



Planning
Assessment
Commission

Russell Vale Colliery Underground Expansion Project

Second Review Report

Joe Woodward PSM (Chair)
Paul Forward
Andrew Stoeckel

March 2016

Russell Vale Colliery Underground Expansion Project PAC Second Review Report©
State of New South Wales through the NSW Planning Assessment Commission, March 2016.

NSW Planning Assessment Commission
Level 13, 301 George St Sydney NSW Australia
Telephone: (02) 9383 2100
Email: pac@pac.nsw.gov.au
ISBN: 978-0-9942315-8-1

Disclaimer

While every reasonable effort has been made to ensure that this document is correct at the time of publication, the State of New South Wales, its agencies and employees, disclaim all liability to any person in respect of anything or the consequences of anything done or omitted to be done in reliance upon the whole or any part of this document.

The NSW Planning Assessment Commission advises that the maps included in the report are to give visual support to the discussion presented within the report. Hence information presented on the maps should be seen as indicative, rather than definite or accurate. The State of New South Wales will not accept responsibility for anything, or the consequences of anything, done or omitted to be done in reliance upon the mapped information.

Executive Summary

Background

Russell Vale Colliery is an existing underground coal mine under the Woronora Plateau in the Sydney Drinking Water Catchment Area within the Wollongong and Wollondilly Local Government Areas. The pit top facilities are located on the slopes of the Illawarra Escarpment west of the Princes Highway. The suburbs of Russell Vale and Corrimal are located directly to the east and south of the pit top site.

The mine has been in operation since the 1880s using various underground mining methods to mine different coal seams. The nature of underground mining is that subsidence and cracking will occur and have been observed in the catchment area. The extent of subsidence and cracking and their environmental consequences in the area are largely unknown. Prediction of crack occurrence, crack attributes and crack connectivity within the subsidence zone is especially difficult¹. The multi-seam mining that has previously been undertaken makes the prediction even more difficult. The implication of these uncertainties for water quality and quantity in the catchment area is therefore a major issue. Noise and dust from the operations of the existing mine are major concerns to the nearby residents in Russell Vale and Corrimal.

The Application

In August 2009, the Environmental Assessment for the Russell Vale Colliery Underground Expansion Project was lodged with the then Department of Planning. The proposal sought a major expansion to the underground operation to the west of the existing mine. Due to major concerns raised in submissions from the public and government agencies, the application was substantially modified to remove a significant portion of the western part of the expansion area. The current application seeks approval to mine a small area to extract 4.7 million tonnes of coal over a 5-year period.

In December 2014, the Commission was asked to review the project including the holding of public hearings. The Commission's review report was submitted to the Minister for Planning in April 2015. The report was critical of the piecemeal approach to small approvals and concluded that *"the Commission does not have sufficient information or confidence to determine the merits of the proposal sufficient for a determination for approval. It may be possible for the proposal, or a modified proposal to be approved if all the additional information identified in this Review Report provides a greater level of confidence for the protection of water quality and quantity in the Sydney Catchment Area and satisfies all the other issues identified in this review"*. The report included 15 recommendations.

The Commission's Process

On 23 October 2015, the Minister for Planning requested the Commission to carry out a second review of the project including the holding of public hearings. A public hearing was held on 8 December 2015. The Commission received submissions both for and against the proposal. In support of the application, submissions highlighted the regional economic benefits, the positive relationship between the mine and the community, and the outcomes of the Integrated Risk Assessment (IRA). The objections to the mine included adverse impact on the upland swamps located in the Sydney Drinking Water Catchment, risks and impacts on water resources within the catchment, the Integrated Risk Assessment process, historical actions and reputation of the mining company, the adequacy of the cost/benefits analysis, climate change, adverse health impacts, adverse impacts on residential amenity (noise and dust), particularly for the local community, biodiversity and Aboriginal cultural issues.

¹ Mackie Environmental Research Pty Ltd, letter to Planning Assessment Commission dated 7 March 2016, p.5

Commission's Considerations

The Commission continues to have a concern with the incremental approach to the assessment of a project which may have significant environmental consequences in a highly sensitive area, the Sydney drinking water catchment area. This concern was first raised by an earlier Commission panel when determining the 2010 application for a small extension to the existing mine to allow continue operation pending the determination of the current application. The same concern was raised again in the 3 subsequent modifications to the approval of the 2010 application and in the first Commission review of this project. The key issue is the potential cumulative environmental impacts to the catchment area and nearby residents. The "bracket creep" effect is a substantial concern to this Commission.

The Commission's First Review recommended the setup of an integrated assessment process to provide independent inputs into the assessment of the project. The proponent formed an independent panel in response to this recommendation. However the public submissions and the Commission's experts, E/Prof Jim Galvin and Dr Colin Mackie, questioned the adequacy of the process. As pointed out by E/Prof Galvin, the expectation of the process is the assessment team would include *"outside expertise in order to tap into other knowledge and experience; promote discussion and critical evaluation; test assumptions; calculations and analyses; and provide an independent layer of assurance that all meaningful hazards had been identified and appropriately assessed for likelihood and consequence and that proposed controls were sensible and likely to be effective"*.² This appears not to be the case here. It should be noted that the Commission is not questioning the independence of any individual expert on the panel.

Dr Mackie in reviewing the underground water information found weakness in the water modelling. He questioned the suitability of calibration as it appears to be biased with a very limited baseline data and high reliance on the results of one piezometer RV20. He also questioned the interpretation of the results of piezometer RV20.

Despite extensive effort, the Commission's two experts have concluded that the concern about the potential loss of surface water flow due to subsidence and cracking remains uncertain.

WaterNSW, the authority responsible for the care and protection of the catchment area objects to the project because of concern about the risks of water losses to the catchment and water quality impacts and associated treatment costs, should upland swamps be impacted and/or lost, along with their associated ecosystem functions.

The Department of Primary Industries is also concerned about the significant uncertainty in the project impacts to water quantity and quality.

The Office of Environment and Heritage (OEH), Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) and WaterNSW all raised concerns about the risk to upland swamps, an endangered ecological community and the Giant Dragonfly, an endangered species.

The Commission recognises that the upland swamps are complex ecosystems, and predicting the ecological and hydrological response of each upland swamp being undermined is difficult. The Commission notes that while these swamps have been undermined previously, the resulting impact on the swamps remains uncertain, particularly as a result of multi-seam mining. There is general agreement that at least some of the swamps to be undermined would be damaged to some extent by the proposed mining.

² Galvin and Associated Pty Ltd, Letter to Chair Planning Assessment Commission dated 8 March 2016, p6.

As highlighted by WaterNSW, a biodiversity offset policy for upland swamps could only ever address biodiversity issues and does not resolve potential hydrological impacts and loss of ecosystem functions.

The community adjacent to the pit top site and the Environment Protection Authority raised concern about the potential operational noise impacts to nearby residents and truck noise on residents along Bellambi Lane. The pit top site directly adjoins a number of residential streets making noise and traffic impacts difficult to manage at the “current” production rate of less than 1 million tonnes per year. The Commission finds the noise impact assessment under-estimated the noise impact on residences adjacent to the pit top site and along Bellambi Lane because the assessment relied on modelled rather than existing noise levels for comparison, which is inconsistent with the *Industrial Noise Policy*.

The project as proposed, may generate short-term benefits including up to 300 jobs for the 5 year approval period, about \$23 million in royalties to the NSW Government, \$85 million capital investment and other direct and indirect flow on effects. Other benefits include the maintenance of coal production in the Southern Coalfields and the utilisation of the Port Kembla Coal Terminal, which is currently underused.

However, the Commission notes the Department of Trade and Investment’s advice that this is a small project ranked 50 out of 56 producing coal mines in NSW if approved. Furthermore, the mine is currently not operating and is in care and maintenance. There are some external costs which have not been included in the economic assessment as identified in the CIE report and by the Commission. These include WaterNSW’s ongoing monitoring requirement, greenhouse gas emissions and monetary compensation for the loss of water, additional mitigation measures to reduce noise impacts and potential long term operation and management cost of the water treatment system, if required, after mine closure.

The Commission has considered all the available information including additional information provided by relevant agencies and experts. There is no disagreement about the importance of protecting Sydney’s drinking water catchment, both in terms of the water quality and quantity. The proponent has argued that this can be achieved by the proposed mining layout and mining methods, acknowledging that the mine plan has been substantially modified and reduced compared with the original proposal. The Department’s assessment concluded that the social and economic benefits of the project outweigh the residual costs and it is in the public interest that the project be approved subject to conditions.

Advices from WaterNSW and the Commonwealth’s Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development have both identified significant risks with respect to the proponent’s water modelling of the predicted impacts. The Commission’s experts confirmed the risk of water loss remains uncertain. The magnitude of water loss is uncertain with the projected range from the proponent and Water NSW varying from minimal to 2.6GL/year. The Commission considers this is a high risk situation. The Commission also has regard to the objectives of the *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011*, particularly “a project will have neutral or beneficial effect on water quality”. From the evidence currently presented to it, the Commission is of the opinion that the project satisfies neither of these requirements.

On the basis of all the information provided, the Commission is of the view that the social and economic benefits of the project as currently proposed are likely outweighed by the magnitude of impacts to the environment.

In reaching its conclusion, the Commission has had regard to the evidence presented to it by the proponent, the Department, the public submissions and presentations to the public hearing and from the advice provided by the Commission's independent experts, the IESC, OEH, and WaterNSW and the relevant State Environmental Planning Policy (Mining SEPP and Sydney Drinking Water Catchment SEPP).

Recommendations:

The Commission recommends that any further consideration of the proposal should have regard to the issues raised in this Review Report.

Glossary

Commission:	The Commission to review this application, constituted by Mr Joe Woodward PSM (chair) Mr Paul Forward; and Dr Andrew Stoekel
Council:	Wollongong City Council
DoE:	Commonwealth Department of the Environment
DSC:	NSW Dams Safety Committee
DRE:	Division of Resources & Energy (within the Department of Trade & Investment)
DP&E:	Department of Planning & Environment
EA:	Environmental Assessment.
EEC:	Endangered Ecological Community (under both the TSC Act and EPBC Act)
EPA:	Environment Protection Authority
EP&A:	Environmental Planning and Assessment Act 1979.
EPBC:	Environment Protection and Biodiversity Conservation Act 1999
IESC:	Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development
IRAP	Integrated Risk Assessment Panel
LGA:	Local Government Area.
DGR:	Requirements provided by the Director General of the Department of Planning for an environmental assessment or environmental impact statement.
NOW:	NSW Office of Water.
OEH:	Office of Environment and Heritage
PAC:	Planning Assessment Commission.
PM₁₀:	Particulate matter with an aerodynamic diameter smaller than 10 micrometres.
PM_{2.5}:	Particulate matter with an aerodynamic diameter smaller than 2.5 micrometres
The proponent:	The applicant under Part 3A of the EP&A Act 1979, in this report being Wollongong Coal Limited. 'Proponent' includes the proponent's EA consultants.
The project:	The subject of the application under Part 3A of the EP&A Act 1979, in this report being the Russell Vale Colliery Underground Expansion Project (UEP).
SCA:	Sydney Catchment Authority (now WaterNSW)
TOR:	Terms of Reference.
TSC:	Threatened Species Conservation Act 1995.
TSP:	Total suspended particulate matter
WaterNSW:	formerly Sydney Catchment Authority (SCA)

CONTENTS

EXECUTIVE SUMMARY	i
GLOSSARY	iv
1. INTRODUCTION AND TERMS OF REFERENCE	1
2. THE PROJECT	
2.1 THE PROPONENT	2
2.2 PROJECT DESCRIPTION	2
2.3 PROJECT SURROUNDS	2
2.4 CURRENT PROPOSAL AND ITS HISTORY	3
3. COMMISSION ACTIVITIES	
3.1 FIRST PLANNING ASSESSMENT COMMISSION REVIEW	4
3.2 SECOND PUBLIC HEARINGS AND SUBMISSIONS	4
3.3 DOCUMENTS, MEETINGS, SITE INSPECTIONS AND CORRESPONDENCES	4
4. COMMISSION'S CONSIDERATION	
4.1 MINING SEPP AS AMENDED	7
4.2 WATER AND SUBSIDENCE	8
4.3 IMPACTS ON UPLAND SWAMPS	14
4.4 SOCIO-ECONOMIC BENEFITS AND IMPACTS	21
4.5 NOISE	26
4.6 AIR QUALITY	32
4.7 BELLAMBI CREEK – FLOOD MANAGEMENT	35
4.8 TRAFFIC AND TRANSPORT	36
5. FINDINGS, CONCLUSION AND RECOMMENDATION	
5.1 FINDINGS	41
5.2 CONCLUSION	44
5.2 RECOMMENDATION	45
REFERENCES	
FIGURES	
1. Regional Location and Existing Project Area	2
2. Existing and Proposed Upland Swamp Monitoring Network	17
LIST OF APPENDICES	
1. Terms of References	
2. List of Presenters	
3. Summary of public submissions to the Commission	
4. Notes of Meeting and Site Visits	
5. Key Correspondences	
6. Expert Advices on Groundwater and Subsidence	

1. INTRODUCTION AND TERMS OF REFERENCE

On 23 October 2015 the Minister for Planning, the Honourable Robert Stokes MP requested the Planning Assessment Commission to conduct a second review of the Russell Vale Colliery Underground Expansion Project. The Minister's request was made under Section 23D of the *Environmental Planning and Assessment Act 1979* and Clauses 268R and 268V of the *Environmental Planning and Assessment Regulations 2000*. A copy of the Minister's request is provided in Appendix 1.

The Terms of Reference are as follows:

1. *Carry out a review of the Russell Vale Colliery Underground Expansion Project (MP09_0013) by considering:*
 - a) *the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment (Significance of Resource) 2015 as amended on 2 September 2015;*
 - b) *the Department of Planning and Environment's addendum to its original environmental assessment report and recommended conditions for the project;*
 - c) *the likely economic, environmental and social impacts of the development in the locality, in the region and for the State;*
 - d) *any submissions made to the Planning Assessment Commission as part of the public hearings held in relation to this review; and*
 - e) *any submissions made by the applicant to the Planning Assessment Commission on the matters the subject of this review.*
2. *Hold a public hearing on matters arising from or relevant to the review as soon as practicable.*
3. *Complete the review and provide a final report to the Department of Planning and Environment containing any findings and recommendations within 5 weeks of receiving the Department's addendum report, unless the Secretary of the Department agrees otherwise.*

Mr Joe Woodward PSM (Chair) with Mr Paul Forward and Dr Andrew Stoeckel constituted the Commission to undertake the second review of the project. The Commission also retained the services of two experts in subsidence, Emeritus Professor Jim Galvin and groundwater, Dr Colin Mackie to assist its review. They were engaged previously by the Commission in the First Review of the project.

2. THE PROJECT

2.1 THE PROPONENT

Wollongong Coal Pty Ltd (formerly Gujarat NRE Coking Coal Ltd) owns and operates the Russell Vale Colliery, which is located in the Illawarra region, approximately eight kilometres (km) north of the centre of Wollongong and 70km south of Sydney. Jindal Steel and Power Limited acquired a majority stake in Gujarat NRE Coking Coal Ltd in October 2013. The mine was known as the NRE No. 1 Colliery prior to February 2014 (Department of Planning & Environment, 2014b).

2.2 PROJECT DESCRIPTION

The proponent (Wollongong Coal Pty Ltd) proposes to expand its longwall mining operations further to the northwest across the Wonga East area, to extract 4.7 million tonnes (Mt) of Run of Mine (ROM) coal over a project life of 5 years. The proposal involves the extraction of coal from eight longwalls, in three blocks (Longwalls 1-3, 6-7 and 9-11) and the continued operation of the mine's surface facilities. The major components of the project were summarised in the Commission's First Review Report of 2 April 2015.

