

Warkworth Continuation Project Review Report

Mr Paul Forward (Chair)
Ms Lynelle Briggs AO
Mr Gordon Kirkby

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Warkworth Continuation Project PAC Review Report©
State of New South Wales through the NSW Planning Assessment Commission, March 2015.

NSW Planning Assessment Commission
Level 13, 301 George St Sydney NSW Australia
Telephone: (02) 9383 2100
Email: pac@pac.nsw.gov.au
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Executive Summary

The Planning Assessment Commission (the Commission) has been directed to review the Warkworth Continuation Project to assess the merits of the project as a whole, paying particular attention to the potential amenity, health and social impacts on the village of Bulga and surrounds. The Commission has been directed to apply all relevant NSW Government policies in its considerations and to its assessment, and to provide recommendations on any reasonable and feasible measures to avoid, reduce and/or offset the potential impacts of the project.

The Commission to undertake the review was constituted by Mr Paul Forward (Chair), with Ms Lynelle Briggs AO and Mr Gordon Kirkby.

The Warkworth Continuation Project involves extending the existing Warkworth open cut mining pit further westward mining through Wallaby Scrub Road and through some of the offsets established under the previous 2003 development consent. The expansion of the mine will facilitate the extraction of a further 230 million tonnes of coal over 21 years at a rate of up to 18 million tonnes of coal a year. More specifically the project includes:

- Continuation of existing and approved development on site
- Extending approved open cut mining operations further west
- Developing a range of associated infrastructure to support this extension
- Maintaining maximum coal extraction rates at 18 Mt of ROM a year
- Exporting coal, tailings and overburden to the Mt Thorley mine
- Water sharing with other mines
- Progressively rehabilitating the site.

The project includes an expansion of the mining area of 698 hectares and disturbance of an additional 611 hectares of vegetation, including 459 hectares of Endangered Ecological Community (EEC) and 152 hectares of EEC derived grasslands. Previously identified Habitat Management Areas (HMAs) and Non-Disturbance Areas (NDAs) are proposed to be disturbed. A biodiversity strategy is proposed to offset the biodiversity impacts, including land based biodiversity offsets and rehabilitation of mine land.

The project proposes a modified version of the 2010 Warkworth Extension Project that was approved by the Commission in 2012 and subsequently refused by the Land and Environment Court (LEC) in 2013. In operational terms the project is very similar to the previous application with the same expansion footprint. However, changes have been made to address issues raised in the LEC's judgment and to reflect changes in government policy.

The Commission held a Public Hearing on the project on the 18 and 19 December 2014 at the Singleton Heights Diggers Club. The Commission heard arguments both for and against the project.

The Commission has given detailed consideration to the issues raised in submissions and at the Public Hearing. It is aware of the significant history of the project particularly in relation to the 2003 approval and Deed of Agreement and the LEC judgment on the previous Warkworth Extension Project. It also notes changes to government policy and legislation in relation to mining assessments and biodiversity offsetting policy that have occurred since refusal of the previous application by the LEC.

Economic impacts

The Commission considers that it is undeniable that the Warkworth Continuation Project will result in significant economic benefits to both the State and the region. In summary these benefits include:

- Extraction of more than 230 million tonnes (Mt) of high grade thermal and semi-soft coking coal at a maximum rate of 18 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal over the next 21 years
- Production of approximately 10 per cent of NSW's total volume of export coal, and a significant proportion of the ongoing production of coal from the Hunter Valley
- Net capital expenditure with a net present value (NPV) of \$715 million
- The continuation of approximately 1,187 jobs (on average) for an additional 14 years
- The payment of \$567 million in royalties in NPV terms to the State.

The Commission also notes that the project (in conjunction with the Mount Thorley project) will result in indirect economic benefits. Approximately 35 per cent of the mine complex's employees and long-term contractors live in the Singleton local government area; and it is estimated that the local flow-on effect from the mines' expansion would be \$84 million in additional income and the continued employment of 61 full-time equivalent workers.

In light of these economic benefits the Commission recognises that if the project was not approved, there would be substantial adverse economic impacts especially to the towns of Singleton and Cessnock. Royalties to the NSW government would be lost, there would be a reduction in infrastructure projects to the Hunter region and resultant lower wage and salary income for both current employees and contractors.

Notwithstanding the economic benefits of the project, the Commission also recognises that the project will result in adverse economic impacts, particularly on the Bulga village and its residents. Specifically these impacts are likely to include impacts on property values and on the ability of residents to be able to sell their properties in the future. In light of these impacts (and other environmental concerns, including notably noise and dust impacts), the Commission is of the view that consideration should be given to options to ameliorate this impact. Options recommended by the Commission for consideration include compensating property owners for actual loss in property values, or relocating the village, or developing an enhancement strategy for the village and undertaking a program of works to benefit the village and its surrounds. The Commission considers that the unique and unusual set of circumstances that apply in this case warrants serious consideration of these options.

Social impacts

Concerns have been raised that the project will also result in significant adverse social impacts. The Commission agrees that although the existing mining complex, along with the other mines in the area, has positive impacts (in particular in terms of employment in the community as a whole), it may also have negative social impacts on the local community and in this case particularly the Bulga community. The positive and negative impacts can reasonably be expected to continue for the life of the project.

In balancing the social impacts against the economic benefits associated with the proposal, the Commission has formed the view that the impacts expected as a result of the project are acceptable when compared to the standards and performance measures commonly applied to mining projects in NSW. The continuation of operations and associated employment of approximately 1,300 employees will contribute to the vitality of centres such as Singleton, as well as a continued demand

for community services and infrastructure in the area. It does however consider that options exist to ameliorate the impacts of the project on the Bulga community.

Noise

One of the key environmental issues raised in the Public Hearing and public submissions regarding the project is noise impacts. The Commission notes that noise is a long-standing issue between the Warkworth mine and the Bulga community. In this regard the Commission concludes that the evidence indicates:

- The relationship between the Applicant and the Bulga community has deteriorated to the level where constructive discussion to resolve issues of significant concern to the community is difficult, particularly in terms of monitoring and compliance
- There is confusion and misunderstanding in the community in relation to the application of the Industrial Noise Policy (INP), the purposes of different types of monitoring and validity of these results for non-compliance prosecution, and the trigger action response process, particularly whether the trigger level is set at or below the noise limit
- The Applicant has not demonstrated it is able to counter the community's scepticism and lack of confidence in its ability to comply with the existing and proposed noise criteria if the project is to be approved.

The Commission considers it is of critical importance that the Applicant attempt to improve its relationship with the community so as to rebuild confidence and trust. Engaging an independent mediator may assist in this rebuilding process. Further, as a first step towards reconciliation, it considers that the Applicant should genuinely commit to honouring the acquisition and mitigation rights provided to the residences under the now repealed Warkworth Extension Project approval.

The Commission considers that many issues raised in relation to noise are broad issues relating to the INP (i.e. acceptability and appropriateness of criteria, low frequency noise, monitoring and compliance) and should be canvassed in a review of the INP.

Other findings of the Commission in relation to noise include:

- The noise issues raised in the LEC judgment have been addressed adequately, based on the totality of evidence before the Commission
- The data collection, analysis and assessment of the background noise levels for the Bulga area are consistent with the INP requirements
- The noise criteria in the draft conditions take into account the Mining SEPP and the Voluntary Land Acquisition and Mitigation Policy
- The removal of the Saddleback Ridge will not significantly increase the current noise environment in the Bulga area due to the benefit of the noise attenuation program, the expected closure of coal extraction in Mt Thorley and the Bulga coal complex's moving away from the Bulga Village
- Predicted noise exceedances have been dealt with in accordance with the Mining SEPP and the Voluntary Land Acquisition and Mitigation Policy
- The unintended consequence of the 2013 LEC judgment is a significant reduction in the number of properties that will be provided with mitigation or acquisition rights, if the subject application is approved
- The commencement of any new consent should trigger the application of the new noise criteria
- The 2012 SKM monitoring report found the mine generally complied with its current noise limits, noting that some locations may be affected by low frequency noise

- Low frequency noise is a significant issue to the community. The INP methodology should apply and not other alternative methods. During compliance testing, if low frequency noise is prevalent, an appropriate noise modification factor should apply before comparison with the noise criteria if the approval is made
- Other noise issues including sleep disturbance, vibration, health impacts, traffic noise and rail noise have been addressed adequately in the EIS, Noise and Vibration Study and the Secretary's assessment report.

Having regard to these findings, the Commission's recommendations (included in the body of the Review report), advice from the EPA and the draft recommended conditions, the Commission considers that the issue of noise has been adequately assessed.

Visual impacts

The project also gives rise to significant concerns in relation to visual impact, particularly the visual impacts of the mine expansion on Bulga village given the proposed removal of Saddleback Ridge, which currently acts as an important visual barrier between a number of residences and the mine.

The Commission has considered the Visual Impact Assessment, ownership status of the land, the proposed mitigation measures and draft recommended conditions in detail. On balance, it has concluded that although the landscape in and around the mining complex would be altered as a result of the project, the visual impact would either be acceptable or could be minimised by the proposed mitigation measures and draft recommended conditions. The Commission acknowledges that the local community of Bulga may view this as a subjective judgement.

Air Quality

Air quality has been raised as a concern, particularly in relation to the potential health impacts of the project, increased dust levels at nearby residences, the impact of removal of Saddleback Ridge and cumulative air quality impacts from mining in the Hunter Valley.

In relation to air quality, the Commission notes that the air quality modelling generally indicates that the proposal will comply with relevant criteria, with the exception of annual average 24-hour PM₁₀ at three privately owned locations, all of which are in Warkworth Village. The two privately owned residences are recommended for acquisition. This is considered appropriate.

The Commission further notes that in terms of human health, PM₁₀ and PM_{2.5} have the potential to give rise to adverse health effects and that particles larger than 10 micrometres are essentially prevented from entering the human respiratory system due to their size. PM_{2.5} particles are of most concern in terms of health effects as they penetrate deeper into the respiratory system than larger particles and because they are generally created by combustion of fuels or by chemical reactions. Deposited dust, whilst not resulting generally in health impacts, can cause nuisance impacts.

The Commission, as advised by the EPA, understands that the proposed mitigation measures (including 'active' mitigation measures such as real-time dust monitoring and meteorological forecasting to guide the day to day planning of mining operations) incorporated into the project to minimise air quality impacts represent 'best practice measures'. Further, a comprehensive Air Quality Management Plan will also be required to be prepared to inform the operation of the mine and manage potential exceedances. Having regard to all these measures, the Commission considers that as far as practicable all possible measures will be taken to minimise exposure to PM as a result of the project.

Specific concerns have also been raised that the removal of Saddleback Ridge would result in higher dust impacts to sensitive receivers west of the mine, in particular Bulga village. However the modelling indicates that prevailing wind patterns mean that the majority of dust impacts from the proposal would be expected to occur in the southeast-north west quadrants (i.e. parallel to the Bulga, Mt Thorley and Warkworth mines) and not in the area of Bulga village. The modelling therefore indicates that the impact of Saddleback Ridge on these patterns is relatively minor and that, with its removal, wind patterns will remain similar to present.

The Commission is, therefore, generally of the view that the proposal is likely to be acceptable in terms of air quality impacts, however some additional information is required prior to it being able to reach a definite conclusion in this regard. Detailed recommendations in this respect are included in the body of the report.

Biodiversity

The impact of the proposal on biodiversity and the adequacy of the proposed biodiversity offsets strategy is a critical issue in relation to the project and has a long and complex history. The Commission has given careful consideration to the impacts of the proposal on biodiversity and has had regard to the findings of the LEC decision in relation to the previous 2010 Warkworth Extension Project and its implications for the current application.

The Commission notes that central to its consideration of biodiversity impacts are changes that have occurred in the legislative and policy framework since the LEC decision on the previous Warkworth Extension Project. Also core to its consideration is certification of the proposed biodiversity offset strategy by the Office of Environment and Heritage.

While the Commission has made a number of recommendations in relation to biodiversity, notably requiring further information on the viability and cost involved in the proposed regeneration of Warkworth Sands Woodlands EEC, it is of the view that the proposal is consistent with government policy in relation to biodiversity offsetting and impacts.

Final void

The project includes a large legacy void to be left post mining. Various concerns that have been raised in relation to the final void include the void's size, water quality impacts and the cumulative impacts of voids from mining projects across the Hunter Valley. Suggestions have been made that the Applicant should be required to backfill all or at least part of the void to minimise impacts on the local topography and groundwater systems.

The Commission considers that the size of the final void as currently proposed is unacceptable and that opportunities exist to reduce its size. In this regard it has recommended that the Applicant undertake further work prior to determination of the application.

Further, the Commission is concerned regarding the cumulative impact of final voids associated with coal mining within the Hunter Valley. It recommends as a matter of priority that a study be undertaken by the Government to establish a policy position on voids for future mining projects and mine expansion projects.

Rehabilitation

In relation to rehabilitation, the Commission has heard concerns that the Applicant has a poor track record of mine rehabilitation and that it is not possible to be confident that the additional rehabilitation proposed as part of the current application will be undertaken in a timely manner and to an acceptable standard. Concerns have also been raised that rehabilitation of post-mined land is

proposed to be included in biodiversity offsets, with doubts raised regarding the likelihood that certain ecological communities, especially Warkworth Sands Woodlands EEC, can be rehabilitated successfully.

The Commission is satisfied that, subject to draft recommended conditions, rehabilitation of the site will be undertaken in a timely manner and to an acceptable standard. In respect of the proposed biodiversity offsetting of post mined rehabilitated land, the Commission accepts that this is consistent with existing government policy and that adequate safeguards are proposed to ensure only land rehabilitated to an acceptable standard is used for offsetting and that if rehabilitated land does not meet this standard, other means will be used to retire the required biodiversity credits.

Wallaby Scrub Road

The Warkworth Continuation Project involves extending the existing operations through a 5.4 kilometre section of Wallaby Scrub Road to the west of Warkworth mine to access coal located beneath its current alignment. The roadway is not proposed to be relocated; instead, current traffic would be detoured via Putty Road and the Golden Highway. The Commission understands that the public interest considerations relating to Wallaby Scrub Road require careful consideration. The Commission has therefore examined the arguments for and against the proposed road closure very carefully.

The Commission acknowledges that there are limited opportunities to economically develop new mines in the Hunter Valley region, and this highlights the significance of the coal resources available at the Warkworth and Mount Thorley mining complex. The approach supported by the Department, of maximising the extraction of coal from reserves located within or adjacent to existing mines and relying on existing infrastructure, is considered reasonable.

With regard to travel time and inconvenience for the residents of Bulga village, the Commission understands that, while the proposed detour may inconvenience some motorists, it is likely to improve travelling conditions due to road construction standards on the Golden Highway. In addition, the detoured traffic would not significantly impact the capacity of the detoured roads and relevant intersections. Based on the information provided, the Commission agrees with the Department that the relocation of Wallaby Scrub Road is not a feasible option. On balance, the Commission supports the closure of Wallaby Scrub Road, subject to the commitments made by the Applicant and draft recommended conditions. The Commission supports the proposition that the Applicant should compensate Singleton Council for the loss of an important public asset.

Other issues

Other issues considered in detail in the attached report include impacts on traffic and transport, Aboriginal archaeology and water resources.

Conclusions

In conclusion, the Commission has made a number of significant recommendations and requires further information on a variety of matters prior to determination of the subject application. Whilst the Commission notes that the current application is very similar to the previous Warkworth Extension Project that was refused by the LEC, significant legislative and policy changes have occurred since that time. The Commission is required to consider the current legislative and policy environment in its review of the application. Further changes have been made to the application to address issues raised in the LEC decision.

The Commission recognises that the project provides for mining of a significant resource and will have very significant direct and indirect economic and social benefits for the State and the Hunter

region. It further notes that if the project was not approved, there would be substantial adverse economic impacts, especially to the towns of Singleton and Cessnock. These impacts include the loss of royalties to the NSW government, a reduction in infrastructure projects to the Hunter region and lower wage and salary income for both current employees and contractors.

Notwithstanding the economic benefits of the project to the State and the region, the Commission considers that the project will undoubtedly have a range of adverse impacts on Bulga village and its community. In light of these impacts the Commission recommends that serious consideration should be given to the potential option for compensation to the villagers.

Notwithstanding the above comment, the Commission considers that, subject to the detailed recommendations outlined in the report, the project is consistent with government policy and legislation and is capable of being approved.

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- 3 Summary of Meetings
- 4 Additional information from the Applicant
- 5 Additional Information from the Department of Planning and Environment
- 6 Additional information from the Environment Protection Authority
- 7 Additional advice from Dr N Broner

Glossary

2003 Consent	Existing development consent for the Warkworth Mine (DA300-9-2002)
AHD	Australian Height Datum
Applicant	Warkworth Mining Limited. A reference to the Applicant includes the Applicant's EIS consultants
BMPA	Bulga Milbrodale Progress Association
CBA	cost benefit analysis
Commission	Planning Assessment Commission constituted for this Review and Public Hearing, Mr Paul Forward (Chair), Ms Lynelle Briggs AO and Mr Gordon Kirkby
DAE	Deloitte Access Economics
Department	NSW Department of Planning and Environment (previously Planning and Infrastructure)
DTI	NSW Department of Trade and Investment
EEC	endangered ecological community
EIS	<i>Warkworth Continuation 2014 Environmental Impact Statement</i> prepared by EMGA Mitchell McLennan on behalf of the Applicant
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
EPBC Act	Commonwealth Environmental Protection and Biodiversity Conservation Act 1999
FBA	Framework for Biodiversity Assessment
HMA	habitat management area
HMP	Heritage Management Plan
INP	NSW Industrial Noise Policy
LEC	Land and Environment Court of NSW
LEC judgment	<i>BMPA v Minister for Planning and Infrastructure and Warkworth Mining Limited</i> [2013] NSWLEC 48 [391]
Mining SEPP	State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment (Resource Significance) 2013
Minister	Minister for Planning
Mt	million tonnes
Mtpa	million tonnes per annum
MTW	Mount Thorley Warkworth mining complex
NDA	non disturbance areas

NEPM	National Environment Protection Measure
OEH	NSW Office of Environment and Heritage
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter smaller than 10 micrometres
PM _{2.5}	particulate matter with an aerodynamic diameter smaller than 2.5 micrometres
Project	Warkworth Continuation Project
PSNL	project specific noise level
RBL	rating background levels
Review	The Commission's Review of the Warkworth Continuation Project, as detailed in this report
ROM	run-of-mine (coal that is delivered from the mine to the coal preparation plant that is not graded according to quality or size)
RFS	NSW Rural Fire Service
RMS	Roads and Maritime Services
RTS	Applicant's Response to Submissions
Secretary	Secretary of NSW Department of Planning and Environment
Secretary's assessment report	Secretary's Environmental Assessment Report for the Warkworth Continuation Project (SSD-6464), referred to in the Terms of Reference as the preliminary assessment report
SEPP Amendment	State Environmental Planning Policy Amendment (Gas Exploration and Mining) 2014
SIA	social impact assessment
Terms of Reference	Minister's Terms of Reference for the Warkworth Review are dated 6 November 2014
TSC Act	Threatened Species Conservation Act 1995
TSP	total suspended particulates
VPA	voluntary planning agreement
WBACHCA	Wollombi Brook Aboriginal Cultural Heritage Conservation Area
WML	Warkworth Mining Limited (the Applicant)

1.0 INTRODUCTION

1.1 DESCRIPTION OF MINES

Mount Thorley and Warkworth are open cut coal mines located approximately 10 kilometres southwest of Singleton and approximately three kilometres northeast of Bulga village in the Upper Hunter Valley (see Figure 1).

Warkworth Mine is operated by Warkworth Mining Limited (the Applicant) and commenced operating in 1981. Current mining operations are under a development consent issued by the Minister for Planning (the Minister) in May 2003 under Part 4 of the *Environmental Planning and Assessment Act 1979* (EPA Act) (DA 300-9-20021). The development consent, which has been modified five times, permits coal mining in a specified area until 2021. The consent is subject to numerous conditions, including the requirement for the conservation of native vegetation areas and landforms to the north, west and south west of the mine. These areas were designated as non disturbance areas (NDAs) and habitat management areas (HMAs).

The mine consists of three integrated open cut mining areas (North, West and South Pits), with the West Pit and North Pit being the focus of production¹. Run-of-mine (ROM) coal from Warkworth is transported to coal preparation plants for processing, before being transported via conveyor to the Mount Thorley Coal Loader or previously to the Redbank Power Station² (prior to its closure in November 2014). Coal taken to Mount Thorley Coal Loader is then loaded into trains and transported to the Port of Newcastle for export.

Directly to the south of Warkworth is Mount Thorley mine, which is operated by Mt Thorley Operations Pty Ltd and was granted Ministerial consent in 1996 (DA 34/95). The consent expires on 22 June 2017. Similar to Warkworth, ROM coal from Mount Thorley is transported to coal preparation plants and taken via conveyor to Mount Thorley Coal Loader for transportation to the Port of Newcastle³.

Despite operating under separate Ministerial consents, the two mines share a cross-linked ownership and management structure, with both mines managed by Coal and Allied Ltd (a subsidiary of Rio Tinto Ltd). Given this structure, the mines have operated as an integrated mine complex since 2004, known as the Mount Thorley-Warkworth mining complex (MTW). Under these arrangements, the mines share employees and surface infrastructure, and connect via a series of haul roads, conveyors and pipelines. The mines are also interdependent in an operational sense with coal, overburden, tailings and water being moved between them.

The approved operations of each of the mines is summarised in Table 1.

¹ EMGA Mitchell McLennan (EMM)(1), *Warkworth Continuation 2014 Environmental Impact Statement*, Sydney, 2014, p.3

² Ibid

³ EMGA Mitchell McLennan (EMM)(2), *Mount Thorley Operations 2014 Environmental Impact Statement*, Sydney, 2014, p.3

Table 1: Approved operations for Mount Thorley and Warkworth Mining Complex

Aspect	Warkworth	Mt Thorley
<i>Company</i>	Warkworth Mining Limited	Mt Thorley Operations Pty Limited
<i>Operations</i>	Commenced 1981	Commenced 1981
<i>Consent</i>	DA 300-9-2002-I (expires in 2021)	DA 34/95 (expires in 2017)
<i>Remaining Life</i>	6 years	2 years
<i>Mining Reserves as at November 2014</i>	128 Mt remaining	29 Mt remaining
<i>Mining Areas</i>	5 open cut pits (North, West, CD, Woodlands and South) with mining operations moving to the west towards Wallaby Scrub Road	3 open cut pits (Loders, Abbey Green North & Abbey Green South), with mining operations moving west towards Charlton Road
<i>Extraction Rate</i>	Approved: up to 18 Mtpa ROM coal Actual in 2013: 13.3 Mt	Approved: up to 10 Mtpa ROM coal Actual in 2013: 5.4 Mt
<i>Coal Processing</i>	Coal is processed at the Warkworth CPP, which can process up to 13 Mt ROM coal a year, and the Mt Thorley CPP	Coal is processed at the Mt Thorley CPP, which can process up to 10Mt ROM coal a year, and the Warkworth CPP
<i>Coal Transport</i>	Coal is transported to the: <ul style="list-style-type: none"> • Mt Thorley Coal Loader by haul road and conveyor, and then railed to export markets • Redbank Power Station by conveyor (now closed) 	Coal is transported to the Mt Thorley Coal Loader by haul road and conveyor, and then railed to export markets
<i>Overburden</i>	In-pit emplacement behind advancing mining operations at the Warkworth mine	In-pit emplacement behind advancing mining operations at the Mt Thorley mine
<i>Biodiversity Offsets</i>	Offset areas to the west and north of the approved mining operations covering 1,646 hectares with: <ul style="list-style-type: none"> • 757 ha in 2 non-disturbance areas; • 889 ha in 3 habitat management areas. 	None
<i>Rehabilitation</i>	2,299 ha on site rehabilitation comprising a combination of woodland, open woodland and pasture. 870 ha rehabilitated across MTW complex at the end of December 2013.	Rehabilitate site to well treed grazing land. 870ha rehabilitated across MTW complex at the end of December 2013.
<i>Employment</i>	Approx. 1,300 with the Mt Thorley mine	Approx. 1,300 with the Warkworth mine

1.2 SURROUNDING AREA

The MTW mine complex is located in an area that is dominated by large-scale and intensive mining operations. Other mining operations in the area are detailed in the Secretary's assessment report⁴ and include:

- Bulga open cut and underground mine complex, which is located to the south of the MTW complex and has consent to extract up to 26.2 million tonnes per annum (Mtpa) of ROM coal
- Wambo open cut and underground mine complex, which is located to the northeast of the MTW complex and has consent to extract up to 14.7 Mtpa of ROM coal
- Hunter Valley Operations mine complex, which is located to the north of the MTW complex and has consent to extract up to 36 Mtpa of ROM coal.

While much of the land in the vicinity of the MTW mine complex is owned by mining companies, large areas are used for a range of agricultural activities. The land along the Hunter River and

⁴ NSW Department of Planning and Environment, *State Significant Development Assessment Warkworth Continuation Project (SSD-6464)*, Secretary's Environmental Assessment Report, Sydney, 2014. This report is referred to in the Terms of Reference as the preliminary assessment report however for ease of reference this report is referred to as the Secretary's assessment report throughout this document.

Wollombi Brook is used for intensive agriculture and the rest of the agricultural land is used primarily for grazing⁵. One of the largest stands of remnant vegetation on the Hunter Valley floor is located immediately to the west of the complex. This vegetation forms part of a fledgling vegetation corridor between the Wollemi and Yengo National Parks to the southwest of the complex and the Barrington Tops National Park, which is located on the northern edge of the valley floor.

The nearest settlement to the MTW complex is Bulga village, which is located about 3.5 kilometres to the west of the mines. Bulga village lies at the base of an escarpment of Wollemi National Park to the west, and the Wollombi Brook to the east. The village has a population of approximately 358 residents, with a population growth rate of 11.5% between 2006 and 2011⁶. The majority of residences are located off The Inlet Road, with residences at the western limit of The Inlet Road being slightly elevated and having direct views of the Bulga and Mt Thorley overburden dumps. Bulga village has a pub, service station and café, police station and rural fire brigade.

There are also several rural-residential properties located in close proximity to the complex, including Mt Thorley to the east; Hambleton Hill, Wylies Flat and Gouldsville to the northeast; Warkworth to the northwest; and Putty Road to the west.