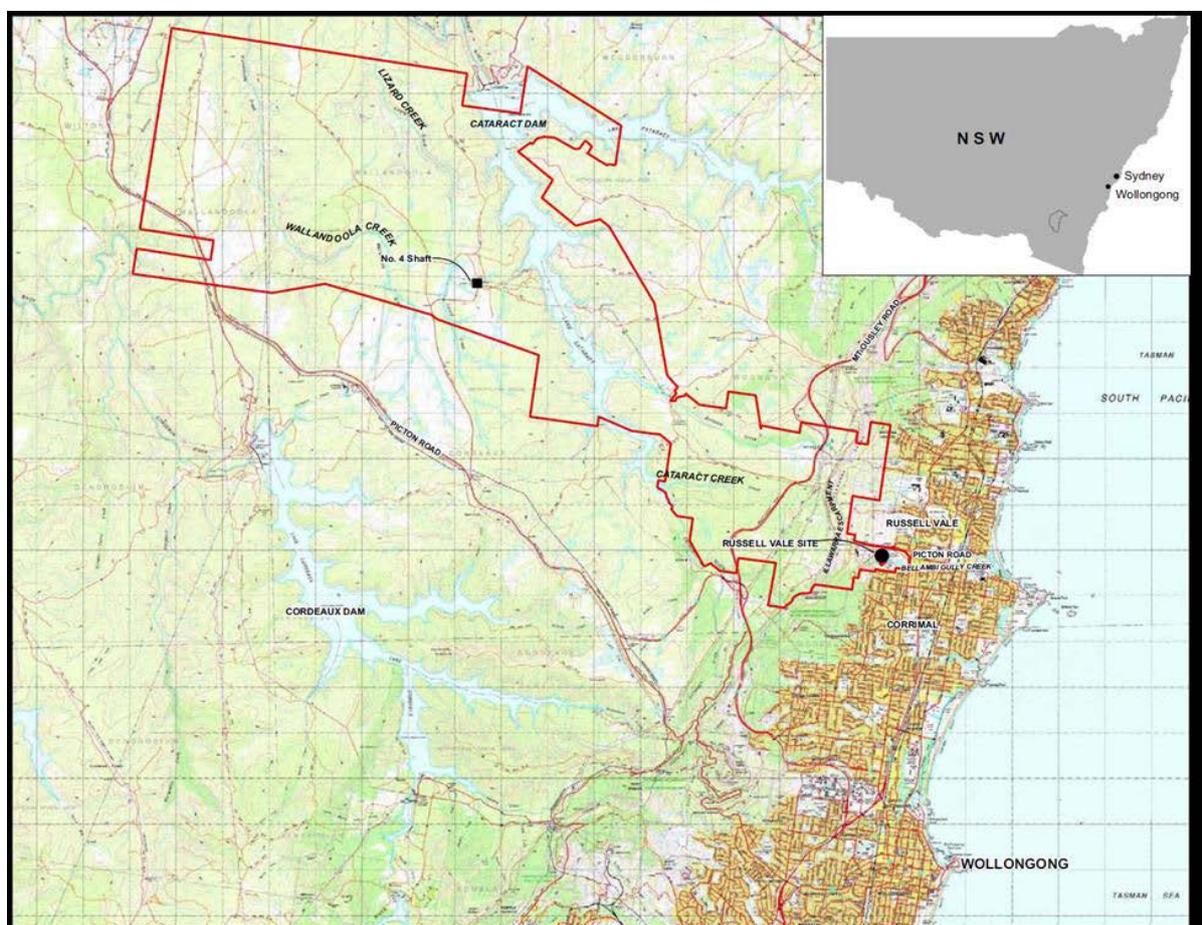


Figure 1: Regional location and project area including the future western expansion area (outlined in red)

2.3 PROJECT SURROUNDS

Russell Vale Colliery is located within the Wollongong and Wollondilly local government areas. The project application area covers about 6,500 hectares (ha) of land and the majority of this comprises an existing underground mining lease area, which lies under the Woronora Plateau.

The surface facilities site, which is approximately 100ha in size, is located on the slopes of the Illawarra Escarpment, at Russell Vale, west of the Princes Highway. To the east and the south of the surface facilities site are the suburbs of Russell Vale and Corrimal respectively.

The vast majority of the land that is covered by the underground mining lease is owned and managed by WaterNSW, formerly Sydney Catchment Authority and lies within the Metropolitan Special Area water catchment. As a consequence, the project assessment must consider State Environmental Planning Policy (Sydney's Drinking Water Catchment) 2011, which states that: *"Consent for development on land in the Sydney Drinking Water Catchment cannot be granted unless it has a neutral or beneficial effect on water quality"*.

The project site is overlain by the catchment area of the reservoir behind Cataract Dam, which supplies potable water to parts of Sydney. It also includes part of the Mt Ousley Road, a Telstra fibre optic cable, fire trails and various electrical transmission lines. Other key features close to the area of proposed mining include Picton Road, Cataract River, Cataract Creek and Bellambi Creek.

2.4 CURRENT PROPOSAL AND ITS HISTORY

Underground mining has been undertaken at this mine since the late 1880s in the Bulli and Balgownie Seams. A range of mining techniques including bord and pillar mining, pillar extraction and longwall mining have been employed at Russell Vale since mining commenced in 1887. An outline of the historical context and history of applications on the site is included in the Commission's First Review Report.

Briefly, the mine has produced very little coal from 2003 to 2012 when long wall mining commenced. An application for a significant expansion of the underground mine was lodged in August 2009. However, the Department considered the application inadequate for public exhibition. In 2010, the proponent lodged an interim application known as Preliminary Works Project to allow for the mine to continue its operation for a 3 year period. Three modifications followed the approval of the Preliminary Works Project to keep the mine in operation pending the determination of the proposed expansion. The approval of the most recent modification lapsed in December 2015. According to the Wollongong Coal Quarterly Report (October to December 2015), a decision was made *"to place the Russell Vale Colliery on Care and Maintenance on the 1st September 2015... No production was completed during the Quarter"*.

The original application for the mine expansion lodged in August 2009 has been substantially changed in response to issues raised in public and agencies' submissions and an independent expert review carried out for the Department. The key changes that are of particular concern to the Commission include the reduction of the project life from 18 years to 5 years and the removal of the Wonga West area.

It is a major concern to this Commission that the current project application again seeks incremental piecemeal approval of a small extension to the existing operation with a stated intention to seek approval for a larger extension to the west of the mine at a later time. The Commission has significant doubt as to the timing of the assessment process of the Wonga West area given the time taken from the lodgement of the EA for this project in August 2009 and the Commission's first review in late 2014. The potential of small modifications over time to the current project (if approved) cannot be ignored so as to allow the mine to continue its operation until the approval of the bigger expansion project. This incremental approach to the assessment of a major development in a sensitive area (drinking water catchment) combines with the uncertainty of cumulative impacts of past and future mining in the area warrants a cautious approach in the review of this application.

3. COMMISSION ACTIVITIES

3.1 FIRST PLANNING ASSESSMENT COMMISSION REVIEW

On 9 December 2014 the Minister for Planning requested the Commission to conduct a public hearing and review the merits of this project, paying particular attention to the potential impacts on upland swamps and water resources, and potential impacts on the residents in the vicinity of the Russell Vale pit top site resulting from noise and air emissions and the trucking of coal. In addition, the Commission was requested to provide recommendations on any reasonable and feasible measures that could be implemented to avoid, reduce and/or offset potential impacts of the project. In accordance with the Commission's terms of reference, a public hearing was held on 3 February 2015.

In its first review, the Commission concluded that it did not have sufficient information or confidence to determine the merits of the proposal necessary for a determination for approval, and made a total of 15 recommendations. The Commission noted that it may be possible for the proposal, or a modified proposal, to be approved if all the additional information identified in the Review Report could provide a greater level of confidence for the protection of the water quality and quantity in the Sydney Catchment Area and satisfied all the other issues identified in the review. (Planning Assessment Commission, 2015).

3.2 SECOND PUBLIC HEARINGS AND SUBMISSIONS

In accordance with the terms of reference for this Commission, a public hearing was held on Tuesday, 8 December 2015 at the WIN Entertainment Centre, Wollongong. A total of 43 verbal submissions were made to the Commission at the hearing, comprising 20 special interest groups and 23 individuals (Appendix 2). A number of written submissions were also made to the Commission. A summary of these submissions is contained in Appendix 3 of this Report.

3.3 DOCUMENTS, MEETINGS, SITE INSPECTIONS AND CORRESPONDENCES

3.3.1 Documents

Through the course of this review the Commission accessed a wide range of documents including, but not limited to:

- the proponent's Environmental Assessment (February 2013 ERM);
- the proponent's Preferred Project Report including Response to Submissions (undated) and the Residual Matters Report (June 2014 Hansen Bailey);
- the Department of Planning & Environment's Assessment Report (December 2014);
- Commission's First Review Report (April 2015);
- the proponent's Response to the Commission's First Review Report both Parts 1 and 2 which included the Independent Risk Assessment (July 2015);
- independent economic analysis undertaken by the Centre for International Economics on behalf of the Department of Planning and Environment (October 2015);
- the Department's Addendum Report (November 2015); and
- submissions from government agencies, special interest groups and the public.

3.3.2 Meetings and Site Visit

The Commission also held a number of meetings and site inspections. Further details of each meeting are provided in Appendix 4. Submissions from the agencies are provided in Appendix 5.

Briefing with WaterNSW

The Commission met jointly with WaterNSW (formerly Sydney Catchment Authority) and the Department of Planning and Environment on the 7 December 2015. The purpose of the meeting was to discuss the residual concerns of WaterNSW with particular focus on the following:

- the delineation of the draw down zone
- the ongoing role of the Dams Safety Committee as outlined in draft condition 11 of Schedule 3
- potential loss of water from the catchment and appropriate levels of compensation
- the ongoing Terms of Reference for the Risk Assessment Panel
- validation of the surface water monitoring, and
- the potential impact on upland swamps.

Briefing with the Department of Planning & Environment

The Commission met with the Department of Planning & Environment on 7 December 2015 (prior to the joint meeting with WaterNSW), for a briefing on the project. In addition to the issues discussed with WaterNSW, further items discussed included the terms of the current approval requiring the cessation of mining activity at the end of December 2015, noise, truck parking facilities, and flooding.

Meeting with Wollongong City Council

The Commission met with representatives from Wollongong City Council on 8 December 2015 to receive an update on the Council's positions. The key topics discussed at this meeting were the voluntary planning agreement and the potential to focus expenditure on Bellambi Road, impact on property values, protection of upland swamps, breaches in the development consent for the emplacement area, noise and flood mitigation.

Briefing from the proponent

The Commission visited the pit top site on 8 December 2015 with Wollongong Coal staff and their consultants. The Commission was briefed on the financial position of the company and Wollongong Coal's response to the Commission's First Review Report particularly addressing the following:

- establishment of the Risk Assessment Panel and the Risk Assessment
- establishment of a network of piezometers within and surrounding the upland swamps
- responses to the offset policy
- update of the economic assessment
- noise mitigation
- air quality monitoring
- flood mitigation works
- truck movements and road maintenance
- capacity of the facilities to handle additional throughput.

Meeting with the Office of Environment and Heritage

On 13 January 2016 the Commission met with the Office of Environment and Heritage, and representatives from the Department of Planning and Environment. The draft swamp offset policy and its status and applicability to this application were discussed. The issues raised in the Office of Environment and Heritage's submission were then also discussed. As a result of this discussion the Department of Planning and Environment agreed to review the draft conditions relating to the upland swamps.

Further site inspection and meeting with the proponent

Due to the concerns regarding subsidence and ground water impacts, the previous Commission engaged the services of Emeritus Professor Jim Galvin and Dr Colin Mackie, experts in these fields, to

assist the assessment of these issues. This Commission retained the two experts to assist in its review of the additional information provided by the proponent, particularly issues related to risk to groundwater loss as a result of subsidence and the Integrated Risk Assessment process. On 28 January 2016, a second meeting was held with the proponent. The meeting's focus was on groundwater and subsidence and included a site inspection.

Mr Paul Forward, Dr Andrew Stoeckel, and E/Professor Jim Galvin inspected upland swamps: CCUS4, CCUS5, CCUS23 and Cataract Creek. Mr Joe Woodward PSM (chair of this Commission) and Dr Colin Mackie attended the meeting discussing groundwater issues. It should be noted that Mr Woodward had previously inspected the uplands swamps as part of the Commission's first review.

3.3.3 Correspondences

The Commission corresponded with certain government agencies, and the proponent during the course of the review. Following a review of the documentation, the Commission sought clarification from the proponent on issues relating to water, subsidence and upland swamps. The proponent's consultants responded in writing including the provision of the numeric water model for the Commission's expert's review.

The key pieces of correspondence are attached in Appendix 5.

4. COMMISSION'S CONSIDERATION

4.1 MINING SEPP AS AMENDED

Although the provisions of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) Amendment (Significance of Resource) 2015* (Mining SEPP) do not strictly apply to this project because it is a transitional Part 3A application, the terms of reference in the Minister's request require the Commission to consider the Mining SEPP as amended.

Clause 12AA of the Mining SEPP, before its repeal, required the consent authority to give the significance of the resource as the principal consideration. This requirement was repealed on 2 September 2015.

Section 4.1 of the Department's Addendum Report considered the key provisions of the SEPP. Briefly, the Department is satisfied that the project can be managed in a manner that is generally consistent with the aims, objectives, and provisions of the Mining SEPP, following the repeal of clause 12AA, and that the project is in the public interest.

Although the Commission accepts the Department's assessment of most of the provisions in the Mining SEPP, it remains to be convinced that the conclusions drawn under the headings of landuse compatibility and the Voluntary Land Acquisition and Mitigation Policy are reasonable and can be supported.

4.1.1 Compatibility with Other Land Uses (Clause 12)

The Department concluded that the project is not likely to result in unacceptable impacts to surrounding land uses in general. Residual impacts could be minimised, mitigated or compensated for to achieve acceptable environmental and amenity outcomes via recommended conditions of approval.

The Commission is yet to be convinced the Department's conclusion is reasonable and justified. Land use compatibility requires that each land use type should not pose any significant threat or impact to the other use.

As will be discussed in Section 4.5 of this report, the Commission finds potential noise impacts on adjacent residences would not be negligible or beneficial, if reasonable benchmarks for existing noise were used for the assessment instead of using the "modelled maximum noise levels for 1Mtpa". Similarly, traffic noise impact on residences along Bellambi Lane requires reassessment.

The risk of subsidence induced cracking to surface resulting in water loss remains uncertain. As a result, the potential impacts on water quality and quantity and the upland swamps remain uncertain and the environmental consequences are also uncertain. Even if the risk of water loss is low, if it occurs, how and what mitigation measures could apply to remediate the situation and the likelihood of success has not been clearly demonstrated. Any water loss and the associated impact on water quality and upland swamps could be permanent and irreversible. Sections 4.2 and 4.3 of this report discuss these concerns in detail.

On the evidence, the Commission is not convinced that "*the project is not likely to result in unacceptable impacts to surrounding land uses in general*". In reaching this conclusion, the Commission is also mindful of one of the key objectives of the Sydney Drinking Water Catchment SEPP that consent cannot be granted unless the project has a neutral or beneficial effect on water quality. From the evidence currently presented to it, the Commission is of the opinion that the project satisfies neither of these requirements.

4.1.2 Voluntary Land Acquisition and Mitigation Policy (Clause 12A)

The Department is of the view that the consent authority cannot grant voluntary mitigation and acquisition rights to reduce operational noise impacts for existing developments with legacy noise issues, such as Russell Vale because its assessment concluded that “the project would have beneficial or negligible noise impacts on nearby residences”.³ (Appendix 5)

Again, as discussed in the noise section of this report (Section 4.5), the Commission considers the potential noise increase on nearby residences would be significant, not beneficial or negligible, if assessment is based on criteria derived from the *Industrial Noise Policy*.

4.1.3 Significance of the Resource (Clause 12AA)

Although this provision was repealed on 2 September 2015, the Department concluded that the repeal of this clause has no material bearing on the outcomes of the Department’s assessment of the project or the conclusions reached regarding its net overall social and economic benefits.

In the First Review Report, the Commission noted the Division of Resources & Energy’s (DRE) advice to the Department in support of the project because it would “*provide diversity of supply within the NSW coal industry, generate employment opportunities and bring economic benefits to the local region and to the State as a whole*”.⁴

This Commission finds it is also important to note that in the same correspondence, the DRE also pointed out that “*the project would be the second smallest producing mine in the Southern Coalfield ... ranked 50 out of the 56 producing NSW coal mines in 2013-14*”. The letter further advised that “*the significance of the Project’s coal resource lies mainly in its ability to maintain coal production from the Southern coalfield and utilisation of the Port Kembla Coal Terminal*”⁵, which is currently underutilised. The economic benefit of this project is discussed in Section 4.4 of this report.

4.2 WATER AND SUBSIDENCE

The Commission’s first review found that the proposal had a number of residual uncertainties and risks associated with impacts to the catchment and it did “*not have sufficient information or confidence to determine the merits of the project*”⁶. Given these uncertainties, the Commission was unable to recommend any approval of the proposal. The First Review Report recommended:

Recommendation 1

The establishment of a risk assessment panel, constituted by an independent chair, Water NSW, the Dams Safety Committee, the Division of Resources and Energy and the proponent to oversee an integrated risk assessment, particularly focusing on links between subsidence and water (both groundwater and surface water) impacts of the proposal. This risk assessment, including associated work rerunning the groundwater modelling as recommended by Dr Mackie; and addressing the issues raised by the relevant agencies and experts (as highlighted in this report), needs to be completed before the application can be determined.

A risk assessment has since been provided by the proponent, finding that there is a low to moderate risk of most of the identified potential impacts. Two potential impacts (cracking of bedrock beneath

³ Department of Planning and Environment letter to Planning Assessment Commission dated 4 February 2016

⁴ Planning Assessment Commission, 2015, *Russell Vale Colliery – Underground Expansion Project Review Report*, April 2015, p.34

⁵ Division Resources & Energy, Trade & Investment, letter to Department of Planning and Environment dated 16 December 2014, Attachment A

⁶ Planning Assessment Commission, 2015, *Russell Vale Colliery – Underground Expansion Project Review Report*, April 2015, p.iii

the swamp and fracturing of controlling rockbars) were found to pose a high risk to the swamp known as CCUS4, with drying of the upland swamp and detrimental effects on the swamp ecosystem. Risks of other impacts were said to be of medium to low risk (Broadleaf Capital International, 2015).

The Department's Addendum Report concluded that:

- the estimated average water loss of 7.3ML/day would have negligible impacts on the water stored within Cataract Reservoir
- the predicted 14.9ML/year transfer of stream flow to the underlying strata in the Cataract Creek, Cataract River and Bellambi Creek catchments at the end of the proposed mining is not 'lost' as a portion as it would migrate to the reservoir via lower elevation, down-gradient, groundwater seeps into the lower catchments and reservoir
- The *Groundwater Assessment's* predictions of baseflow and stream flow losses are a much more accurate reflection of potential actual impacts than those in the Surface Water Modelling, and that they should be adopted for assessment purposes.
- There is no policy basis for restricting baseflow losses to an arbitrary (and exceedingly low) limit. The policy requires surface water take to be licensed under the *Water Management Act 2000*. It is of the view that the surface water take can be licenced within the Upper Nepean and Upstream Warragamba Water Source in contrary to WaterNSW's concern that it might not be possible to authorise the surface water take.
- The project might result in some iron oxide staining of the beds of watercourses. However, it is of the view that the iron staining is likely to be localised and would have negligible effect on the overall water quality of Cataract Creek and more particularly Cataract Reservoir. It has recommended specific requirement to monitor surface water to address both dissolved iron and filterable iron oxides/hydroxides.
- The revised assessment has addressed the groundwater-related issues raised in the Commission's first review report and groundwater management plan including the preparation of groundwater monitoring program is a standard condition of approval for underground coal mines.

At the public hearing, the Commission heard concerns about the independence of the integrated risk assessment process, criticism of the groundwater modelling, risk of water loss, cumulative impacts of other mines within the catchment area, water should be the primary consideration, and adequacy of supporting studies.

In reviewing the Department's Addendum Report and correspondences between the Department and agencies, the Commission notes the OEH in an email dated 2 September 2015 to the Department of Primary Industries raised significant concerns, particularly that "*the UEP ignores the advice and recommendations of the Australian Governments Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mines (IESC 2014, 2015)*". Regarding subsidence assessment and potential for connective fracturing, the email pointed out that "*the IESC does not have increased confidence from the proponent's response that the proposed project would not have a significant impact on the stored waters of Cataract Reservoir through connective cracking*". Reference was made to the Tammetta assessment, which "*indicated that the height of depressurisation was predicted to extend to the surface over many areas of the proposed mine plan*". The Tammetta assessment "*is likely to underestimate the degree of depressurisation due to the presence of multi-seam mining...*"⁷

⁷ Email correspondence between J Dawson and M Kirton dated 2 September 2015, *OEH preliminary comments on Russell Vale UEP risk assessment report*

The Department of Primary Industries (letter to the Department dated 16 October 2015) also raised concern about the uncertainty in the project impacts on surface water flow into Cataract Reservoir and potential loss if water does not re-emerge downstream. The issue of licences for taking of surface and groundwater was also raised. Impact to creek baseflow due to groundwater depressurisation is another issue of concern to the DPI.

WaterNSW also provided additional written comments to the Commission following its meeting with the Commission in December 2015. Briefly, the key concerns to WaterNSW are:

- The need to consider the requirement of financial compensation for any water losses from Cataract Reservoir if the measures in the proposed Contingency Plan fail.
- The estimated water loss of 7.5ML/day is unacceptable, particularly during dry periods.
- The conclusion that the likely estimated baseflow loss of 0.04ML/day is questioned.
- Real surface water reductions are likely to be within the range of 15ML/year and 2.6GL/year.
- If the current replacement value of water of \$2276/ML is used, a potential cost of the estimated loss of water would be about \$22.1 million.

Following a review of the documents provided by the proponent, the Department and submissions made to the public hearings, the Commission retained the services of E/Prof Jim Galvin and Dr Colin Mackie to assist in reviewing the latest subsidence and groundwater information provided by the proponent in its response to the First Review Report. Both experts were involved in the first review by providing expert advices to the previous Commission. They again identified a number of questions that required further clarification. The Commission wrote to the proponent on 15 January 2016. The proponent's consultants GeoTerra Pty Ltd, Biosis and SCT Operations Pty Ltd replied in writing dated 27 January 2016, 5 February 2016, 12 February 2016 and 16 February 2016 respectively. See Appendix 5.

Dr Mackie and E/Professor Galvin Mackie provided their advice to the Commission on 7 March 2016 and 8 March 2016 respectively (Appendix 6).

4.2.1 Potential Loss of Surface Water due to Subsidence Related Cracking

Notwithstanding the additional works and a revised water model, Dr Mackie remains concerned, particularly from the potential loss of surface water flow in Cataract Creek via subsidence related cracking. His review concluded that:

Prerequisites for such a loss to occur include:

- 1. Seam to surface cracking that is interconnected and provides a vertically continuous pathway down to mine workings. Based upon the observed vertical pore pressure distributions at piezometer RV20, it is plausible that the longwall panel areas identified on Figure 5 by yellow shading will exhibit seam to surface connected cracking, particularly at the eastern ends of longwalls LW6 and LW7 where depths of cover are reduced compared to the cover that prevails at RV20.*
- 2. Stream bed cracking and diverted flows. While creek bed damage to date appears to be low or negligible, there remains a risk that strata movements associated with valley closure could initiate cracking of the stream bed.*
- 3. Connection between the two crack regimes. This may follow from valley closure movements with sliding of beds leading to development of horizontal flow pathways.*

The 2015 Independent Risk Assessment concluded that the possibility of creek bed damage from subsidence related cracking was real. However the analysis appears to have been restricted to tributaries of Cataract Creek exclusive of Cataract Creek itself. As a worst case scenario, the proponent considers re-direction of all surface flow from sub-catchments that are upstream of or overlying the proposed longwall panels. This area includes upland swamps.

*To determine the reductions in stream flow resulting from cracking, these sub-catchments together with sub catchments associated with Cataract River and Bellambi Creek were excluded from the catchment runoff model. This resulted in a reduction in total flow in Cataract Creek of 6.38ML/day and in Cataract River and Bellambi Creeks of 0.56 and 0.4ML/day respectively. These losses total 7.34ML/day which represents 9.6% of the average flow from these catchments. The risk associated with these scenarios is classified as **medium** according to Risk ID AQH2121, BH2121 and CH2121.*

If Cataract Creek was to be included (assuming diverted flow and subterranean connection to the mine workings at the eastern end of LW6 and LW7), then the diverted flow losses could be substantially greater than has hitherto been assessed. This flow loss pathway appears to have been considered only in the context of adaptive management in the risk assessment. Just how this management approach would be invoked is unclear and raises significant concerns. Certainly, if such a diverted flow pathway occurs, experience at other locations in the Southern Coalfields suggests remediation would prove difficult if not impossible.

Other concerns associated with the above relate to water access licences (surface and groundwater), which would need to be procured in a timely way should losses be identified. The logistics of this process are unclear.⁸

E/Prof Galvin raised similar concerns. He noted that in his earlier advice to the Commission, the uncertainty that the height of depressurization may reach the surface was raised. The additional information provided by the proponent, particularly the results from piezometer site RV20 indicated the area is highly fractured and hydraulically connected. He questioned why there was no confirmation that fracturing developed all the way through to the surface. The results of RV20 are inconsistent with earlier reported conclusion that depressurisation to surface is not predicted at the end of mining. E/Prof Galvin is of the view that *“if the height of fracturing is at or close to the surface over the deeper western end of Longwall 4, then careful consideration will need to be given to cross connections to this fracture network from surface and groundwater sources, especially at the eastern ends of Longwall Panels 5, 6 and 7 which are adjacent to Cataract Creek and up to 90m shallower”*.⁹

E/Prof Galvin also noted that the current control for changes to groundwater regime is to monitor to detect abnormal flows to allow adaptive management intervention to adjust mining activities. He questioned what other management measures apart from reducing mining height and/or panel width, or not mining could be adopted to prevent fracturing extending all the way to the surface. Based on the information available, he concluded that *“a reasonable degree of uncertainty still surrounds the potential for fracturing to extend all the way to the surface over portions of the application area and, if it did, how it could be responded to by adaptive management or be remediated”*.¹⁰ Dr Mackie raised similar concern and pointed out that experience *“in the Southern Coalfields suggests remediation would be proven difficult if not impossible”*.¹¹

4.2.2 Integrated Risk Assessment

The Commission notes the independence of the Risk Assessment Panel was questioned in the OEH September 2015 email to the DPI.

In view of such concern, the Commission’s request to E/Prof Galvin included a review of the Integrated Risk Assessment. He is critical of the risk assessment process. He is of the view that

⁸ Mackie Environmental Research Pty Ltd, letter to Planning Assessment Commission dated 7 March 2016, p11

⁹ Galvin and Associates Pty Ltd, letter to Chair Planning Assessment Commission dated 8 March 2016, p.6

¹⁰ Ibid, p.7

¹¹ Mackie Environmental Research Pty Ltd, letter to Planning Assessment Commission dated 7 March 2016, p11

an essential element for robust risk assessment, as reflected in risk assessment guidelines such as MDG1010 – Risk Management Handbook for the Mining Industry (MDG-1010, 1997, 2011) is the use of a team with appropriately varied and relevant experience for risk identification... the risk assessment team would include outside expertise in order to tap into other knowledge and experience; promote discussion and critical evaluation; test assumptions, calculations, and analyses; and provide an independent layer of assurance that all meaningful hazards had been identified and appropriately assessed for likelihood and consequence and that proposed controls were sensible and likely to be effective. A risk assessment by oneself of one's own work, even if a recognised expert in the field, does not constitute a truly independent or high level risk assessment...

The context of the integrated risk assessment did not extend to the effects of water quantity and quality on fauna and on water dependent species along watercourses.

The integrated risk assessment was based on quantitative descriptions of levels of likelihood that were expressed in terms of annual probability. However, levels of consequences were defined in qualitative terms. For example, reduction in water quantity (which is a critical factor in this matter) was classified in terms of very large, large, moderate, small and negligible. Similarly, reduction in water quality was classified as significant, major, moderate, small and minimal. These descriptors can mean different things to different people. Hence, the risk outcomes lack objectivity for those not involved in the risk assessment process".¹²

4.2.3 Sealing of Mine Adit¹³ to Manage Water Inflow

With regard to the issue of sealing of mine adit as a control for managing water inflow, E/Prof Galvin is of the view that:

... If sealing of a mine adit constitutes a control, then this control needs to be risk assessed to determine its likely practicality and effectiveness and hence, residual risk. In this particular instance, sealing of a mine adit is likely to present significant challenges for a number of reasons, two of which are:

- *Sealing an adit located toward the base of the escarpment may have the potential to induce landslides due to the escarpment being charged with water pressure over time; and*
- *Should a seal fail, there is a potential for an outrush (inrush) of water through residential and public areas downhill from the adit.¹⁴*

He also found the consideration of sealing is inconsistent with earlier documentation which indicated that the adits would remain open and water outflows being managed by a water treatment system. If this is the case, the ongoing costs of management and maintenance of the treatment system should be included as part of the mine closure plan.

Dr Mackie raised similar concern that *"the flow loss pathway appears to have been considered only in the context of adaptive management in the risk assessment"*. He questioned how the adaptive management regime would be invoked and considered this raised significant concerns. He also pointed out that *"experiences at other locations in the Southern Coalfields suggest remediation would prove difficult if not impossible"¹⁵.*

¹² Galvin and Associated Pty Ltd, letter to Chair Planning Assessment Commission dated 8 March 2016, p.3

¹³ Mine adit means an entrance to an underground mine for the purpose of access, drainage of water, ventilation or extraction.

¹⁴ Galvin and Associated Pty Ltd, letter to Chair Planning Assessment Commission dated 8 March 2016, p.9

¹⁵ Mackie Environmental Research Pty Ltd, letter to Planning Assessment Commission dated 7 March 2016, p.11

4.2.4 Barrier to Stored Waters of Cataract Reservoir

E/Prof Galvin also raised concern in relation to the potential subsidence impact to the base of the reservoir. He pointed out that:

The concept of leaving a solid protective barrier against surface infrastructure is well established in subsidence engineering...

In the case of Longwall 7 at Russell Vale Colliery, however, bord and pillar workings and some limited pillar extraction workings occur within the so-called protective pillar, which has a width of some 200m. I concur with the stability assessment undertaken for these workings, which indicates that overloading of the workings is a credible possibility. It has been estimated that if this were to occur, surface subsidence of up to about 600mm is possible over the workings. The analysis does not address the angle of draw associated with this subsidence event, which is likely to result in some (minor) subsidence of the base of the reservoir.

The analysis concludes that the subsidence associated with the workings becoming overloaded would not be expected to cause any increase in hydraulic conductivity between the reservoir and the mining horizon. I concur in respect of direct vertical conductivity. However, I do not subscribe to the proposition that the consequence of an increase in vertical compression [due to the pillars yielding] is that the hydraulic conductivity above the start of Longwall 7 is likely to be reduced by pillar compression. Any such increase will be associated with high stress concentrations in the immediate roof and floor of the pillars and dissipate with distance into the roof and floor.¹⁶

4.2.5 Trigger Levels for Responding to Future Subsidence

E/Prof Galvin is concerned about the trigger criteria proposed by the Department and Water NSW. He is of the view that cumulative effects and impacts of subsidence in the area are not known with certainty presents a challenge to setting trigger levels for responding to future subsidence, therefore:

- *The criteria outlined in DoP(2010) for strain required to fracture rock cannot be applied directly to future measured values (as appears to be proposed) because the amount of incremental strain that may have already developed is unknown.*
- *The proposal by WaterNSW that any consent should only permit mining up to a point where the valley closure is predicted to be 200mm needs to be assessed with caution for a number of reasons. These include firstly, that predictions of valley closure can be unreliable. Secondly, it is not known how much valley closure has already occurred and, therefore, what tolerance there is to further valley closure without resulting in unacceptable impacts. Rather, more emphasis may need to be given to trigger levels based on observed and measured impacts of valley closure (such as surface cracking and horizontal shear planes).¹⁷*

4.2.6 Commission's Consideration and Findings

The expert advices provided by Dr Mackie and E/Prof Galvin have confirmed the Commission's concern that the uncertainty of potential impact to the catchment area remains unresolved, particularly when the cumulative impacts are considered. The additional works carried out by the proponent's consultants and the review by the Integrated Assessment Panel have not been able to allay the Commission's concern or give the Commission enough confidence and certainty that the potential impacts to water both quality and quantity would be acceptable.

The Commission shares both Dr Mackie and E/Prof Galvin's concerns. If flow loss does occur, what and how adaptive management measures could be implemented, when there is no clear indication of what these measures are and their effectiveness in remediate the situation. As pointed out by Dr

¹⁶ Galvin and Associated Pty Ltd, letter to Chair, Planning Assessment Commission dated 8 March 2016, p9-10

¹⁷ Ibid, p11-12

Mackie, “*experience in the Southern Coalfields suggests remediation would prove difficult, if not impossible*”. Further that, it may be too late to remediate by the time the impact is observed.

WaterNSW estimated the potential water loss would be between 15ML/year and 2.5GL/year. It considers the predicted loss of 7.5ML/day is not acceptable, particularly during dry periods. The Commission agrees that potential loss of about 10% flow in the Cataract catchment would be a significant loss.

In terms of financial compensation for the loss of water, the CIE estimated the cost of 15ML/year could be up to \$430,000 (present value). It is not clear how this figure compares with the WaterNSW estimate of \$22 million. The Commission’s concern is that any payment could be a one-off payment. However, the loss will be permanent and irreversible. The loss will also have its associated impact on water quality due to the damage of upland swamps and other vegetation that rely on surface and shallow groundwater, which play a significant role in water quality control. See further discussion in the next section 4.3.

A further concern to the Commission is the Department’s assessment treating water loss as water take, which requires water licence to allow the take. In the Commission’s view, if the loss is negligible, the water licence system could be employed to compensate the loss. However, the estimated potential loss ranges between 15ML/year and 2.6GL/year. The question is at what point does a water licence as a compensatory mechanism become unacceptable?

The Commission is also concerned about the ongoing costs of management and maintenance of the water treatment system, if required, to treat water outflows from the adit after the mine closes. It is not clear whether the proponent or the community will bear the long term management and operational cost of the treatment system after mine closure as it will have significant impact on the economic assessment of the project.

On the evidence, the Commission finds the uncertainty of potential water impacts to the catchment remains unresolved and it does not have sufficient confidence that the project would have negligible impact. The long-term cost of managing and monitoring water loss, water quality control and residual impacts after mine closure could be substantial. Hence, the Commission is not in a position to give any conditional support to the project as it currently stands.

4.3 IMPACTS ON UPLAND SWAMPS

In its first review of the project the Commission considered the potential impacts on upland swamps. The uncertainties around impacts on water (quality and quantity) and upland swamps led it to recommend that an independent risk assessment should be undertaken. The Commission also made the following recommendations specifically relating to the swamps.

Recommendation 2

The establishment of a network of piezometers within and surrounding the upland swamps, the establishment of this network should be guided by the relevant authorities (ie Office of Environment & Heritage, WaterNSW, the Dams Safety Committee and the Department of Planning & Environment). This network will collect additional baseline data and monitor the impacts to the swamps, through changes to the groundwater supporting the swamps, from the mining. This monitoring data should be made available to the independent risk assessment panel.