⁵ Secretary's Environmental Assessment Report, p.4

⁶ Ibid, p. 8

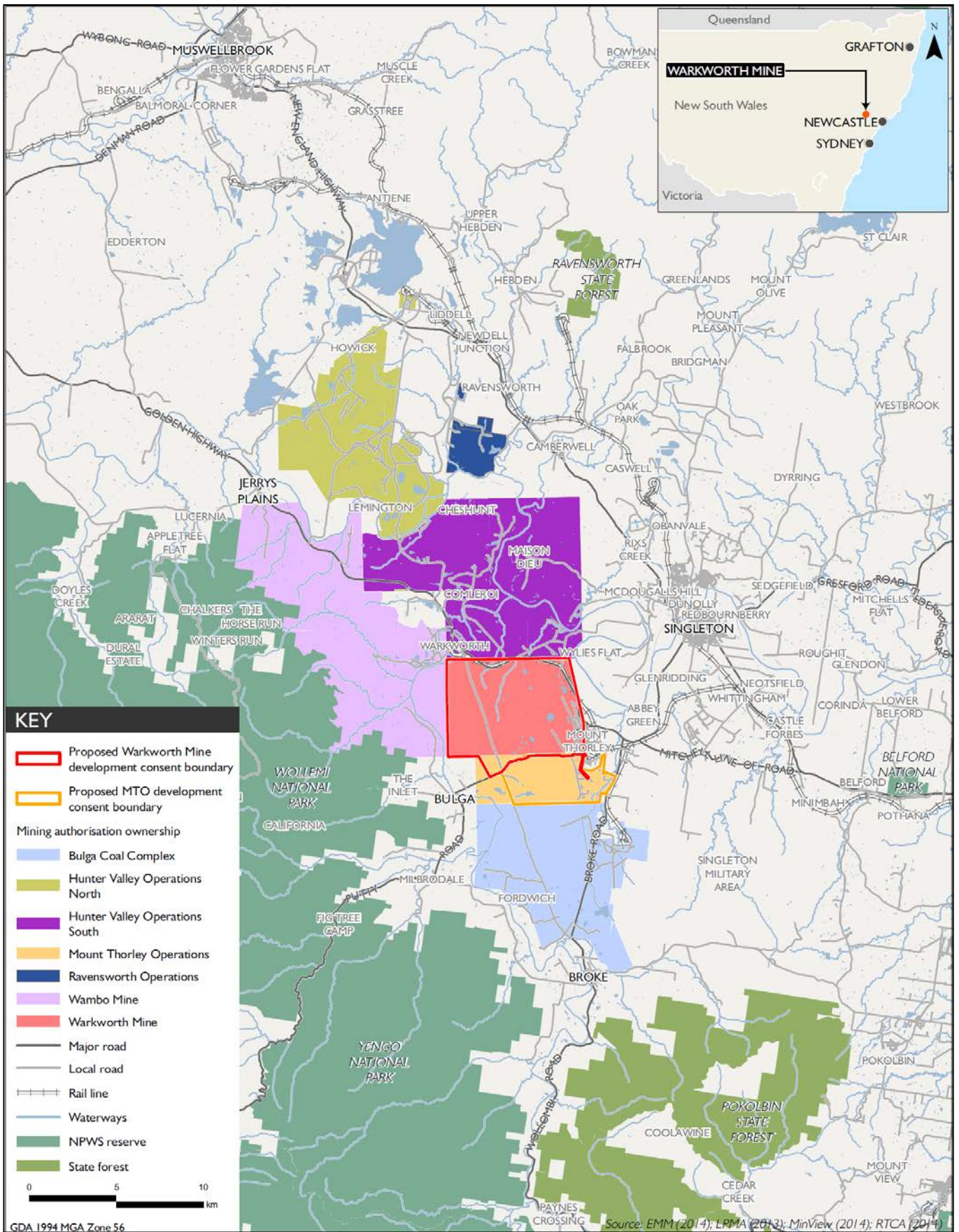


Figure 1: Site and surrounding area (source: Secretary's assessment report, 2014)

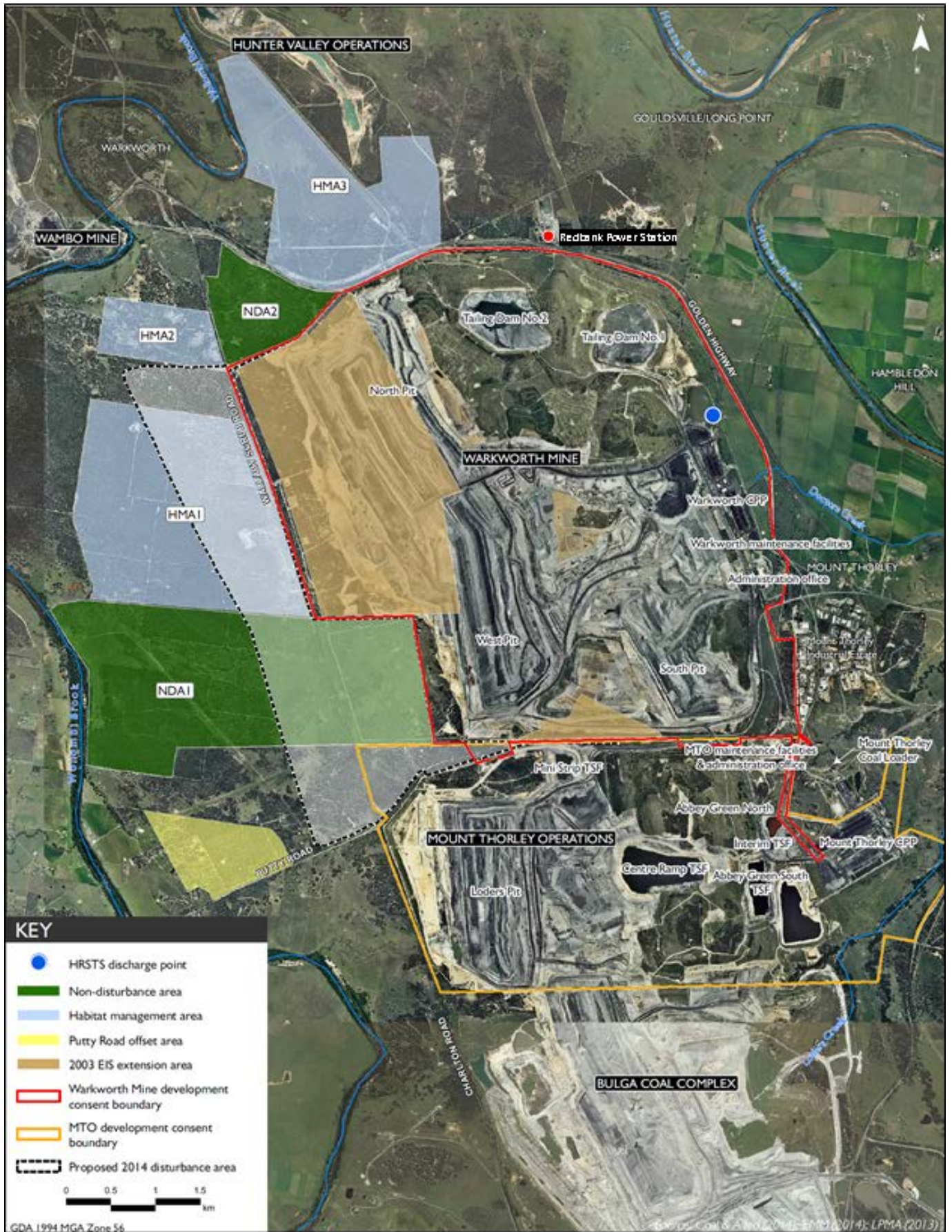


Figure 2: Existing operations (source: Secretary's assessment report, 2014)

2.0 BACKGROUND

2.1 2003 AND 2012 APPROVALS

Warkworth mine is currently operating under an approval granted in May 2003. The approval included a Ministerial Deed of Agreement between Warkworth Mining Limited and the then Minister for Planning, whereby land in the NDAs and HMAs was protected for conservation and open cut mining generally excluded. These areas included Wallaby Scrub Road, Saddleback Ridge and offset areas containing Endangered Ecological Communities (EECs).

In 2010, the Applicant lodged a major project application for approval under the now repealed Part 3A of the EP&A Act (Application No. 09_0202). The proposal, a combined application for both Warkworth and Mount Thorley, involved the extension of the Warkworth mine complex to the west and south west to mine the underlying coal reserve until 2031. The application, known as the Warkworth Extension Project, was referred to the Planning Assessment Commission (the Commission) for determination in October 2011.

In February 2012, the Commission approved the Warkworth Extension Project, subject to stringent conditions. The approval comprised the following:

- Continued integration of the Warkworth and Mount Thorley mines
- Extension of the existing open cut operations by an additional 750 hectares, through Wallaby Scrub Road and Saddleback Ridge and through some of the green offset areas set aside under the 2003 consent as NDAs and HMAs
- Extending the life of the mine by a further 11 years and extracting an additional 200 Mt of ROM coal
- Matching existing production levels, processing and coal transport arrangements
- Requiring biodiversity offsets to compensate for the impacts of the project on biological diversity, including on EECs.

In summary, the Commission's determination report provided the following rationale for approving the project:

- Subject to stringent conditions, the Commission considered that the benefits of the project outweighed the disadvantages
- The significant noise impacts warranted improved control over noise-generating activity at the mine complex and increased options for some residences likely to experience significant impact. These included:
 - imposition of at-source controls including purchase, retro-fitting and maintenance of noise attenuation equipment
 - improved practice during adverse meteorological conditions
 - improved monitoring and reporting
- Specific consideration should be given to properties that may experience significant impacts from the western expansion of Warkworth. The Applicant's proposal to provide an increased number of properties with acquisition options addressed the Commission's concerns
- The conditions of approval provided a sound basis for control of dust emissions, including:
 - improved monitoring and reporting requirements

- improved provisions for incident notification
- provision of information on health risks to potentially affected residents
- The closure of Wallaby Scrub Road without relocation was supported subject to conditions regarding emergency access, road and intersection upgrades, heritage management and compliant blasting operations. The Commission noted that the issue of compensation would need to be addressed by the relevant parties in the context of action necessary to effect closure of the road
- By 2012 standards, the 2003 biodiversity offsets were inadequate. This position was supported by the Office of Environment and Heritage (OEH)
- The proposal provided improved environmental outcomes and the approval conditions provided the level of certainty necessary to ensure that the new offset lands will be protected in the long-term
- The terms of the approval provided the best outcome available in the circumstances for the Bulga village. The environmental management requirements for the mine were made more onerous and explicit, enforcement options were expanded, and the option of acquisition was extended appropriately by the Applicant.

Following the Commission's decision, on 9 August 2012 the Commonwealth Minister for the Environment approved the mine's extension and relocation of the 2003 Commonwealth offsets under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

2.2 LAND AND ENVIRONMENT COURT APPEAL

The Bulga Milbrodale Progress Association (BMPA) is a community group opposed to the mine expansion and relocation of the 2003 Commonwealth offsets. Following the Commission's 2012 determination, the BMPA appealed to the NSW Land and Environment Court (LEC) against the merits of the approval⁷.

On 15 April 2013, the Court upheld the merit appeal and refused the Warkworth Extension Project. The Court's decision was based on the following:

- It had not been established that the project was justified on environmental, social and economic grounds
- The project would have significant and unacceptable impacts on biological diversity, including on EECs, noise and dust impacts, and social impacts
- The proposed conditions of approval were inadequate in terms of the performance criteria set and the mitigation strategies required to enable the project to achieve satisfactory levels of impact on the environment, including the residents and community of Bulga
- The proposed conditions of approval, including combining the Warkworth mine with the Mount Thorley mine, were likely to make monitoring and enforcing of compliance difficult, thereby raising the possibility that the project's impacts could be greater and more adverse than allowed by the conditions of approval.

The Applicant and the former Minister for Planning and Infrastructure subsequently appealed some of the legal technicalities associated with the LEC's judgment in the NSW Court of Appeal. This appeal was on matters of law, rather than on the merits of the project.

⁷ *BMPA v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48 [391]

On 7 April 2014, the NSW Court of Appeal dismissed the appeal on all grounds, upholding the LEC's refusal of the project.

2.3 CHANGES TO LEGISLATION AND GOVERNMENT POLICY

Since the determination of the Warkworth Extension Project by the Commission, and the subsequent refusal by the LEC, there have been a number of changes to policy and legislation by the NSW Government in relation to mining assessments. The key changes are summarised below.

2.3.1 State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment (Resource Significance) 2013 ("Mining SEPP")

On 4 November 2013, the NSW Government amended the Mining SEPP to clarify the factors to be considered in the decision-making process for proposals for mining of mineral resources. The amendment introduced a statutory requirement that the consent authority must consider the significance of the resource, in terms of:

- The economic benefits of developing the resource both to the State and the region in which the development is proposed to be carried out
- Any advice from the NSW Department of Trade and Investment (DTI) as to the relative significance of the resource in comparison with other mineral resources across the state.

Other factors, including environmental, social and economic impacts, must continue to be considered.

The 2013 amendments to the Mining SEPP also included:

- Details of key environmental, ecological and amenity criteria to protect water resources, habitat and amenity
- Provision for the OEH to certify biodiversity offsets and mitigation measures during the assessment process
- The introduction of non-discretionary development standards (for example cumulative noise levels, blasting, ground vibration and cumulative air quality levels) that cannot be used to refuse a mining application.

2.3.2 NSW Biodiversity Offsets Policy for Major Projects 2014 ("Biodiversity Offsets Policy")

In October 2014 the NSW Government introduced a new Biodiversity Offsets Policy. This Policy is supported by the OEH's Framework for Biodiversity Assessment (FBA) tool, which is used to calculate biodiversity impacts on a proposed development site and determine the offset requirements for those impacts⁸.

The purpose of the Biodiversity Offsets Policy is to provide a standardised, detailed and quantifiable methodology for assessing biodiversity offset requirements for major projects. The Secretary's assessment report explains that the new methodology provides a more strategic approach to the identification and management of biodiversity offset sites, which have traditionally been identified by individual proponents on a project by project basis.

⁸ OEH website: www.environment.nsw.gov.au

The Policy is based on the following six principles:

1. Before offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining impacts
2. Offset requirements should be based on a reliable and transparent assessment of losses and gains
3. Offsets must be targeted to the biodiversity values being lost or to higher conservation priorities
4. Offsets must be additional to other legal requirements
5. Offsets must be enduring, enforceable and auditable
6. Supplementary measures can be used in lieu of offsets.

The Policy enables biodiversity liability to be addressed through direct offsets, by translating liability into a monetary value to provide funding into an offset account, or through supplementary non-land based offsets (for example, contributing to an environmental recovery program). Mine rehabilitation may also be considered an acceptable (albeit discounted) offset. All offsets are to be provided under a bio-banking agreement, rather than through a Voluntary Planning Agreement (VPA) and/or approval conditions.

At a meeting in December 2014 between the Commission and officers from the Department of Planning and Environment (the Department), OEH, Environment Protection Authority (EPA) and NSW Office of Water (NOW) the agencies explained that the Biodiversity Offsets Policy recognises that it may not be possible to offset all impacts associated with a development, but for economic and/or social reasons the development may still be approvable (refer minutes at Appendix 3).

2.3.3 Voluntary Land Acquisition and Mitigation Policy

In December 2014 the NSW government released State Environmental Planning Policy Amendment (Gas Exploration and Mining) 2014 ("SEPP Amendment"). This amendment introduces the Voluntary Land Acquisition and Mitigation Policy, which seeks to protect landholders from noise and dust impacts associated with mining, petroleum and extractive industries. This policy must now be considered by consent authorities when determining all existing and future State Significant development applications.

The Voluntary Land Acquisition and Mitigation Policy sets out the criteria for noise and particulate matter where voluntary mitigation and acquisition rights apply, but only encourages acquisition as a last resort after all reasonable and feasible mitigation measures have been undertaken. The preferred approach is to manage exceedances of the relevant assessment criteria through negotiated agreements between the mine and the affected landowners.

In circumstances where acquisition is the only option, the policy provides that the acquisition price to be paid by a proponent should not be less favourable than a 'market value' rate. This rate is calculated as if the land was unaffected by the development and with reference to section 55 of the *Land Acquisition (Just Terms Compensation) Act 1991*⁹.

⁹ NSW Government Voluntary Land Acquisition and Mitigation Policy (December 2014)

3.0 CURRENT APPLICATIONS

The current applications propose a modified version of the 2010 Warkworth Extension Project that was approved by the Commission in 2012 and subsequently refused by the LEC in 2013.

The 2010 proposal sought to facilitate and formalise integration between the Warkworth and Mount Thorley mines, with the Warkworth mine relying on Mt Thorley's infrastructure and facilities following completion of mining at Mt Thorley in 2017. Given that the LEC was critical of the integrated approach to mine complex management, separate development applications have now been lodged for each mine with the intention of maintaining separate development consents for each.

Sections of the community have expressed frustration that these further applications have been lodged for a similar scope of works. It is noted that under the EP&A Act, the Applicant is entitled to lodge a new application for the modified project, despite the LEC's findings on the original Warkworth Extension Project. The Commission must review any proposal referred to it by the Minister on merit.

3.1 WARKWORTH CONTINUATION PROJECT

The Warkworth Continuation Project (the Project) involves extending the existing open cut mining pit further westward, mining through Wallaby Scrub Road and some of the offsets established under the 2003 development consent. The expansion of the mine will facilitate the extraction of a further 230 million tonnes of coal over 21 years at a rate of up to 18 million tonnes of coal a year.

The Project also involves a number of operational changes, including the following:

- A change of mining methods (a dragline tandem offset method is proposed, rather than a continuous dragline operation)
- Use of the Putty Road underpass as an option in lieu of the approved (unbuilt) third bridge over Putty Road
- Inclusion of a small void in the South Pit to facilitate access to potential underground mining in the future.

A summary of the Warkworth Continuation Project is provided in Table 2.

Table 2: Summary of the Warkworth Continuation Project

Aspect	Description
<i>Project Summary</i>	<ul style="list-style-type: none">• Continuation of existing and approved development on site• Extending approved open cut mining operations further west• Developing a range of associated infrastructure to support this extension• Maintaining maximum coal extraction rates at 18 Mt of ROM a year• Exporting coal, tailings and overburden to the Mt Thorley mine• Water sharing with other mines• Progressively rehabilitating the site.
<i>Project Life</i>	21 years
<i>Mining & Reserves</i>	Extraction of an additional 230 Mt of ROM coal, taking the total reserves to around 360 Mt of ROM coal.
<i>Mining Areas</i>	Extending the north and west pits further west, covering an additional 698 ha.
<i>Consent Boundary</i>	Expanded to include an additional 63 ha area (previously approved for mining under existing the Mt Thorley consent).
<i>Extraction Rate</i>	No change. The maximum extraction rate would remain 18 Mt of ROM coal a year.

Aspect	Description
<i>Coal Processing</i>	No change. Coal would continue to be processed at the Warkworth CPP and the Mt Thorley CPP.
<i>Coal Transport</i>	No change. Product coal would continue to be transported by overland conveyor and along internal haul roads to the Mt Thorley Coal Loader and transported by rail to export markets.
<i>Overburden Emplacement</i>	Overburden would continue to be emplaced in-pit behind the advancing mining operations. In addition, overburden from Warkworth mine is proposed to be transferred to Mt Thorley mine for use in development of the final landform.
<i>Rejects Disposal</i>	No change. Coarse rejects and tailings would continue to be disposed of in-pit and at tailings storage facilities at either Warkworth or Mt Thorley mines.
<i>Infrastructure</i>	<ul style="list-style-type: none"> • Upgrade and augment existing surface infrastructure, including a services corridor located along the western extension boundary • Construct an underpass below Putty Road between the Warkworth and Mt Thorley mines, or construct the approved third bridge over the road • Close Wallaby Scrub Road and construct an emergency vehicle access road between Putty Road and the Golden Highway (within the services corridor).
<i>Water Management</i>	<p>Upgrade the integrated MTW water management system including:</p> <ul style="list-style-type: none"> • extend the mine water management system to include the extension of mining • design changes to the northern out-of-pit dam • water sharing between Bulga Coal Complex and Wambo Mine if required. <p>Continued water sharing between the Warkworth mine, Mt Thorley mine, Redbank Power Station and Hunter Valley Operations mine complex.</p>
<i>Cultural Heritage Conservation</i>	Establish the Wollombi Brook Aboriginal Cultural Heritage Conservation Area, located west of the proposed extension area and adjacent to the Hunter River.
<i>Biodiversity Offsets</i>	<p>The project would disturb 611 ha of vegetation, including 459 ha of EECs and 152 ha of EEC derived grassland. The 2003 HMA and NDA offsets would also be disturbed. The proposed offset strategy includes the following land-based offsets:</p> <ul style="list-style-type: none"> • Northern biodiversity offset area – 705 ha • Southern biodiversity offset area – 303 ha • Goulburn River National Park – 1,299 ha • Bowditch property – 520 ha • Rehabilitation – 2,100 ha.
<i>Rehabilitation</i>	Establish 2,673 ha of rehabilitated land, including at least 1,617 ha of EEC woodland at Warkworth mine (2,100 ha of EEC including the rehabilitated Mt Thorley mine)
<i>Employment</i>	Approximately 1,187 long term full time positions (1,307 including Mt Thorley mine)
<i>Capital Value</i>	Approximately \$715 million (\$719 million including Mt Thorley mine)
<i>Royalties</i>	Approximately \$567 million (\$617 million including Mt Thorley mine)

3.2 MOUNT THORLEY CONTINUATION PROJECT

The Mount Thorley Continuation Project is considered in a separate Review by the Commission.

3.3 COMPARISON BETWEEN THE CURRENT APPLICATIONS AND PREVIOUS PROPOSAL

The Commission met with representatives from the Department for a briefing on 5 December 2014. One of the issues discussed was the differences between the 2010 proposal and the current applications. In operational terms they are very similar as they propose the same expansion footprint. However, changes have been made to the current applications to address issues raised in the LEC's judgment and to reflect changes in government policy. These changes are detailed in Section 1.2 of the Applicant's Response to Submissions (RTS) report for the Warkworth Continuation Project, and are summarised below:

- A revised assessment of biodiversity impacts and a revised biodiversity offset strategy prepared in accordance with the NSW Biodiversity Offsets Policy for Major Projects, the FBA and the Upper Hunter Strategic Assessment Interim Policy
- A revised noise assessment, addressing concerns regarding background noise levels
- A revised social impact analysis and economic assessment
- Operational changes in response to ongoing stakeholder engagement, particularly regarding the management of noise and dust
- Additional commitments, including the inclusion of an additional area within the Wollombi Brook Aboriginal Cultural Heritage Conservation Area, and the establishment of local historic heritage conservation initiatives
- Changes to the final landform, including the emplacement of overburden at Mount Thorley mine, enabling the void at Mount Thorley to be backfilled
- Optional underpass of Putty Road
- Extraction of coal as part of Warkworth mine's operations which is approved for mining operations under Mount Thorley's development consent (DA 34/95), avoiding the need to relocate Putty Road.

3.4 THE SECRETARY'S ASSESSMENT REPORT

The Secretary has prepared assessment reports for both the Warkworth and Mount Thorley Continuation Project applications. These reports have been submitted to the Commission for consideration as part of the review process.

In relation to the Warkworth Continuation project, the Secretary's assessment report considers the proposal, its strategic and statutory context, public and agency submissions, and the Applicant's EISs and RTS reports. It identifies the key issues relating to this application to be:

- Noise, vibration and dust/air quality
- Biodiversity
- Heritage
- Closure of Wallaby Scrub Road
- Visual amenity, including the removal of Saddleback Ridge
- Water resources
- Aboriginal heritage
- Socio-economic.

The report concludes:

- The extraction of a coal resource of the size and quality proposed would result in a range of very significant economic benefits to the Singleton LGA, the Hunter region and to the state of NSW, which must be given sufficient weight in assessing the development's overall merits
- The combined benefits of the two mines include a net economic benefit of approximately \$1,488 million, \$617 million in royalties for the NSW Government, and continued employment for the 1,300 people that currently work at the MTW complex¹⁰

¹⁰ Secretary's assessment report, p.31

- Noise, air quality, blasting and visual impacts would increase as the mining complex progresses towards Bulga village. Conversely, the amenity impacts on local residents to the east of the mine would reduce to some extent compared to the current situation
- Given the location of the resource and the local topography, the Department considers that there are limited options for appreciably reducing visual impacts. Nonetheless, it is recommended that affected residents be entitled to visual screening at their residences, which would reduce visual impacts to some extent
- Subject to the provision of an additional land-based offset to compensate for the impact on Warkworth Sands Woodland, OEH has certified that the proposed offsets are adequate. The Department has recommended that all the offset areas be protected and managed under bio banking agreements under the *Threatened Species Conservation Act 1995* (TSC Act).

Overall, the Department is satisfied that the Applicant has designed the project in a manner that achieves a reasonable balance between maximising the recovery of the coal resource and minimising the potential impacts on surrounding land users and the environment. The Secretary's assessment report includes draft recommended conditions of approval relating to the management of air quality/dust, noise and blasting, water, contamination, biodiversity conservation, heritage conservation, transport, visual impact and rehabilitation.

4.0 THE COMMISSION'S PROCESS

4.1 TERMS OF REFERENCE FOR THE REVIEW

Under Section 23D of the EP&A Act the Minister has requested the Commission conduct a review of the Project and hold a Public Hearing. The Minister's Terms of Reference for the Warkworth Review are dated 6 November 2014 and are as follows:

1. *Carry out a review of the Warkworth Continuation Project, and:*
 - (a) *Consider the EIS for the project, the issues raised in submissions, the formal response to submissions, the Department of Planning and Environment's preliminary assessment report of the project, and any other relevant information provided on the project during the course of the review;*
 - (b) *Assess the merits of the project as a whole, paying particular attention to the potential amenity, health and social impacts on the village of Bulga and surrounds;*
 - (c) *Apply all relevant NSW Government policies in those considerations and to that assessment; and*
 - (d) *Provide recommendations on any reasonable and feasible measures that could be implemented to avoid, reduce and/or offset the potential impacts of the project.*

The Commission was asked to conduct a Public Hearing during the Review by no later than 12 December 2014. However, this direction and the Secretary's assessment report were only received on 14 November 2014. In order to give reasonable notice to the community, the Public Hearing was held on 18 and 19 December 2014.

4.2 PUBLIC HEARING AND SUBMISSIONS

The Public Hearing was held on 18 and 19 December 2014 at the Singleton Heights Diggers Club. Approximately 50 verbal submissions were made to the Commission at the hearings including from representatives of special interest groups, Singleton Council and individual residents. All those who registered to speak and attended the hearing were heard. The Commission also received written and photographic submissions. Copies of the submissions are available on the Commission's website: <http://www.pac.nsw.gov.au>.

A summary of the issues raised at the Public Hearing is provided in Table 3.

Table 3 – Summary of main issues raised at the Public Hearing and in submissions

Issue	Submissions from Public Hearing
Summary of submissions supporting the project	
Social and Economic	<ul style="list-style-type: none"> • The mines will provide direct and indirect regional employment within the Upper Hunter and wider region • The project will stimulate economic growth for the region • Social implications associated with employment, including mental health and vitality of local towns • Continuation of an existing mine complex within defined lease area • Impact on property prices if mining does not continue in the area
Summary of submission objecting to the projects	
Procedural issues and historical agreements	<ul style="list-style-type: none"> • Proposals are the same projects that were refused by the LEC • Change of assessment criteria and government policy in favour of Applicant • Faith put into 2003 Deed of Agreement which conserved and protected land in the NDAs and HMAs • Investment decisions were made by local residents based on the 2003 Deed • Amendments and disregard of 2003 Deed of Agreement • Concern regarding the review process and the community losing third party appeal rights • Lack of faith in the Commission and the Department/state government
Water	<ul style="list-style-type: none"> • Surface and groundwater impacts • Proposal will make contamination worse • Dredging impacts on aquatic and estuarine habitats • Cumulative impacts on the Hunter River
Biodiversity	<ul style="list-style-type: none"> • Concerns about loss and potential extinction of Warkworth Sands Woodlands • Insufficient offset strategy, particularly offsetting removal of portions of Warkworth Sands Woodlands • Impact on native fauna, including wallabies, bats and birds • Loss of flora, including EECs
Land and Environment Court	<ul style="list-style-type: none"> • Issues identified in LEC judgment have not been adequately addressed
Air Quality	<ul style="list-style-type: none"> • Potential impact on air quality in Bulga village and the wider region • Health and amenity implications for the local population • Impacts of fine particles on human health • Air quality will be exacerbated • Quantity and accuracy of monitoring stations and procedures
Saddleback Ridge and visual impacts	<ul style="list-style-type: none"> • Visual impact of the expansion of the mining complex, particularly from Bulga village • The importance of the Saddleback Ridge in terms of noise attenuation • Minimising air quality impacts and visual protection from the mines • The ridge should remain the outer limit of the mining complex • The mine should go underground from Saddleback Ridge

Issue	Submissions from Public Hearing
Wallaby Scrub Road	<ul style="list-style-type: none"> • The road was perceived/understood by the community to be the outer limit of the mining complex • Impact of road closure and consequential mine expansion on Bulga village • Loss of community asset, with no offer to date of compensation to the Council • Concern about future access for emergency vehicles • Road should be relocated rather than closed completely
Social	<ul style="list-style-type: none"> • Social impacts on the community • Resale values of properties and inability to sell properties at a fair price • Impacts on the social fabric and infrastructure of Bulga village • Visual impacts particularly for residents west of the proposed mine • Impacts on health from noise, vibration and dust
Aboriginal heritage	<ul style="list-style-type: none"> • Impact on existing Aboriginal heritage, artefacts and culture • Removal of artefacts and relocation to Sydney, rather than keeping them in the area
Noise	<ul style="list-style-type: none"> • Loss of Saddleback Ridge will remove a buffer between Bulga village and the mining complex, resulting in increased noise and visual impacts • Increased noise and vibrations generally • Disregard of LEC Court judgement, including methodology requirements in the NSW Industrial Noise Policy (INP) • Quantity and accuracy of monitoring stations and procedures • Assessment of background noise levels
Cumulative impacts	<ul style="list-style-type: none"> • Cumulative long-term impact of all mining projects in the Hunter Valley on the environment, health and communities, particularly rural communities and their long term survival
Compliance issues	<ul style="list-style-type: none"> • Non-compliance with existing conditions of consent, including those relating to noise and air quality

4.3 DOCUMENTS, MEETINGS AND SITE INSPECTIONS

4.3.1 Documents

The Commission has reviewed a wide range of documents including:

- The Applicant's EIS for the Warkworth Continuation Project and Mount Thorley Continuation Project (prepared by EMGA Mitchell McLennan, both dated June 2014)
- The Applicant's RTS for the Warkworth Continuation Project and Mount Thorley Continuation Project (prepared by EMGA Mitchell McLennan, both dated November 2014)
- Submissions from government agencies, special interest groups and the public made to the Department on the EIS
- Submissions made directly to the Commission
- The Secretary's assessment reports for both the Warkworth Continuation Project and Mount Thorley Continuation Project (both dated November 2014).