Recommendation 3

Any more definitive policy developed regarding triggers for offsets and mitigation measures under the “Policy Framework for Biodiversity Offsets for Threatened Upland Swamps and Associated Threatened Species Impacted by Longwall Mining Subsidence” should be made available for consideration by the independent risk assessment panel (see Recommendation 1).

Recommendation 4

Any potential offset policy should address key elements including:

- a. the potential delayed onset of subsidence and associated hydrogeological and ecological impacts to swamps;
- b. potential ecological and structural tipping points; and
- c. mechanisms to adequately secure offset sites (with consideration of the current land tenure and exploration licence and mining lease tenements of the proposed offset site; and the need for site specific offset management plans).

There are nine upland swamps over a 17.51 ha area in the vicinity of the longwalls that have the potential to be impacted. Each of the swamps meet criteria to be classified as Endangered Ecological Communities under both State and Commonwealth legislation.

In its first review, the Commission found that there were a number of uncertainties about the long-term consequences for the swamps of project-related impacts. These were mainly related to hydrological changes as a result of subsidence either cracking the swamps bedrock base or affecting the inflows or outflows of water that support the swamps. These uncertainties and the need for further quantitative data led the Commission to its 'Recommendation 2'.

The Commission also noted that calculating offsets for the impacts of underground mining on upland swamps is difficult as offsetting is usually based on the amount of vegetation cleared, but in this case the impact will most likely be a long term change in the vegetation communities of the swamps brought about by changes in hydrological conditions. It was suggested that the trigger for provision of offsets should be the loss of the shallow groundwater aquifer, reinforcing the need for further piezometric monitoring data. This led to the Commission's 'Recommendation 3' and 'Recommendation 4'.

OEH and the Department of Planning and Environment developed and recently exhibited the draft *Policy Framework for Biodiversity Offsets for Threatened Upland Swamps and Associated Threatened Species Impacted by Longwall Mining Subsidence* (draft upland swamps offsetting policy) in order to overcome these offsetting difficulties and addressing Recommendations 3 and 4 of the First Review Report.

4.3.1 Proponent response

The proponent has responded to the Commission's 'Recommendation 2' by installing 15 new shallow groundwater piezometers within the upland swamps, following consultation with WaterNSW and OEH, in addition to the eight piezometers previously installed.

Swamp	No. of Piezometers (as at Oct 2014)	Proximate Longwall	Overall Risk Classification
BCUS4	4	Longwall 10 and pillar	Medium
BCUS11	0		Low
CCUS1	0		Medium
CCUS2	1	Pillars of Longwalls 2 & 3	Medium
CCUS3	1	Longwall 5	n/a
CCUS4	4	Longwall 6 and pillar	High
CCUS5	4	Longwall 7 and north	Low
CCUS6	1	Pillar of Longwall 4	n/a
CCUS10	2	South of Longwall 9	Low
CCUS11	0		Low
CCUS12	2	Longwall 10	Low
CCUS24	0		Negligible

CRUS1	4	Longwall 6 and southeast	Negligible
CRUS3	0		Negligible
CRUS6	0		Low

Note: n/a-CCUS3 and CCUS6 already impacted by previous longwall mining

Subject to further consultation, these piezometers will be augmented with another approximately 30 shallow groundwater piezometers to be installed in all upland swamps within 400m of the longwalls.

Figure 2 shows the existing and proposed upland swamps monitoring network¹⁸. Data from the piezometer network is being provided to the Integrated Risk Assessment Panel.

4.3.2 Integrated Risk Assessment Panel (IRA Panel)

Subsidence impacts

The IRA Panel noted that compared to single seam mining, subsidence resulting from the multi seam environment at Russell Vale occurs over a smaller area, resulting in greater tilts and strains. Perceptible fracturing of sandstone bedrock may potentially occur when tensile strains exceed 1-2mm/m and compressive strains exceed 2-3mm/m. This fracturing can result in a loss of any stored water within the swamp. The project is predicted to result in subsidence of such a magnitude to cause fracturing of swamp bedrock. These subsidence related impacts are expected to be confined to the region where vertical subsidence is greater than 200mm¹⁹.

The IRA panel assessed the risks to each swamp separately due to the individual geomorphological, hydrological and pedological characteristics of each swamp²⁰. It concluded that the 'risk of impacts due to fracturing is assessed as low for all swamps except CCUS4, which is assessed as being at a high risk of impact. However CCUS4 is not considered to contribute significant flow volumes to the catchment.

Changes to Swamp Water Regimes

The IRA Panel found that subsidence induced tilting has the potential to alter the water distribution and flow patterns within a swamp, potentially leading to scour and erosion. Changes in vegetation composition may also occur as a result. Potential tilting related impacts were assessed using flow accumulation modelling²¹.

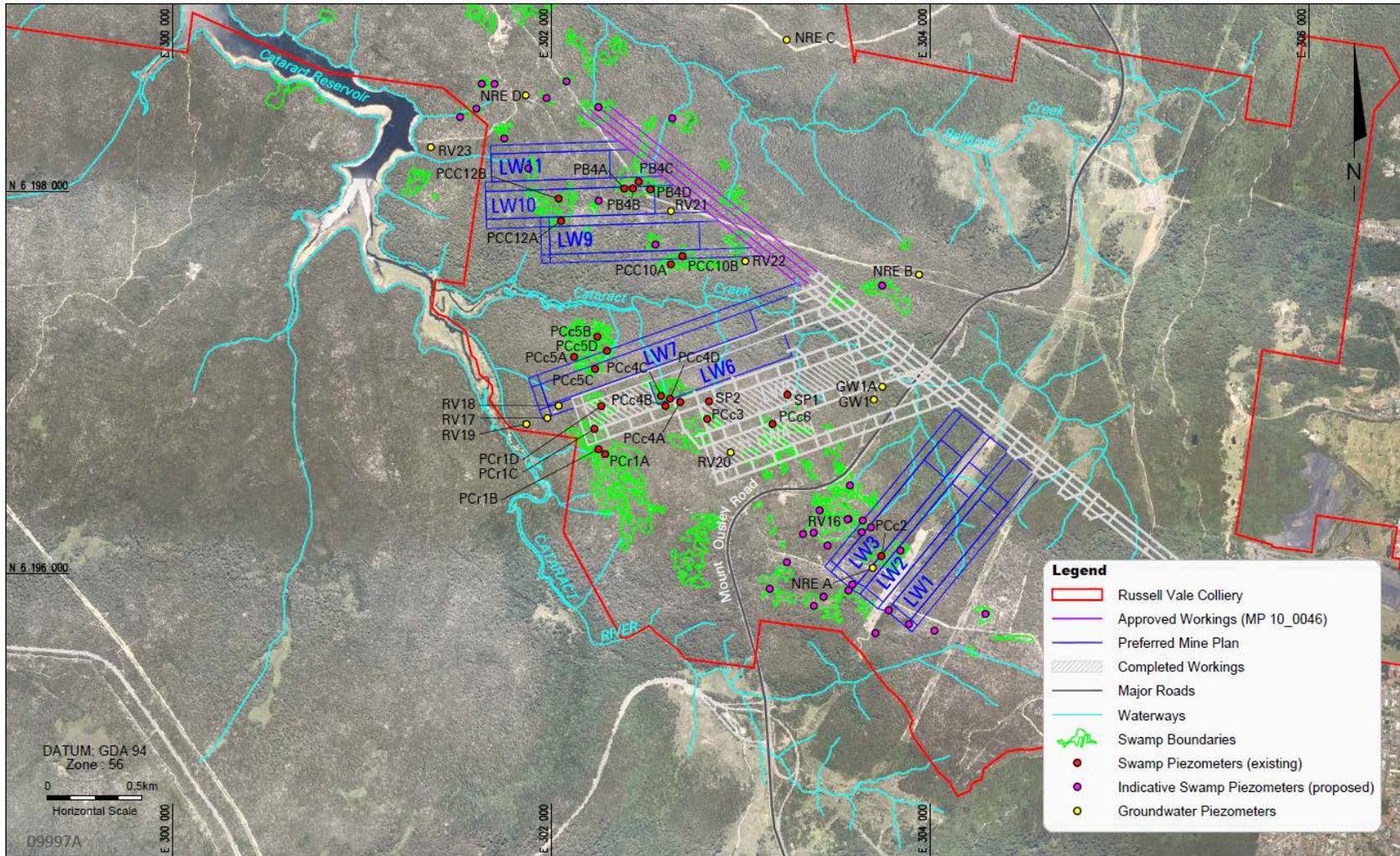
CCUS5 is predicted to experience a significant (26%) decline in overall water availability due to tilting associated with Longwall 7. Flow pathways within the swamp are predicted to change, possibly resulting in changes to vegetation composition in parts of the swamp.

¹⁸ Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Response to the Planning Assessment Commission Review Report- Part 2, prepared for Wollongong Coal Limited, September 2015 p.13 Figure 2

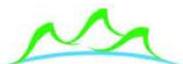
¹⁹ Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Integrated Risk Assessment p.31

²⁰ Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Integrated Risk Assessment p.31

²¹ Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Integrated Risk Assessment p.37



RUSSELL VALE COLLIERY



Hansen Bailey

Existing and Proposed Upland Swamp Monitoring Network

Figure 2. Existing and Proposed Upland Swamp Monitoring Network

CCUS11 is predicted to experience a significant (50%) decline in catchment yield with tilting associated with Longwall 8 resulting in the flow pathway diverting around this swamp. Due to the small catchment of this swamp the changes are not predicted to have a significant impact on water availability.

All other swamps assessed were found to have minor to negligible changes in flow accumulation post mining.

Overall risk classification

Four swamps were assessed as having a greater than 'Low' risk; BCUS4, CCUS1, and CCUS2 were assessed as at 'Medium' risk; and CCUS4 was assessed as at 'High' risk²².

The bedrock of Upland Swamp BCUS4 is likely to be fractured, however this is predicted to occur over a small upper section of the swamp which supports vegetation not reliant on a perched water table. The Commission notes that BCUS4 is a comparatively large swamp and appears that at least 50% of the swamp and 12% of its catchment is within the subsidence zone. It is also a known habitat for the Giant Dragonfly, which is an endangered species.

Upland Swamp CCUS1 is predicted to experience bedrock cracking but impacts are expected to be confined to a limited area. Upland Swamp CCUS2 is also predicted to experience bedrock cracking, however this swamp does not support vegetation reliant on waterlogging. Due to its small catchment area this swamp does not contribute significant baseflow.

Swamp CCUS4 lies directly over Longwall 6 and is predicted to experience subsidence resulting in cracking of its bedrock and potentially the controlling rockbar. This would likely lead to drying of the swamp, which supports vegetation reliant on the perched water table. Localised impacts to the Giant Dragonfly are possible as the species is reliant on the perched water tables found in upland swamps. The swamp does not provide significant baseflow to Cataract Creek.

Risk Controls

In terms of the measures that should be implemented to control the risks that have been assessed by the panel the proponent refers to the mine plan, which has been re-designed to, in part, avoid significant risks to upland swamps, resulting in only one swamp at 'High' risk of impact. A network of piezometers has also been installed to monitor swamp water levels, to assist in adaptive management of subsidence related impacts. The proponent has committed to ceasing mining of active longwalls if it is found that greater than 200mm of valley closure is occurring.

The proponent proposes to compensate for the residual impacts on upland swamps by obtaining suitable offsets in accordance with relevant offsetting policies²³.

4.3.3 Offset Policy

The recently exhibited draft Policy Framework for Biodiversity Offsets for Threatened Upland Swamps and Associated Threatened Species Impacted by Longwall Mining Subsidence is yet to be adopted by the government. The Commission also understands it is yet to be formally consider by the Integrated Risk Assessment Panel.

²² Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Integrated Risk Assessment p.47

²³ Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Integrated Risk Assessment p.53

4.3.4 Office of Environment and Heritage view

OEH has raised concerns with the risk assessment in relation to upland swamps. OEH *'considers that the risk assessment is compromised by assumptions that consistently lead to an under-estimation of the project's consequences'*²⁴. The OEH stated that the permanent and irreversible nature of bedrock cracking beneath upland swamps should warrant a 'High' or greater risk classification. It is also concerned that the area of assumed impact is not sufficiently conservative given the inherent uncertainty of predicting subsidence impacts in a multi-seam environment. OEH also dispute the conclusions made in relation to vegetation communities waterlogging dependence and the assumption that the Banksia Thicket vegetation community is deemed as less susceptible to decreased groundwater availability. It noted that assumptions about swamp hydrology have been made in the absence of groundwater data.

In an email to the Department of Primary Industries, the OEH also raised concern about the potential impact to the Giant Dragonfly, which

*is a swamp dependant endangered species that is known from only a limited number of swamps on the Woronora Plateau. Two of the three swamps the species is known to inhabit within the UEP mining domain are planned to be undermined however impacts to this species has not been included in the risk assessment. "The IESC (2014) carried out a sensitivity analysis of the likely impacts to individual species resulting from a range of likely impact factors resulting from mine subsidence in upland swamps. They concluded 'because inundation controls peat stability and fire (the other two strongest influences), it is the most important aspect of the swamp to maintain'. Furthermore, 'the giant dragonfly appears to be the worst affected at high-impact scenarios but is also substantially affected with low-impact scenarios'".*²⁵

4.3.5 WaterNSW

Water NSW advised that offsets would need to be within Sydney's drinking water catchment Special Areas and the proponent has proposed two swamps as offsets, both within the Special Area. If offsets cannot be obtained, the mine plan should be adapted to avoid greater than negligible impacts on swamps. WaterNSW also recommended that:

- Define the determination of the 'negligible environmental consequences' as per the OEH draft Swamp Offset Policy
- Conditions of any approval should require the consultation with WaterNSW in the development and implementation of an offset strategy including a variation to the strategy.
- Swamp monitoring data should also be provided to WaterNSW (recommended condition 10(j) dot point 7 should be amended accordingly).

4.3.6 Department view

The Department acknowledged OEH's concerns and accepted *'that there is uncertainty in predicting subsidence and environmental outcomes for upland swamps'*²⁶.

On this basis the Department questioned the need for further technical analysis noting that the draft upland swamps offsetting policy provides for variability in predictions of impact. The Department noted that *'it is vital that there is strict monitoring of the impacts on swamps and an obligation to*

²⁴ OEH correspondence to the Department of Planning and Environment, dated 21 October 2015, re Russell Vale Colliery UEP – Wollongong Coal Response to PAC Review.

²⁵ OEH preliminary comments on Russell Vale UEP risk assessment report, J Dawson email to M Kirton dated 2 September 2015

²⁶ Department of Planning and Environment, 2015, Addendum Report: Major Project Assessment Russell Vale Colliery Underground Expansion Project (MP 09_0013), November 2015, p.15

offset all such impacts. If offsets cannot be obtained, then Wollongong Coal would have to adapt the mine plan to avoid greater than negligible impacts on swamps²⁷.

4.3.7 Commission's Consideration and Findings

In considering the potential impacts to upland swamps, the Commission notes the advices from the proponent's consultant, the Integrated Risk Assessment Panel, the Department of Planning and Environment, the DPI, the OEH and WaterNSW. Of particular concern to the Commission is the OEH view that the risk assessment underestimated the project's impacts, given the permanent and irreversible nature of bedrock cracking beneath the swamps. The OEH is responsible for the care and protection of the environment. One of its functions is to provide scientific evidence and expert knowledge to underpin environmental decision making²⁸. Therefore, the Commission considers significant weight must be given to its advice.

The OEH's opinion together with the Commission's experts' advices on groundwater and subsidence and their review of the integrated assessment process reinforce the Commission's concern about the uncertainty of the project's potential impact to the catchment area in terms of water quantity & quality, upland swamps and biodiversity. The Commission's consideration has regard to the general principle of the Offset Policy that when an impact is identified, avoidance should be the first consideration, followed by mitigation and finally offsets.

In the circumstances here, there is significant doubt in any mitigation measures that could remediate the impact or be able to reduce the impact to an acceptable level. Any loss of water could be permanent and irreversible resulting in changes to the composition and nature of the swamps with unknown long-term consequences. Any socio-economic benefits arising from the project must be balanced with the risk of water loss and associated impacts in the drinking water catchment area, which is a highly sensitive area.

In response to the Commission's question regarding options to avoid impacts to CCUS4, the proponent advised that the cost of avoiding 230m section of longwall 6 beneath CCSU6 would be \$10 million. No independent verification of the cost has been provided to the Commission. As discussed in the previous section of this report, the Commission's experts raised significant concerns about the potential cracking to surface at the eastern ends of LW6 and LW7 with a resulting potential loss of 10% of water flow in the Cataract Creek. This leads to the question of whether LW6 should be mined at all.

The proposed offsets may be able to offset the swamps, although the question is raised that the proposed offsets are not similar in characteristic, nature and composition to the damaged ones. A further question that appears to be overlooked is the potential water quality impact from the damaged swamps.

The Commission finds that

1. The uncertainty in predicting subsidence and the environmental outcomes for upland swamps and the sensitive nature of the area warrants a cautious approach.
2. There is significant doubt as to what mitigation measures could be applied to remedy the cracking of bedrock beneath the swamps, apart from offset.
3. If the OEH's classification of risk is considered, the potential damage of 14 swamps with uncertain environmental consequences in a drinking water catchment area is a significant concern, if offset could not be found within the catchment area.