4.3.2 Meetings and site inspections

The Commission attended the following meetings in relation to this review, in conjunction with the review of the Mount Thorley Continuation Project application:

- On 5 December 2014 the Commission was briefed on the projects by representatives of:
 - the Department
 - the OEH
 - the Department of Trade and Investment (Resources and Energy Division)
 - the EPA
 - the NOW.
- On 9 December 2014 the Commission inspected the MTW mining complex and met with the Applicant to discuss the current applications
- On 9 December 2014 the Commission visited the area surrounding the mine, including Bulga village
- On 9 December 2014 the Commission met with representatives of Singleton Council to hear its view of the projects
- On 5 February 2015 the Commission met with representatives of the Department to discuss a range of issues raised at the Public Hearing and in public submissions.

A summary of the matters discussed at the Commission's meetings is provided in Appendix 3.

4.4 PROCESS FROM HERE

In this Review report the Commission provides its findings and recommendations to the Department, as requested by the Minister. The Department will then prepare its final assessment report having regard to the Commission's findings. The final assessment report will then be forwarded to the Commission to make a determination on the application.

5.0 CONSIDERATION OF KEY ISSUES

The following is a consideration of the key issues in relation to the Warkworth Continuation Project. Consideration of the key issues in relation to the Mount Thorley Continuation Project is provided in a separate Commission Review Report.

5.1 ECONOMIC IMPACTS AND BENEFITS

5.1.1 Significance of the resource

Under Clause 12AA of the Mining SEPP, a consent authority must consider the significance of the resource that is the subject of a mining application. The consent authority must have regard to:

- the economic benefits, both to the State and the region in which the development is proposed to be carried out, of developing the resource
- any advice from the DTI as to the relative significance of the resource in comparison with other mineral resources across the State.

NSW has a large and mature coal industry based around substantial coal resources. Over the past decade, NSW coal production has grown steadily due to growing demand from export markets in Asia. Despite a recent downturn, world energy demand is expected to increase over at least the next 20 to 30 years, and thermal coal is likely to remain a key energy source over this period¹¹. According to the Secretary's assessment report, NSW produces around 120 Mtpa of export coal, with almost 60 per cent of this produced in the Hunter Valley.

The proposed continuation projects generate substantial economic activity which confers significant economic benefits to NSW and the Hunter region. These are outlined in detail in the Applicant's EIS.

In summary, the economic activity generated by continuation of the Warkworth mine and the economic benefits this produces include:

- Extraction of more than 230 Mt of high grade thermal and semi-soft coking coal at a maximum rate of 18 Mtpa of ROM coal over the next 21 years
- Production of approximately 10 per cent of NSW's total volume of export coal, and a significant proportion of the ongoing production of coal from the Hunter Valley
- Net capital expenditure with a net present value (NPV) of \$715 million
- The continuation of approximately 1,187 jobs (on average) for an additional 14 years¹²
- The payment of \$567 million in royalties in NPV terms to the State.

The economic activity generated by continuation of the Mount Thorley mine and the economic benefits this produces include:

- Extraction of the remaining coal resource (about 29 Mt of ROM coal)
- Net capital expenditure with an NPV of \$4 million
- Continuation of approximately 120 jobs for an additional 14 years
- The payment of \$50 million in royalties in NPV terms to the State.

¹¹ Secretary's assessment report, p.17

¹² EMGA Mitchell McLennan (EMM)(3), *Warkworth Continuation 2014 Response to Submissions*, Sydney, 2014, p.137

The Commission also notes that the proposals will result in indirect economic benefits. Approximately 35 per cent of the mine complex's employees and long-term contractors live in the Singleton local government area; and it is estimated that the local flow-on effect from the mines' expansion would be \$84 million in additional income and the continued employment of 61 full-time equivalent workers.¹³

The second consideration when determining the significance of the resource under the Mining SEPP is any advice received from the DTI. In August 2014, the DTI provided written advice to the Department in support of the project due to the economic significance of the resource. The significant integration between the Warkworth and Mount Thorley projects was acknowledged by the DTI, as together the mining complex is the third largest in NSW, with continuous operation for over 30 years.

Having considered the economic benefits outlined above, the Commission accepts that the resource can be considered significant as its extraction would deliver substantial benefits to the region and state of NSW. The Commission recognises that if the Warkworth and Mount Thorley projects were not approved, there would be substantial adverse economic impacts (especially to the towns of Singleton and Cessnock). These include the loss of significant royalties to the NSW government, a reduction in infrastructure projects to the Hunter region and lower wage and salary income for both current employees and contractors.

5.1.2 Economic study and cost benefit analysis

The LEC appeal against the 2010 Warkworth Extension Project found that the Applicant's economic analyses were of limited value, and did not support the assertion that the benefits of the project outweighed the environmental, social and other costs. For example, the input-output analysis was found to have deficiencies in terms of data and assumptions, which in turn affected the reliability of conclusions regarding the net economic benefits associated with an approval. Other economic tools used by the applicant were also considered to be deficient.

In response to the Court's judgment, the Applicant submitted an Economic Study as part of the EIS for both continuation projects. The study includes a Cost Benefit Analysis (CBA) prepared by BAEconomics in accordance with applicable NSW Government guidelines. The CBA considers the environmental and social impacts of the proposal, the principles of ecologically sustainable development, and the cost associated with rehabilitating the site. It also includes a sensitivity analysis to account for potential changes to fundamental inputs that may occur over time, such as the export price of coal.

The CBA calculates that the MTW complex would deliver direct net economic benefits to NSW of approximately \$1.5 billion (NPV)¹⁴. Even under a scenario where the coal price decreases by \$10 a tonne and the Australian dollar appreciates to an average of 95 US cents, the CBA indicates that the project would remain above \$1.2 billion in net benefits¹⁵.

¹³ BAEconomics, *Economic Impact Assessment for Warkworth Continuation 2014 and Mount Thorley Operations 2014*, Canberra, 2014, p.3

¹⁴ BAEconomics, op.cit., p.1

¹⁵ Secretary's assessment report, p.18

In the Secretary's assessment report for the Warkworth Continuation Project, it is noted that CBAs are not a 'precise science' because they value environmental and social externalities in monetary terms, and these valuations may vary from one expert to another. To test the methodology and assumptions in the applicant's CBA against applicable NSW Government guidelines, the Department commissioned Deloitte Access Economics (DAE) to conduct a peer review of the BAEconomics CBA.

In summary, DAE concludes the following:

- The CBA provides a broadly robust coverage of the economic costs and benefits of the project to the region and NSW, and meets the majority of the requirements set out in:
 - The Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals (NSW Government 2012)
 - The Guideline for economic effects and evaluation in EIA (PlanningNSW 2002)
 - NSW Government guidelines for economic appraisal (NSW Treasury 2007)
- A number of aspects of the assessment should be improved to provide a more detailed assessment of the project-level cost and benefits. An alternative structure was recommended by DAE, which is shown on page 18 of the Secretary's assessment report
- The alternative structure would assist with aligning the CBA with best practice, ensuring consistency with applicable guidelines; and allowing the disaggregation of the project-specific impacts from broader State and regional benefits.

In response to the concerns raised by DAE, on 21 November 2014 the Department requested additional project level cost and benefit information. This data was required to provide a greater breakdown of the underlying assumptions contained in the economic assessment.

On 10 December 2014 the Applicant provided a response to the Department, which states that the information requested by DAE is based on a non-mandatory table in a guideline. The Applicant's view is that the Secretary's requirements have been fully met and that the economic assessment is robust and generally accords with relevant guidelines and industry practice. Notwithstanding this, Rio Tinto sought to address the concerns raised by DAE by providing additional economic data where possible; and additional evidence that the underlying project information and assumptions are reasonable. This additional information is included at Appendix 4.

The Commission notes that the BMPA has questioned the Applicant's economic analysis, in particular the input data which it believes unreasonably favours the Applicant. In its submission, the BMPA refers to an assessment of the analysis carried out by The Australia Institute, which claims that the mining complex is not viable and that the economic benefits flowing to the community have been inflated and do not compensate for its social and environmental impacts. It also claims that the DAE review is highly critical and the Applicant's economic evaluation of the proposals is inadequate.

The Commission has reviewed all relevant documentation relating to the methodology used to determine the economic costs and benefits of the projects and reached the following conclusions:

- The Commission's assessment of the CBA is based on the assumption that the estimates provided by the Applicant are true. In particular, the substantial estimated benefits of the project from higher compensation of employees and contractors are driven by the differential between average wages and salaries in the Mid and Upper Hunter region and those earned at the mine. The Applicant has not provided the average wage and salary assumed to be paid at the mine, meaning the estimates cannot be verified by the Commission. Similarly, the Commission accepts the validity of the BAEconomics spreadsheet modelling

- The Commission notes that while the updated economic assessment is more informative than the documentation submitted as part of the 2010 proposal, there is still community concern that it does not fully account for the impact on the community and the loss of environmental assets. Moreover, some of the key inputs into the CBA have changed in recent times, including the value of the Australian dollar and coal prices.
- The Commission recommends that the Applicant's economic assessment, including the CBA, be updated to reflect the current economic climate
- The Commission notes that the DAE peer review concludes that the CBA is broadly sound and provides a good overview of the regional impacts of the proposal, both at the NSW and local level
- DAE has not been provided with an opportunity to review the additional information provided by the Applicant in response to its peer review. As part of the determination of the projects, DAE should be asked to review the information and any updated economic assessment/CBA provided by Rio Tinto and provide updated advice to the consent authority
- The Commission agrees with the Department's view that the matters raised by DAE do not substantially change the broad conclusion that the expansion of the MTW mining complex would result in a significant positive net economic benefit for the Hunter region and NSW
- In terms of the financial viability of the mine, the Commission agrees with the Applicant's position that this is a risk assumed by the owners of the mine¹⁶.

Recommendation

1. The Applicant's economic assessment, including the CBA, should be updated to reflect the current economic climate.
2. As part of the determination of the project, DAE should review the additional information and any updated economic assessment/CBA provided by the Applicant and provide updated advice to the Department as required.

5.1.3 Economic impacts to Bulga village

Notwithstanding the economic benefits associated with the proposal, the Commission is aware that the two continuation projects could result in adverse economic impacts to the residents of Bulga village. The key concern of the BMPA and Bulga residents is that property values will be detrimentally affected by the expansion plans for the mine, and that there is no requirement for Rio Tinto to compensate for the reduced value of their property.

The presentations made at the Public Hearing raised a consistent theme from Bulga's residents - that the 2003 approval and associated Deed of Agreement have been relied upon by individuals investing in Bulga village. As outlined under Section 2.1 of this Review, the 2003 approval and Deed included the retention of Saddleback Ridge and Wallaby Scrub Road. This aspect of the approval provided a physical and visual buffer between the MTW mining complex and Bulga village. As a consequence, a number of Bulga's residents are understood to have purchased properties, made improvements to existing properties and/or encouraged family members to relocate to Bulga village. This experience is depicted in affidavits made to the LEC as part of the 2012 appeal, which were resubmitted to the Commission as part of the current Review. One example is the experience of John Krey:

¹⁶ EMGA Mitchell McLennan (EMM)(3), op.cit., p.266

“...I read the 2003 project approval for the Warkworth Mine extension...I remember noting a reference, in the conditions, to a deed of agreement, to be entered into by the mine and the Minister, to permanently protect non-disturbance areas, where open cut mining was to be excluded. This gave me considerable comfort that the land west of Wallaby Scrub Road would be protected. In or about 2003, construction commenced on our new house on our property. We had initially intended on only building a small simple style house open planned. However, with the reassurance that Warkworth Mine and other nearby mines would not be coming any further west towards Bulga than Wallaby Scrub Road, we decided to invest a lot more capital and build a larger pavilion style house with courtyards”.

In response to the issues raised by BMPA and residents of Bulga village, the Applicant has noted that notwithstanding the 2003 approval, the proposed extent of mining is well within the lateral limits of MTW's mining leases on land privately-owned by WML and Miller Pohang Coal Company Pty Limited. In addition, Rio Tinto points out that the original Deed was an early attempt at offsetting by the Department and one that does not achieve the biodiversity goals of current government policy¹⁷.

The Applicant has stated that there is no evidence of substantial decline in property prices due to the previous application for the Warkworth Extension 2010 or the current proposal¹⁸. This position is based on a property devaluation study undertaken by Judith Stubbs in 2012. The BMPA has criticised various aspect of the Stubbs report.¹⁹

The Commission does not accept the Applicant's position that the expansion of the MTW mining complex will not result in property devaluation in Bulga village. The Commission accepts that property values could be negatively affected and that the encroachment of mining will make it more difficult for land owners to sell their property. The Commission understands the difficult position faced by the residents of Bulga village, particularly given the apparent degree of certainty provided by the 2003 consent. However, the economic benefits associated with the mine by way of employment and royalties (as outlined earlier in this section) warrant consideration and there may be a need to look at alternative options for the residents of Bulga village.

The Commission is aware of the government's recent policy on land acquisition, but also understands community concerns regarding encroachment of the mine around Bulga village. In this regard, the Commission has taken account of the Hicks Kaldor compensation principle. When applied, this principle results in a Pareto superior solution, whereby those who are better off as a result of an investment are able to compensate the losers and still be better off.

The Commission has carefully considered possible options for the future of Bulga village, including:

- Compensating property owners who wish to sell
- Relocating the village at the expense of the NSW government and Applicant
- Developing a village enhancement strategy, similar to the approach taken with the Ashton open cut mine and Camberwell village.

One option would require the Applicant to compensate property owners in Bulga who wish to sell. The compensation amount would be the difference between movements in the average regional/sub-regional property price and that of local property sale prices based on an independent

¹⁷ EMGA Mitchell McLennan (EMM)(3), op.cit., p.286

¹⁸ Ibid, p.326

¹⁹ BMPA submissions to the NSW Department of Planning and Environment (2014), p.70

valuation process. A dispute resolution process would also need to be agreed in respect of this option.

Relocating Bulga village would require the government to fund the delivery of new infrastructure and the Applicant to fund the construction of new houses. It is important to note that the Commission has not consulted with the community, Council or applicant regarding this proposition. However, the Commission believes that this is an option worthy of genuine consideration when the applications return to the Department for determination. Such relocations are undertaken already in dam approvals. Any relocation decision and associated planning would, of course, need to involve the residents of Bulga. It is recognised that this option is not an approach that would generally be considered, however the Commission believes that in this instance there are a unique and unusual set of circumstances that make it worthy of serious consideration.

A further option is to take a similar approach to that taken with the Ashton open cut mine and Camberwell village, whereby the Department recommended conditions requiring the applicant to develop a Camberwell Village Enhancement Strategy in consultation with the local community and Council. The applicant was also required to fund and implement a program of works via a VPA with the Minister and Council, or fund a program of works of other identified community infrastructure within the Singleton local government area.

Recommendations

3. The following options should be considered for the future of Bulga village:
 - a. Compensating property owners who wish to sell. This compensation would be paid by the Applicant and the compensation amount would be the difference between movements in the average regional/sub-regional property price and that of local property sale prices based on an independent valuation process. A dispute resolution process would also need to be agreed
 - b. Relocating the village at the expense of the NSW government and Applicant. The government would be required to deliver all new infrastructure, while the applicant would be required to pay for the construction of new houses. Any relocation decision and associated planning would need to involve the residents of Bulga
 - c. Requiring the Applicant to develop a Village Enhancement Strategy in consultation with the local community and Council and to fund and implement a program of works or similar via a VPA with the Minister and Council.

The other impacts of the mine on Bulga village are discussed in other sections of this report.

5.1.4 Summary

The Commission accepts that the resource is economically significant as its extraction will deliver substantial benefits to the region and state of NSW. The Commission recognises that if the Warkworth and Mount Thorley projects were not approved, there would be substantial adverse economic impacts, including the loss of significant royalties to the NSW government, a reduction in infrastructure projects to the Hunter region and lower wage and salary income for both current employees and contractors.

The Commission notes that a CBA has been prepared for the project and that this has been peer reviewed by DAE at the request of the Department. While DAE found that the CBA is broadly sound and provides a good overview for the regional impacts of the proposal, it did find that a number of

aspects of the analysis needed further consideration. The Applicant has responded to these concerns and the Commission considers that DAE should be given the opportunity to review the Applicant's responses.

The Commission has carefully considered the issue of the impact that the project will have on Bulga village property values and accepts the argument put forward by BMPA and others that the mine's encroachment will have a negative impact on property prices and on the ability of residents to be able to sell their properties in the future. The Commission is of the view that serious consideration should be given to options to ameliorate this impact, including compensating property owners, potentially relocating the village, developing an enhancement strategy for the village and/or undertaking a program of works. The unique and unusual set of circumstances that apply in this case warrants consideration of these options.

Recommendations

1. The Applicant's economic assessment, including the CBA, should be updated to reflect the current economic climate.
2. As part of the determination of the project, DAE should review the additional information provided by the applicant and any updated economic assessment/CBA provided by the applicant and provide updated advice to the Department as required.
3. The following options should be considered for the future of Bulga village:
 - a. Compensating property owners who wish to sell. This compensation would be paid by the Applicant and the compensation amount would be the difference between movements in the average regional/sub-regional property price and that of local property sale prices based on an independent valuation process. A dispute resolution process would also need to be agreed
 - b. Relocating the village at the expense of the state government and applicant. The government would be required to deliver all new infrastructure, while the applicant would be required to pay for the construction of new houses. Any relocation decision and associated planning would need to involve the residents of Bulga
 - c. Requiring the Applicant to develop a Village Enhancement Strategy in consultation with the local community and Council and to fund and implement a program of works or similar via a VPA with the Minister and Council.

5.2 SOCIAL IMPACTS

5.2.1 Social benefits and impacts of the proposal

The EISs for both the Warkworth and Mount Thorley Continuation projects included a Social Impact Assessment (SIA) that considers the positive and negative impacts of the mines on the region. These impacts are also addressed in Appendix E of the Applicant's RTS report.

The SIA was prepared by EMGA Mitchell McLennan (EMM) in accordance with the Secretary's requirements, and seeks to address the issues identified in the LEC judgment with regard to the social implications associated with the projects. The view of the LEC regarding the 2010 proposal was that the adverse change in the composition of the community due to the acquisition of properties was likely to cause adverse social impacts on some individuals residing near the mine and specifically the community of Bulga village. It was concluded that these impacts would exacerbate

the loss of sense of place, and materially and adversely change the sense of community felt by the residents of Bulga and the surrounding countryside.

The SIA also details the socio-economic management, mitigation and enhancement initiatives currently implemented at MTW. These initiatives would continue under the current proposals. Additional project-specific initiatives are also proposed, namely:

- The development of a Social Impact Management Plan, to manage and monitor the implementation of strategies to reduce social impacts and enhance social opportunities
- The negotiation of a VPA with Singleton Council, which would include the dedication of funds to maintain and/or improve facilities and services in Bulga village, other local communities and the Singleton local government area as a whole
- The establishment of a “Near Neighbour Amenity Resource” to provide support to residents surrounding the mining complex.

These initiatives are all explained in detail in the SIA accompanying the EIS.

Many of the social benefits and impacts identified in the Applicant’s documentation were raised at the Public Hearing and in the written submissions received by the Commission. It is clear that there is a strong correlation between the social impacts associated with the proposal and the economic impacts, as factors such as property values and employment opportunities have flow-on effects to the wellbeing of the community.

The key concern of individuals and groups supporting the projects was that if they are not approved, there would be significant adverse social impacts on the community. A number of people supporting the projects described how residents and businesses in the Hunter are currently experiencing hardship as a result of a downturn in the coal market and a reduction in local employment opportunities. Therefore, the continuation of mining at Warkworth and Mount Thorley mines was considered by many to be a positive outcome for the region, as it would result in the following social benefits:

- The continuation of employment opportunities, which has positive impacts on economic activity, mental health and well-being
- Career and traineeship opportunities to local youth
- Stability within the community and wider region
- Ongoing vitality of local centres such as Singleton
- Indirect contributions, including local spending and reliance on local suppliers/industries
- Positive impacts on property values and saleability due to maintenance of local workforce
- Population stability
- Viability of community services
- Support for local charities, community and sporting associations.

Conversely, many community organisations and individuals expressed concern about the negative social impact of open-cut mining on rural communities, most specifically Bulga village. The main impacts raised at the Public Hearing and in written submissions are identified in Table 4, which also considers the Applicant’s response to these concerns.

Table 4 – Summary of social issues resulting from the projects and the Applicant’s response

Social impact	Assessment of impact by applicant ²⁰
<p>Population decline and loss of community and cohesion</p> <p>There is concern about the possible loss of population (including community leaders) resulting from land acquisition and relocation. This could lead to the gradual decline of the community, including facilities/services and existing connections and village life.</p>	<p>The applicant’s view is that the proposal would contribute to maintaining the current and regional population by continuing to provide employment opportunities.</p> <p>Subject to the implementation of management commitments made under the proposal, it is considered that the potential for loss of population, community members and leaders will remain relatively unchanged and, on balance, there will be limited social impact. These commitments include the establishment of a “Bulga and Near Neighbour Amenity Resource” to support residents surrounding the mines and the development of a social impact management plan to guide the implementation of the community initiatives identified in the SIA.</p>
<p>Stress and uncertainty</p> <p>Local residents have feelings of stress and uncertainty relating to the future of Bulga village, potential decline of community, property values and related impacts on investments/ assets.</p>	<p>The applicant explains that conversely, submissions from employees of the mine and supporting businesses commonly reference health impacts, such as stress related illnesses, due to the uncertainty regarding the mine’s future and job security.</p> <p>Subject to the implementation of all reasonable and feasible mitigation, the potential social impacts on health and wellbeing are considered to be acceptable and consistent with government policies and guidelines.</p>
<p>Impacts on infrastructure and social services</p> <p>Concern was raised regarding the medium to long-term viability of community facilities and services in Bulga village, including the Bulga Hall, tavern and store, as a result of proposal-related acquisitions and the associated relocation of residents.</p> <p>In addition, the removal of Wallaby Scrub Road may have a negative social impact in terms of lost local road connections and emergency vehicles access.</p>	<p>The applicant’s view is that the continued workforce of MTW and their families would help maintain the use of local businesses and services, particularly shops, services, schools and childcare facilities.</p> <p>The applicant is seeking to negotiate a VPA with Singleton Council, which would include public benefit contributions to be dedicated to maintaining and/or improving local facilities and services in Bulga village, other local neighbouring communities and the Singleton LGA as a whole.</p> <p>The Applicant’s response to the loss of Wallaby Scrub Road is provided under Section 5.9 of this report.</p>
<p>Solastalgia</p> <p>Solastalgia is described by Professor Glenn Albrecht (representing the BMPA) as a "loss of place". It is a condition caused by the gradual erosion of the sense of belonging to a particular place and a feeling of distress about its transformation. This will likely be experienced by residents of Bulga if the proposals are approved.</p>	<p>The potential for loss of a sense of place under the proposal is considered to remain acceptable. The predicted impacts are below the amenity criteria for a rural area and suggest that the mine and Bulga village can co-exist.</p> <p>If the proposal did not proceed, stakeholders residing in the Singleton local government area (and others areas where the existing level of social services could not be maintained) may experience a loss of sense of place.</p>

²⁰ EMGA Mitchell McLennan (EMM)(3), op.cit, Appendix E

5.2.2 Department's position

The Secretary's assessment report acknowledges that, as with all major developments, the Project would likely result in direct social benefits and costs. The Department considered the costs against the likely social benefits that would arise from the project. In doing so, the report notes that the majority of the 1,600 submissions received by the Department supported the Project, primarily due to the socio-economic benefits.

The Department shares the view of the Applicant that the Project would enable significant benefits to be realised, which would outweigh the residual social costs of the Project for the local community. The Department is also satisfied that subject to the provision of a suitable VPA between the Applicant and Council, together with the funds committed by the NSW Government for the Singleton local government area, there will be a continued demand for community services and infrastructure created by the Project.

5.2.3 Commission's view

The Commission agrees with the LEC judgment that although the existing mining complex, along with the other mines in the area, have positive impacts (in particular in terms of employment in the community as a whole), mines also have negative social impacts on the local community. The positive and negative impacts can reasonably be expected to continue for the life of a mining project.

The Commission does not entirely agree with the Applicant's position that the Project will not have a significant social impact on the health and wellbeing of the residents of Bulga. The Commission recognises that the expansion of the mining complex may result in a loss of community identity for Bulga village, due to the departure of existing residents who choose to move. This is likely to result in "solastalgia", as identified by Professor Albrecht at the Public Hearing.

Notwithstanding this, the Commission must balance the social impacts against the economic benefits associated with the proposal. In this regard, the Commission shares the Department's view that the impacts expected as a result of the Project are acceptable when compared to the standards and performance measures commonly applied to mining projects in NSW. The continuation of operations and associated employment of approximately 1,300 employees will contribute to the vitality of centres such as Singleton, as well as a continued demand for community services and infrastructure in the area.

While the Commission supports the proposed socio-economic initiatives outlined in the SIA, it has also recommended that other options be considered for the existing residents of Bulga, as outlined in Section 5.1 above. They include compensating property owners, undertaking an enhancement strategy and program of works for Bulga village or even possibly relocating the entire village. The continuing encroachment of several surrounding mines on the village, and the possibility that further mining rights may be sought in the future, warrant serious consideration of this last option.

5.2.4 Summary

The Commission recognises that the Project will result in adverse social impacts on the residents of the Bulga village. However, the Commission must balance this against the significant economic and social benefits associated with the proposal. The Commission supports the socio-economic initiatives outlined in the SIA but considers that these initiatives should be augmented through the preparation

of a Bulga Village Enhancement Strategy and a program of works to be undertaken by the Applicant. It also considers serious consideration be given to the option of compensating existing residents or relocating the village or, as detailed in Section 5.1.

Additional social impacts associated with the proposal (such as dust, noise and visual impacts) are considered in separate sections of this report.

5.3 NOISE IMPACTS

5.3.1 Introduction

Noise impact on the Bulga village is one of the key issues raised in the Public Hearing and public submissions. The Commission notes that noise is a long-standing issue between the Warkworth mine and the Bulga community.

Although the existing Warkworth and Mt Thorley mines have separate development consents with different noise limits, they have been operating as an integrated operation since 2004.

The 2010 Warkworth Expansion Project proposed to extend the open cut mining operations and increase the integration between the Warkworth and Mt Thorley mines. In assessing the 2010 application, the Department considered that the operation of the mine complex should be assessed as one operation to tighten the noise criteria for the complex as a whole. The continued operation of the complex under two separate noise criteria would allow higher noise levels from the complex as a whole than would otherwise be permitted if MTW was considered as a single complex.²¹

Noise impacts were a key reason for the refusal of the application by the LEC in 2013.

Since the court case, the NSW Government has made a number of changes to policy and legislation in relation to mining assessments. The key changes that are relevant for the consideration of noise impacts are:

Mining SEPP

The Mining SEPP was amended in November 2013 to set specific criteria for noise, air quality, air blast overpressure, ground vibration and aquifer interference. The criteria are said to be consistent with longstanding policies and guidelines. The Mining SEPP makes it clear that if the criteria are met, a proposal cannot be refused on those grounds.