²⁷ Department of Planning and Environment, 2015, Addendum Report: Major Project Assessment Russell Vale Colliery Underground Expansion Project (MP 09_0013), November 2015, p.15

²⁸ Office of Environment & Heritage, Corporate Plan 2014-2017, p.6

4.4 SOCIO-ECONOMIC BENEFITS AND IMPACTS

The First Review Report recommended that:

Recommendation 5

The proponent's economic assessment, in particular the estimated costs and benefits, should be updated to reflect the current economic climate.

Recommendation 6

The final assessment and determination of the application should be informed by an independent analysis of the economic costs and benefits of the project, including any additional information/updated economic assessment provided by the Applicant. The independent analysis should be managed by the Department of Planning & Environment.

The proponent revised its Economic Assessment²⁹, including an updated cost benefit analysis (CBA) as part of its response to the Commission's first review.

4.4.1 Updated Economic Assessment

The updated Economic Assessment used more up to date forecasts of an AUD/USD exchange rate of 0.73 and export prices of US\$84 per tonne for coking coal and US\$61 per tonne for thermal coal. It maintained the assumptions, made in the previous CBA, of an average annual production rate of 934,000 tonnes and export coking/thermal coal split of 52.6%/28.6%³⁰ to conclude that the project would generate an estimated \$323 million in revenue for the proponent and \$23 million in royalties for the State. This compares with the previous Economic Assessment that assumed an AUD/USD exchange rate of 0.85 and export prices of US\$150 per tonne for coking coal and US\$90 per tonne for thermal coal to arrive at an estimated \$400 million in revenue and \$34million in Royalties³¹.

Sensitivity testing was undertaken for a number of variables that highlighted the value of royalties was most sensitive to changes in production rates and to changes in the USD price for coal. For instance a further 20% drop in either production or coal prices would result in the royalties decreasing to \$18.6 million.

The updated Economic Assessment considers that the \$23 million in royalties is a minimum estimate of the net production benefits of the project and provides a minimum threshold value against which the residual environmental, social and cultural costs of the project can be compared.

The residual environmental, social and cultural costs of the project are those remaining impacts after avoidance, mitigation and offsetting or compensation strategies have been applied. The costs associated with avoidance, mitigation and offsetting or compensation has been included in the capital and operating costs borne by the proponent.

The updated Economic Assessment notes that impacts related to noise, surface water, groundwater, visual amenity, biodiversity, and infrastructure associated with the project would be either mitigated or offset or compensated for and would form part of the capital or operating costs of the project. No material economic effects were considered likely in relation to air quality, traffic and

²⁹ Gillespie Economics, 2015, *Russell Vale Colliery Underground Expansion Project Economic Assessment* (revised Economic Assessment)

³⁰ This is equivalent to a product coal split of 65% coking coal and 35% thermal coal, Gillespie Economics, 2015, *Russell Vale Colliery Underground Expansion Project Economic Assessment* (revised Economic Assessment) footnote 14

³¹ ERM, 2013 NRE No.1 Colliery Project Application (09_0013) EA prepared for Gujarat NRE Coking Coal Pty Ltd p.497 and Department of Planning and Environment 2014, Major Project Assessment: Russell Vale Colliery Underground Expansion Project (MP09_0013) p.55

transport, ³²historic or Aboriginal cultural heritage. Greenhouse gas emissions were considered to be the only unmitigated/uncompensated impact. These were costed at \$0.15 million (present value).

Overall the revised CBA put the net social benefits at \$23 million minus the \$0.15 million in greenhouse gas costs and concluded that the project is *'desirable and justified from an economic efficiency point of view'*³³.

The updated Economic Assessment states that the project will directly provide average annual output of \$79 million, average annual wages of approximately \$34 million and employment for up to 300 people for up to 5 years³⁴.

4.4.2 Department's Addendum Report

The Department engaged the Centre for International Economics (CIE) to undertake the independent review of the revised economic costs and benefits of the project, as requested by the Commission in its first review.

The CIE found that the 'minimum threshold value' approach used in the updated Economic Assessment was a reasonable basis on which to frame the economic analysis. This approach focusses on the quantification of royalty payments as these are the most certain of the benefits to arise from the project³⁵.

In terms of royalty payments, the CIE was of the opinion that the estimated royalties of A\$23 million (present value) was appropriately conservative and an indicator of the minimum net production benefit of the project. In its analysis CIE assumed A\$87 per tonne for export thermal coal and A\$148 per tonne for hard coking coal and calculated that this would generate royalties equivalent to \$28 million in present value terms. CIE explained that *'while coal export prices are low, in US dollar terms, this has been 'countered' by the lower exchange rate'*.

The CIE reviewed the Commission's recommendations in relation to noise, air quality and traffic impacts. It accepted that, based on the proponent's conclusions in relation to these impacts and the risk management strategies adopted, that the impacts have been appropriately accounted for in the revised CBA. In reviewing the Commission's recommendations in relation to surface water quality impacts the CIE's analysis concluded that minor additional monitoring costs of \$62,000 (present value) accruing to WaterNSW as a result of the project should be reflected in the CBA. It also concluded that the economic costs of a project-related loss of stream baseflow within the Sydney Basin Nepean Groundwater Source of a maximum of 15 ML per year could be up to \$430,000 (present value), and that this should also be included as a cost in the CBA if it was not factored in as an operational cost by the proponent³⁶.

³² Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Integrated Risk Assessment Appendix J Biosis, 2015, Independent Risk Assessment – Addendum Report p.13 and Appendix 2 Presentation to the IRAP, Slide 13.

³³ Gillespie Economics, 2015, *Russell Vale Colliery Underground Expansion Project Economic Assessment* (revised Economic Assessment)

³⁴ Gillespie Economics, 2015, *Russell Vale Colliery Underground Expansion Project Economic Assessment* (revised Economic Assessment).

³⁵ The Centre for International Economics, 2015, *Review of CBA for Russell Vale extension*, prepared for the Department of Planning and Environment p. 3

³⁶ The Centre for International Economics, 2015, *Review of CBA for Russell Vale extension*, prepared for the Department of Planning and Environment p. 7

Overall the CIE raised no issue with the way in which the updated Economic Assessment had been framed³⁷.

The Department noted that recommended conditions would require the proponent to bear the costs of any stream baseflow loss by purchasing water licences.

Any impacts to upland swamps or other biodiversity will be compensated for by the proponent purchasing suitable offsets in accordance with the government's draft *'Policy Framework for Biodiversity Offsets for Upland Swamps and Associated Threatened Species Impacted by Longwall Mine Subsidence'*.

The Department is satisfied that the project would result in socio-economic benefits to the region and the State through employment generation, significant capital investment and royalty returns in the order of \$23 million.

4.4.3 Submissions to the Commission

A number of submissions to the Commission raised concerns with the proponent's updated Economic Assessment, that the stated benefits to NSW of the project seemed optimistic considering the decline in coal prices, and that any benefits of the project would flow to the State and broader community rather than the local community which would be most affected by the environmental impacts, the financial viability of the proposal, the financial capacity of the proponent to fund rehabilitation of the mine site and whether the proponent was a 'fit and proper person'. Two particularly detailed and considered submissions were received.

A submission made on behalf of the Illawarra Residents for Responsible Mining, raised a number of points. In summary the submission was concerned that: social costs of environmental impacts (biodiversity, noise, air quality) were not accounted for properly in the CBA; the cost ascribed to carbon emissions was unjustifiably low; and that the regional economic impact analysis and the non-market employment benefits should be ignored.

A submission made by the IEEFA questioned the claimed economic benefits of the project in what the IEEFA views as a market in structural decline, citing continuing declines in the price of coal. The submission also makes a number of claims in relation to the financial viability of Wollongong Coal Ltd, worker safety and the risk that rehabilitation of the mine will fall to the State of NSW.

WaterNSW in a letter to the Commission dated 11 December 2015, raised concerns regarding the predicted water quantity loss from the project and the monetary value placed on the predicted loss. The submission contended that surface water reductions are likely to be within the range of 15ML/year and 2.6GL/year. It further noted that the price of water as set by IPART is under represented in the revised cost benefit analysis and rejects the Department's estimate that the *"predicted extreme water loss is negligible"*. It expressed the view that *"if the current replacement value of water of \$2,276/ML is used, a potential cost to Water NSW of approximately \$22.1M could ensue, which is not significantly different from the threshold value of the project given by Gillespie of \$23M"*.

4.4.4 Commission's Consideration

The Commission is of the opinion that the proponent's updated Economic Assessment has used reasonably up to date data and its future coal price assumptions are not out of step with current

³⁷ The Centre for International Economics, 2015, *Review of CBA for Russell Vale extension*, prepared for the Department of Planning and Environment p. 12

government forecasting for the resources sector. The Commission has addressed the key economic issues raised in submissions below.

Compensation and offsets

The Commission understands that the way the CBA accounts for environmental impact mitigation costs and residual environmental costs is in line with government policy as reflected in the recently finalised '*Guidelines for the economic assessment of mining and coal seam gas proposals*'³⁸ (economic guidelines). As these economic guidelines were exhibited and finalised after the proponent's updated economic assessment was completed in June 2015 it is not expected that the proponent needs to achieve full compliance with them. The Commission notes that government policies, such as the '*NSW Biodiversity Offsets Policy for Major Projects*' and the '*Voluntary Land Acquisition and Mitigation Policy*' (VLAMP), operate to mitigate and compensate for impacts.

The Commission further notes that the independent review by CIE accepted the treatment of environmental impact mitigation costs, such as the purchase of biodiversity offsets or implementing noise mitigation measures as proposed in the proponent's response to the First Review Report, in the updated economic assessment (ie absorbed as part of the operating costs).

The Commission's experts pointed out there is a need to consider the potential long term management and operation costs of the water treatment system that may be required to control water outflows from the adit following mine closure as well as the long term on-going monitoring cost to WaterNSW if it is to be responsible for the long-term monitoring water quality after mine closure.

Greenhouse Gas emissions

The Commission understands that without a carbon pricing mechanism operating in Australia and without specific guidance provided within the economic guidelines it will be up to the proponent to quantify GHG impacts with regard to '*relevant research and approaches used in other Australian and international jurisdictions for quantifying similar impacts*'³⁹. It is noted however that Gillespie Economics' approach of scaling Greenhouse gas impacts by Australia's share of global GDP has been criticised in the past by two separate peer reviewers for another project reviewed by the Commission⁴⁰. Nevertheless, it is evident that there is a wide array of different methods currently employed by economic consultants to quantify GHG impacts, with no settled approach on this issue. In fact the exhibited draft of the economic guidelines required comparison of three different carbon pricing models: the European Union Emission Allowance Units carbon price forecast; the Clean Energy Future Policy Scenario/Australian Treasury carbon price estimate; and the US EPA Social Cost of Carbon⁴¹. Each of these models would have returned a higher social cost for GHG in the CBA.

The independent review undertaken by CIE for the Department provided no comment on the calculation of GHG costs in the updated Economic Assessment. The Commission notes that the draft conditions for the project provided by the Department require that an Air Quality Management Plan

³⁸ NSW Government, 2015, Guidelines for the economic assessment of mining and coal seam gas proposals pp.11 and 19

³⁹ NSW Government, 2015, Guidelines for the economic assessment of mining and coal seam gas proposals p.16

⁴⁰ BDA Group, 2015, Drayton Mine Extension Project Economic Impact Assessment Peer Review, prepared for Hansen and Bailey on behalf of Anglo American; Deloitte Access Economics, 2015, Peer Review of economic assessment of Drayton South Coal Project, prepared for the Department of Planning and Environment. Accessed at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6875 on 19/01/2016

⁴¹ NSW Government, Draft Guidelines for the economic assessment of mining and coal seam gas proposals p.60

describing measures to minimise the release of GHG be prepared and implemented for the project. In this regard the proponent identified within its preferred project report measures to potentially reduce total emissions by at least 59%⁴².

The Commission finds the net benefit of the project could be improved by committing to the costs of the mitigation measures to minimise the release of GHG in the CBA.

Regional economic impacts and non-market employment benefits

The Commission notes that the governments '*Guidelines for the economic assessment of mining and coal seam gas proposals*' support the inclusion of a 'local effects analysis' (LEA) to support the CBA. The LEA is intended to analyse the '*local effects of the project on local employment and income effects; other local industry effects, for example on suppliers; and environmental and social changes in the local community*'⁴³. It is considered that the regional economic impact analysis and the non-market employment benefits information provided as part of the updated economic assessment provides some similar information as required for an LEA and, while reporting should be separate, it is a useful adjunct to the CBA which remains the primary tool for evaluating whether the project will deliver net benefits to NSW.

Market for Coking Coal

Despite the continuing decline in coking coal prices Australia's exports of coking coal are forecast to increase⁴⁴. It is noted that while worldwide steel production is projected to remain steady over the short-term world steel consumption is forecast to return to growth⁴⁵. The Commission is satisfied that there will be continued demand for coking coal.

Project Finances and Worker Safety

In relation to concerns raised in public submissions and at the public hearings about the financial viability of the proposal, the financial capacity of the proponent to fund rehabilitation of the mine site, and whether the proponent was a 'fit and proper person' the Commission notes that these issues are regulated under the *Mining Act 1992*. The *Work Health and Safety (Mines) Act 2013* regulates safe working environments at mines. These are separate statutory regimes and not relevant considerations under the *Environmental Planning & Assessment Act 1979*, to which the Commission must have regard.

4.4.5 Commission's Findings

The Commission questions the quantum of economic benefits that would be generated from the project and the proponent's capacity to deliver the claimed benefits including employment, expected production rates and associated royalty payment.

The claimed benefits include employment, engagement of contractors, and royalty payments. The Commission notes the Division of Resources & Energy in a letter to the Department dated 16 December 2014 concluded that the significance of the project is its ability "*to maintain coal production from the Southern coalfield and utilisation of Port Kembla Coal Terminal*". The Division directed attention to the potential economic impact on the region, if the project were not approved. "*The combined economic impacts of job losses at the company's Wongawilli and Russell Vale Collieries may be as high as \$886 million and impacting on over 1000 jobs directly and indirectly*". In

⁴² Gujarat NRE Coking Coal Limited, Underground Expansion Project Preferred Project Report, p.34

⁴³ NSW Government, 2015, Guidelines for the economic assessment of mining and coal seam gas proposals p.5

⁴⁴ Department of Industry, Innovation and Science - Office of the Chief Economist 2015, *Resources and Energy Quarterly- December 2015*, Canberra p.23

⁴⁵ Department of Industry, Innovation and Science - Office of the Chief Economist 2015, *Resources and Energy Quarterly- December 2015*, Canberra p.12

this regard, the Commission notes the Wollongong Coal Quarterly Report (October to December 2015) reported “Wongawilli Colliery to commence operation in the fourth quarter” and a decision has been made “to place the Russell Vale Colliery on Care and Maintenance on the 1st September 2015...”⁴⁶

Put simply, the claimed socio-economic benefits include:

- the creation/continue employment opportunity for up to 300 people including contractors for 5 years
- the generation of \$23 million royalties for NSW
- indirect employment by adopting a multiplier of 4
- direct flow on effects in the region of \$114 million
- \$85 million in capital and operation expenditure that would generate \$580 million in regional output over the mine’s life
- Tax for the Commonwealth
- Maintain coal production from the Southern Coalfields
- Utilisation of the Port Kembla Coal Terminal

The CIE identified the following costs should be included in the CBA analysis:

- The ongoing monitoring requirement at a cost of \$62000 (present value) to WaterNSW
- Greenhouse gas emissions at \$0.15 million
- Monetary compensation to the loss of water at up to \$430,000 (present value). This may be included as the proponent’s operating cost resulting in a reduction in profit.

The Commission finds the economic assessment requires updating to take into consideration that:

- The additional mitigation measures are required to reduce noise impact from the pit top site to private residences and truck traffic noise impact to residents along Bellambi Lane when the benchmark existing noise levels are updated to reflect actual existing noise.
- How does the \$22 million cost of water loss estimated by WaterNSW compare with the CIE estimate of \$430,000 present value?
- Who should bear the potential long term management and operational cost of the water treatment system, if require to control water outflows from the adit following mine closure assuming it is part of the operating cost while the mine is in operation.
- The timeframe factored in the estimated \$62,000 (present value) to WaterNSW for on-going monitoring requirements as monitoring will continue to be required after mine closure.

The key issue to the Commission is how to balance the short-term immediate economic benefits with the uncertain long-term costs and environmental consequences.

4.5 NOISE

Noise from the pit top site has been an ongoing issue for the mine. The Commission’s First Review heard concerns from surrounding residents and the EPA. During the review, the Commission noted there were significant differences between the noise assessment for this application and the one provided for the 2011 preliminary works application, and found that:

*The proposed less stringent noise levels have not been justified adequately by the information available to the Commission nor have additional practical measures been adequately investigated to meet intrusive noise levels recommended by the Industrial Noise Policy.*⁴⁷

⁴⁶ Wollongong Coal, Quarterly Report, October to December 2015, p.3-4

⁴⁷ Planning Assessment Commission, 2015, *Russell Vale Colliery – Underground Expansion Project Review Report, April 2015, p.40*

The Review Report made the following recommendation:

Recommendation 7

*The Commission recommends that further consideration of the noise impacts of the project needs to be provided including consideration of further noise mitigation measures as recommended by the EPA. Detailed justification should be provided for any deviations from the existing noise limits in current planning approval. Also clarification should be provided on the outcomes and applicability of the noise audit required in the 2011 approval.*⁴⁸

4.5.1 The Proponent's Response to the Commission's First Review Report

The Wilkinson Murray Report No 14141-A Version B dated July 2015 (WM2015) responded to the recommendations in the Commission's First Review Report.