Clause 12AB of the Mining SEPP is relevant for consideration:

12AB Non-discretionary development standards for mining

- (1) The object of this clause is to identify development standards on particular matters relating to mining that, if complied with, prevents the consent authority from requiring more onerous standards for those matters (but that does not prevent the consent authority granting consent even though any such standard is not complied with).
- (2) The matters set out in this clause are identified as non-discretionary development standards for the purposes of section 79C(2) and (3) of the Act in relation to the carrying out of development for the purposes of mining.

²¹ Major Project Assessment Warkworth Extension Project (09_0202), Director General's Environmental Assessment Report, October 2011, p.19

Note: The development standards do not prevent a consent authority from imposing conditions to regulate project-related noise, air quality, blasting or ground vibration impacts that are not the subject of the development standards.

- (3) Cumulative noise level
The development does not result in a cumulative amenity noise level greater than the acceptable noise levels, as determined in accordance with Table 2.1 of the Industrial Noise Policy, for residences that are private dwellings.

The amenity criteria set out in the *NSW Industrial Noise Policy (INP)* that are relevant for the consideration of noise impacts on the Bulga village (i.e. rural residences) are shown in Table 5.

Table 5: Relevant amenity criteria in INP

Time of day	Recommended L_{Aeq} Noise Level dB(A)	
	Acceptable	Recommended Maximum
Day	50	55
Evening	45	50
Night	40	45

The Mining SEPP was further amended in December 2014 by the insertion of Clause 12A which requires the consent authority to consider any applicable provisions of the Voluntary Land Acquisition and Mitigation Policy (discussed in Section 2.3).

Voluntary Land Acquisition and Mitigation Policy

In relation to noise, the Voluntary Land Acquisition and Mitigation Policy describes the NSW Government’s interpretation of the significance of any potential exceedances of the relevant noise assessment criteria, and identifies potential treatments for these exceedances²².

Put simply, exceedance of 0-2dB(A) above the project specific noise level (PSNL) is considered negligible as it is not discernible and would not require any treatments or controls. Exceedance of 3-5dB(A) above PSNL is considered marginal/moderate and mitigation measures are warranted. Exceedance of 5dB(A) above PSNL is considered significant and mitigation measures and voluntary land acquisition rights should be provided²³.

5.3.2 Issues raised in the Public Hearing and public submissions

The following is a brief summary of issues related to noise that were raised at the Public Hearing and in public submissions:

- The EIS did not consider the noise issues raised in the LEC judgment
- Background noise - questioned the levels identified in the EIS for the Bulga area and the 3dB(A) difference between two monitoring locations on Wambo Road when they are only 500m apart
- PSNLs should be set in accordance with the INP and at a level acceptable to the community - they should not be set at achievable levels
- The cumulative noise (log addition) of Warkworth (PSNL 38dB(A)), Mt Thorley (PSNL 38dB(A)) and Bulga (PSNL 35 dB(A)) is almost 42dB(A) which is above the amenity criteria
- The Saddleback Ridge is an important noise barrier for the residents of Bulga and must remain
- No noticeable operational noise improvements with the implementation of proactive and reactive noise management

²² NSW Government, *Voluntary Land Acquisition and Mitigation Policy – SSD Mining*, December 2014, p. 13

²³ *Ibid*, p.14

- Past compliance record and current noise management process were questions, particularly the trigger action response
- Assessment and application of modification factor for low frequency noise (LFN) should be in accordance with the INP, not other methodologies/criteria
- It is not acceptable to wait for attended monitoring to confirm the community is impacted by LFN
- Sleep disturbance.

5.3.3 Noise matters raised in the LEC judgment

The BMPA contended that the EIS failed to address the noise matters raised in the LEC judgment.

The Commission notes that Section 15 of the *Noise and Vibration Study* prepared by EMGA Mitchell McLennan dated 12 June 2014 (Appendix F of the *Warkworth Continuation 2014 Environmental Impact Statement* (EIS)) considered the noise matters raised in the LEC judgment. The issue was also addressed in Section 6.4 of the *Warkworth Continuation 2014 Response to Submissions, Volume 1 – Main Report, prepared by EMGA Mitchell McLennan*, dated 10 November 2014 (RTS). The six key issues raised in the LEC judgment as identified in the EIS and RTS were existing noise levels, background noise, low frequency noise, residual level of noise impacts, cumulative noise and combined MTW noise criteria.

The following documents are of particular relevance in the Commission's review of the noise issue:

- *Noise and Vibration Study*, Appendix F of the *Warkworth Continuation 2014 Environmental Impact Statement* (EIS), prepared by EMGA Mitchell McLennan dated 12 June 2014
- Wilkinson Murray peer review letter dated 15 May 2014 to EMGA Mitchell McLennan
- *Warkworth Continuation 2014 RTS*
- EPA's letter to the Department dated 13 August 2014 which provided comments on the *Warkworth Continuation Project development application*
- The two court judgments
- The BMPA submission to the Department dated 20 August 2014
- *Acoustic Peer Review Mt Thorley and Warkworth Mine Continuation* prepared by Day Design Pty Ltd dated 6 August 2014
- The *Response to Noise and Vibration Issues* prepared by Day Design Pty Ltd dated 17 December 2014; and
- The Secretary's assessment report dated November 2014.

The Commission is satisfied that the issues raised in the LEC judgment have been adequately addressed based on the totality of the information available. The following sections of this report provide further discussion of the noise issue raised in the Public Hearing and submissions.

5.3.4 Existing and background noise levels

One of the key issues raised in the LEC judgment is the reliability of the adopted background noise levels. The background noise levels are very important because the PSNLs are generally set at 5dB(A) above the background noise levels in accordance with the INP.

Chapter 3 of the INP outlines the process to determine existing noise levels. It requires the assessment of existing noise levels that exclude all unusual extraneous noise, including the noise from the existing development that is now proposed to be expanded. A minimum of seven days of monitoring data covering the days and times of operation of the development is required to establish the representative background noise levels for an area.

Section 8 of the *Noise and Vibration Study* considered the existing acoustic environment adjacent to the mine. According to the study, an extensive data gathering and analysis process was carried out. The results of six real time noise monitors were used to quantify the background noise levels in and around the Bulga village. The Barnowls' directional data was used to filter out the Warkworth operation. The data used for the analysis was collected between November 2012 and August 2013, a much longer period than the minimum of seven days required by the INP. Table 8.1 in the Study summarised its findings of the rating background levels (RBL) for Bulga village as follows:

Table 6: Representative background noise levels for Bulga (based on Table 8.1 in *Noise and Vibration Study*)

Location	Period (Duration)	RBL, dB(A)		
		Day	Evening	Night
A. Wollemi Peak Rd	20/06/13 – 14/08/13 (3 months)	33	33	34
B. 367 Wambo Rd ¹	01/12/11 – 29/11/12 (11 months)	30	33	33
C. 128 Wambo Rd	29/11/12 – 31/07/13 (8 months)	33	37	33
D. 193 Inlet Rd ¹	01/12/11 – 29/05/12 (6 months)	30	32	30
E. 229 Inlet Rd ¹	18/03/13 – 30/06/13 (3.5 months)	30	30	30
F. Scout Hall (putty Rd)	01/12/11 – 04/09/12 (10 months)	33	36	35

Notes: 1. Locations B, D and E data show RBL's at or below the INP minimum of 30 dB(A) for some assessment periods, and hence 30dB(A) was adopted as per the INP across all three assessment periods.
2. The RL is as defined in the INP, i.e. the median value of all ABLs. The ABL is also as per the INP, i.e. the lower 10th percentile of L₉₀ values.

The *Noise and Vibration Study* reported that the six monitoring locations were well distributed across the Bulga area, hence provided representative data for all residences in the area (see Figure 3).

Objectors also questioned why there is a 3dB(A) difference in the RBL between Monitoring Locations B and C when they are only 500m apart.

The Commission notes the *Noise and Vibration Study* was peer-reviewed by *Wilkinson Murray* which considers the assessment approach is more thorough than the minimum of one week of data.²⁴

The EPA in its letter to the Department dated 13 August 2014 did not raise any concern about the *Noise and Vibration Study* reported background noise levels.

The Secretary's assessment report considered the background noise levels (page 30). The report stated that both the Department and the EPA have examined the *Noise and Vibration Study* results closely, and are satisfied that accurate background noise levels have been established for the surrounding areas.

The Department also engaged an independent noise expert (Dr Norm Broner) to review the various aspects of the noise impacts of the proposal. The Commission is advised that Dr Broner is satisfied

²⁴ Letter from Wilkinson Murray to EMGA Mitchell McLennan dated 15 May 2014

with the adopted background noise levels.²⁵ However, Dr Broner’s report is not yet available for review by the Commission.

The Commission finds the noise environment of the Bulga area has changed over time due to the operations of other mines in the locality including the Bulga open cut and underground complex to the south, the Wambo open cut and underground complex to the north east and the Hunter Valley Operations South complex to the north. The LEC judgment also acknowledged the changing nature of background noise in the area.

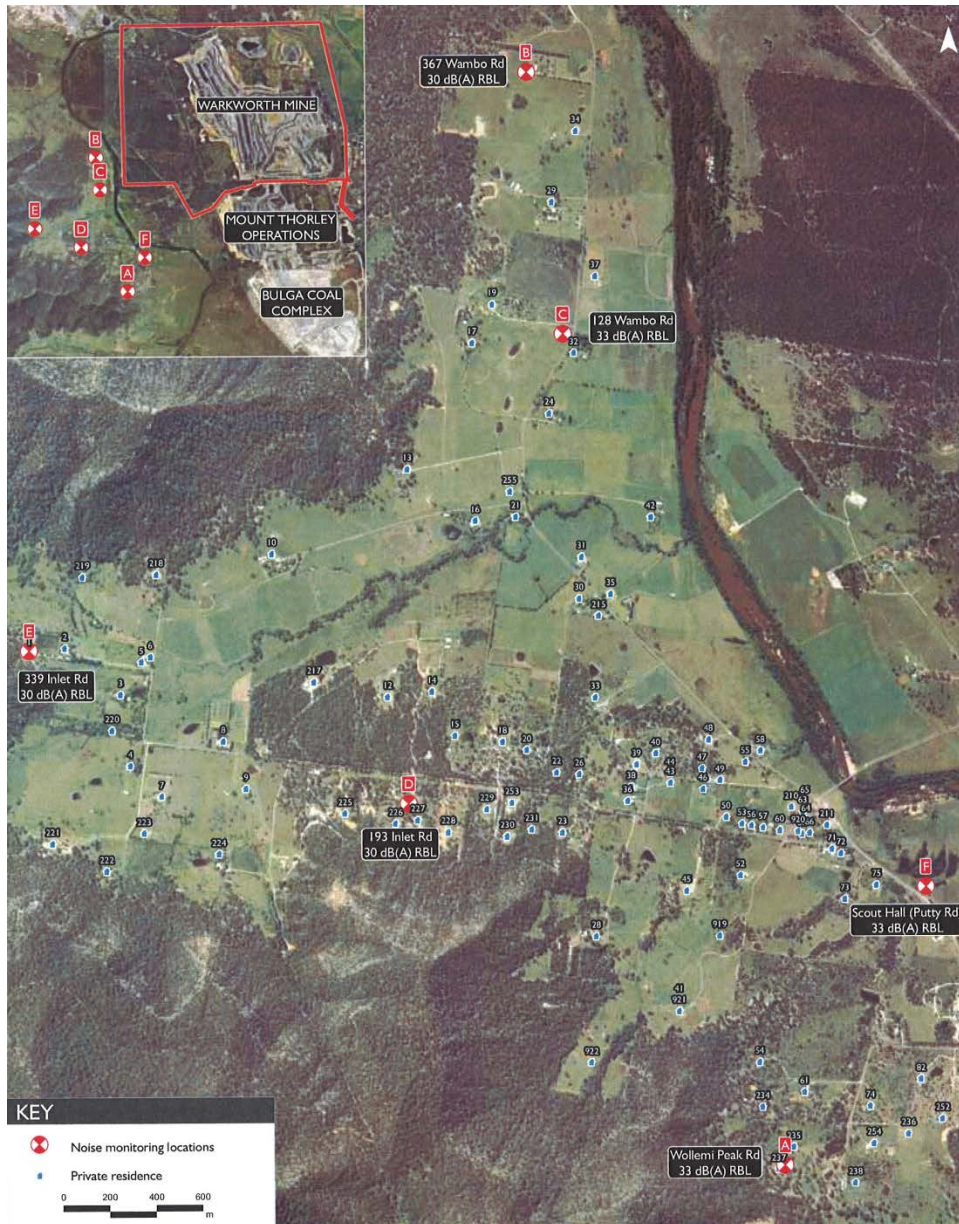


Figure 3: Long-term background noise monitoring locations in Bulga (Source: Figure 8.1, Noise and Vibration Study)

²⁵ Department of Planning and Environment Memorandum – Response to PAC request for information dated February 2015

As to the question of the 3dB(A) difference between Locations B and C, the Commission finds ideally the monitoring period of adjacent stations should have at least had some overlapping duration to provide a better picture of the acoustic environment for the area, when the monitoring results from different time periods indicate a noticeable difference between locations in close proximity.

For areas outside Bulga, the study adopted either the RBL values in the Warkworth EIS 2002 or 30dB(A) in the absence of long term monitoring data.

The BMPA contended that the Bulga open cut EIS reported the background noise level for Bulga village was 29dB(A). The 2002 background noise reported by the Applicant for the existing mine included noise from the operations of the Warkworth and Mt Thorley mines. If these operations were excluded, the background noise level of Bulga village would be lower. Therefore the background noise level for Bulga should be 30dB(A), not 30-33dB(A).

The BMPA's independent consultant (Day Design) considered that the background noise for 98 Wollemi Peak Road (Location A) should be 30dB(A) based on its monitoring results, not 33dB(A) as indicated in the EIS. The consultant further pointed out that the background noise level for locations C and F should be verified by an independent expert.

In this case, it is noted that the monitoring was carried out broadly over two periods. The first period was between December 2011 and November 2012 which involved three monitoring stations, namely Locations B, D and F. Although their monitoring duration varied, there were some overlapping periods. The distribution of the stations was well spread out in the Bulga area. (See Figure 3)

The second monitoring period was between January 2013 and August 2013 and involved three different monitoring locations, namely Locations A, C and E. These monitoring stations were again well distributed in the Bulga area and had some overlapping periods.

These monitoring results appear to be supported by the SKM monitoring report in 2012 that the background noise levels in the area are generally between 30-33dB(A).

On the evidence, the Commission finds the data gathering process and the quantity of data collected for the assessment of background noise levels is adequate and consistent with the INP requirements. The locations of the monitoring stations were well distributed in the Bulga area, thus providing appropriate representative information.

5.3.5 Noise criteria

Objectors argued that the PSNL for Bulga should be 35dB(A) and not 35-38dB(A) as proposed in the EIS. They expressed the view that the PSNL should be set in accordance with the INP and that noise criteria should be set at levels that are acceptable to the community, not at what is achievable. They disagreed with the statement that Bulga generally has a rural level of amenity as per the INP and argued that the noise from the four mines surrounding Bulga is an intrusion for a rural community. They also questioned the cumulative noise of Warkworth, Mt Thorley and Bulga when their respective PSNLs are 38dB(A), 38dB(A) and 35dB(A). The log addition of these levels is a noise level close to 42dB(A), which is above the amenity criteria.

Section 2.1 of the INP provides the procedures to establish two sets of noise criteria. The objects of these criteria are to control the intrusive noise impacts in the short term for residences and to

maintain an acceptable noise amenity for residences within an area affected by industrial noise sources.

The intrusive noise criteria are set at 5dB(A) above the rated background noise levels, whereas Table 2.1 in the INP provides the relevant amenity criteria for residences and other sensitive facilities on different types of land uses (refer Table 5 herein).

It is important to note that some people in the community are more sensitive to the change of noise levels. The criteria set in the INP aim to protect 90% of the population over 90% of the time. Therefore, meeting the INP criteria does not mean all the population in a community will be protected. Section 1.4.1 of the INP makes it very clear that provided the criteria in the document are achieved, it is unlikely that most people would consider the resultant noise level excessive.

Although the Commission is sympathetic to the changing noise environment in the Bulga area over time, it is bound to give significant weight to the current applicable government policies and the advice from the EPA in its review of the current application given the EPA is the lead authority in the assessment of noise impact and regulating noise from industrial sources.

Project Specific Noise Level

As discussed in the previous section of this report, the Commission finds the EIS and the *Noise and Vibration Study* reported background noise levels for Bulga of between 30 and 33dB(A) reasonable. Therefore, the setting of the intrusive noise levels (PSNLs) between 35 and 38 dB(A) are in accordance with the INP, i.e. background level plus 5dB(A). The Secretary's assessment report directed attention to the advice in the INP which states that project specific noise levels should not be 'automatically interpreted as conditions for consent, without consideration of other factors,' and 'in many instances, it may be appropriate to set noise limits for a development above the project specific noise levels'²⁶.

The Commission notes that some of the noise criteria set in the draft conditions are above the PSNLs and are the predicted mine operational noise levels. In setting these criteria, mitigation and acquisition rights would be provided to those properties with noise levels, as predicted, above the PSNL in accordance with the government's interpretation of acceptability of impacts. For example, the PSNL for property number 29 is 35dB(A). The noise limit for this property is set at 40dB(A) in the draft conditions. That is 5dB(A) above the PSNL. Given the predicted exceedance, this property is provided a right for mitigation measure when requested by the property owner as provided in the relevant policies.

The community's view on the acceptability of setting the noise limits above the PSNL is a policy matter that should be discussed in the broader policy setting environment such as the review of the INP.

Recommendation

1. The acceptability of setting noise limits above the PSNL should be considered by the NSW government, ideally via a review of the INP.

²⁶ EPA, *NSW Industrial Noise Policy*, Sydney, 2000, p.6

Cumulative Noise and Amenity Criteria

Section 11 of the *Noise and Vibration Study* provides an assessment of cumulative noise from all industrial sites (including Wambo mine, Hunter Valley Operations South mine, Mt Thorley mine, Bulga mine and to some extent the Redbank Power Station). The assessment concluded that the night-time amenity criteria are satisfied at most locations. The exception is Location 77 which is entitled to acquisition rights upon request from a neighbouring mine. The amenity criteria are likely to be exceeded at two other locations (102 and 264) due to the Wambo mine. The Study further pointed out that “the amenity, which relates to cumulative noise from all industry, cannot worsen for this area because it is highly unlikely that new large scale industry will be able to physically exist in a position that could push amenity levels any higher for the Bulga residences.”²⁷

The EPA’s submission to the Department dated 13 August 2014 raised an issue that the *Noise and Vibration Study* in its assessment of cumulative noise seems to include the noise of the subject mine which appears to be inconsistent with the INP methodology. However, the EPA concluded that the use of intrusive criteria is appropriate as the PSQL would not change if the inconsistency is corrected.

The Commission understands the INP requires that both the amenity and intrusive criteria are satisfied and the more limiting criterion becomes the PSQL. The Commission has also been advised that to breach the amenity criteria, the mine must first breach its intrusive criteria.

5.3.6 Saddleback Ridge

The Bulga community is of the view that the Saddleback Ridge currently provides some protection from the noise of mining in the Warkworth pit. Hence it is seen as an important noise barrier for the residents and must remain. The BMA acoustic consultant, Day Design, in its submission contended that the removal of the ridge as proposed will increase the noise impact during calm weather so that the noise impact to the Bulga community, currently only experienced during adverse weather, will occur during all weather conditions.²⁸

The Applicant’s RTS considered this issue and noted that the removal of Saddleback Ridge (initially assessed in indicative Year 9 of the mine plan) is accounted for in the modelled and predicted noise levels for the proposal. It also noted that the removal of the ridge is not considered to be a material contributor to the predicted increased noise levels at the western side of the mine.²⁹

The first question for consideration by the Commission is how often the calm conditions occur in the area given that the noise reduction effect of the ridge is said to be up to 5dB(A) during calm conditions. The Applicant in its letter to the Commission dated 9 January 2015 advised that calm conditions occur less than 2% of an average year. The Commission has not independently verified this information and considers this should be verified before the application is determined. If this information is correct, the noise reduction effect of the ridge is not significant for most times of the year. However, the Commission is also conscious of the visual benefit provided by the Saddleback Ridge. This issue is discussed at Section 5.4 of this report.

The second question is whether the removal of the Saddleback Ridge will result in a significant increase in the current noise environment in the area west of the mine if the application is

²⁷ EMGA Mitchell McLennan (EMM)(4), *Warkworth Continuation 2014 Noise and Vibration Study*, Sydney, 2014, p.84

²⁸ Day Design Pty Ltd, *Response to Noise and Vibration Issues*, 2014, p. 5,

²⁹ EMGA Mitchell McLennan (EMM)(3), op.cit., p. 106

approved. There are several factors influencing the outcome. According to the RTS the attenuation program that is currently being implemented will result in a noise reduction of up to 5dB(A) for residences on the eastern side of the mine. However, this noise reduction benefit will not materialise on the western side of the mining area because the reduction will be nullified by the removal of the Saddleback Ridge and the western progression of the mine towards Bulga village. It is also important to note that when the Saddleback Ridge is due to be removed, coal extraction at the Mt Thorley mine is expected to cease and the Bulga mine will be moving away from the Bulga village. For these reasons, the proposed mine expansion if approved is not expected to have significant noise impact on the western side of the mine and the noise level will only marginally increase from the current noise levels.

On the evidence, the Commission finds the removal of the Saddleback Ridge will not result in a significant net increase in the existing noise environment west of the mine due to the expected noise reduction from the attenuation program. The modelled and predicted noise impacts have included the removal of the Saddleback Ridge and the noise attenuation program. There is insufficient information available to indicate the benefits of the attenuation program realised so far. To ensure the benefits of the attenuation program will be fully realised, there is a need to carry out regular monitoring and audit of the performance of the attenuated fleet and equipment.

Recommendation

2. The question of how often calm conditions occur in the area should be independently verified by the Department before the application is determined
3. To ensure the benefits of the attenuation program will be fully realised, regular monitoring and audit of the performance of the attenuated fleet and equipment should be carried out

5.3.7 Exceedances of noise criteria

The community raised two issues in relation to exceedances of the noise criteria. The first issue relates to compliance with existing noise limits which gives rise to the lack of confidence in the mine's ability to meet the noise criteria if the current application is approved. Some Bulga residents contend that the mine at present does not keep to the noise limits in its 2003 approval. Despite MTW's claimed compliance, the objectors cite their own monitoring results as proof. This issue is discussed in section 5.3.9 of this report.

The second issue relates to the predicted exceedances and the acceptability of these exceedances. The predicted exceedance of noise criteria is a key concern to the community. Some objectors are of the view that plant and equipment should be shut down to reduce noise impact if exceedance occurs.

Section 10.4.2 of the EIS discussed the assessment of operational noise and Table 10.7 therein summarised the extent of noise exceedance above PSNL.

The Secretary's assessment report considered noise predictions on pages 33 to 35. The predicted noise impacts of the project at privately owned residences are summarised as follows:

Table 7: Predicted noise impacts (No. of privately owned residences)

PSNL(dB)	≤PSNL	+ 1-2dB	+ 3-5dB	>5dB
35	80	36	13	1
36	-	8	-	-
37	2	15	-	-

38	36	22	2	1
Total	118	81	15	2

Note: The table excludes properties in Mt Thorley with existing acquisition rights under the Mt Thorley mine consent.

The BMPA consultant (Day Design) in its December 2014 report contended that the EIS and RTS have not addressed the predicted non-compliance at 47% of the assessment locations. The report shows the extent of non-compliance predicted in the EIS for the Bulga area, where the LFN penalty has been assessed but not applied to the predicted noise levels. This shows 60 locations in the Bulga area exceeding the noise criteria by 1-2dB and six locations exceeding by 3dB or more.³⁰

It is not clear why the LFN penalty should apply when the modelled dB(A) and dB(C) noise levels as shown in Table 4.5 of the RTS are less than 15 dB, unless Day Design considered the modelled dB(A)/dB(C) levels are incorrect.

In considering whether the predicted exceedances are acceptable, the Commission must take into account the current applicable government policies, particularly the Mining SEPP amendments made in 2013 and 2014 (discussed in Section 2.3 of this report). Based on the Government's interpretation, exceedances of 1-2dB(A) are considered negligible as they are not discernible by the average listener and therefore do not warrant any treatments or controls. Exceedances of 3-5dB(A) are considered as marginal/moderate and mitigation measures should be provided. Exceedances over 5dB(A) are considered to have significant impact and mitigation measures should be provided and voluntary land acquisition rights should only apply as a last resort.

The Commission is sympathetic to the community's view on predicted exceedances and this issue was raised in previous Commission review/determination reports. However, the Commission must consider the application in accordance with the relevant government policies. The Commission finds the Department's assessment of the noise exceedances and recommended treatments to predicted exceedances on residences are consistent with the current applicable government policies. As mentioned earlier, the INP review process is the best avenue to discuss the community's view on acceptability and appropriateness of noise exceedances.

5.3.8 Noise management measures

To minimise noise impacts of the mine operation, the applicant proposes to implement all reasonable and feasible noise mitigation measures. These include the completion of the attenuation program for mine fleet and equipment by the end of 2016, the implementation of best management practice and a proactive and reactive noise management system on the mine site.

The *Noise and Vibration Study* devoted a significant part of the study (Chapters 3 to 5) to outline the current acoustic management system including administrative controls, substitution controls, engineering and elimination controls. It also detailed the Applicant's commitment to continuous improvement by working towards implementing a predictive modelling interface and alternative real-time noise monitoring technology.

The EPA in its submission to the Department advised that it is of the view that the proposed noise mitigation measures reasonably represent current best practices at similar mines. The EPA considers

³⁰ Day Design, op.cit.

it is unlikely that there are further feasible and reasonable measures that would provide significant additional noise mitigation.³¹

The Secretary's assessment report also concluded that the applicant is implementing best management practice on site. The Commission agrees that the proposed noise management measures, if implemented and applied correctly, would represent best management practice. It is therefore important to ensure these measures are implemented and their performance is monitored.

The Commission considers that there is also a need to clarify the confusion in the community in relation to the operation of the Trigger Action Response Plan and at what noise level the trigger is activated. A public information briefing session is recommended.

Recommendation

4. A public information briefing session should be held to clarify the operation of the Trigger Action Response Plan.

Current attenuation program

Although the approval of the 2010 application is not a relevant consideration of this application, the Commission notes that one of the approval conditions required all fleet to be attenuated by 2015 to reduce noise impacts. It is therefore a disappointment to the Commission that only 50% of the haul truck fleet has been attenuated and the remaining trucks are now expected to be attenuated by the end of 2016. The Commission understands that the program to attenuate all the mining fleet of dozers, excavators and drills will continue and is also expected to be completed by the end of 2016.³²

The Commission sought additional information to justify why it is not reasonable and feasible to accelerate the proposed attenuation program of the mining fleet and equipment. The Applicant advised that the ongoing operation relies on the use of the existing fleet. The noise attenuation packages are not available off the shelf and are retrofitted at the Mt Thorley Operations workshop. It takes two to four weeks to retrofit each item of equipment on average, depending on condition and age. The program also includes the use of off-site facilities where cost effective to expedite the program. The attenuation programme is scheduled progressively, prioritising attenuation on the loudest trucks first and ensuring operations are managed using fleet that has been attenuated in more exposed areas.³³

In response to the Commission's question of cost and benefits of accelerating the attenuation program, the Department advised that the current attenuation program would cost in excess of \$30 million, and the acoustic benefits of accelerating the program would be limited. It considers that the costs of accelerating the attenuation program outweigh any benefits that may be realised. It is also important to note that the Department has recommended stricter noise limits once the attenuation program is complete (i.e. from January 2017)³⁴.

³¹ Attachment 3 to the EPA letter to the Department of Planning and Environment dated 13 August 2014

³² EMGA Mitchell McLennan (EMM)(1), op.cit., p.153

³³ RioTinto letter to the Department of Planning and Environment dated 10 February 2015.

³⁴ Department of Planning and Environment Memorandum dated February 2015

In this regard, the Commission notes the operation of draft conditions 8 and 9 (Schedule 2) and draft conditions 4 and 5 (Schedule 3) may present an anomaly whereby the new consent commences but not the new noise criteria. These draft conditions are:

Schedule 2

COMMENCEMENT OF DEVELOPMENT UNDER THIS CONSENT

8. The Applicant shall:
- (a) notify the Secretary in writing of the date of commencement of development under this consent; and
 - (b) may only commence development under this consent once the Secretary has agreed in writing that all prerequisites to the commencement of development under this consent have been met.

SURRENDER OF EXISTING DEVELOPMENT CONSENT

9. By the end of January 2017, unless the Secretary agrees otherwise, the Applicant shall surrender the existing development consent (DA-300-9-2001-i) for the Warkworth mine in accordance with Section 104A of the EP&A Act.
- Following the commencement of development under this consent, the conditions of this consent shall prevail to the extent of any inconsistency with the conditions of DA-300-9-2002-i.

Schedule 3

Noise Criteria – before 1 January 2017

4. Before 1 January 2017, except for the land in Table 1, the Applicant shall ensure that the noise generated by the development does not exceed the noise criteria in Condition 18 of DA-300-9-2002-i.

Noise Criteria – From 1 January 2017

5. From 1 January 2017, except for the land in Table 1, the Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 3 at any residence on privately-owned land,

Notes: Table 1 lists the land/properties subject to acquisition upon request and Table 3 provides noise criteria for the all identified properties.

The Commission considers the conditions should be amended to ensure that when any new consent commences, the new noise criteria should apply and recommends the noise criteria in Condition 18 of DA-300-9-2002-I be attached as an Appendix to the new consent if the subject application is to be approved.

Recommendation

5. Draft conditions 8 and 9 in Schedule 2 and draft conditions 4 and 5 in Schedule 3 should be amended to ensure that when any new consent commences, the new noise criteria should apply and the noise criteria in Condition 18 of DA-300-9-2002-I be attached as an appendix to the new consent if the subject application is approved.

Voluntary Land Acquisition and Mitigation Policy

As outlined above, the Commission recognises that the approval of the 2010 application is not a matter for its consideration in this review. However, given the history of this project and the ongoing noise concerns of the community, the Commission notes that the LEC judgment has created an anomaly in terms of the number of properties that would be offered mitigation rights and acquisition rights if the subject application is approved. The current project would result in significantly less properties having access to these options than the previous approval. This is

primarily due to the separating out of the two applications. The Commission is of the view that this is a significant issue that needs to be addressed.

It is noted that the Applicant in its RTS (p.202) committed to honouring the voluntary acquisition rights granted to some residents under the now rescinded planning approval for the Warkworth Extension 2010 project subject to approval of the current application. The Commission sought the Department's advice as to the best way to formalise this commitment and whether this commitment should be extended to the rights to mitigation measures provided in the previous approval.

The Department advised that the allocation of mitigation and voluntary acquisition should be carried out in accordance with the Voluntary Land Acquisition and Mitigation Policy. There are uncertainties in the Applicant's commitment to honour the previous acquisition rights as no details have been provided. The Department considers these rights, if they were to be provided, should not be confused with the rights provided under the Voluntary Land Acquisition and Mitigation Policy.

The Commission agrees that these commitments are a social contract between the Applicant and the relevant land owners/community and not a regulatory obligation. In the Commission's view, if the Applicant is genuine about its commitment to honour the voluntary acquisition rights granted to some residents, the commitment should be extended to mitigation rights and that these commitments should be included in an updated Statement of Commitments. These rights should be provided in similar terms and conditions to those granted under the consent conditions.

Recommendation

6. The Applicant should update its Statement of Commitments to provide acquisition and mitigation rights to those properties which were granted such rights under the now repealed approval. The terms of these rights should be similar to those that would be granted under the recommended draft conditions.

5.3.9 Noise monitoring and compliance

The BMPA directed attention to the LEC judgement which raised the following key issues in relation to noise monitoring and compliance:

- Past attended monitoring has been at too few locations on too few occasions
- Even attended monitoring will have difficulty in distinguishing the source of noise generated
- It is likely to be difficult to monitor or enforce compliance.

Accordingly, the judgment found that no confident conclusion could be drawn that the noise impacts of the project will be acceptable.³⁵

Some Bulga residents raised concern that the four Barnowl directional monitoring devices located in Bulga appeared to be highly inaccurate when their recorded results were compared with those obtained by the community. They questioned how Warkworth could comply with the proposed noise criteria when the mine will be much closer to Bulga village if it cannot comply with the 2003 approval conditions at present.

³⁵ Bulga Milbrodale Progress Association Inc letter to the PAC dated 19 January 2015

BMPA directed attention to recent complaints about the effectiveness and quality of the current noise monitoring system, particularly the differences of noise measuring results between the Applicant's results and the residents' records.

The Commission notes noise monitoring and compliance of noise limits are issues raised regularly in public submissions and at the Public Hearing. However, the Department has advised that 'in NSW only attended monitoring can be used to monitor compliance with noise limits under planning approvals and environmental protection licences'.³⁶ Other monitoring types (real time/directional monitors or residents' handheld monitors) have technical issues that render their results not suitable for prosecution of non-compliance. The main purpose of real time monitoring and directional monitoring is to trigger reactive noise management at the mine.

The Department acknowledged that the distinction between the two types of noise monitoring carried out at mines, and the purpose for which they are carried out, is not well understood within the broader community and commonly leads to confusion, particularly when people try to judge the compliance of mines by interpreting the real time noise monitoring results. In recent consents, the Department has required mining companies to try to improve the calibration between attended and real time monitoring results, so the real time monitoring results can become a better indicator of compliance and trigger further attended monitoring. However, this work is still in its infancy and could take several years before it can be used effectively.³⁷

The Commission agrees and considers an information forum should be arranged to brief the community on the issues that have created confusion and misunderstanding including the application of the LFN modification factor and the purposes of different types of monitoring, and the Trigger Action Response Plan.

As to the question about the Applicant's compliance record, the Commission notes in 2012 the Department engaged SKM to conduct an independent monitoring program to assess the impact of mine noise from the Mt Thorley Warkworth mine complex. A monitoring and assessment program was established in conjunction with members of the Bulga community. In total eight monitoring locations were selected to represent the wider Bulga area.³⁸

The monitoring program lasted eight weeks, and consisted of attended and unattended noise monitoring at several locations. From 72 monitoring events, a single exceedance of the noise criteria was observed at the Warkworth coal mine. Further assessment using the results from continuous directional monitoring indicated 13 probable exceedances from the Warkworth mine over a two month period and a single exceedance as a result of noise from both mines. No exceedances were longer than an hour and all were 10dB or below. Low frequency noise impacts were considered to be significant at two locations, and moderate at two further locations.

The SKM report found the operations generally complied with the noise conditions noting that some locations may be impacted by LFN at night. The report also identified that insufficient data was collected to enable it to assess the accuracy of ongoing routine noise monitoring carried out by the Applicant. This issue appears not to have been addressed in the information before the Commission and should be addressed before the determination of the current application.

³⁶ Department of Planning and Environment Memorandum dated February 2015

³⁷ *ibid*

³⁸ Sinclair Knight Merz, *Mount Thorley/Warkworth Coal Mine Independent Noise Monitoring Report*, 30 April 2012

To address residents' complaints of non-compliance and the issues raised in the LEC judgement, the draft recommended conditions provided by the Department include a significant increase in compliance monitoring (attended monitoring) requirements to at least 12 times a year in accordance with the INP. The Commission supports the conditions.

Recommendation

7. The recommended public information briefing session referred to in Recommendation 4 should include a briefing on the application of the LFN modification factor and the purposes of different types of monitoring as well as the operation of the Trigger Action Response Plan.
8. The concerns raised in the SKM report that insufficient data was collected to enable it to assess the accuracy of ongoing routine noise monitoring carried out by the Applicant should be addressed before determination of the current application.

5.3.10 Low frequency noise

The *Noise and Vibration Study* considered three different methods of assessment of LFN, including the INP method, the Broner method and the UK Department of Environment, Food and Rural Affairs method. Objectors contended the application of the INP method to the 2013 monitoring results indicated exceedances occurred and the INP penalty should apply. They argued that it is not acceptable to discount the LFN modifying factor and that to use the Broner method to assess and forecast adjustments to account for the impact of low frequency noise is not acceptable as this is not a recognised method of assessment. They argued that the 5dB(A) low frequency penalty should be applied to the predicted noise levels and that consequently the predicted cumulative noise levels for the Inlet Road west and Long Point will increase to well above INP noise criteria and are thus considered unacceptable.

The Commission noted Section 4.2.3 of the 2012 SKM monitoring report summed up the issues in relation to the application of the LFN in accordance with the INP as follows:

- The 15dB(A) difference between the A and C weighted noise as described in the INP can often be a feature of many natural environments
- Due to the increased attenuation rate for higher frequencies when compared to lower frequencies, any noise spectra may be dominated by lower frequencies at larger distances in such a way as to unjustly qualify for the 5dB(A) low frequency penalty
- The original intention of the modification factor was to assess noise sources at close range for low frequency characteristics rather than at large distances
- The influence of other sources of LFN in the background noise.

The EPA in its submission to the Department advised that the former Department of Environment Climate Change and Water (DECCW) in December 2010 expressed the view that 'it agreed with the Department of Planning that the INP Low Frequency Noise (LFN) modification factor would be applied except where it is shown that it results in perverse outcomes'. The EPA further advised that it 'proposes to apply the methodology for LFN in Table 4.1 of the INP unless further information is provided'.

In response to the EPA's comments, the Applicant advised that an assessment of LFN from the proposal has been undertaken using the noise model developed for the EIS to quantify the L_{eq} dB(c) minus L_{eq} dB(A) levels. The predicted L_{eq} dB(C) minus L_{eq} dB(A) are less than 15 dB. when mine noise

is predicted to be at its highest (i.e. worst case weather). The results reaffirm the predicted noise levels in the EIS for these areas in accordance with the INP and that the LFN penalty does not apply to the proposal.³⁹

The Department's noise expert also pointed out issues similar to those identified in the SKM report. In particular, he noted that the penalty does not apply to general noise or the predictions and must be applied specifically to a noise source. He also noted the additional analysis carried out by the Applicant's consultant, which supported the earlier findings that the penalty should not apply. The Department accepted the advice.

The RTS on page 165 pointed out that the INP standard for LFN is not being applied to existing operations. It also acknowledged that the noise profile of un-attenuated plant is one factor for the current non-compliance of the INP's 15 dB rule. The RTS indicated that the focus should be on the 'in-service target noise levels presented in the EIS include both a linear dB(L) as well as a weighted dB(A) target' to ensure the attenuation program for the mining fleet and equipment addresses the LFN. The Commission agrees and supports the early completion of the attenuation program. As discussed earlier in this section, the performance of the attenuated mining fleet and equipment should be monitored and audited on a regular basis to ensure they meet the performance targets and the Commission recommends accordingly.

The Commission agrees with the EPA and the community that the INP methodology should apply, not the alternative methods proposed by the Applicant. Therefore it is recommended that the conditions in any approval should require the application of an appropriate noise modification factor for LFN during compliance testing if LFN is prevalent before comparison with the PSNL in the approval. However, if a new INP is adopted before the determination of this application, the new INP methodology and criteria should apply.

The Commission notes LFN is a significant issue to the community and there is confusion in the community in terms of LFN assessment methodology and the application of the modification factor. As recommended above, a public information forum may assist in clearing the confusion.

Recommendation

9. The conditions in any approval should require the application of an appropriate noise modification factor for LFN during compliance testing if LFN is prevalent before comparison with the PSNL in the approval. However, if a new INP is adopted before the determination of this application, the new INP methodology and criteria should apply.

5.3.11 Blasting

Singleton Council raised two issues in relation to blasting impact. Firstly, best practice blast management should continue to be implemented and be incorporated into any consent conditions. Secondly, an online blast schedule should be provided and updated regularly.

The BMPA raised concerns that the blast study was undertaken without consultation and without reference to the site management plan and is inconsistent with contemporary limits. It further contended that road closures are random in nature and will increase the vibration and damage from blasting.

³⁹ EMGA Mitchell McLennan (EMM)(3), op.cit., section 4.3.1(i)

Both the RTS and Secretary's assessment report considered these issues. The Department accepted that blasting can feasibly be managed to meet the relevant criteria by reducing the maximum instantaneous charges and applying other blast management techniques. The Department has recommended draft conditions requiring Warkworth to:

- Prepare and implement a blast management plan that confirms the blast design and blast management techniques to be used to manage blasting operations so that they comply with all relevant criteria at private properties
- Manage blasting operations to comply with all relevant criteria at private properties through appropriate blast design
- Limit blast frequencies and hours
- Keep residences notified and up to date regarding blasting operations, and facilitate feedback/complaint management
- Provide structural property inspections and investigations for private residences (upon request) within two km of the project blast area.

The Commission notes the Applicant sought approval for blasting between the hours of 7am and 6pm, Monday to Saturday and a maximum of three blasts a day and 15 blasts a week, averaged over a 12 month period. The Department disagreed and recommended restricting blasting to between 7am and 5pm, Monday to Saturday and a maximum of three blasts a day and 12 blasts a week, averaged over a 12 month period. The Commission considers the issues have been adequately assessed in the Secretary's assessment report and that the recommendations are reasonable.

With respect to the blast management plan as outlined on page 331 of the RTS, up-to-date information should also be provided on the RioTinto website, in addition to the hotline.

Recommendation

10. Up-to-date information should be provided on both the Rio Tinto website and hotline with respect to blasting schedule.

5.3.12 Summary

In relation to the significance issue of noise, the Commission considers the evidence indicates that

- The relationship between the Applicant and the Bulga community has deteriorated to the level where constructive discussion to resolve issues of significant concern to the community is difficult, particularly in terms of monitoring and compliance
- There is confusion and misunderstanding in the community in relation to the application of the INP, the purposes of different types of monitoring and validity of these results for non-compliance prosecution, and the trigger action response process, particularly whether the trigger level is set at or below the noise limit
- The Applicant has not demonstrated it is able to counter the community's scepticism and lack of confidence in its ability to comply with the existing and proposed noise criteria if the project is to be approved.

The Commission considers it is of critical importance that the Applicant attempt to improve its relationship with the community so as to rebuild confidence and trust. Engaging an independent mediator may assist in this rebuilding process.

As a first step towards reconciliation, the Applicant should genuinely commit to honouring the acquisition and mitigation rights provided to the residences that were granted such rights under the now repealed approval. These rights should be included in an updated Statement of Commitments and the terms of these rights should be similar to those granted under the draft recommended conditions.

The EPA's review of the Noise and Vibration Study concluded that it can support the project based on predicted noise levels in the study and draft recommended conditions. Given the EPA is the lead authority in noise assessment and regulating noise from industrial sources, significant weight should be given to its advice.

The Secretary's assessment report has adequately addressed the issues raised in the public submissions and its recommendations are consistent with current government policies.

Many issues raised in the objection submissions are broad issues relating to the INP (i.e. acceptability and appropriateness of criteria, low frequency noise, monitoring and compliance) and should be canvassed in a review of the INP.

Other findings of the Commission are:

- The noise issues raised in the LEC judgment have been adequately addressed based on the totality of evidence before the Commission.
- The data collection, analysis and assessment of the background noise levels for the Bulga area are consistent with the INP requirements.
- The noise criteria in the draft conditions take into account the Mining SEPP and the Voluntary Land Acquisition and Mitigation Policy.
- The removal of the Saddleback Ridge will not significantly increase the current noise environment in the Bulga area due to the benefit of the noise attenuation program, the expected closure of coal extraction in Mt Thorley and the Bulga coal complex's moving away from the Bulga village
- Predicted noise exceedances have been dealt with in accordance with the Mining SEPP and the Voluntary Land Acquisition and Mitigation Policy
- The unintended consequence of the 2013 LEC judgment is a significant reduction in the number of properties that will be provided with mitigation or acquisition rights, if the subject application is approved
- The commencement of any new consent should trigger the application of the new noise criteria
- The 2012 SKM monitoring report found the mine generally complied with its current noise limits, noting that some locations may be affected by low frequency noise.
- Low frequency noise is a significant issue to the community. The INP methodology should apply and not other alternative methods. During compliance testing, if low frequency noise is prevalent, an appropriate noise modification factor should apply before comparison with the noise criteria in the approval is made
- Other noise issues including sleep disturbance, vibration, health impact, traffic noise and rail noise have been adequately addressed in the EIS, Noise and Vibration Study and the Secretary's assessment report.

Recommendations

1. The acceptability of setting noise limits above the PSNL should be considered by the NSW government, ideally via a review of the INP.
2. The question of how often calm conditions occur in the area should be independently verified by the Department before the application is determined
3. To ensure the benefits of the attenuation program will be fully realised, regular monitoring and audit of the performance of the attenuated fleet and equipment should be carried out
4. A public information briefing session should be held to clarify the operation of the Trigger Action Response Plan
5. Draft recommended conditions 8 and 9 in Schedule 2 and draft recommended conditions 4 and 5 in Schedule 3 should be amended to ensure that when the new consent commences, the new noise criteria should apply and the noise criteria in Condition 18 of DA-300-9-2002-I be attached as an appendix to the new consent if the subject application is approved.
6. The Applicant should update its Statement of Commitments to provide acquisition and mitigation rights to those properties which were granted such rights under the now repealed approval. The terms of these rights should be similar to those that would be granted under the approval conditions should the application be approved
7. The recommended public information briefing session referred to in Recommendation 4 should include a briefing on the application of the LFN modification factor and the purposes of different types of monitoring as well as the operation of the Trigger Action Response Plan
8. The concerns raised in the SKM report that insufficient data was collected to enable it to assess the accuracy of ongoing routine noise monitoring carried out by the Applicant should be addressed before determination of the current application
9. The conditions in any approval should require the application of an appropriate noise modification factor for LFN during compliance testing if LFN is prevalent before comparison with the PSNL in the approval. However, if a new INP is adopted before the determination of this application, the new INP methodology and criteria should apply
10. Up-to-date information should be provided on both the Rio Tinto website and hotline with respect to blasting schedule.

5.4 VISUAL IMPACTS

5.4.1 Introduction

Members of the public and community interest groups in the written submissions and at the Public Hearing raised significant concerns regarding the visual impact of the project. The focus of the concern was on the visual impacts of the mine expansion on Bulga village, particularly given the proposed removal of Saddleback Ridge, which has provided an important visual barrier between a number of residences and the mine.

5.4.2 Existing visual landscape

As part of the EIS, the Applicant submitted a Visual Impact Assessment prepared by Integrated Design Solutions⁴⁰. This study provides a detailed description of the landscape character of the local area surrounding the mining complex, which generally comprises moderate to gently sloping hills,

⁴⁰ Integrated Design Solutions, *Warkworth Continuation 2014 Visual Impact Assessment*, Sydney, 2014

with several locally dominant ridges. Saddleback Ridge is located approximately 4.5 kilometres northeast of Bulga village and 650 metres east of Wallaby Scrub Road (see Figure 4). The ridge currently screens parts of the Warkworth operations from Bulga village, although several properties in the village have direct views of the Mount Thorley and/or Bulga mining operations. These mines are particularly visible from the elevated foothills of the village, but are mitigated to some extent by the distance between the village and the mining operations (approximately three kilometres).

The mining complex is not visible from Singleton or Broke due to the topography of the area.

5.4.3 Expected visual impacts

The two projects will alter the existing landscape of the mining complex as a result of the following works:

- Expansion of the Warkworth mine through Saddleback Ridge. The eastern sections of the ridge are expected to be removed in the third year of the mine life, and by the ninth year the parts of the ridge located within the proposed extension area would be completely removed
- Advancement of the North and West pits of Warkworth mine in a westward direction
- Continuation of the existing overburden emplacements in a westward direction
- Establishment of a third crossing (underpass) of Putty Road between Warkworth mine and Mount Thorley mine
- Construction of a bund adjacent to the northern side of Putty Road
- Continuation of night lighting at Mount Thorley on overburden emplacement areas and mining equipment.

The Visual Impact Assessment concludes that the potential visual impacts associated with the project will generally be limited to areas to the west of the mine, specifically Bulga village. The impact on properties within Bulga would be dependent on the position of the viewing location, the orientation of the property and the extent of any intervening screening provided by vegetation. Some parts of the village would experience low impacts, while some properties in elevated locations (such as those on parts of Inlet Road) will potentially experience high impacts. The visible elements of the mining complex from Bulga village will be the overburden emplacements associated with the Warkworth extension, which would be located approximately 4 to 5 kilometres from the village. In some areas the emplacement would be 190 metres AHD, which is a significant increase of around 30 metres AHD over existing heights. Night time lighting would potentially also cause additional visual impacts.

5.4.4 Mitigation measures

The Visual Impact Assessment recommends a range of management and mitigation measures to minimise the visual impacts of the proposals.

For residences within the primary visual catchment expected to experience high impacts, the Applicant has indicated that suitable mitigation measures would be implemented (subject to agreement with landowners). They are likely to constitute vegetation screening and/or other property-specific measures. In addition, the Applicant has offered all residences in elevated locations in Bulga village the opportunity to request a site-specific visual assessment to determine the severity of the visual impact of the mining complex. This assessment would be conducted by the Applicant

and would suggest to affected residents the location and type of screening that might be required to minimise the impact from each property.

The Applicant's view is that following the implementation of appropriate visual mitigation measures, the visual impact for affected residences would be reduced to low or acceptable levels, as demonstrated in the Visual Impact Assessment.

5.4.5 Department's position

The Department acknowledges that the project would result in increased visual impacts for a number of residences in Bulga village and surrounds, and that in some cases there would be some unavoidable residual impacts. Notwithstanding this, the Department supports the proposed expansion of Warkworth mine, including the loss of Saddleback Ridge, as it will provide access to a very significant volume of coal and ensure the efficiency of existing draglines. The Secretary's assessment report notes that even if the ridge was retained to provide topographic screening, the majority of the overburden emplacements at Warkworth would still be visible from Bulga village to the northeast of the ridge.

The Department also supports the proposed mitigation measures for Warkworth, in particular the on-site vegetated screens and landscaping treatments. It considers that while there is some merit to the proposed site-specific visual assessments, residents should not need to request a further assessment prior to mitigation measures being implemented. Therefore, conditions of consent are recommended allowing any residence with significant direct views of the mine/s to request additional mitigation at any time during the life of the project. To ensure the measures are implemented quickly and to avoid conflict between residents and the mining operator, the conditions recommended by the Department allow either party to make a referral to the Secretary within three months of a landowner requesting mitigation.

5.4.6 Summary

The Commission has visited the site and surrounding area, including Bulga village. During this visit it was observed that much of the existing outlook from the village to the east and southeast contains views of the existing Mount Thorley and Bulga mines. The outlook towards Saddleback Ridge was viewed from elevated parts of the village. These properties are largely unaffected by views of Warkworth mine due to the existing natural screening provided by Saddleback Ridge.

The Commission appreciates the views expressed by individuals and public interest groups regarding the importance of Saddleback Ridge to Bulga village. It is widely considered a local landmark that acts as a visual and physical barrier to the mining complex beyond. The Commission therefore recognises that the proposed removal of the ridge would permanently change the visual outlook from parts of the village.

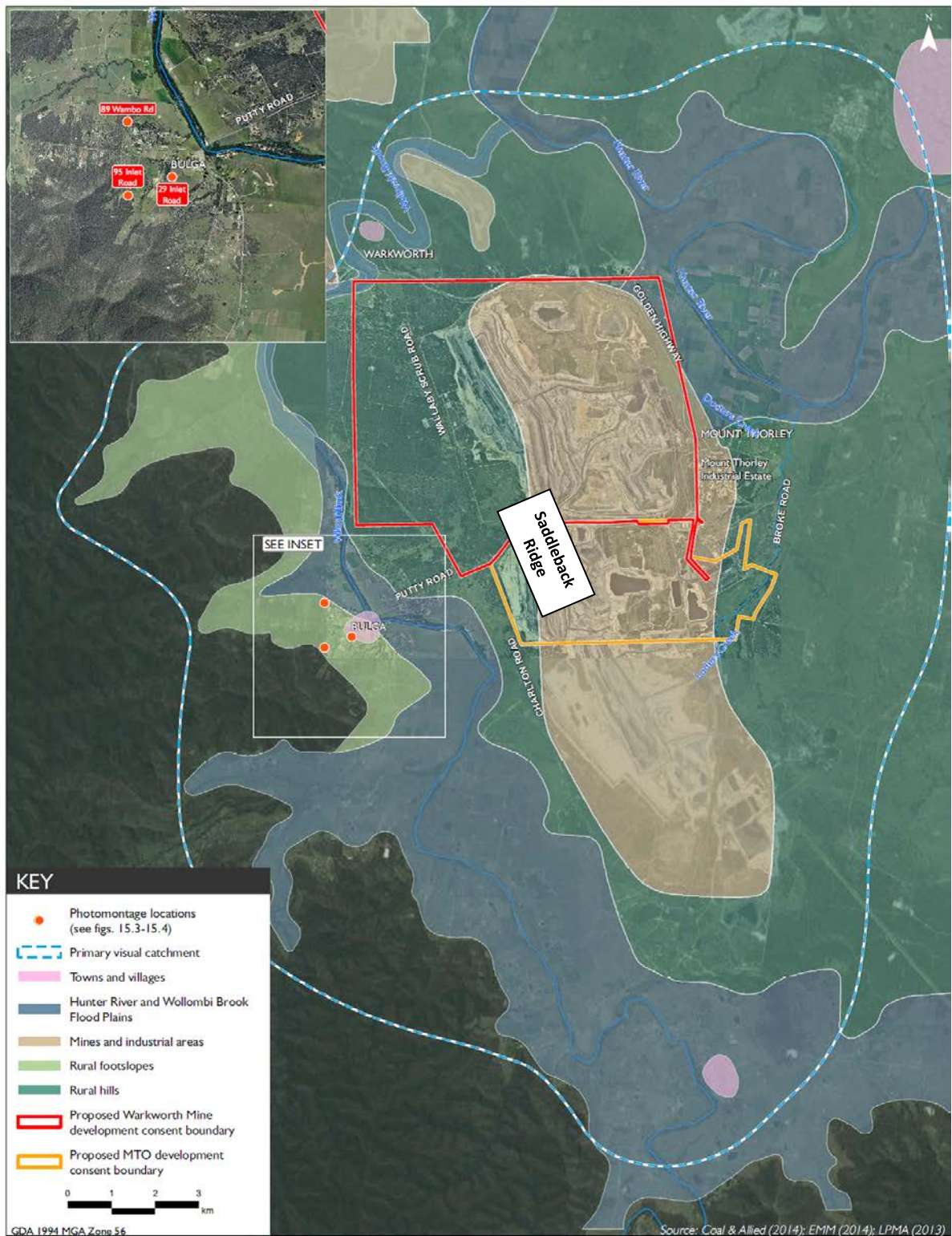


Figure 4: Characteristics of the site and surrounding landscape, including the location of Saddleback Ridge (source: Secretary's assessment report, 2014)

The Commission understands the residents' expectation that Saddleback Ridge would remain in perpetuity based on the 2003 approval and associated Deed of Agreement. The Commission also understands the Applicant's position that the ridge is located within the boundary of the lease area of the mining complex and that it has an expectation that the valuable coal reserves beneath the ridge should be accessible using existing infrastructure.

The Commission notes that the 2003 Deed of Agreement has been amended in consultation with OEH, and now makes provision for mining through the ridge.

The Commission has considered the Visual Impact Assessment, ownership status of the land, the proposed mitigation measures and draft recommended conditions. On balance, it is concluded that although the landscape in and around the mining complex would be altered as a result of the projects, the visual impacts would either be acceptable or could be minimised by the proposed measures and draft recommended conditions. However, the Commission acknowledges that the local community of Bulga may view this as a subjective judgement.

Nevertheless on balance, the Commission considers there are limited grounds to refuse the proposal based on the anticipated visual impacts, especially given that the impacts can be substantially mitigated.

5.5 AIR QUALITY

5.5.1 Introduction

Air quality has been raised as a concern in both the Public Hearing and submissions on the Warkworth Continuation Project. Particular concerns raised relate to the potential health impacts of the project, increased dust levels at nearby residences, the impact of removal of Saddleback Ridge and cumulative air quality impacts from mining in the Hunter Valley.