Briefly, the report advised that the noise levels predicted by the ERM 2010 assessment for the approval of the 2011 preliminary works (2011 Approval) were lower than the levels predicted by Wilkinson Murray 2014 assessment "*principally due to the incorrect assumption that adverse meteorological conditions were not a feature of the area, and the adoption of different source sound power levels*". Table 3-2 of the WM2015 report shows the inconsistency with the ERM assessed PSNLs, the predicted noise levels and the 2011 Approved noise limits. Due to the incorrect assumption in the ERM 2010 assessment, the proponent considered it appropriate to reconsider the approved noise levels based on the findings of the noise assessment for the current project.

The proponent advised that most of the noise mitigation measures have been implemented. Other measures including fitting conveyors with poly rollers and maintaining a minimum level of coal in the loading bin, have been accepted and would be implemented. It has also committed to replace the front-end loaders, undertake a trial of tripper automation, and carry out further noise monitoring to determine whether a noise barrier is warranted.

As to the 2012 Noise Audit results, the WM2015 report advised that "*the 2012 audit noise levels represent the levels found to occur during the brief period of the audit. Whilst it is not clear from the audit report exactly which on-site noise sources influenced the measured noise levels, it is apparent that the results of the attended noise survey indicated compliance with the Interim Intrusive Noise limits outlined in the Project Approval.*" The report also directed attention to "*the Department's proposed levels are based on assessment of the site at full capacity and reliant on modelling which has accounted for the simultaneous operation of all equipment operating concurrently and at full capacity.*"⁴⁹

4.5.2 Agencies and Council's Comments on the Proponent's Response

Environment Protection Authority (EPA)

By letter dated 20 August 2015, the EPA advised the Department that:

In relation to noise impacts the EPA advised on 11 December 2014 ... "noise from the premises will be clearly audible and likely to be considered as intrusive by some members of the surrounding community" ... and ..."proposed limits exceed what the EPA would consider licensing to" ... The PSNLs will be exceeded even following the implementation of reasonable and feasible noise mitigation measures. In such cases, if Approval was granted, it would have to be granted taking account of the balance of overall social and economic benefits against undesirable local amenity impacts. The notes to the Industrial Noise Policy (INP) state that

⁴⁸ Ibid, p.41

⁴⁹ The Wilkinson Murray Report No 14141-A Version B dated July 2015, p.22

“decisions of feasible and reasonable mitigation option, the absolute level of noise and existing measures of community impact including complaints”.

The EPA recommended that if approval were to be granted,

1. Consideration be given to requiring the provision of noise mitigation measures at private residences where proposed noise limits are measurably exceeded as this is consistent with the INP, and
2. The scope of mitigation works and timeframes for completion should be clearly defined and secured as a condition of approval.

Wollongong City Council

By letter dated 14 October 2015, Council advised that it supports the construction of a noise barrier to reduce the noise impacts on the surrounding residences and a condition of approval should require appropriate consultation with adjoining residential property owners.

4.5.3 The Department’s Addendum Report and Recommended Conditions of Approval

Table 2 of the Department’s Addendum Report (Nov 2015) summarised the “existing noise levels” against the predicted noise levels for the project. As the two sets of noise levels are “either the same as, or less than, those currently being experienced with the exception of one receiver, which is predicted to experience a 1dB(A) increase in existing noise level” with the proposed project. Such minor increase would not be noticeable.

As to best practice noise mitigation measures, the Department noted that *“the EPA has reviewed the additional noise and costing reports and has indicated that Wollongong Coal has undertaken a ‘reasonable and feasible’ assessment of the noise control recommendations and costs”*. Further that, *“the majority of the EPA’s recommended noise mitigation measures have already been implemented on-site. Those that have not been implemented have been assessed as having limited acoustic benefit”*.

The Department noted Wollongong City Council’s support of the construction of a noise barrier. However, the Department maintained *“its long-held position that the topography in the vicinity of the pit-top site is not conducive to a noise barrier being an effective noise management technique. Furthermore, such a barrier would result in significant visual impacts on nearby receivers, which have generally not raised noise as an issue in the past”*. Notwithstanding such views, the Department supports the proposal that the proponent should carry out further real time in-situ noise monitoring and discuss the results with the affected residents before a final position is made on whether the noise barrier should be constructed. A condition of approval is recommended accordingly by the Department.

With regard to the proposed noise limits, the Department considered the flaws in the ERM noise assessment for the preliminary works in 2010 resulted in a significant underestimate of the predicted noise levels when the site is operated to capacity leading to unrealistically low noise criteria in the 2011 approval. The WM2014 report revised the earlier assessment and the Department’s noise specialist reviewed the results and found them to be *“representative of the existing and future operational activities under the UEP”*.

The Department acknowledged that the proposed noise levels would exceed the PSNLs at certain locations, even following the implementation of all reasonable and feasible noise mitigation measures. However, *“in no case would the predicted levels exceed the Acceptable Amenity Criteria”*. Attention was directed to the Voluntary Land Acquisition and Mitigation Policy (November 2014) that voluntary mitigation and acquisition rights should not be granted to resolve existing development’s legacy noise issues, *“where the modification would have beneficial or negligible*

noise impacts.” The Department maintains that its recommended noise criteria are appropriate and the recommended conditions would require the proponent to continue its investigation and implementation of any reasonable and feasible noise reduction measures.

Following a review of the Addendum Report, other available information and the submissions made at the public hearing, the Commission sought further clarification from the Department. The response is in Appendix 5.

Briefly the Department advised that the pit top site is an existing operation with legacy noise issues. Its assessment concluded that the proposed project would have beneficial or negligible noise impacts on nearby residences and under the current Government policy, the consent authority should not grant voluntary mitigation and acquisition rights. The Department further advised that current noise policy requires noise level objectives to apply under ‘worst-case operational and meteorological conditions’. It does not consider it is realistic or applicable to use noise levels measured during the noise audit as ‘benchmark’ noise levels. The Department considered it is reasonable to limit noise from the pit top site to levels that do not exceed the Acceptable Amenity Criteria for the area. Under the proposed draft Industrial Noise Guideline, industries that have operated for a long period of time in one location will not be treated the same as for green-field sites. If the site were assessed under the draft guideline, the intrusive noise criteria would increase significantly. The Department maintains the assessment methodology undertaken is the most reasonable and applicable option.

4.5.4 Public Submissions to the Commission

Issues raised at the second public hearing are quite similar to those raised in the first hearing. Briefly the main concerns are:

- The predicted noise levels from the mine will exceed the project specific noise levels at certain locations.
- Noise mitigation measures at private residences should be considered.
- Recommended conditions of consent are insufficient as they rely on the applicant identifying what is *reasonable and feasible* in relation to noise and air quality.
- No other mine in Australia is as close to residential areas.

4.5.5 Commission’s Considerations

The key issues for the Commission’s consideration are:

1. the appropriate benchmark noise levels for the assessment of impact on residences, and
2. the adequacy of the proposed and recommended mitigation measures to reduce impact on residences, if the project were to be approved.

1. Benchmark noise levels for the assessment of impact on residences

This is the most critical question as they determine whether the proposed project would have negligible or beneficial impact on nearby residences, hence the application of the *Voluntary Land Acquisition and Mitigation Policy* (November 2014).

The Department is of the view that given the flaws in the earlier ERM’s assessment for the 2010 application, the remodelled noise levels in the WM2014 should be taken as the “existing” noise levels for comparison with the predicted noise levels for the current proposal. As the “existing” and predicted levels are quite similar, almost the same, the Department concluded that the proposed project even with the significant increase in production levels, would have a negligible noise impact

on nearby residents. The Commission sought further clarification from the Department in relation to the benchmark noise levels and the Department's response is in Appendix 5.

Notwithstanding the detailed explanation and justification provided by the Department, the Commission is not convinced that the modelled noise levels should be adopted as the "existing" noise levels for the assessment of the current application.

The Department's approach to setting the "existing" noise levels fails to give due regard to the noise limits set out in the 2011 approval, notwithstanding the approved limits were based on flawed assumption and methodology. It is fair to say that there is no certainty that approval would have been granted to the earlier application, or if granted, what additional mitigation requirements would be imposed if the WM2014 revised noise levels were presented to the 2011 consent authority.

The 2011 approved noise limits gave certain expectation to the community that those were the noise impacts that they would receive. The 2012 noise audit showed compliance with the night time limits except for residences on West Street and Broker Street, Russell Vale. The Commission does not accept the argument that the reason for the reported low levels of operational noise was due to operational constraints, which did not allow the mine to operate to its full capacity. If the mine were to operate to its full capacity, it would breach the approved noise limits. A modification application would have been required to increase the noise limits, and there is no knowing what conditions the consent authority would impose if the noise limits were allowed to increase.

The Commission agrees that the 2012 noise audit results are not appropriate for benchmarking the existing noise levels for the assessment of the current project. However, they provide reference points for the consideration of the current application. In the Commission's view, the setting of the benchmark noise levels for assessment should have regard to the 2011 approved noise limits, the 2012 noise audit results and the *Industry Noise Policy*.

The *Industrial Noise Policy* provides a clear framework and process to establish the criteria for noise assessment. The Commission noted the draft Industrial Noise Guideline. However, it is yet to be adopted by the Government and there is no certainty that the draft will be adopted as exhibited. In the absence of a fair and reasonable alternative benchmark noise levels for the assessment, the Commission will focus its consideration of the noise issue having regard to the existing *Industrial Noise Policy*.

Table 5-2 of the WM2015 report shows the revised predicted worse case noise levels from the project in Year 4 and the relevant criteria (PSNLs) derived from the *Industrial Noise Policy*. Predicted exceedances range up to 10dB (day time), 13dB(evening) and 5dB(night time). Notwithstanding the already implemented and proposed mitigation measures, the range of exceedances clearly indicate noise impacts on nearby residences are not negligible or beneficial.

In this regard, the Commission notes the EPA's advice that

the PSNLs will be exceeded even following the implementation of reasonable and feasible noise mitigation measures. In such cases, if Approval was granted, it would have to be granted taking account of the balance of overall social and economic benefits against undesirable local amenity impacts. The notes to the Industrial Noise Policy (INP) state that "decisions of this nature will be determined on a case-by-case basis, taking into account various factors, for example, feasible and reasonable mitigation option, the absolute level of noise and existing measures of community impact including complaints".

If approval was granted, the PAC could consider discussing with the DPE the option of requiring the provision of noise mitigation measures at private residences where proposed noise limits are measurably exceeded. The consideration of such a benefit is consistent with the INP's approach where there is a residual level of impact after reasonable and feasible measures are implemented. It might also address the PACs expressed concerned that "the project should be considered on its merits, rather than simply against the mine's historic noise impacts."⁵⁰

Based on the information available, the Commission is not convinced that the *Voluntary Land Acquisition and Mitigation Policy* should not apply as concluded in the Department's Addendum Report. However, the application of the policy should take into consideration the history of the mine, which has existed in the locality since the late 1800s. In the circumstances, the Commission agrees with the EPA that mitigation measures on private residences could be considered.

2. *The adequacy of the proposed and recommended mitigation measures to reduce impact on residences, if the project were to be approved*

The evidence indicates that the implementation of the EPA recommended mitigation measures would not be sufficient to reduce the noise levels to an acceptable level. The Commission notes that noise barrier is an option that is being considered. Wollongong City Council supports the construction of the barrier. The proponent has committed to carry out further noise monitoring and discuss the results with the community before finalising its position whether to construct the barrier. The Department held the view that the construction of a noise barrier would create a visual impact and the effectiveness is limited to those residences that are close to the barrier. As discussed earlier, the Commission supports the EPA's recommendation that consideration be given to provide "noise mitigation measures at private residences where proposed noise limits are measurably exceeded".

The draft recommended noise criteria

Draft condition 1 in Schedule 4 provides the noise criteria that are applicable to the 14 identified receiver. For all other privately owned land, the applicable criteria are 63dBA (day), 53dBA (evening) and 48dBA (evening) with a $L_{A1(1min)}$ of 52 for the night period. The Commission has serious concern about this condition.

For example, the day time criterion for 14 West Street, Russell Vale is 53dBA and for 30 West Street, Russell Vale is 54dBA. There are several residences between these two properties. The noise criteria condition as drafted means these residences would be subject to noise level up to 63dBA during day time unless they have an agreement with the proponent. The Commission finds this condition not fair or equitable. The same situation applies to Broker Street, Midgley Street, and Lyndon Street. The Commission considers a noise contour map should be provided to indicate the predicted noise levels to allow appropriate criteria to be applied.

4.5.5 Commission's Findings

The Commission finds:

1. The Department's adoption of the modelled noise levels as existing noise levels is not reasonable or sufficiently justified.
2. The setting of benchmarks should have regard to the 2011 approved noise limits, the 2012 noise audit results and the *Industrial Noise Policy*.
3. If the PSNLs are accepted as the benchmark for assessment of impact, the proposed project would have significant residual noise impact on certain nearby residences, notwithstanding the already implemented and proposed on site mitigation measures.

⁵⁰ NSW EPA letter to the Department of Planning and Environment, *Request for Comment, Wollongong Coal Response to PAC Recommendations*, dated 20 August 2015, Attachment 1, p.2-3

4. The draft recommended noise criteria for the identified receivers are not reasonable, particularly the criteria for “all other privately-owned land” especially to those who are neighbours to the identified receivers.

The Commission notes the advice from the EPA that the Industrial Noise Policy that where acceptable noise levels cannot be achieved with reasonable and feasible measures then the determining authority should consider the impacts against the social and economic benefits of the project. The Commission addresses this balance in its conclusions for this Review.

4.6 AIR QUALITY

The Commission’s First Review Report found that although the proponent has predicted that the mine would be able to comply with current air quality criteria, further assessment of PM_{2.5} emission against the National Environmental Protection Measures (NEPM) criteria is warranted. It should also demonstrate how the increased coal handling capacity (proposed to increase from the existing 1 Mtpa to 3 Mtpa) would be managed to minimise emissions and achieve best practice.

The First Review Report recommended:

Recommendation 8

The PM_{2.5} emissions from the proposal need to be assessed prior to any determination of the application.

Recommendation 9

Consideration of best practice standards needs to be provided to demonstrate that air emissions would be minimised and to justify the proposed increase in coal handling capacity.

Recommendation 10

The mine’s existing monitoring and reporting systems should be strengthened to clearly demonstrate compliance with current conditions, environmental standards and reporting goals (i.e. for PM_{2.5} emissions). (Planning Assessment Commission, 2015, p. 43)

4.6.1 The Proponent’s Response to the First Review Report

The proponent advised that an assessment of PM_{2.5} emissions was carried out by Pacific Environment Limited (PEL letter dated 23 July 2015). “The modelling results show that no sensitive receptor is predicted to experience ground level concentrations of PM_{2.5} greater than the relevant assessment criteria due to the project alone or cumulatively”. (p 7)

In terms of monitoring and reporting of PM_{2.5}, the proponent advised that it currently provides quarterly reports on PM₁₀ as there are no criteria for PM_{2.5}. It also advised that the two new monitors installed in late 2013 have produced PM_{2.5} data. The proponent has logged and evaluated the data for internal environmental management purposes. It will include the PM_{2.5} results in future reporting and published on its website.

With regard to best practice, an evaluation of best practice dust management at the mine site was carried out by PAEHolmes in 2012 (PAEH2012). The report identified the four highest ranking activities in terms of PM generation are wind erosion of coal stockpiles, trucks unloading coal, material transfer of coal and wheel generated particulates on unpaved roads. The best practice measures that are proposed as part of the current application include new truck loading facility, two new conveyors with enclosures, underground reclaim, secondary sizer building, water sprays on moving tripper and upgrade fleet from 34 tonnes to 44 tonnes. Other potential measures have been considered including vegetative windbreaks on stockpiles, trial chemical wetting agents on the stockpiles, pave the surface of the haul roads, and trial suppressants on the haul roads. Of these

four measures, the proponent has committed to trial chemical wetting agents on haul roads and stockpiles, and paving the proposed haul road through the stockpile area.

4.6.2 EPA's Comments on the Proponent's Response to the First Review Report

By letter dated 20 August 2015, the EPA advised the Department that it has reviewed the proponent's response to the First Review Report and noted that *"all sensitive receivers are predicted to experience PM_{2.5} concentrations below the current national NEPM criteria"*. It further noted that the proponent has committed to install new works including a reclaim conveyor/coal hopper loading facility and sealing of the main haul roads so as to reduce dust emissions. Additional dust mitigation measures have been proposed including trial use of chemical wetting agents on haul road and stockpiles, sealing of the proposed haul road and water sprays on the moving tripper. The EPA recommends the scope and timeframes for completion of all works be clearly defined and secured as conditions of approval, if the project were to be approved.

With regard to monitoring and reporting of PM_{2.5}, the EPA supports the proponent's commitment to include PM_{2.5} monitoring and future reporting be published on its website.

4.6.3 The Department's Addendum Report and Recommended Conditions of Approval

The Department advised that its assessment concluded that the proposed project would comply with all relevant dust criteria (project specific and cumulative) at privately owned residences near the pit top site with one exceedance of short term (24 hour) cumulative impact over the year. This is considered *"to be infrequent and would only occur rarely under worst case meteorological conditions"*.

Attention is directed to a range of air quality mitigation measures that have been implemented by the proponent for the existing mining operations. The proponent has committed to construct the new truck loader facility and the secondary sizer building by the end of 2016, truck fleet upgrade would be phased in over a 24 month period following approval of the current application, and the two new conveyors and underground reclaim operations would be implemented when production reaches about 2.7mtpa.

The Department also noted the proponent's commitment to trial chemical wetting agents on haul roads and stockpiles, sealing of haul road and installing water sprays on the tipper.

In summary, the Department maintains its view that the proposed air quality criteria and operating conditions remain applicable to the proposed project. It also noted the EPA's request and recommended additional conditions to ensure the scope and timeframes of the proposed mitigation measures are implemented.

4.6.4 Submissions to the Commission at the Public Hearing

The Commission heard from a number of local residents at the public hearing raising concerns about various dust sources associated with the pit top, particularly the expansion of coal stockpiles, emplacement areas and emissions from trucks transporting coal to the Port Kembla Coal Terminal.

4.6.5 Commission's Considerations

The three issues raised in the First Review in relation to air quality are:

1. The need for assessment of PM_{2.5} emission
2. Best practice to manage emissions
3. Monitoring and reporting of performance

Assessment of PM_{2.5} Emission

The evidence indicates that the proposed project would meet the NEPM PM_{2.5} criteria at all sensitive receivers. However, the Commission notes that although “*the modelling results show that no sensitive receptor is predicted to experience ground level concentrations of PM_{2.5} greater than the relevant assessment criteria, due to the Project alone or cumulatively*”.⁵¹ Table 4 indicates that two of the receivers (R1-1 and R2-2) are very close (24.4µg/m³) to the NEPM 24 hour criterion of 25µg/m³. Receiver R3_10 is at 23.9µg/m³. This is a concern to the Commission. When this concern and the predicted one exceedance of PM₁₀ 24 hour criterion referred to in the proponent’s RTS⁵² are considered together, the Commission finds a strong real time monitoring and pro-active management system including shutdown of facilities is of critical importance to minimise impact on nearby residents, particularly during adverse weather conditions.

Implementation of Best Practice Standards

The Commission notes the already implemented best practice measures for the existing operations. It also supports the proposed measures to be implemented if the project were approved. The Commission also notes the Department has accepted the EPA’s recommendation to include the scope of works and specific time frames for the implementation of the measures as additional recommended conditions of approval. However, the Commission is concerned regarding the inherent delay in implementation of the measures due to the generous time limit proposed in the draft conditions. For example, the draft condition requires the sealing of the haul roads through the stockpile area within 12 months of the commencement of mining operations. The Addendum Report has not explained why the haul roads cannot be sealed before commencement of mining operation or within 3 months of commencement.

The Commission is concerned that the construction of the two conveyors and underground reclaim is linked to production levels reaching an equivalent of 2.7 Mtpa. Information from the proponent indicates that this level of production may never be achieved for this project. The Commission is of the view that further consideration of the implementation timeframe and assessment of the predicted impacts is required if these measures are not implemented.

Monitoring and Reporting System

The Commission notes that the proponent has included in its Statement of Commitments to report on:

- Annual average and 24 average PM10 criteria;
- Annual average and 24 hour average PM2.5 criteria; and
- Adaptive management and ongoing improvements implemented to reduce dust emissions throughout the reporting period.

The Commission supports the introduction of the reporting regime and reporting on the proponent’s website.

Emplacement Area and Stockpiles

At the public hearing the community raised concerns regarding both the existing emplacement area and the proposed stockpile areas, particularly the height of the stockpiles.

The Russell Vale Emplacement Area (RVEA) is not part of the current application. The RVEA land lies north of the mine site and operates under a separate consent issued by Wollongong City Council. The proponent has advised that there is no intention to use this emplacement area as part of the

⁵¹ Pacific Environment Limited letter to Hansen Bailey, *Response to Planning Assessment Commission Air Quality Recommendations*, dated 23 July 2015, p.7

⁵² Hansen Bailey, *Response to Planning Assessment Commission Review Report Part 1*, July 2015 p.15

project. The Commission has discussed outstanding compliance issues with Wollongong City Council and recognises that the Council is the regulatory authority. To ensure that the proposed project does not exacerbate existing compliance issues at the RVEA a prohibition of transport materials from the project to the RVEA should be considered.

The existing stockpile (SP1) has a capacity of 60 000t to 80 000t and will continue to be used for the proposed project. Two additional stockpiles (SP2 and SP3) are proposed to be located to the east of SP1. Each new stockpile will have a capacity of approximately 140 000t. Following construction of SP2 and SP3, the total stockpiling capacity will be about 340 000 to 360 000 tonnes of coal on site. The Commission notes the stockpiles has been included as part of the surface facilities in the air quality assessment and the proposed mitigation measures will minimise potential impacts on nearby residents.

The Commission notes that the dimensions of the proposed stockpiles are not easy to find in the main documents. Two drawings in Appendix 3 of the EA (Dwg No 282800 Rev G and Dwg No 282801 Rev E) show the locations and approximate elevations of the 3 stockpiles.

4.6.6 Commission's Findings

The Commission finds:

1. The concerns raised in the First Review Report have largely been addressed in the additional information provided.
2. A strong real time monitoring and pro-active management regime is of critical importance to minimise potential impact on residents and annual reporting should be available on the proponent's website
3. A review of the draft conditions of approval in relation to timeframes for implementation of the various proposed mitigation measures is required, particularly when production rate is unlikely to reach 2.7mtpa.
4. A prohibition condition may be required to disallow the transport of materials from the site to the RVEA without the agreement of the Wollongong City Council.
5. A clear description of the stockpiles' dimensions (height, length and width) would assist the understanding of the visual relationship of the stockpiles and the surrounding landuses.

4.7 BELLAMBI CREEK - FLOOD MANAGEMENT

The Commission's First Review recommended that

Recommendation 11

Any new approval should retain the existing requirement to realign Bellambi Creek or a full justification why this is no longer necessary to provide protection to the creek downstream from the pit top surface area.

4.7.1 Proponent's Response to the First Review Report

In response to the recommendation in the First Review Report, the proponent submitted a report entitled *Bellambi Gully Flooding Approach* prepared by Cardno in July 2015 (Cardno 2015 Report). This study considered the originally proposed creek realignment and presented alternate mitigation measures to address the flooding issue. It recommends a number of mitigation measures to reduce clean water runoff entering the stockpile area, while conveying all site runoff into Bellambi Gully Creek in a manner to prevent flooding of Bellambi Lane.

4.7.2 Wollongong City Council's Comment on the Proponent's Response

By letter dated 14 October 2015, Wollongong City Council advised the Department that it recommended a condition of consent be imposed requiring the carrying out of appropriate flood mitigation works as per the recommendations contained in the Cardno 2015 Report.

4.7.3 The Department's Addendum Report

The Department advised that it is satisfied that the additional reports from Cardno have adequately addressed the issues of concern and Wollongong City Council is also satisfied with the proposed flood mitigation measures. It has recommended a condition be imposed to require the implementation of mitigation measures within 12 months of the date of approval. The Department is also satisfied that *"the existing water performance measure requiring dams to be designed, installed and maintained in accordance with the series 'Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2E Mines and Quarries' is otherwise sufficient to ensure the treatment of runoff water within the stockpile area prior to discharge"*.⁵³

4.7.4 Submissions to the Commission

The Commission heard concerns regarding flooding, failure to construct flood mitigation works and previous flood events in the first public hearing. Similar concerns were raised at the second public hearing. Reference was also made to the recent pollution event caused by a malfunction of the stockpile spray.

4.7.5 Commission's Considerations and Findings

The Commission is satisfied that the issue raised in the First Review Report has been adequately addressed and supports, if the project were to be approved, the inclusion of a condition of consent that requires the implementation of flood mitigation measures recommended in the Cardno 2015 Report within 12 months of the date of approval. It also supports the draft recommended condition requiring the installation of a swale alongside the stockpile access road, which should improve water management on the site, though it is noted that the discharge of dirty water from the site is regulated by the EPA under the site's Environment Protection Licence.

4.8 TRAFFIC AND TRANSPORT

The Commission's First Review Report made the following recommendations:

Recommendation 12

The proponent should negotiate with Council and Roads & Maritime Services regarding maintenance contributions to mitigate impacts from the increase in truck movements along the haulage route.

Recommendation 13

Consideration should be given to further limiting the hours of truck movements.

Recommendation 14

Proponent should investigate and cost a number of options to reduce the noise impacts to the most effected residents along Bellambi Lane, particularly those near the intersections with the Princes Highway and the Northern Distributor. Options to be considered by the proponent, should include, but not be limited to:

- a. construction of a coal truck parking area (for trucks to wait prior to the commencement of haulage hours) within the mine boundary*
- b. construction of a noise barrier near the intersections of Bellambi Lane/Princes Highway and Bellambi Lane/Northern Distributor; and*
- c. use of pavement modifications along Bellambi Lane, to reduce truck/trailer banging.*

Recommendation 15

⁵³ Department of Planning and Environment, 2015, Addendum Report: Major Project Assessment Russell Vale Colliery Underground Expansion Project (MP 09_0013), November 2015, p.28

No increase in the currently approved maximum rate of extraction should be approved without clear demonstration that facilities can handle the additional volume without unacceptable impacts for local residents.

4.8.1 Submissions to the Commission at the Second Public Hearing

Public submissions at the second public hearing raised issues similar to those raised at the first public hearing. The following is a brief summary of these concerns.

- Current truck noise is already having a significant impact on residents in Bellambi Lane, particularly noise and fumes. The proposed production level will significantly increase truck traffic with unacceptable impact, particularly in the evening.
- Contribution to maintain Bellambi Lane should be required.
- Consultation for the Traffic Control Plan should be expanded to include the Council and residents.
- Transportation of coal should be via a conveyor belt to the rail line, not road.
- Road transport should be restricted to 1mtpa. Any production above this level should be transported via a conveyor belt.
- Previous government position was coal to be transported by rail with only residual approval to be transported by road and those to be subject to stringent conditions.

4.8.2 Commission's Consideration

Road Maintenance Contributions

Both Wollongong City Council and the proponent advised the Commission that negotiation of a road maintenance contribution has commenced. Council also recommended *"a condition be imposed requiring the proponent to successfully conclude negotiations with the Council (through a Planning Agreement) regarding the payment of appropriate road maintenance contributions towards Bellambi Lane"*⁵⁴. The Department's Addendum Report advised that it has included a draft condition that requires *"agreement with Council to be reached within 6 months of approval, and referral to the Secretary if agreement cannot be reached"*.⁵⁵

The Department also directed attention to the RMS's advice via its letter to the Department dated 28 May 2015 that the proposed increase in traffic would not have a significant impact on the operation and performance of the main road network and raised no objections in principle to the application.

The Commission finds the issue has been adequately addressed and supports the requirement to reach an agreement within 6 months of approval, if the project were to be approved.

Truck Movements and transportation hours

The proponent advised that current approval allows coal transportation between 7am to 10pm on weekdays and 8am to 6pm on weekends and public holidays. The current application does not seek to alter these hours.

The Department advised that it has recommended the same transportation hours to be continued for the current application. To support its recommendation, the Department pointed out that the increase transport of coal from 1Mtpa to 3Mtpa would increase the number of truck movements

⁵⁴ Wollongong City Council letter to the Department of Planning and Environment dated 14 October 2015

⁵⁵ Department of Planning and Environment, 2015, Addendum Report: Major Project Assessment Russell Vale Colliery Underground Expansion Project (MP 09_0013), November 2015, p29

from 22 to 34 per hours. The noise assessment concluded that traffic noise would increase by 1.7dB(A) from the current road traffic noise. Such increase *“is considered negligible, particularly within the historical context of noise levels generated on Bellambi Lane until 2009, which were much higher than future predictions. The Department notes there would be no night-time trucking (apart from the odd over-sized vehicle) and that the project would remain fully in compliance with criteria in the Road Noise Policy”*.⁵⁶

The Commission is concerned about how the conclusion of noise increase of 1.7dB(A) was reached. The issue here appears to be similar to that discussed in the noise section of this report.

In the July 2010 Cardno Report, it outlined the then existing transportation of coal on a day to day basis with about 110-120 truck movements per delivery day⁵⁷. In the April 2014 Cardno Report⁵⁸, it reported the March 2014 summary of average weekday truck movements of 144 equivalent to 17 movements per hour. For 3 million tonnes per annum production there would be an average of 34 movements per hour, equivalent to 510 truck movements per day. The February 2013 ERM Report⁵⁹ predicted the peak coal delivery would generate 682 trips per day.

The figures in these reports indicate the increase in truck movement would be from 17 to 34 movements per hour and could be as high as 45 movements per hour during peak delivery. The Commission fails to understand how such increase in truck movement numbers would only generate an increase of 1.7dB(A) in traffic noise level. It appears the Department’s assessment was again based on the modelled maximum production of 1mtpa as the existing noise levels for comparison. However, this still fails to take into consideration of peak delivery and the frequency of its occurring.

A reassessment of traffic noise impact is required to provide a true picture of existing and predicted traffic noise levels due to the increase in truck movement. The assessment should include peak delivery to allow a proper consideration of appropriate mitigation measures to be implemented, if required, to maintain reasonable amenity for residents along Bellambi Lane. Consideration of mitigation measures should include limiting truck movement after 6pm.

Truck parking area within the site

The proponent advised that the current application includes a proposed haul trucks parking area to address the concerns of the residents.

The Commission notes the proposed parking area is adjacent to the entrance of the pit top site and in close proximity to a number of residences. It is also noted that the proposed truck parking area may require the removal of part of the existing noise bunds as indicated in Figure 6-4 of the WM2014. The Commission is concerned the impact of noise associated with truck queueing on nearby residences, particularly in the early morning hours.

Noise barrier

As to the proposal to construct a noise barrier near the intersection of Bellambi Lane and Princes Highway, the proponent advised that Section 7 of the WM2015 report detailed the analysis of perimeter noise barrier to reduce potential noise and concluded that only a section of 6m high noise barrier may benefit those who are close to the barrier. This section does not include the intersection of Bellambi Lane and Princes Highway.

⁵⁶ Ibid, p 30

⁵⁷ Cardno, *Gujarat NRE No. 1 Mine Traffic Study*, dated July 2010, p.7

⁵⁸ Cardno, *Wollongong Coal Russell Vale Colliery – Traffic & Transport Impact Assessment for the Preferred Project*, dated April 2014

⁵⁹ Environmental Resources Management, *NRE No. 1 Colliery Noise Assessment Major Works Project*, Feb 2013

Regarding the construction of a barrier on the corner of Bellambi Lane and Northern Distributor, the proponent argued that according to the WM2014 report, *“the increase in traffic noise levels due to the Project is predicted to be less than 2dB. On that basis, it is considered that the impact associated with increasing the haulage is relatively minor and likely to be barely perceptible. Therefore, the construction of a barrier at the Bellambi Lane/Northern Distributor intersection is considered to provide no benefit”*.⁶⁰

As discussed earlier, the Commission considers the traffic noise issue requires reassessment as the predicted increase of 1.7dBA is not a true reflection of potential increase. The construction of a noise barrier may be one of the mitigation measures that could reduce the impact to an acceptable level.

Pavement upgrade

The proponent advised that the RMS previous attempt to upgrade the pavement along Bellambi Lane met with objection from local residents due to concerns of access during upgrading. The proponent submitted that if approval is granted, it would make a monetary contribution to the relevant roads authority for upgrading the pavement along this section of the road.

The Commission accepts the proponent’s offer as reasonable and considers a condition of consent should be included, if the project were to be recommended for approval, to ensure an appropriate contribution is made when requested by the relevant roads authority.

Capacity of Facilities to handle increase volume of extraction

In terms of the capacity of the facilities to handle the proposed production level of 3mtpa, the proponent advised that an assessment was carried out by its consultant Hatch.⁶¹ The report finds *“the project includes new coal handling facilities, a 2nd and 3rd Stockpile and associated reclaim systems along with new processing equipment and truck loading bin. The proposed material handling equipment system capacity has been assessed and we confirm that proposed materials handling infrastructure has the system capacity to handle 3Mtpa”*.⁶²

The Department’s Addendum Report confirmed that

The air quality, noise and traffic assessments undertaken for the UEP have all modelled an operational scenario with an annual coal production rate of 3 Mtpa. The Department is satisfied that the additional mitigation measures required under the recommended project approval would ensure that the UEP would comply with applicable criteria and standards, despite the proposed increase in coal handling capacity.

The Commission accepts the advice.