5.5.2 Proposal

To assess the air quality impacts of the proposal, an air quality impact assessment has been undertaken and submitted with the EIS⁴¹. The Commission notes that the assessment has generally been undertaken in accordance with the EPA's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* as advised by the EPA.

The modelling assesses likely total suspended particulates (TSP), fine particular matter (PM₁₀) and deposited dust impacts over three representative mining scenarios (Years 3, 9 and 14). In addition it addresses cumulative impacts associated with the project and other nearby mining operations. In response to potential health concerns the modelling also includes an assessment of fine particle matter (PM_{2.5}) under the three mining scenarios. Modelling post Year 14 was not included in the modelling as it is understood that the mining footprint post Year 14 would not extend any further west, rather mining would go deeper, which would result in plant being shielded from assessment locations.

⁴¹ Todoroski Air Sciences, *Air Quality and Greenhouse Gas Assessment Warkworth Continuation 2014*, Sydney, 2014

In terms of background air quality levels, the existing Warkworth operation includes an extensive air quality monitoring network of high volume air samplers, tapered element oscillating microbalances and dust deposition gauges around the mine. This network was used to identify existing background levels which notably are generally consistent with the EPA's regional air quality modelling.

The air quality assessment also includes an assessment of meteorological conditions in the area and identifies that predominant winds are from the south, southeast and northwest, meaning that the majority of dust impacts as a result of the proposal are likely to occur in the southeast-north west quadrants (i.e. parallel to the Bulga, Mt Thorley and Warkworth mines).

Measures proposed as part of the project to minimise dust impacts include:

- Minimising disturbance areas
- Watering of haul roads and coal stockpiles
- Limiting the development on minor roads and rehabilitating disused roads
- Revegetating topsoil stockpiles
- Restricting blasting to only occur during favourable conditions
- Minimising dragline and loading/dumping drop heights
- Dust control systems on drill rigs (e.g. dust aprons, extraction systems and/or water sprays)
- Using adequate stemming in blast drill holes
- Suspension of operations in adverse conditions, and
- Progressive rehabilitation of disturbed areas.

The Commission notes, as advised by the Department and EPA, that these measures are generally consistent with current best practice. It is understood that the air quality modelling factors in the above measures do not include proposed 'active' mitigation measures (such as real-time dust monitoring and meteorological forecasting to guide the day to day planning of mining operations). As noted in the Secretary's assessment report, these predictive and real-time mitigation measures are likely to result in lower short-term dust emissions in practice than those predicted in the modelling.

5.5.3 Modelling results

The air impact assessment includes air quality criteria for the various types of air pollutants as follows:

Table 8: NSW EPA Air Quality Criteria

Pollutant	Averaging Period	Impact	Criterion
TSP	Annual	Total	90µg/m ³
PM ₁₀	Annual	Total	30µg/m ³
	24 hour	Total	50µg/m ³
Deposited dust	Annual	Incremental	2g/m ² /month
		Total	4g/m ² /month
PM _{2.5}	24 hours	-	25µg/m ³
	Annual	-	8µg/m ³
Carbon monoxide (CO)	15 minute	-	100mg/m ³
Nitrogen Dioxide	1 hour	-	246µg/m ³
	Annual	-	62µg/m ³

The modelling indicates that the project will comply with the above criteria for annual average 24-hour PM₁₀, total suspended solids (TSP) and dust deposition criteria at all privately owned receivers with the exception of assessment locations 77, 102 and 264. It is also consistent with the *Mining SEPP 2007* non-discretionary development standard for cumulative air quality (30 µg/m³ of PM₁₀ annual average for private dwellings).

Locations 77 and 264 are privately owned residences located in the village of Warkworth (and Location 102 is Warkworth Hall which is non-residential (refer Figure 5). Location 77 is understood to already be eligible for acquisition under the neighbouring Wambo mine consent. The assessment indicates that Location 264 is inferred to be within the Wambo mine's acquisition zone if it had been previously assessed. The Department has recommended that the Applicant be required to acquire Location 77 regardless of any other acquisition rights. However, no recommendation has been made in regard to Location 264. Acquisition of Location 77 is considered appropriate as recommended however clarification should be provided as to why Location 264 should not similarly be granted acquisition rights.

Recommendation

1. Clarification should be provided in relation to Location 264 as to whether this property should be granted acquisition rights as part of any future approval of the subject application having regard to air quality impacts.

In addition to privately owned properties, a significant number of mine owned properties would also be affected by dust above the relevant criteria. NSW Health has raised concerns regarding air quality impacts on tenants of these properties and has recommended tenants be informed of potential health risks. Further in relation to these properties the Department has recommended that the Warkworth Mine be required to undertake additional dust mitigation measures (i.e. provide air filters or air conditioning) at the request of tenants of any mine owned receivers predicted to be affected by dust impacts above EPA criteria. The Commission considers this appropriate.

In terms of short term dust impacts, the assessment identifies that background concentrations of PM₁₀ in the surrounding region are already elevated and would be expected to result in exceedances of the 24-hour impact criteria at present without any impact from the current proposal (existing exceedances of three to four days per year in Bulga and Warkworth villages and 20 days a year near the Mt Thorley estate). However the modelling indicates the incremental impacts of the project would result in exceedances of the 50µg/m³ PM₁₀ criteria by up to an additional six days per year near Warkworth village, two days per year near Knodlers Lane and three days per year near the Mt Thorley Industrial Estate. No increase is predicted as a result of the project at Bulga village.

The Secretary's assessment report notes that the existing assessment does not include sufficient information to determine whether individual properties in these areas should be granted voluntary land acquisition or mitigation measures and has therefore requested that the Applicant undertake supplementary air quality modelling of cumulative 24-hour PM₁₀ to enable an assessment of this matter. The Commission has been advised by the Department that supplementary modelling has been provided which confirms that there are no additional privately owned lots that meet the criteria for acquisition in accordance with the *Voluntary Land Acquisition and Mitigation Policy*.

In relation to PM_{2.5} (fine particles) the Commission notes there are currently no adopted Australian or NSW air quality criteria for PM_{2.5} impacts and that generally PM_{2.5} is generated through combustion processes or as secondary particles formed through chemical reactions rather than through mechanical processes used on mine sites. For the purposes of the assessment the National

Environment Protection Council (NEPC) provisional advisory reporting standards have been used as set out in the table above. No background data for PM_{2.5} exists for the site however using a method used by the Victorian EPA it was determined that no assessment location (that would comply with the criteria for other pollutants) would experience cumulative PM_{2.5} level above the National Environment Protection Measures (NEPM) advisory reporting standards. The EPA has confirmed that the assessment was undertaken in general accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* and that the approach adopted is consistent with other mining assessments in NSW.

In terms of other air emissions associated with the project the assessment notes that expected CO, SO₂ and NO_x emissions are likely to be minor and will comply with the EPA criteria.

In summary, the Commission notes that the air quality modelling generally indicates that the proposal will comply with relevant criteria, with the exception of annual average 24-hour PM₁₀ at three privately owned locations (77, 102 and 264) all of which are in Warkworth Village. Location 77 is recommended for acquisition however the Commission also considers that clarification should be provided in relation to Location 264 to confirm whether this property should be granted acquisition rights having regard to air quality impacts

Accordingly, and subject to additional information and draft recommended conditions (including compliance with relevant criteria), the commission considers that the proposal will not result in air quality impacts that do not comply with relevant air quality criteria.

5.5.4 Impact of Saddleback Ridge

A number of submissions raised concerns that the removal of Saddleback Ridge would result in higher dust impacts to sensitive receivers west of the mine, in particular Bulga village. After extensive and careful review, the Commission notes that the modelling indicates that prevailing wind patterns mean that the majority of dust impacts from the proposal would be expected to occur in the southeast-north west quadrants (i.e. parallel to the Bulga, Mt Thorley and Warkworth mines) and not in the area of Bulga village. The modelling indicates that the impact of Saddleback Ridge on these patterns is relatively minor and that with its removal wind patterns will remain similar to present.

5.5.5 Health impacts

NSW Health (Hunter New England Population Health) in its submission raised concerns that there is no evidence of a threshold below which exposure to PM is not associated with health effects and that therefore it is important that all reasonable and feasible measures are taken to minimise human exposure to PM even where assessment criteria are met. The Commission agrees that all measures possible should be taken to minimise exposure to PM as a result of the project.

The Commission notes that in terms of human health PM₁₀ and PM_{2.5} have the potential to give rise to adverse health effects and that particles larger than 10 micrometres are essentially prevented from entering the human respiratory system due to their size. PM_{2.5} particles are of most concern in terms of health effects as they penetrate deeper into the respiratory system than larger particles and because they are generally created by combustion of fuels or by chemical reactions. Deposited dust, whilst not resulting generally in health impacts, can cause nuisance impacts.

The Commission, as advised by the EPA, understands that the proposed mitigation measures (including 'active' mitigation measures such as real-time dust monitoring and meteorological forecasting to guide the day to day planning of mining operations) incorporated into the project to minimise air quality impacts represent 'best practice measures'. Further a comprehensive Air Quality Management Plan will also be required to be prepared to inform the operation of the mine and manage potential exceedances.

Having regard to all these measures, the Commission considers that as far as practicable all possible measures will be taken to minimise exposure to PM as a result of the project.

5.5.6 Draft Recommended Conditions

The Commission has reviewed the draft recommended conditions and notes that the currently proposed condition wording provides that 'the Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria ...' (refer Schedule 3, Conditions 17-19). The LEC judgment was critical of this wording and concluded that there was no reason why conditions should not require compliance with the criteria. The Commission agrees with this conclusion and considers that it is appropriate that the wording of the conditions be amended to require compliance noting that extraordinary events such as bushfires, prescribed burning, dust storms etc. would be excluded (Schedule 3, Condition 17(d)).

Recommendation

2. Prior to any approval Conditions 17-19 of Schedule 3 should be amended to require compliance with established criteria.

5.5.7 Summary

The Commission has given careful consideration to the impacts of the proposal on air quality. Detailed consideration has been given to issues raised in the Public Hearing and submissions.

In general the Commission is of the view that the proposal is likely to be acceptable in terms of air quality impacts however additional information is required prior to it being able to reach a conclusion in this regard.

Recommendations

1. Clarification should be provided in relation to Location 264 as to whether this property should be granted acquisition rights as part of any future approval of the subject application having regard to air quality impacts.
2. Prior to any approval conditions 17-19 should be amended to require compliance with established criteria.

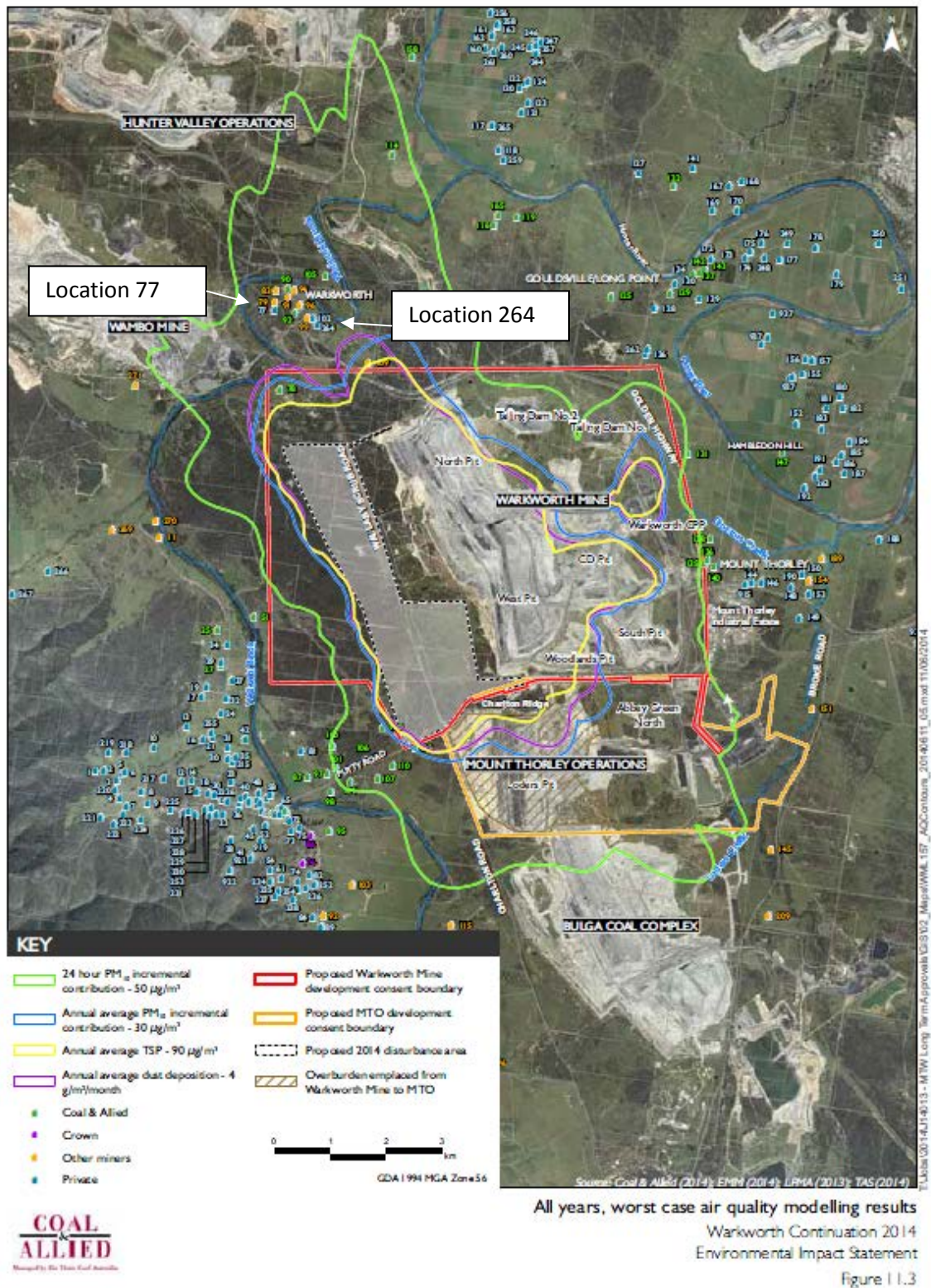


Figure 5: Air quality modelling results (Source: EMGA Mitchell McLennan (EMM)(1), p.191)

5.6 BIODIVERSITY

5.6.1 Introduction

A key issue raised in the Public Hearing and public submissions is the impact of the proposal on biodiversity and the adequacy of the proposed biodiversity offsets strategy. In this regard the Commission notes that Warkworth Mine has a long and complex history.

The Warkworth Mine currently operates under development consent DA300-9-2002 (2003 consent). Specifically in relation to biodiversity, the 2003 consent identified land to be set aside and managed for conservation. These areas were identified as NDAs and HMAs. The Commission notes that the intention in 2003 was that the NDAs would be established and managed for conservation in perpetuity and that the HMAs would be established and managed for conservation for an undefined period. The 2003 consent requires that open cut mining be excluded in the HMAs unless, in the opinion of the Minister, Warkworth Mining Limited has demonstrated that there is 'clear justification for open cut mining on social, economic and environmental grounds'.

The former application for mine expansion (2010 Warkworth Expansion Project) was refused by the LEC in 2013. One of the key reasons for the refusal by the Court was biodiversity impacts. The LEC found that 'the Project will have significant and unacceptable impacts on biological diversity that are not able to be avoided, mitigated or compensated'.

As detailed by the Applicant, the 2014 Warkworth Continuation Project seeks to address issues raised in the LEC judgment and in particular includes a revised approach to biodiversity offsetting. Since refusal of the 2010 Warkworth Expansion Project by the LEC, the policy framework for biodiversity offsetting has changed with the introduction of the Biodiversity Offsets Policy for Major Projects (2014), FBA tool and the Upper Hunter Strategic Assessment (UHSA) which is intended to provide a coordinated approach to biodiversity offsetting associated with coal mining.

In addition, it is noted that the Mining SEPP has also been amended to, among other matters, include a requirement for a consent authority to consider the significance of the resource (cl.12AA) and certification of a biodiversity offsetting strategy by the Chief Executive of OEH (cl.14) before granting consent to a mining application.

5.6.2 Proposal

The 2014 Warkworth Continuation Project would disturb a total of 698ha of land (63ha of which has previously been approved for removal under the current Mount Thorley mine consent). Accordingly 611ha of additional vegetation is proposed to be disturbed under the current application comprising vegetation communities as set out below:

Table 9: Vegetation community impacts

Community	Conservation Significance (TSC ACT)	Area to be Cleared (ha)
<i>Central Hunter Grey Box – Ironbark Woodland</i>	EEC	365.5
<i>Regenerating Central Hunter Grey Box – Iron Bark Woodland</i>	EEC	6.5
<i>Central Hunter Ironbark – Spotted Gum – Grey Box Forest</i>	EEC	15
<i>Warkworth Sands Woodland</i>	EEC	72
Sub-total Woodland EEC		459
<i>Warkworth Sands Grassland</i>		0.5
<i>Central Hunter Grey Box – Ironbark Derived Grassland</i>		151.5
Sub-total Grassland		152
Total		611

(Source: Secretary's Assessment Report)

Threatened fauna species have also been recorded on the site. In particular two species listed as endangered (Southern Myotis and Regent Honeyeater) have been identified on the site and the loss of habitat for these species requires species offsets. A further endangered species (large-eared Pied Bat) was identified in the 2003 application.

Measures proposed to mitigate impacts, as outlined in the EIS, include:

- Procedures to minimise clearing and avoid unnecessary disturbance
- Pre-clearance surveys
- Clearing protocols to minimise impacts on fauna
- Relocation habitat features
- Seed collection and propagation
- Weed and feral animal control measures
- Erosion and sedimentation control measures
- Specifications for replanting native trees where appropriate.

In addition to offsetting the impacts on endangered vegetation communities and threatened fauna species as a result of the current application, the project also seeks to 're-offset' the 2003 impact as a result of the proposed clearing of part of the NDAs and HMAs as provided for under the 2003 consent.

As detailed in the OEH's Biodiversity Offset Decision report (Nov. 2014) ecosystem credits and species credits generated by the 2014 Warkworth Continuation Project, and re-offsetting of the 2003 consent, are as set out below:

Table 10: OEH assessment of ecosystem and species credits

	Ecosystem credits required	Species credits required
2014 Warkworth Continuation Project	19,708	24,930
2014 Warkworth Continuation Project – re-offsetting of 2003 consent	11,992	12,360
Total	31,700	37,390

The figures outlined above vary from those provided by the Applicant in its EIS, however the Commission is confident that the figures provided by OEH are correct and in accordance with the applicable NSW Biodiversity Offsets Policy for Major Projects and underlying FBA.

The project includes a biodiversity offset strategy comprising land based offsetting of remnant native vegetation, rehabilitation of post mined land, supplementary measures to improve Warkworth Sands Woodland EEC and retirement of any unmet credits in accordance with the rules for the Upper Hunter Strategic Assessment Offset Fund.

The proposed land based offsets, to be held in perpetuity, include three areas: the Northern Biodiversity Area, the Southern Biodiversity Area and rehabilitation of the post-mined landscape (see Figure 6). In relation to the rehabilitation of the post-mined landscape the Commission notes that this land attracts 50 per cent of the credits generated by remnant vegetation.

In addition to the land-based offsets, the Applicant is also proposing to:

- Rehabilitate the mine site with 1,600ha of suitable native woodland species
- Restore Warkworth Sands Woodland on cleared areas within the northern and southern biodiversity areas
- Lodge a \$1 million implementation bond with OEH that would be forfeited if the restoration of the Warkworth Sands Woodland is unsuccessful after 15 years
- Contribute \$1 million towards the Saving Our Species – Regent Honeyeater conservation program.

5.6.3 OEH Certification

Under clause 14(3) of the Mining SEPP in determining a development application for mining the consent authority must consider any certification by the Chief Executive of OEH ‘that measures to mitigate or offset the biodiversity impact of the proposed development will be adequate’. The Commission notes that OEH’s report certifies in accordance with clause 14(3) of the Mining SEPP:

A. *...that the measures to mitigate or offset the biodiversity impact of the Warkworth Continuation project... including the additional land based offset of equal or greater biodiversity value to the 72ha of Warkworth Sands Woodlands EEC impacted by the Warkworth Continuation Project, are adequate:*

AND

B. *Recommend[s] to the consent authority that an additional land based offset of equal or greater biodiversity value to the 72ha of Warkworth Sands Woodland EEC impacted by the Warkworth Continuation Project should be required.*

The Commission considers that in accordance with the requirements of the Mining SEPP 2007 significant weight should be given to the OEH certification.

More specifically the Commission notes that OEH’s decision report does not address in detail how the required ecosystem and species credits will be met. However, the report identifies the ecosystem credits calculated for the Northern Biodiversity Area and Southern Biodiversity Area (total 21,495). Accordingly a shortfall of 10,205 ecosystem credits remains to be satisfied by other

means as outlined above. Further OEH's decision report does not address how the required 37,390 species credits will be met. The Commission understands that this is due to uncertainty regarding proposed measures at the time of writing but that OEH is satisfied that the offset requirements can and will be met having regard to relevant policies and draft recommended conditions (conditions 28-37 of Schedule 3).

5.6.4 NSW Biodiversity Offset Policy for Major Projects

As noted in section 2.3.2, the key policy document which applies to biodiversity offsetting is the NSW Biodiversity Offset Policy for Major Projects prepared by OEH and which came into effect in September 2014. The Policy is underpinned by six principles as outlined in section 2.3.2 above.

OEH's decision report includes an evaluation of the project against the above principles and concludes that the proposed offset strategy is consistent with the principles and accordingly with the Policy.

However, the Commission considers that the proposed offsetting strategy does not currently meet Principle 2 – that 'offset requirements should be based on a reliable and transparent assessment of losses and gains'. While the Commission agrees that the losses as a result of the proposal have been clearly articulated in OEH's decision report, a clear and transparent assessment of the proposed gains as a result of the project has not been provided in OEH's decision report, in the Secretary's assessment report or in the EIS. Rather both OEH's report and the Secretary's assessment report focus on the impacts with the detail of all the proposed gains (offsets) to be determined at a later date.

The proposed land based offsets illustrate how part of the ecosystem credit requirements will be met. However, it is understood that detailed surveys of offset areas are not currently available therefore available species credits within these areas are not yet known. It is understood from discussions with OEH that it is satisfied that the identified land based offsets are appropriate and that other offsets can be met by further land based offsetting, by payment into an offset fund or by supplementary measures. Further surveys of offset areas will also enable identification of species credits within these areas.

Notwithstanding OEH's view, the Commission is concerned that as currently submitted the proposed biodiversity offset strategy does not include a reliable and transparent assessment of loss and gains as required by the Policy and therefore does not enable a clear assessment of the adequacy of offsets particularly in terms of potential biodiversity gains. Without this information the Commission considers that there is a real risk that adequate biodiversity outcomes will not be achieved.

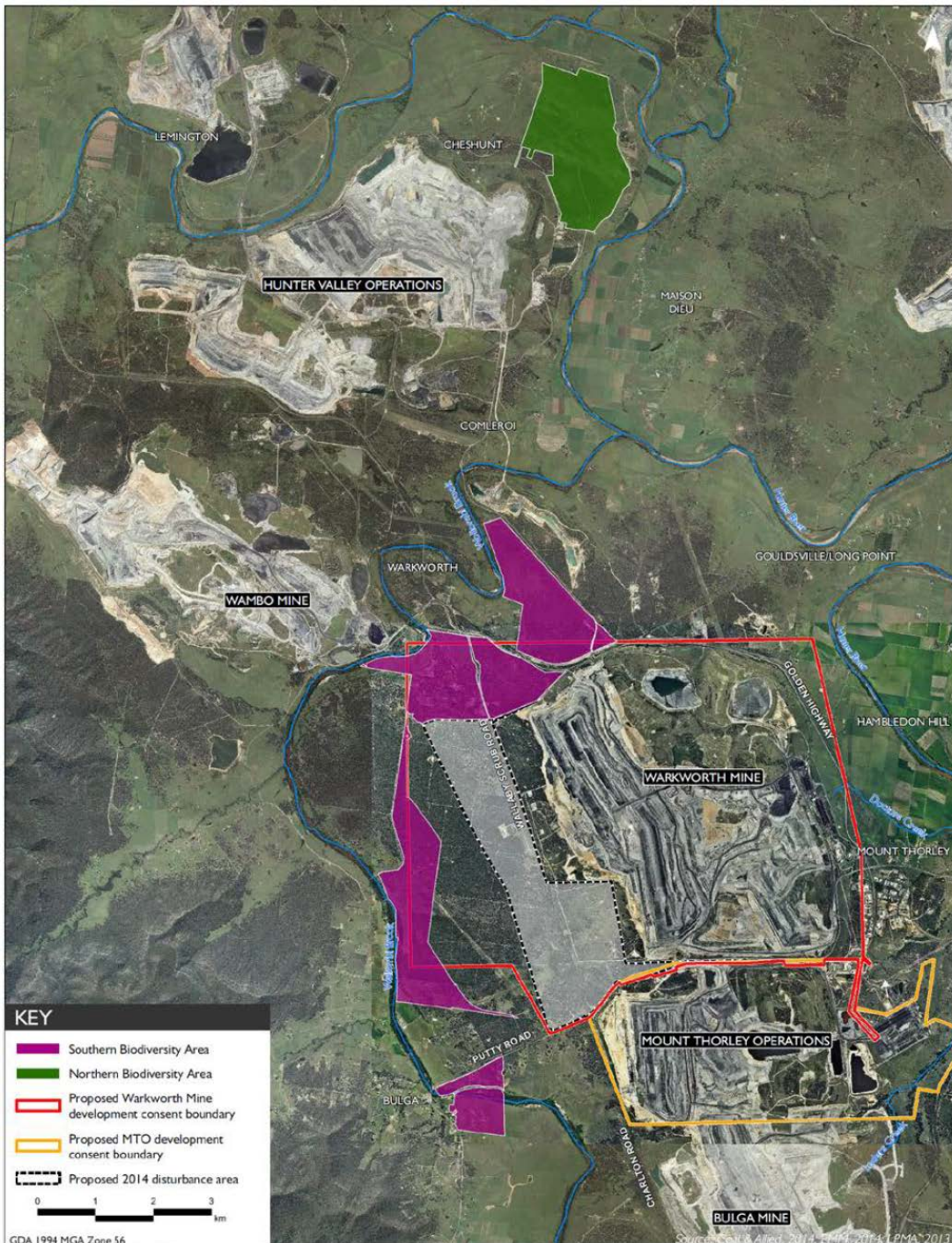


Figure 6: Location of proposed Southern and Northern Biodiversity Areas (Source: Secretary's assessment report)

Further, the Commission notes that the Policy provides that 'proponents will generally have to secure offsets before development commences' and that 'if they wish to secure the offset after development commences, they may enter into a voluntary planning agreement prior to the granting of project approval, requiring the offset requirement to be carried out'. The proposed conditions of consent require that biodiversity credits are retired (and land based offsets secured) within three years of the date of commencement of development and 10 years in relation to credits retired through mine rehabilitation rather than as provided for in the Policy before commencement. This appears to be inconsistent with the Policy and would result in biodiversity offsets not being realised until three years after commencement. The Commission considers that further justification should be provided in relation to this matter or alternatively the conditions should be amended to comply with the Policy.

Recommendation

1. Further detail should be provided which includes a clear and transparent strategy to achieve ecosystem and species credit requirements as required by the NSW Biodiversity Offset Policy for Major Projects
2. Further justification should be provided to indicate why the Project should not be required to secure offsets before development commencement as required by the NSW Biodiversity Offset Policy for Major Projects. Alternatively conditions of consent should be amended to comply with the Policy and require that offsets be secured prior to commencement of development.

5.6.5 Warkworth Sands Woodlands EEC

The Commission is mindful that a key reason for the LEC refusal of the 2010 Warkworth Expansion Project was the biodiversity impacts of the project on the four EECs to be cleared. In particular it notes that the Court found that:

"the project would be likely to have a significant adverse impact on biological diversity, including on four endangered ecological communities (EECs), but in particular on the Warkworth Sands Woodland EEC, which impacts would not be mitigated by the project or the proposed conditions of approval".

The LEC found that the proposed clearing of the Warkworth Sands Woodland EEC would not result in its extinction, however it did consider that it was likely to increase the risk of extinction of the community. Accordingly the Commission considers that particular attention needs to be given to this impact.

Warkworth Mining Limited is proposing a number of measures to mitigate the risk including:

- *The protection and management for conservation of 75.5ha of Warkworth Sands of Warkworth Sands Woodland in Bio banking sites*
- *The rehabilitation of approximately 160ha of native grasslands derived from Warkworth Sands Woodlands back to Warkworth Sands Woodland*
- *Finalising and implementing both the Draft Local Offset's Management Plan and the Warkworth Sands Woodland Restoration Manual to inform management effects on the offset lands*

- *Preparation of an integrated management plan for the ecological community to coordinate management and recovery efforts across landholders*
- *Additional supplementary measures including a \$1 million financial contribution to the Saving Our Species program for the Regent Honeyeater.*

(Source: OEH Decision Report, Nov. 2014)

The proposed clearing of 72ha of Warkworth Sands Woodlands EEC represents 17 per cent of the remaining areas of this endangered community (426ha) and generates an ecosystem credit requirement of 3,043. Further, the proposed land based offset areas (56ha in the Southern Biodiversity Area and 19.5ha in the Northern Biodiversity Area) and rehabilitation of native grasslands back to Warkworth Sands Woodland will generate 2,303 credits. This leaves 740 ecosystem credits to be retired which are proposed to be retired in accordance with the UHSA Offsets fund.

In addition to the above measures, OEH has recommended that the consent authority give further consideration to Warkworth Mining Limited's commitment of securing an additional land based offset of equal or greater biodiversity value to the 72 ha of Warkworth Sands Woodland impacted by the Project. In this regard the Secretary's assessment report has recommended a condition of consent (condition 32, Schedule 3) requiring that prior to any clearing of the Warkworth Sands Woodland EEC to the west of Wallaby Scrub Road, the Applicant will identify an additional land-based offset of equal or greater biodiversity value to the satisfaction of OEH. This offset would be secured in perpetuity and any credits generated by the offset retired.

The draft recommended conditions would also require the development of performance criteria to the satisfaction of OEH to determine the successful regeneration of the Warkworth Sands Woodlands EEC in the land based offset areas and the lodgement of a \$1 million bond with OEH. This bond would be forfeited to OEH if 15 years post commencement the regeneration does not meet the performance criteria to its satisfaction.

The Commission notes that the 2003 consent included a requirement to undertake a pilot to establish the viability of regeneration of the Warkworth Sands Woodlands EEC however this has only recently been commenced. It is concerned that no information currently exists to substantiate that the EEC can be successfully regenerated and that no information is available to quantify the likely cost should the regenerated land not meet OEH's performance criteria 15 years post commencement. The Commission is of the view that the proposed regeneration of the Warkworth Sands Woodlands EEC in the Northern and Southern Biodiversity Areas is critical to the ongoing viability of the EEC and to the acceptability of the proposed offsets. Accordingly it considers that prior to any development approval additional information should be required to:

- substantiate the viability of the proposed regeneration
- quantify the indicative cost of undertaking this work 15 years post commencement should the Applicant's regeneration program be unsuccessful as assessed against OEH's agreed performance criteria, as a basis for determining the bond.

The Commission also considers that if the bond is forfeited by the Applicant it should be used by OEH for the regeneration of Warkworth Sands Woodlands EEC not for other strategic conservation initiatives as currently proposed.

Recommendation

3. Prior to any development approval further additional information be provided to:
 - (a) substantiate the viability of the proposed Warkworth Sands Woodlands EEC regeneration
 - (b) quantify the indicative cost of undertaking this work 15 years post commencement should the Applicant's regeneration program be unsuccessful as assessed against OEHs agreed performance criteria, as a basis for determining the bond. The bond proposed in condition 33(b) (Schedule 3) should be amended to reflect the estimated cost of the proposed regeneration works to ensure that these works are able to be undertaken.
4. Condition 34 (Schedule 3) should be amended to require the bond required by condition 33(b) to be used by OEH for the regeneration of Warkworth Sands Woodlands EEC in the local area should it be forfeited.

5.6.6 EPBC Act Approval

A number of parties have raised concerns that the approval of the 2010 Warkworth Extension Project by the Commonwealth Minister for the Environment under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) on 9 August 2012 (EPBC approval no. 2009/5081) is not valid for the current application as the application is new and separate from the previous application. The Commission notes that the Commonwealth approval was not affected by the LEC decision and that the disturbance and required biodiversity offsets associated with the proposal are covered by the 2012 Commonwealth approval. Accordingly the Commission is satisfied that no further approval is required under the EPBC Act.

5.6.7 Summary

The Commission has given careful consideration to the impacts of the proposal on biodiversity and in particular has had regard to the findings of the LEC decision in relation to the previous 2010 Warkworth Extension Project and its implications for the current application. Detailed consideration has also been given to issues raised in the Public Hearing and submissions.

The legislative and policy framework has changed since the LEC decision and accordingly the current 2014 Warkworth Extension Project is required to be assessed in light of current controls and policy requirements.

In general the Commission is of the view that the proposal is likely to be consistent with government policy in relation to biodiversity offsetting and impacts however additional information is required prior to it being able to reach a conclusion in this regard.

Recommendations

1. Further detail should be provided which includes a clear and transparent strategy to achieve ecosystem and species credit requirements as required by the NSW Biodiversity Offset Policy for Major Projects.
2. Further justification should be provided to indicate why the Project should not be required to secure outsets before development commencement as required by the NSW Biodiversity Offset Policy for Major Projects. Alternatively conditions of consent should be amended to

comply with the Policy and require that offsets be secured prior to commencement of development.

3. Prior to any development approval further additional information be provided to:
 - (a) substantiate the viability of the proposed Warkworth Sands Woodlands EEC regeneration
 - (b) quantify the indicative cost of undertaking this work 15 years post commencement should the Applicant's regeneration program be unsuccessful as assessed against OEHS agreed performance criteria. The bond proposed in Condition 33(b) (Schedule 3) should be amended to reflect the estimated cost of the proposed regeneration works to ensure that these works are able to be undertaken.
4. Condition 34 (Schedule 3) should be amended to require the bond required by condition 33(b) to be used by OEH for the regeneration of Warkworth Sands Woodlands EEC in the local area should it be forfeited.

5.7 FINAL VOID

5.7.1 Introduction

Various concerns have been raised in relation to the final void proposed to be left post mining. Concerns include the size of the void, water quality impacts and cumulative impacts of voids from mining projects across the Hunter Valley. Views have also been expressed that the Applicant should be required to backfill all or at least part of the void to minimise impacts on the local topography and groundwater systems.

5.7.2 Proposal

The Warkworth Project proposes a final void be left post mining that would operate as a permanent ground water sink. It is not proposed that this void be filled or rehabilitated as part of the project. The size of the void is estimated to be 950ha in area if measured at the pre-mining natural surface level of RL80m AHD or 445ha in area if measured at the in-pit lake ground water recovery level of RL-10m AHD. The void would have a maximum depth of 300m (as illustrated in Figure 7).

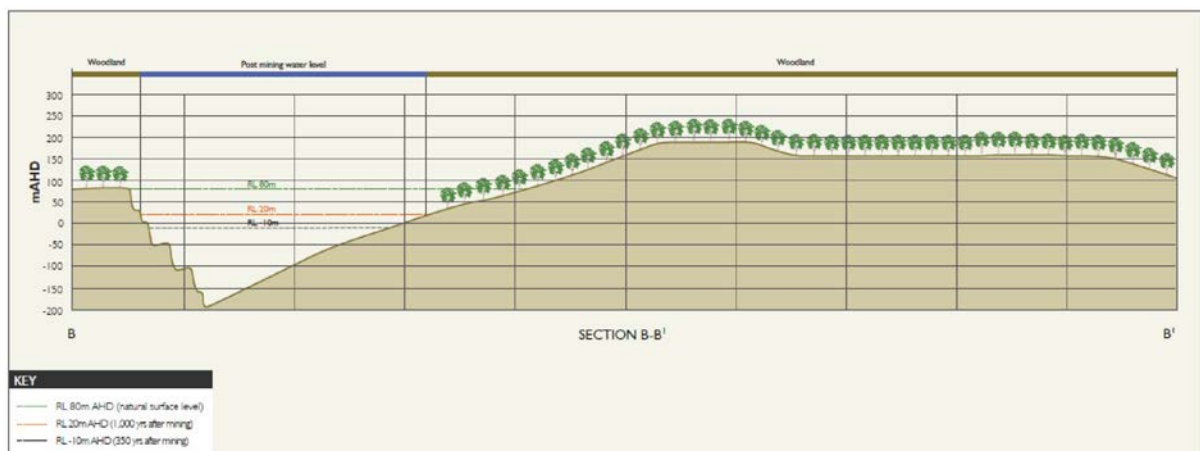


Figure 7: Final void cross section schematic (illustrative only) (Source: Rio Tinto letter to Department, Feb 2015)

As detailed in the EIS the void would receive inflows of water through seepage, infiltration, rainfall and runoff and would fill over an estimated 1,000 years post mining to a stabilised level of RL20m AHD at which time it would have a surface area of approximately 576ha.

Documentation submitted with the application indicates that the estimated final water surface level of the void (RL20m AHD) is substantially below the crest of the pit (as illustrated above) and below the localised regional water table. This would prevent poor quality water within the void from migrating to the surrounding groundwater system.

The Commission notes that the project proposes one final void that would be smaller than the two combined voids for Warkworth Mine and Mount Thorley Mine under the current approvals (445ha v current approved 491ha at RL-10m AHD). This is due to the proposed backfilling of the Mount Thorley Mine void with material extracted from Warkworth Mine as part of the current applications.

5.7.3 Size of the final void

As noted above a final void 950ha (measured at the pre-mining natural surface level) in area is proposed. To put the size of the void into perspective the Commission notes that this area equates to an area approximately one sixth the size of Sydney Harbour (5500ha) or the equivalent of approximately 4.3 times the size of Centennial Park (220ha).

The Commission raised concerns regarding the size of the proposed final void with the Department as part of its review and in particular sought additional information on the feasibility, practicality and associated costs of backfilling either all or part of the void. The Department sought additional information on this matter from the Applicant who provided further advice in letter form dated 10 February 2015 (refer Appendix 4). The information provided looked at a number of options to reduce the size, depth and slopes of the void and the relative costs of each option. It includes justification for the proposed final void and indicates that the current proposal incorporates reasonable and feasible measures to reduce the size of the final void at an estimated cost of \$127 million.

The Department's advice to the Commission (refer Appendix 5) indicates that, based on the NSW Resource and Energy rehabilitation cost calculator, the cost of completely filling the void would conservatively equate to a cost in the order of \$2 billion over the life of the mine (\$2.2 million per hectare). It noted that this was likely to be an underestimate of the actual costs and advised that even the minimum cost associated with reshaping aspects of the final landform would be substantial (an additional \$143 million to reduce the total area of the void by 54 ha or a cost of \$2.6 million per hectare). By comparison the Department noted rural land values in the region range from approximately \$2,000 to \$10,000 per hectare.

In addition, the Department advised that some risks and additional impacts would be associated with filling the void. These include risks to water resources as the final void may not act as a groundwater sink and therefore saline water may migrate off the site, as well as increases in dust and noise impacts associated with filling over an extended period. The Department also advised that sourcing the required volume of fill is likely to be difficult.

The Commission notes that the Department has indicated in its assessment report that there are aspects of the final landform that could be improved. In particular, it considers that there may be

opportunities for reducing the size and depth of the final void, partially filling the gap between the two main overburden emplacements, reducing the slopes of the final highwall and/or incorporating additional micro-relief.⁴² To this end the Department has recommended that Warkworth be required to investigate whether there are feasible options for further refinements to the final landform for the site prior to determination of the application. The Commission agrees and notwithstanding the further information provided by the Applicant on this matter considers that the size of the final void as currently proposed is unacceptable. It agrees that opportunities exist to reduce the size of the void and the applicant should be required to demonstrate prior to determination of the application that the size of the proposed final void has been minimised.

Recommendation:

1. The applicant should be required to undertake further investigations to minimise the size and depth of the final void prior to determination of the application. These additional investigations should also consider opportunities to partially fill the gap between the two main overburden emplacements, reduce the slopes of the final highwall and / or incorporate additional micro-relief as recommended by the Department.

In addition the Department has recommended a condition of consent which requires that the site be rehabilitated to the satisfaction of DRE. This is generally to be consistent with the proposed rehabilitation strategy described in the EIS and the following objectives:

- Design as long term groundwater sinks and to maximise groundwater flows across back-filled pits to the final void
- Minimise:
 - The size and depth of final voids
 - The drainage catchment of final voids
 - Any high wall instability risk
 - Risk of flood interaction for all flood events up to an including the 1% AEP.

The Commission considers that this condition is appropriate subject to recommendation 1 above.

5.7.4 Cumulative impact of final voids

The Commission also sought advice on the cumulative impact of final voids from mining within the Hunter Valley and was advised by the Department that approximately 30 final voids are currently approved (not yet complete) in the Hunter Valley with the proposed Warkworth Mine void being one of the largest. The Department noted that whilst it was not aware of the total size of existing and approved voids, it estimated that the area of voids would be very small compared to the total land area of the Hunter Valley (approximately 0.5% of the area of the Upper Hunter region). However, a more useful comparison may be the percentage of areas covered by mine leases and exploration leases, as this would give a more accurate measure of the percentage of land subject to mine disturbance that will be left unusable in perpetuity.

The Commission does not accept that a mining legacy of large voids across the Hunter Valley is acceptable and considers that as a matter of priority a study should be undertaken by the Department to review the cumulative impact of voids in the Hunter Valley including impacts on the

⁴² Secretary's assessment report, p.84

water table and on the future of agriculture. The findings of this study should be used to establish a policy position on final voids for future mining / mine expansion projects.

Recommendation:

2. A study should be undertaken by government as a matter of priority to review the cumulative impact of voids in the Hunter Valley including the impact of these voids in the short, medium and long term on the water table and on the future of agriculture and associated industries in the Hunter Valley. The findings of the study should be used to establish a policy position on voids for future mining projects / mine expansion projects.

5.7.5 Water quality

Concerns have been raised that there are potential interactions between the Wollombi Brook (and its alluviums) and the final void and, in particular, that saline water from the final void may drain back into the Wollombi Brook.

The Commission notes that the proposed final void would operate as a groundwater sink with groundwater, surface runoff and rainfall inflows slowly filling the void to form a water body. As the void fills, the rate of groundwater inflow would slow and eventually a state of equilibrium would occur where the water level in the void would stabilise and the groundwater levels would begin to recover. The rate of recovery would depend on rainfall, with levels of inflow and evaporation rates ultimately influencing the level of the water body, with stabilisation predicted 1,000 years post mining. As the void will act as a groundwater sink in the local groundwater environment, the salinity of water in the final void is not predicted in the EIS documentation to affect salinity in the surrounding aquifer system.

In relation to the matter of water management, the Commission notes that the Department has draft recommended conditions including the preparation and implementation of a Water Management Plan for the development to the satisfaction of the Secretary and prepared in consultation with the EPA, NOW and OEH. Relevant to the final void and groundwater interactions, the Plan is to include:

27. Water Management Plan

.....

(ii) Surface Water Management Plan that includes:

.....

- *Detailed plans, including design objectives and performance criteria for*
 - *Design and management of final voids.....*
- (iii) Groundwater Management Plan which includes:....*
 - *Detailed baseline data on groundwater levels, yield and quality in the region....*
 - *Groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts*
 - *A program to monitor and report on:*
 - *Groundwater inflows to the open cut pits*
 - *The seepage/leachate from water storages, emplacements, backfilled voids and final voids*
 - *The impacts of the development on*
 - *Regional and local(including alluvial) aquifers*
 - *Groundwater supply of potentially affected landowners*
 - *Groundwater dependent ecosystems and riparian vegetation*

- *Base flows to Wollombi Brook*

- *A plan for respond to any exceedances of the groundwater assessment criteria and*
- *A program to validate the groundwater model for the development, including an independent review of the model with every independent environmental audit and compare the modelling results with modelled prediction.*

Having regard to the recommended condition, the Commission is satisfied that the water quality within the final void would not give rise to adverse impacts on water quality within the Wollombi Brook or surrounding groundwater system. The Commission does not consider that any further condition is required in this regard.

5.7.6 Summary

The Commission has given careful consideration to the impacts of the proposed final void and to the issues raised in the Public Hearing and submissions.

The Commission considers that the size of the final void as currently proposed is unacceptable and that opportunities exist to reduce its size. It recommends that the Applicant undertake further work in this regard prior to determination of the application.

Further, the Commission is concerned regarding the cumulative impact of final voids associated with coal mining within the Hunter Valley. It recommends as a matter of priority that a study be undertaken to establish a policy position on voids for future mining projects / mine expansion projects. However, with regard to the current application, the Commission is satisfied that, subject to draft recommended conditions, the final void will not give rise to adverse water quality impacts.

Recommendations

1. The Applicant should be required to undertake further investigations to minimise the size and depth of the final void prior to determination of the application. These additional investigations should also consider opportunities to partially fill the gap between the two main overburden emplacements, reduce the slopes of the final highwall and / or incorporate additional micro-relief as recommended by the Department.
2. A study should be undertaken by government as a matter of priority to review the cumulative impact of voids in the Hunter Valley including the impact of these voids in the short, medium and long term on the water table and on the future of agriculture and associated industries in the Hunter Valley. The findings of the study should be used to establish a policy position on voids for future mining projects / mine expansion projects.

5.8 REHABILITATION

5.8.1 Introduction

Concerns have been raised in public submissions and in the Public Hearing that the Applicant has a poor track record of mine rehabilitation in respect of the existing 2003 consent and that it is not possible to be confident that the additional rehabilitation proposed as part of the current application will be undertaken in a timely manner and to an acceptable standard. Concerns have also been raised that rehabilitation of post-mined land is proposed to be included in biodiversity offsets, with

doubts raised regarding the likelihood that certain ecological communities, especially Warkworth Sands Woodlands EEC, can successfully be rehabilitated as proposed.

5.8.2 Applicant's track record in rehabilitation

The existing 2003 mine consent required that progressive mine rehabilitation be undertaken. However, the community is concerned that rehabilitation undertaken to date has been poor, and that this gives them little confidence that rehabilitation proposed under the current application will be undertaken in a timely manner and to an acceptable standard.

The Commission requested additional advice on this issue from the Department, noting that in the Secretary's assessment report it was stated that 870ha of land had been rehabilitated across the MTW complex at the end of December 2013. In response to the Commission's request, the Department advised that

'Until recently progressive rehabilitation was hampered at the WMT [Mount Thorley Warkworth complex] mines by a number of legacy issues, principally that the mines were operating in a number of different pits reducing the amount of land available for progressive rehabilitation. The Department further notes that these constraints have now been removed to a large extent by the progress of mining operations and that over the last year or so, there has been a significant improvement in both the speed and the quality of progressive rehabilitation at the Warkworth mine.'

The Commission notes this advice. It is conscious that conditions of consent are recommended (refer conditions 56-58, Schedule 3) that would require rehabilitation of the site to the satisfaction of DRE, consistent with the rehabilitation strategy outlined in the EIS. In addition, the rehabilitation is to be consistent with the stated rehabilitation objectives, provide for progressive rehabilitation and be the subject of a detailed rehabilitation management plan. Condition 58 specifies that rehabilitation management plan must:

- (a) Be prepared in consultation with the Department, NOW, OEH, Council and the Community Consultative Committee;*
- (b) Be prepared in accordance with any relevant DRE guidelines;*
- (c) Be submitted to the DRE for approval prior to carrying out any development under this consent;*
- (d) Include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);*
- (e) Describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform including final voids, and final land use;*
- (f) Include interim rehabilitation where necessary to minimise the area exposed for dust generation;*
- (g) Include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and*
- (h) Building to the maximum extent practicable on the other management plans required under this consent.*

The Commission considers that the above requirements for the Rehabilitation Management Plan are appropriate but should also include timeframes for achieving specified rehabilitation benchmarks, with penalties to be enforced if these benchmarks are not met.

Otherwise the Commission considers that, having regard to the draft recommended conditions (as amended), the progressive rehabilitation of the site should be undertaken in a timely manner and to the required standard as overseen by DRE.

Recommendation:

1. Recommended Condition 58 (Schedule 3) should be amended to include timeframes for achieving specified rehabilitation benchmarks with penalties to be enforced if these benchmarks are not met.

5.8.3 Offsetting of rehabilitation mine land

The biodiversity strategy proposed as part of the application, as certified by OEH, includes substantial reliance on rehabilitation of post-mined land to retire biodiversity credits required as a result of vegetation clearing. Concerns have been raised that this is not appropriate, that mine rehabilitation should be a requirement of development and that rehabilitated land is not appropriate for biodiversity offsetting.

The Commission notes that the *NSW Biodiversity Offsets Policy for Major Projects (2014)* now provides for the use of mine rehabilitation for offsets. This is a significant shift in biodiversity policy of which members of the public may not be fully aware. It is understood, as advised by the Department and OEH, that this recent policy position is intended to create an incentive for good quality rehabilitation (credits are generated for rehabilitation substantially superior than standard rehabilitation) and also because mine rehabilitation has the potential to make a significant contribution to biodiversity conservation values over the medium to long term. However, it is noted that due to the risks associated with rehabilitating land, a 50 per cent discount is applied to biodiversity credits generated.

Given that mine rehabilitation for biodiversity offsetting is now explicitly provided for in government policy, the Commission accepts that the proposed approach is valid. However, it remains concerned over the timing of the offsetting of such land. In this regard, the Commission notes that the Department has recommended a condition of consent requiring that offsets associated with mine rehabilitation are to be retired within 10 years of completion of mining operations (refer proposed condition 29, Schedule 3). If the required credits cannot be retired in that time through mine rehabilitation, the condition provides that they must be retired through another means i.e. bio banking, payment to an offset fund or providing supplementary measures. The Commission agrees that within the framework of the Biodiversity Offset Policy, this is acceptable.

5.8.4 Warkworth Sands Woodlands Rehabilitation

The biodiversity strategy proposed as part of the application includes the rehabilitation of approximately 160ha of native grasslands derived from Warkworth Sands Woodlands back to Warkworth Sands Woodland EEC. A number of parties have raised concerns over the viability of regeneration of the Warkworth Sands Woodland EEC. This matter has been addressed in detail in section 5.6.

The Commission has concluded that the proposed regeneration of the Warkworth Sands Woodlands EEC in the Northern and Southern Biodiversity Areas is critical to the ongoing viability of the EEC and to the acceptability of the proposed offsets. Accordingly, as set out in section 5.6, the Commission

has recommended that prior to any development approval additional information should be required to:

- substantiate the viability of the proposed regeneration
- quantify the cost of undertaking this work 15 years post commencement should the Applicant's regeneration program be unsuccessful as assessed against OEH's agreed performance criteria.

The Commission also has recommended that if the bond is forfeited by the Applicant it should be used by OEH for the regeneration of Warkworth Sands Woodlands EEC not for other strategic conservation initiatives as currently proposed (refer section 5.6 above for further detail).

5.8.5 Summary

In relation to rehabilitation the Commission is satisfied that, subject to draft recommended conditions, rehabilitation of the site will be undertaken in a timely manner and to an acceptable standard.

In respect of the proposed biodiversity offsetting of post mined rehabilitated land, the Commission accepts that this is consistent with existing government policy and that adequate safeguards are proposed to ensure only land rehabilitated to an acceptable standard is used for offsetting and that if rehabilitated land does not meet this standard, other means will be used to retire the required credits.

Recommendation:

1. Recommended Condition 58 (Schedule 3) should be amended to include timeframes for achieving specified rehabilitation benchmarks with penalties to be enforced if these benchmarks are not met.

5.9 WALLABY SCRUB ROAD

5.9.1 The proposal

The Warkworth Continuation Project involves extending the existing operations through a 5.4 kilometre section of Wallaby Scrub Road to the west of Warkworth mine to access coal located beneath its current alignment. The roadway is not proposed to be relocated. Instead, current traffic would be detoured via Putty Road and the Golden Highway. The road currently carries approximately 875 vehicle movements per day with an estimated 25 per cent of these vehicles travelling to and/or from Bulga village⁴³.

Wallaby Scrub Road forms part of the former Great North Road. Other sections of this road are listed on the World Heritage Register however this section is not.

The rationale provided by the Applicant for the closure of the road is provided in the RTS report and is summarised as follows:

- The proposed mine plan requires the removal of Wallaby Scrub Road to access the coal measures below and to ensure the maintenance of strike length for the dragline operations

⁴³ Secretary's assessment report, p.72

- The section of road impacted lacks integrity and intactness when compared to other surviving sections of the road elsewhere along its total alignment, particularly those sections which are listed on the World/National/State and local heritage registers/lists
- There have been previous disturbances to the road resulting from 20th century road upgrades and maintenance activities over the last 40 years. Consequently, previous survey findings presented in the Conservation Management Plan assessed the heritage integrity of the road to be low.

The Applicant has committed to the following mitigation and management measures in relation to the closure of Wallaby Scrub Road:

- Preparation of a Road Closure Implementation Plan, in consultation with emergency services, the RMS and Singleton Council
- Construction of an emergency access track/trail between Putty Road and the Golden Highway prior to the closure of Wallaby Scrub Road. The trail will be constructed in accordance with the access standards of the Rural Fire Service and in consultation with the emergency services
- Review of existing speed advisory and curve warning signs for all roads likely to be used by detoured traffic (Putty Road, Broke Road and the Golden Highway) prior to the closure of Wallaby Scrub Road.

5.9.2 Heritage considerations

The Department has advised that five small areas of archaeological potential have been identified along the impacted section of the road, consisting of sub-surface remains associated with the early road system.

The Heritage Council's original submission to the Department (dated 24 July 2014) raised concern regarding the closure of Wallaby Scrub Road to allow for the expansion of Warkworth mine. The Heritage Council recommended that due to the cumulative impact of mining on sections of the Great North Road alignment, and the significance of the road alignment, the proposal should be redesigned around the current alignment of Wallaby Scrub Road. However, following the submission of additional information in the RTS report, the Heritage Council advised the Department that it no longer has concerns, largely as a result of the Bulga Optimisation Project not proceeding with plans to disturb a four kilometre section of Charlton Road, which is also part of the Great North Road alignment.

The Applicant has committed to the following heritage conservation works:

- Undertaking further archaeological investigations of the sections of road with archaeological potential, prior to commencing work
- Updating the existing Conservation Management Plan for the road
- Engaging a suitably qualified and experienced historical archaeologist to undertake a historical interpretation program
- Providing additional funding for heritage conservation works on significant surviving elements of the Great North Road located within the Singleton LGA (and potentially other areas)
- Provision of landscape features marking the original road alignment within the final landform design.

5.9.3 Relocation of Wallaby Scrub Road

The Secretary's assessment report considers the feasibility of relocating the impacted section of Wallaby Scrub Road to the west of Warkworth mine. In doing so, it is recognised that there are significant ecological and archaeological constraints west and north of the proposed mining area, limiting relocation options.

A comparison of the potential impacts associated with the closure and relocation of the road is provided in Table 11.

Table 11: Comparison of the impacts associated with the closure and relocation of Wallaby Scrub Road

Aspect	Closure of Wallaby Scrub Road	Relocation of Wallaby Scrub Road
Travel Time	<ul style="list-style-type: none"> An additional 6 minutes to/from Bulga village An additional 4 minutes to/from the intersection of Broke Rd and Charlton Rd 	<ul style="list-style-type: none"> An additional 2 minutes An additional 2 minutes
Ecology	<ul style="list-style-type: none"> No additional ecological impacts 	<ul style="list-style-type: none"> Clearing of 32.1 ha of EEC woodland, including 3.3 ha of WSW EEC Fragmentation and edge effects associated with proposed Southern Biodiversity Area
Aboriginal Cultural Heritage	<ul style="list-style-type: none"> No additional cultural heritage impacts 	<ul style="list-style-type: none"> Potential impacts on Aboriginal heritage sites and proposed Wollombi Brook Aboriginal Cultural Heritage Conservation Area.
Construction Noise	<ul style="list-style-type: none"> No additional impacts 	<ul style="list-style-type: none"> Three residences likely to experience construction noise in excess of criteria
European Heritage	<ul style="list-style-type: none"> Minor impact on former RAAF base runway Removal of a non-listed section of the Great North Road 	<ul style="list-style-type: none"> Impact over full extent of former RAAF base runway Relocation of a non-listed section of the Great North Road
Economics		<ul style="list-style-type: none"> Net cost of \$15.4M

Based on the above, the Department's conclusion is that relocation of Wallaby Scrub Road is not a feasible option. Relocation would result in additional and avoidable impacts on Aboriginal heritage and EECs, in particular the Warkworth Sands Woodland.

The current usage level of Wallaby Scrub Road is considered by the Department to be relatively low. The additional travel times anticipated as a result of the proposed closure of the road would not be significantly greater when compared to travel times associated with relocation. Furthermore, the Department considers that the costs associated with relocation (to both the Applicant and the community in terms of ongoing maintenance), are unlikely to outweigh the benefits which would be gained by a small proportion of road users.

5.9.4 Council's view

Singleton Council is the owner of the affected road reserve and is the road authority in this instance. Therefore, closure of the road would require Council approval under the *NSW Roads Act 1993* as part of any future determination.

The Commission met with representatives of Singleton Council on 9 December 2015. At this meeting Council explained that in the past it had opposed the closure of Wallaby Scrub Road. This was primarily due to the resulting visual impacts, loss of Aboriginal heritage and biodiversity and the

detrimental impacts on Bulga village. However, the current Council is aware of a recent downturn in the mining market and has concerns regarding the future of Singleton if this downturn continues. Notwithstanding this, the Council still has the following concerns regarding the proposed closure of Wallaby Scrub Road:

- Closure of the road would allow the mining operation to continue toward Bulga village
- Closure of the road would cause an inconvenience to motorists and would hinder emergency services attending incidents in a timely manner
- Wallaby Scrub Road is a significant Council asset and its value to the community would be a lost if it is closed
- Wallaby Scrub Road and Saddleback Ridge are the demarcation points between mining and rural/residential areas. Closure of the road would facilitate the continued encroachment of mining operations towards Bulga village.

Council's view is that the residual local social and environmental impacts associated with the proposal are critical to the determination of the project and there should be a separate compensation process for the closure of the road, based on land valuation.

5.9.5 Community concerns

At the Public Hearing and in the written submissions, the community has expressed similar concerns to those listed above regarding the proposed closure of Wallaby Scrub Road. The road is widely considered to have a high level of usage and the potential impacts of its closure are thought to be significant. The impacts are expected to directly affect businesses in Bulga village that rely on road users for patronage and locals who will have to travel further and incur additional expense and time to reach their destination.

The community is also frustrated about the closure of the road, for similar reasons to those expressed regarding the proposed removal of Saddleback Ridge. Since the 2003 consent and Deed of Agreement were issued, there has been an understanding that these landmarks would be preserved indefinitely. Consequently, Wallaby Scrub Road is perceived by the community as the outer limit of mining, particularly for the residents of Bulga village.

The community also raised concern regarding the heritage significance of Wallaby Scrub Road, as it is part of the Great North Road designed by Sir Thomas Mitchell.

5.9.6 Department's view

Having considered the option of relocation, the Department supports the closure of the Wallaby Scrub Road, subject to heritage conservation initiatives. The Secretary's assessment report explains that the viability of the Warkworth Continuation Project would be severely compromised if Wallaby Scrub Road was retained.

To strengthen the commitments made by the Applicant, the Department has recommended draft conditions, including:

- The Applicant is to fund the relocation of the Rural Fire Service to allow for quicker response times following the closure of Wallaby Scrub Road
- Requirement for the proposed landscape features marking the original road alignment to be detailed in the Rehabilitation Management Plan for the project

- Requirement for the Applicant to contribute to the upgrade of the Golden Highway/Putty Road and Mitchell Line of Road intersection, as required by RMS.

5.9.7 Summary

The Commission understands that the public interest considerations relating to Wallaby Scrub Road require careful consideration. The Commission has therefore examined the arguments for and against the proposed road closure very carefully.

The Commission acknowledges that there are limited opportunities to develop new mines in the Hunter Valley region, and this highlights the significance of the coal resources available at Warkworth and Mount Thorley mining complex. The approach supported by the Department, of maximising the extraction of coal from reserves located within or adjacent to existing mines and relying on existing infrastructure, is considered reasonable.

With regard to travel time and inconvenience for the residents of Bulga village, the Commission understands that while the proposed detour may inconvenience motorists, it is likely to improve travelling conditions due to road construction standards on the Golden Highway. In addition, the detoured traffic would not significantly impact the capacity of the detoured roads and relevant intersections⁴⁴. Based on the information provided, the Commission agrees with the Department that the relocation of Wallaby Scrub Road is not a feasible option.

The Commission notes that there is currently insufficient detail provided regarding compensation to Singleton Council for the closure of the road. This issue will need to be addressed by Council and the Applicant.

On balance, the Commission supports the closure of Wallaby Scrub Road, subject to the commitments made by the Applicant and the Department's draft recommended conditions in relation to emergency access, road upgrades and heritage conservation. The Commission supports the principle that compensation should be paid to Singleton Council by the Applicant for the loss of a community asset.

5.10 OTHER ISSUES

5.10.1 TRAFFIC AND TRANSPORT

Chapter 20 of the EIS provides a summary of the traffic and transport study prepared by EMGA Mitchell McLennan in June 2014. According to the EIS, the proposed expansion of the Warkworth mine will not change the existing employee traffic volume and the truck traffic would largely remain at current level. The proposed closure of Wallaby Scrub Road would result in minor traffic impacts on the wider road network. An emergency access road/fire trail will be constructed between Putty Road and the Golden Highway to allow emergency vehicle to access areas west of the Wallaby Scrub Road. As there is no projected increase in annual train movements, the proposed expansion is not expected to cause any rail transport impacts. Management measures include preparation of a road

⁴⁴ Singleton Council (2014) Planning and Sustainable Environment Report – DP&SE40/14, 18 August 2014

closure implementation plan for Wallaby Scrub Road, construction of the emergency access road and a review of existing speed advisory and curve warning signs.⁴⁵

The key issues raised in the Singleton Council and public submissions included:

- the closure of Wallaby Scrub Road
- the increase in Rural Fire Service response time via the new emergency vehicle access/fire trail due to the closure of the Wallaby Scrub Road
- the redirection of traffic due to the closure of Wallaby Scrub Road will result in additional traffic on the Putty Road and Golden Highway intersection.

Council in its submission advised that the Rural Fire Service (RFS) has indicated its acceptance of the proposed emergency access road, provided it is constructed in accordance with the RFS's access standards.

The Roads and Maritime Services (RMS) has no objection to the proposal if its concerns are met and included in the planning approval. The recommendations are:

- The applicant to contribute \$1 million to the upgrade of the Putty Road/Mitchell Line of Road intersection, or alternatively carry out upgrade works of an equivalent value on the intersection to its satisfaction
- The existing intersection of Lydes Lane and the northbound on load ramp of the Golden Highway should be closed to ensure road safety and maintain network efficiency
- The proposed third bridge crossing of the Putty Road should be designed and constructed to its satisfaction.

The Applicant in its RTS disagreed with the RMS's contribution requirement as it is of the view that the intersection is part of the State road network and its EIS intersection assessment indicated minimal change in any of the intersection delay parameters at this intersection.

The Secretary's assessment report provided a detail assessment of the transport and traffic issue and concluded that the local and regional road network is capable of accommodating the traffic associated with the proposed expansion subject to the identified upgrade works. The Department agrees with the RMS that the Applicant should pay a contribution of \$1 million towards the upgrade of the Golden Highway/Putty Road and Mitchell Line of Road intersection, and design and build the Putty Road underpass/bridge to the satisfaction of the RMS. Draft conditions have been included accordingly.

The Commission finds the Secretary's assessment report adequately addressed the issues raised and the recommendations are reasonable.

⁴⁵ Page 351, *Warkworth Continuation 2014 Environmental Impact Statement Volume 1*, prepared by EMGA Mitchell McLennan, June 2014

5.10.2 Aboriginal Archaeology

The proposed Warkworth Continuation Project has the potential to result in both positive and negative impacts in terms of Aboriginal archaeology. Key issues raised in relation to this aspect of the proposal in the Public Hearing and submissions include:

- impact on Aboriginal cultural heritage
- the views of the Aboriginal community not fully considered
- the special significance of Saddler's Ridge (or Saddleback Ridge) as a pathway to Baiamai Cave and Yengo Flat Rock sacred sites.

The project includes the conservation in perpetuity of the Wollombi Brook Aboriginal Cultural Heritage Conservation area (WBACHCA) as shown in Figure 8 below. The WBACHCA has an area of 696ha (183ha larger than previously proposed as part of the 2003 Warkworth Extension Project) located within the Southern Biodiversity Area and is proposed to be co-managed in partnership with the Aboriginal community. The WBACHCA includes approximately 265 identified Aboriginal cultural heritage places including significant spiritual and ceremonial places.

The Commission notes that the Department and OEH support the proposed WBACHCA and have draft recommended conditions to formalise and strengthen the Applicant's commitment to the WBACHCA in terms of conservation and enhancement. The Commission supports both the Applicant's commitment and the draft recommended conditions.

In terms of impact on known Aboriginal sites, the archaeological assessment included in the EIS identifies 110 extant Aboriginal sites (including two partially destroyed sites) within the area to be impacted by the project (as illustrated on Figure 8 below). The sites and proposed management are as outlined in Table 12 below:

Table 12: Summary of Aboriginal Sites and Archaeological Significance (Proposed Management in Brackets)

Site type	High significance	Moderate significance	Low significance	Number of sites impacted
Stone artefacts	-	-	103 (SC)	103
Stone artefacts/PAD	-	3 (SC+E)	-	3
Axe-grinding grooves	1 (R)	-	-	1
Scarred tree + artefacts	1 (RR+SC)	-	-	1
Scarred tree	2 (RR)	-	-	2
Total	4	3	103	110

Legend:

SC – Surface Collection

SC + E – Surface Collection and Excavation

R – Detailed Recording & Attempted Relocation

RR – Removal & Relocation

(Source: Secretary's assessment report, p.62)

As detailed in OEH's submission (Aug. 2014), the Applicant proposes the following management commitments with respect to Aboriginal cultural heritage:

- Finalising an integrated Heritage Management Plan (HMP) for both Warkworth Mine and Mount Thorley
- The 110 extant places will only be impacted where unavoidable with avoidance the preferred option

- Implementation of agreed impact measures to be staged over time so that measures such as archaeological salvage will be implemented no more than 5 years in advance of mine operation requirements
- Until such time that agreed impact measures need to be implemented, all Aboriginal cultural heritage within the proposed extension will continue to be managed in accordance with the current HMP, avoidance and physical protection will compromise the key management strategy in this period
- If and when mitigation becomes necessary, areas containing stone artefact sites will be managed in accordance with the current HMP, including standard salvage collection measures and controlled collections in consultation with OEH
- If and when mitigation becomes necessary, sub surface testing of the three areas of potential archaeological deposits (PADs) will be investigated and managed in accordance with the HMP and in consultation with OEH
- If and when mitigation becomes necessary, the registered three scarred trees will be managed in accordance with the current HMP and the RTCA Scarred Tree Management Procedure. This may include removal and relocation. This should include consultation with OEH
- Investigations should continue into the feasibility of moving “Site M” grinding grooves – this should include consultation with OEH
- Any unknown Aboriginal sites or objects recovered will be managed in accordance with the HMP
- The Aboriginal community will be involved in the implementation of all impact management measures consistent with the existing Cultural Heritage Working Group (CHWG) processes and protocols
- The Aboriginal objects collected will be curated and stored in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (OEH, 2010), until an adequate facility is established within the WBACHCA. All objects will be stored in the secure facility at Hunter Valley Services.
- The Commission notes that both the Department and OEH have indicated their strong support for the proposed commitments. They have also noted that local Aboriginal groups (with the exception of one party who refused to be involved), while indicating that they would prefer that no additional disturbance occur, have indicated that the management commitments are acceptable.
- Concerns have also been raised regarding the special significance of Saddler's Ridge (or Saddleback Ridge) as a pathway to Baiamai Cave and Yengo Flat Rock sacred sites to the Wonnarua people. It has been claimed that the value of the ridge is in its landscaped scale and ‘cannot be captured or replaced by relocated artefacts, set-aside areas, or compensation payouts’ (Lock the Gate Alliance, Jan. 2015). The Commission notes that this matter has not been explicitly addressed in the Aboriginal cultural heritage assessment or in the Secretary’s assessment report. However, the Commission considers that the assessment undertaken as part of the application is comprehensive and that the proposed management commitments are appropriate. The Commission considers that the landscape and cultural significance of the site and the wider locality have been addressed in the assessment and notes that the land has been identified as being of high cultural and archaeological significance. Notwithstanding, it is agreed

that subject to the draft recommended conditions, conservation and management of the WBACHCA and proposed management commitments, the impact of the proposal on Aboriginal archaeology (including Saddleback Ridge) is acceptable.

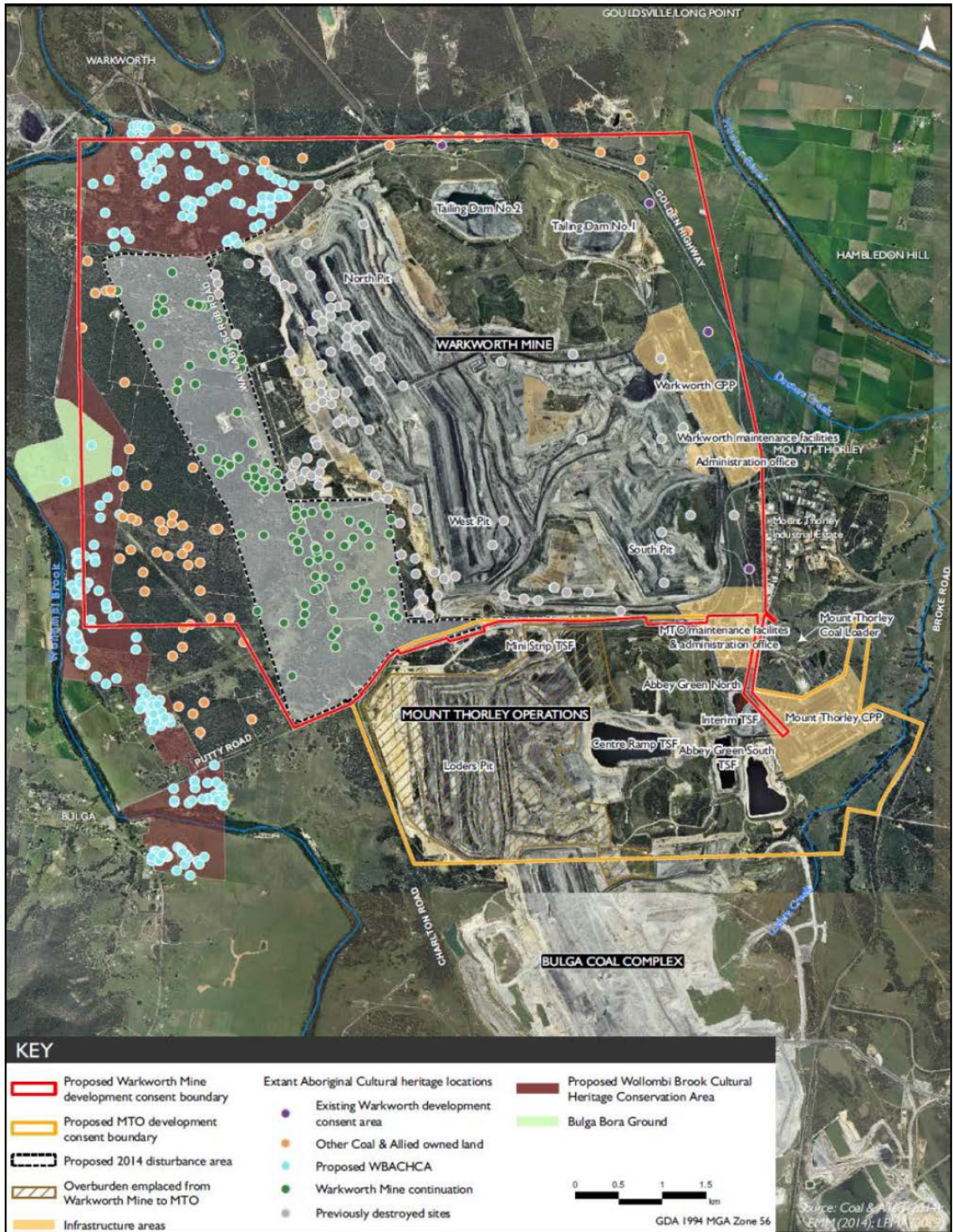


Figure 8: Aboriginal heritage sites

(Source: Secretary's assessment report, p.61)

5.10.3 Water Resources

The only significant issue raised in submissions and at the Public Hearing in respect of water resources relates to the potential for water within the final void to impact on groundwater and in particular the Wollombi Brook alluviums. This matter has been addressed by the Commission in section 5.7 of this report.

In summary, subject to relevant conditions of consent the Commission is satisfied that the water quality within the final void would not give rise to adverse impacts on water quality within the Wollombi Brook or surrounding groundwater system.

In respect of the potential impact of the proposal more broadly on surface and groundwater resources in the locality, the Commission notes that the NSW Office of Water has advised that it is satisfied that the project would not have any significant impacts over and above the impacts associated with the existing approved project. The Department has recommended a broad suite of conditions to ensure the ongoing management and protection of water resources in the vicinity. The Commission considers that these conditions are appropriate and represent best practice measures.

6 CONCLUSION AND RECOMMENDATIONS

The Commission has carefully considered the application for the Warkworth Continuation Project. The Commission has also considered the submissions made to the Commission and to the Department of Planning and Environment, the issues raised at the Public Hearing, advice from government agencies, and other documents referred to throughout this report.

The Commission considers that it is undeniable that the Warkworth Continuation Project will result in significant economic benefits to both the State and the region. In summary these benefits include:

- Extraction of more than 230 Mt of high grade thermal and semi-soft coking coal at a maximum rate of 18 Mtpa of ROM coal over the next 21 years
- Production of approximately 10 per cent of NSW's total volume of export coal, and a significant proportion of the ongoing production of coal from the Hunter Valley
- Net capital expenditure with a net present value (NPV) of \$715 million
- The continuation of approximately 1,187 jobs (on average) for an additional 14 years
- The payment of \$567 million in royalties in NPV terms to the State.

The Commission also notes that the project (in conjunction with the Mount Thorley project) will result in indirect economic benefits. Approximately 35 per cent of the mine complex's employees and long-term contractors live in the Singleton local government area; and it is estimated that the local flow-on effect from the mines' expansion would be \$84 million in additional income and the continued employment of 61 full-time equivalent workers.

The Commission has given careful consideration to the key issues raised in relation to the application including economic, social, noise, visual, air quality, biodiversity, traffic and transport, Aboriginal archaeology and water impacts as well as the impacts of the proposed final void, rehabilitation and of the closure of Wallaby Scrub Road.

In conclusion, the Commission has made a number of significant recommendations and requires further information on a variety of matters prior to determination of the subject application. Whilst the Commission notes that the current application is very similar to the previous Warkworth Extension Project that was refused by the LEC, significant legislative and policy changes have occurred since that time. The Commission is required to consider the current legislative and policy environment in its review of the application. Further changes have been made to the application to address issues raised in the LEC decision.

The Commission recognises that the project provides for mining of a significant resource and will have very significant direct and indirect economic and social benefits for the State and the Hunter region. It further notes that if the project was not approved, there would be substantial adverse economic impacts especially to the towns of Singleton and Cessnock. These impacts include the loss of significant royalties to the NSW government, a reduction in infrastructure projects to the Hunter region and lower wage and salary income for both current employees and contractors.

Notwithstanding the economic benefits of the project to the State and the region, the Commission considers that the project will undoubtedly have a range of adverse impacts on Bulga village and its community. In light of these impacts the Commission recommends that consideration should be given to compensating property owners; potentially relocating the village; developing an

enhancement strategy for the village; or undertaking a program of works prior to any determination of the application.

Notwithstanding the above comment, the Commission considers that, subject to the detailed recommendations outlined in the report, the project is consistent with government policy and legislation and is capable of being approved.

Recommendations

Economic Impacts

1. The Applicant's economic assessment, including the CBA, should be updated to reflect the current economic climate.
2. As part of the determination of the project, DAE should review the additional information provided by the applicant and any updated economic assessment/CBA provided by the applicant and provide updated advice to the Department as required.
3. The following options should be considered for the future of Bulga village:
 - a. Compensating property owners who wish to sell. This compensation would be paid by the Applicant and the compensation amount would be the difference between movements in the average regional/sub-regional property price and that of local property sale prices based on an independent valuation process. A dispute resolution process would also need to be agreed
 - b. Relocating the village at the expense of the state government and Applicant. The government would be required to deliver all new infrastructure, while the Applicant would be required to pay for the construction of new houses. Any relocation decision and associated planning would need to involve the residents of Bulga
 - c. Requiring the Applicant to develop a Village Enhancement Strategy in consultation with the local community and Council and to fund and implement a program of works or similar via a VPA with the Minister and Council.

Noise

4. The acceptability of setting noise limits above the PSNL should be considered by the NSW government, ideally via a review of the INP.
5. The question of how often calm conditions occur in the area should be independently verified by the Department before the application is determined
6. To ensure the benefits of the attenuation program will be fully realised, regular monitoring and audit of the performance of the attenuated fleet and equipment should be carried out
7. A public information briefing session should be held to clarify the operation of the Trigger Action Response Plan
8. Draft recommended conditions 8 and 9 in Schedule 2 and draft recommended conditions 4 and 5 in Schedule 3 should be amended to ensure that when the new consent commences, the new noise criteria should apply and the noise criteria in Condition 18 of DA-300-9-2002-I be attached as an appendix to the new consent if the subject application is approved.
9. The Applicant should update its Statement of Commitments to provide acquisition and mitigation rights to those properties which were granted such rights under the now repealed approval. The terms of these rights should be similar to those that would be granted under the approval conditions should the application be approved

10. The recommended public information briefing session referred to in Recommendation 4 should include a briefing on the application of the LFN modification factor and the purposes of different types of monitoring as well as the operation of the Trigger Action Response Plan
11. The concerns raised in the SKM report that insufficient data was collected to enable it to assess the accuracy of ongoing routine noise monitoring carried out by the Applicant should be addressed before determination of the current application
12. The conditions in any approval should require the application of an appropriate noise modification factor for LFN during compliance testing if LFN is prevalent before comparison with the PSNL in the approval. However, if a new INP is adopted before the determination of this application, the new INP methodology and criteria should apply
13. Up-to-date information should be provided on both the Rio Tinto website and hotline with respect to blasting schedule.

Air Quality

14. Clarification should be provided in relation to Location 264 as to whether this property should be granted acquisition rights as part of any future approval of the subject application having regard to air quality impacts.
15. Prior to any approval conditions 17-19 should be amended to require compliance with established criteria.

Biodiversity

16. Further detail should be provided which includes a clear and transparent strategy to achieve ecosystem and species credit requirements as required by the NSW Biodiversity Offset Policy for Major Projects.
17. Further justification should be provided to indicate why the Project should not be required to secure outsets before development commencement as required by the NSW Biodiversity Offset Policy for Major Projects. Alternatively conditions of consent should be amended to comply with the Policy and require that offsets be secured prior to commencement of development.
18. Prior to any development approval further additional information be provided to:
 - (a) substantiate the viability of the proposed Warkworth Sands Woodlands EEC regeneration
 - (b) quantify the indicative cost of undertaking this work 15 years post commencement should the Applicant's regeneration program be unsuccessful as assessed against OEHS agreed performance criteria. The bond proposed in Condition 33(b) (Schedule 3) should be amended to reflect the estimated cost of the proposed regeneration works to ensure that these works are able to be undertaken.
19. Condition 34 (Schedule 3) should be amended to require the bond required by condition 33(b) to be used by OEHS for the regeneration of Warkworth Sands Woodlands EEC in the local area should it be forfeited.

Final Void

20. The Applicant should be required to undertake further investigations to minimise the size and depth of the final void prior to determination of the application. These additional investigations should also consider opportunities to partially fill the gap between the two main overburden emplacements, reduce the slopes of the final highwall and / or incorporate additional micro-relief as recommended by the Department.
21. A study should be undertaken by government as a matter of priority to review the cumulative impact of voids in the Hunter Valley including the impact of these voids in the short, medium and long term on the water table and on the future of agriculture and associated industries in

the Hunter Valley. The findings of the study should be used to establish a policy position on voids for future mining projects / mine expansion projects.

Rehabilitation

22. Recommended Condition 58 (Schedule 3) should be amended to include timeframes for achieving specified rehabilitation benchmarks with penalties to be enforced if these benchmarks are not met.

SELECTED REFERENCES

BAEconomics	<i>Economic Impact Assessment for Warkworth Continuation 2014 and Mount Thorley Operations 2014</i> , Canberra, 2014
Day Design Pty Ltd	<i>Response to Noise and Vibration Issues</i> , 2014
Deloitte Access Economics	<i>Peer review of economic assessment of Mount Thorley Warkworth extension</i> , November 2014 (Commercial-in-Confidence)
EMGA Mitchell McLennan (EMM)(1)	<i>Warkworth Continuation 2014 Environmental Impact Statement</i> , Volumes 1 and 2, Sydney, June 2014
EMGA Mitchell McLennan (EMM)(2)	<i>Mount Thorley Operations 2014 Environmental Impact Statement</i> , Volumes 1 and 2, Sydney, June 2014
EMGA Mitchell McLennan (EMM)(3)	<i>Warkworth Continuation 2014 Response to Submissions</i> , Volumes 1 and 2, Sydney, November 2014
EMGA Mitchell McLennan (EMM)(4)	<i>Warkworth Continuation 2014 Noise and Vibration Study</i> , Sydney, 2014
Integrated Design Solutions	<i>Warkworth Continuation 2014 Visual Impact Assessment</i> , Sydney, 2014
NSW Environment Protection Authority	<i>NSW Industrial Noise Policy</i> , Sydney, 2000
NSW Government	<i>Voluntary Land Acquisition and Mitigation Policy – SSD Mining</i> , December 2014
NSW Planning and Environment	<i>State Significant Development Assessment Warkworth Continuation Project (SSD-6464) – Secretary’s Environmental Assessment Report</i> , Sydney, November 2014
Sinclair Knight Merz	<i>Mount Thorley/Warkworth Coal Mine Independent Noise Monitoring Report</i> , 30 April 2012
Todoroski Air Sciences	<i>Air Quality and Greenhouse Gas Assessment Warkworth Continuation 2014</i> , Sydney, 2014

LIST OF APPENDICES

- 1. Minister's Terms of Reference**
- 2. List of speakers at the Public Hearing**
- 3. Summary of Meetings**
 - a. 5 December 2014 – Briefing from the Department of Planning and Environment, the Office of Environment and Heritage, the Department of Resources and Energy, the Environmental Protection Authority and the Office of Water
 - b. 9 December 2014 – Briefing to the applicant and site inspection
 - c. 9 December 2014 – Meeting with Singleton Council
 - d. 5 February 2015 – Meeting with the Department of Planning and Environment and noise consultant Dr Norm Broner
 - e. 11 February 2015 – teleconference with Office of Environment and Heritage
- 4. Additional information from the Proponent**
 - a. 10 December 2014 – Cost Benefit Analysis
 - b. 15 December 2014 – Options for refinements to the final landform and void; and predictions for project-alone 24 hours PM₁₀ concentrations for vacant land.
 - c. 16 December 2014 – Biodiversity offset strategy.
 - d. 9 January 2015 – Additional information requested following briefing and site inspection.
- 5. Additional information from the Department of Planning and Environment**
 - a. 17 December 2014
 - b. 18 February 2015
- 6. Additional information from the Environmental Protection Authority - 20 February 2015**
- 7. Additional advice from Dr Norm Broner (noise consultant) - 22 February 2015**