Production Levels

The Commission notes that the original EA proposed a production level of 3 million tonnes per annum for an 18 year mine life. The project has been substantially modified since its lodgement in 2009 by removing the Wonga West area and mine life has been reduced to 5 years. Yet the annual

⁶⁰ Wilkinson Murray, *Russell Vale Colliery Noise Impact Assessment*, Report No. 14141 Ver C, September 2014, p.14

⁶¹ Hatch, *Report Wollongong Coal Russell Vale Material Handling Assessment*, dated 16 July 2015, Appendix F of Hansen Bailey, *Response to Planning Assessment Commission Review Report Part 1*, July 2015

⁶² *Ibid*, p.2

production rate remains at 3 million tonnes. The Commission requested clarification from the proponent, which has provided the following predicted production levels.

Wonga East Mining	ROM Coal Extracted (tonnes)	Estimated Commencement	Estimated Completion
1st Workings	620,000	2016	2020
LW 6	454,000	2016	2016
LW 7	625,000	2016	2016
LW 1	388,000	2016	2017
LW 2	396,000	2017	2017
LW 3	485,000	2017	2018
LW 9	500,000	2018	2018
LW 10	564,000	2019	2019
LW 11	403,000	2020	2020

Source: Email from D Clarkson – Wollongong Coal 27/01/16

The information above indicates it is unlikely the production level would reach 3 million tonnes in any given year. Hence the Commission questions the reason for the application seeking approval for 3mtpa. It is a concern to the Commission that if approval were granted for a production level of 3Mtpa without credible reasons, the approval would be used as justification for assessment of future incremental increase in amenity impacts on residences and the environment as demonstrated in the noise and traffic assessment.

4.8.3 Commission's Findings

The Commission finds:

1. The issue of road maintenance contribution has been adequately addressed.
2. The predicted traffic noise increase of 1.7dBA is not credible and should be reassessed having regard to the then existing truck movements not modelled movements.
3. The proposed truck parking area is in close proximity to a number of residences near the entrance to the pit top site. The review of the need for the construction of a noise barrier and/or mitigation measures on private residences should have regard to the noise impact arising from truck queuing.
4. The proponent's offer to make a contribution to the RMS for pavement upgrade along Bellambi Lane is reasonable and should be accepted as a condition of approval, if the project were to be approved. However, the contribution should be made to the relevant roads authority.
5. The issue of capacity of facilities to handle the proposed increase in volume of extraction has been adequately addressed.
6. There is insufficient justification to increase production level to 3Mtpa based on the predicted production levels provided by the proponent.

5. FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 FINDINGS

The Minister's Terms of Reference requires the Commission to review the project by considering the Mining SEPP; the Department's assessment report, addendum report and recommended conditions; the likely economic, environmental and social impacts of the project in the locality, region and State; and submissions made to the Commission as part of this review.

The following is a summary of the Commission's findings for each of the Terms of Reference.

1(a) The Mining SEPP

The Department's Addendum Report concluded that the project is not likely to result in unacceptable impacts to surrounding land uses in general. The Commission finds it is yet to be convinced the Department's conclusion is reasonable and can be justified, particularly in relation to noise impacts on nearby residents and along Bellambi Lane and risk to water loss and impacts on upland swamps with uncertain environmental consequences in the catchment area.

1(b) The Department's environmental assessment report, the addendum report and the recommended conditions for the project

The Department's environmental assessment report concluded that "the Department is satisfied that Wollongong Coal has designed the project in a manner that achieves an appropriate balance between maximising recovery of coal resources and minimising potential impacts on the environment, while further reducing impacts on neighbouring residents" (p60). The report recommended the project application be approved subject to conditions.

The addendum report concluded that "the additional assessment... provides greater confidence in the previous predictions made in relation to the impacts of the UEP on swamps, underground and surface waters, and the risks to stored waters in Cataract Reservoir... With the proposed amendments, the Department considers that its recommended conditions provide a comprehensive, strict, and precautionary approach to ensuring that the project can comply with relevant criteria and standards, and ensure that the predicted residual impacts can be effectively minimised, mitigated and/or compensated for... The Department has carefully weighed the impacts of the project against its social and economic benefits. On balance, the Department is satisfied that the project's benefits substantially outweigh its residual costs, that it is in the public interest and should be approved, subject to strict conditions of consent". (p33)

The Commission finds it is not in a position to support the Department's conclusion and recommendation when regard is given to:

- the Commission's expert advices on water and subsidence
- The concerns expressed by the IESC, OEH and DPI on the risk of water loss and impact to upland swamps
- the advices from WaterNSW on the potential water loss in the range of 15ML per annum and 2.6GL per annum and the estimated cost to the loss
- the OEH's view on risk classification of upland swamps
- the noise assessment (pit top site and truck movements) based on modelled rather than existing noise.
- The short term economic benefits versus the risk of permanent and irreversible loss of water up to 2.6GL per year and damage to upland swamps with resulting impact on water quality and uncertain environmental consequences.

1(c) the likely economic, environmental and social impacts of the development in the locality, in the region and for the State

Socio-Economic impacts

The project, if approved, may generate immediate short-term benefits including up to 300 jobs for 5 years, about \$23 million in royalties to the NSW Government, \$85 million capital investment and other direct and indirect flow on effects. Other benefits include the maintenance of coal production in the Southern Coalfields and the utilisation of the Port Kembla Coal Terminal, which is currently underused. However, the Department of Trade and Investment advised that this is a small project ranked 50 out of 56 producing coal mines in NSW if approved. Also the mine is currently not operating and is in care and maintenance.

There are some external costs which have not been included in the economic assessment including the on-going monitoring role of the WaterNSW, Greenhouse gas emissions, monetary compensation to the loss of water at a cost between \$430,00 (present value) and \$22 million as estimated by WaterNSW. Negligible water loss may be acceptable with offset via the water licence system. The question is what is negligible loss and the cumulative loss over time.

Other costs include the likely additional mitigation measures that are required to reduce noise impacts to residents bordering the pit top site and along Bellambi Lane, which may be absorbed by the proponent as part of the operating costs. The ongoing operation and management of water treatment system, if required, to control water outflows from the adit and the WaterNSW on-going monitoring requirement following mine closure would be a significant financial burden to the community unless the proponent is prepared to absorb the on-going costs in perpetuity.

Environmental impacts

The operational noise from the pit top site would have significant impact on nearby residences if the noise criteria derived from the *Industrial Noise Policy* is used for assessment instead of the modelled existing noise levels. Similarly, the traffic noise impact on residences along Bellambi Lane is likely to be higher than assessed if actual existing truck movements were used as a base for the assessment. As a result of under-assessment of the level of impacts, it is likely that extra mitigation measures including mitigation on private residences are required to reduce the noise impact to acceptable level.

Air quality impact is edging toward exceedance of established criteria. Real time monitoring and strong proactive measures including facilities shutdown is of critical importance to ensure emissions would not exceed relevant criteria.

The independence of the Integrated Risk Assessment is questionable. Hence the risk outcomes lack objectivity.

The potential impacts of the project to the catchment area remain uncertain. The risk of loss of surface water due to subsidence related cracking is still a significant concern to the Commission. The additional information provided by the proponent remains inadequate to support the conclusion in earlier reports that depressurisation to the surface is not predicted at the end of mining. The latest piezometer results suggest the area is highly fractured and hydraulically connected. Question is also raised as to what adaptive management measures could be implemented to remediate if fracturing extends to the surface and the effectiveness of such measures.

The proposal to seal the mine adit to manage water inflow would itself become a significant issue and require a risk assessment as it could lead to land slips on the escarpment or outrush of water if a seal fails as pointed out by E/Prof Galvin. The earlier report indicated the adit would remain open and a water treatment system would be installed to control water quality of outflows. If the water treatment system is implemented, the question of its long-term operation and maintenance cost has not been addressed.

The trigger criteria proposed by the Department and WaterNSW are a concern to the Commission's expert as the cumulative effects and impacts of subsidence in the area are not known with certainty, which presents a challenge to setting trigger levels for responding to future subsidence.

The OEH disagreed with the IRA risk classification of the upland swamps and is of the view that the risk assessment has underestimated the project's impacts to upland swamps and the environmental consequences. Any loss of water due to cracking presents a significant risk to the swamps' long-term viability. It is a significant concern that 14 swamps are predicted to be impacted by cracking and are likely to experience negative environmental consequences. The hydrological and soil conditions within the swamps provide habitats for an array of threatened flora and fauna communities. The loss or severe decline of the swamps within the area would negatively impact these species.

The Giant Dragonfly is an endangered species and swamp dependent. Two of the three swamps within the site are Giant Dragonfly habitats and will be undermined but impacts to the Giant Dragonfly have not been included in the risk assessment.

The Commission notes the Department has updated the recommended project approval to strengthen the monitoring conditions requiring an expansion of the existing piezometers network in and around the upland swamps and also reflect the draft Offset Policy. The Commission acknowledges and accepts these conditions should be imposed if the project were to be approved. However, the fundamental question is the uncertainty in the extent of fracturing to surface. As a result of such uncertainty, the extent and magnitude of impacts to the upland swamps and the Giant Dragonfly is also uncertain.

1(d) Any submissions made to the Planning Assessment Commission as part of the public hearings held in relation to this review

A summary of public submissions is in Appendix 3. The Commission has considered all relevant issues raised in these submissions.

Some submissions raised concerns that the applicant is not a fit and proper person and presented information in relation to the proponent's financial and legal status. While this is a relevant factor for approval under the Mining Act 1992, it is not a relevant consideration for planning consent under the Environmental Planning and Assessment Act.

1(e) Any submissions made by the applicant to the Planning Assessment Commission on the matters the subject of this review

Through the course of this review, the Commission has accessed a wide range of documents prepared by the proponent including, but not limited to:

- The proponent's Environment Assessment
- Preferred Project Report, Response to Submissions and Residual Matters Report
- the presentation presented at the meeting with the Commission
- the responses to the Commission's First Review Report
- the responses to the Commission's request for clarification

5.2 CONCLUSION

Water and subsidence are two of the major issues considered in the Commission's first review of this project. The Commission engaged E/Prof Galvin and Dr Mackie to assist in its review of the project. They identified various issues that required further consideration and assessment including the setting up of an integrated risk assessment panel (IRAP). The proponent has provided extensive documentation and plans in response to the recommendations in the First Review including the IRAP assessment results.

In January 2016, this Commission again retained E/Prof Galvin and Dr Mackie to review the additional information provided by the proponent for the second review of the project. Dr Mackie identified a number of significant concerns relating to the revised groundwater modelling. The proponent was provided with an opportunity to clarify these issues including the provision of the numeric model to Dr Mackie. Notwithstanding all the additional information, Dr Mackie still has residual concerns, which are shared by E/Prof Galvin and detailed in their advice in Appendix 6.

This leads to the Commission's doubt and lack of confidence in the proponent's ability to provide scientifically sounded and properly assessed documentations to support this application. For example, the earlier report predicted that fracturing to surface would be unlikely at the end of mining. The recently provided data appear to confirm cracking to surface has already occurred. Yet, this is not confirmed in the recent report. Thus the risk of water loss remains uncertain.

The magnitude of the potential water loss is also contested, ranging from negligible, 15ML per year to 2.6GL per year. As a result of such uncertainty, the potential impacts on upland swamps and Giant Dragonfly are also uncertainty as the swamps depends on the surface and shallow groundwater while the Giant Dragonfly depends on the swamps.

The proponent has placed substantial emphasis on mitigation strategy to deal with residual impacts. However, it is likely that some damage has already occurred before mitigation measures can be initiated and there is considerable uncertainty about the types of mitigation measures and the effectiveness of the measures to be employed. Long term operation and management costs of these measures after mine closure have not been considered.

The project is located in a highly sensitive area, a drinking water catchment area. The environment is also very fragile because of past multi seam underground mining activities. Subsidence induced fracturing is already occurring. The critical issue is where is the tipping point and what is the cumulative impact of long wall mining?

It should be noted that during the current review, the Commission has received a letter from WaterNSW and advices from the experts engaged by the Commission. These documents have not been forwarded to the proponent for a response before this review is finalised. The reason for not providing these final assessments to the proponent is because the proponent has ample opportunities to provide information to the Commission during the first and second review processes. During this current review, the Commission reviewed the proponent's submissions, met with the proponent twice, carried out two site inspections and provided written questions to the proponent to seek clarification on the information provided. Importantly, this review is part of the assessment process, and the proponent will have further opportunity to make submissions prior to any final determination.

Advices from WaterNSW and the Commonwealth's Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development have both identified significant risks with respect to the proponent's water modelling of the predicted impacts. The Commission's experts confirmed the risk of water loss remains uncertain. The magnitude of water loss is uncertain with the projected range from the proponent and Water NSW varying from minimal to 2.6GL/year. The Commission considers this is a high risk situation. The Commission also has regard to the objectives of the *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011*, particularly "a project will have neutral or beneficial effect on water quality". From the evidence currently presented to it, the Commission is of the opinion that the project satisfies neither of these requirements.

On the basis of all the information provided, the Commission is of the view that the social and economic benefits of the project as currently proposed are likely outweighed by the magnitude of impacts to the environment.

Following the release of this review report, the proponent will have the opportunity to respond to this report before the Department finalises the assessment of this project for the consent authority's determination. The proponent will also have the opportunity to meet the consent authority before a decision is made on the application.

5.3 RECOMMENDATION

The Commission recommends that any further consideration of the proposal should have regard to the issues raised in this Review Report.

REFERENCES

Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Response to the Planning Assessment Commission Review Report- Part 2, prepared for Wollongong Coal Limited, September 2015

Hansen and Bailey, 2015, Russell Vale Colliery Underground Expansion Project, Integrated Risk Assessment, prepared for Wollongong Coal Limited, September 2015

Broadleaf, 2015, Final report: Integrated risk assessment for the UEP, prepared by Dr Dale Cooper for Wollongong Coal Limited, September 2015

Biosis, 2015, Underground Expansion Project, Independent Risk Assessment- Addendum Report, prepared for Wollongong Coal Limited and the Independent Risk Assessment Panel, September 2015

Biosis, 2013, NRE No.1 Colliery – Underground Expansion Project: Preferred Project Report – Biodiversity, prepared for Gujarat NRE Coking Coal Ltd September 2013

Planning Assessment Commission, 2015, Russell Vale Colliery – Underground Expansion Project Review Report, April 2015

Planning Assessment Commission, 2014, Russell Vale Colliery Modification to Preliminary Works Project – Longwall 6 (MP 10_0046 MOD 2)

Department of Planning and Environment, 2014, Major Project Assessment: Russell Vale Colliery Underground Expansion Project (MP 09_0013), December 2014

Department of Planning and Environment, 2015, Addendum Report: Major Project Assessment Russell Vale Colliery Underground Expansion Project (MP 09_0013), November 2015

APPENDIX 1 TERMS OF REFERENCE

APPENDIX 2 LIST OF PRESENTERS AT THE PUBLIC HEARING

Meeting Time and Date: 1.00pm, Tuesday 8 December 2015

Meeting Place: WIN Entertainment Centre, corner Harbour and Crown Street, Wollongong

1. Dr Peter Turner (National Parks Association for NSW)	2. Adrian Ingleby
3. Tim Buckley (IEEFA)	4. Margaret Armstrong
5. Deidre Stuart	6. Martin Denny
7. Ann Brown (National Parks Association Illawarra)	8. Desmond Jacobs
9. Robert Garnsey	10. Murray Scott (National Parks Association Southern Sydney)
11. Carolyn Graham (Rivers SOS)	12. Shirley Gladding
13. Debra Murphy (Illawarra Business Chamber)	14. Irene Tognetti (Wollongong Transport Coalition)
15. Daisy Barham (Nature Conservation Council of NSW)	16. Miguel Heatwole (Ecopella)
17. Emma Rooksby	18. Dallas de Brabamder
19. Holly Creenaune (Land Water Future)	20. Michael Rynn (Parramatta Climate Action Group)
21. John Wilson	22. Neil Perry
23. Nic Clyde (Lock the Gate)	24. Susan Benham
25. Rod Plant	26. Gavin Workman
27. James Keene (Australia India Business Council)	28. Dr Melissa Haswell (Doctors for the Environment Australia)
29. Taylor Benny	30. Peggy Fisher
31. Ana Gracanin	32. Catherine Blakey
33. Tom Hunt (Wollongong Climate Action Network)	34. A/Prof. Phillip Laird
35. Dr Keith Tognetti	36. Bruce Rowles
37. Cr Jill Merrin	38. Elizabeth Cameron (Oatley Flora & Fauna Conservation Society Inc)
39. Dr Dale Cooper	40. Dominic Tier
41. Gary Caines	42. Kaye Osborn (Illawarra Residents for Responsible Mining)
43. Rhys Brett (Wollongong Coal)	

APPENDIX 3

SUMMARY OF PUBLIC SUBMISSIONS TO THE COMMISSION

Objections to the Proposal

Upland Swamps

- Longwall mining is a key threatening process to swamps and does more damage to swamps and the escarpment than coal seam gas.
- The absence of quantitative water balances, and the inability to include connected swamps within the numerical model, prevents an accurate assessment (i.e. one that does not rely on poorly constrained assumptions) of the hydrological risks and potential impacts of the proposed development.
- Once damaged, swamps cannot be repaired and will increase in bushfire hazard.
- Offset
 - should not be used as there is no exact match and like for like ecology is very limited and will result in a decrease in swamps
 - will not address the impacts of swamp degradation or the potential impact on water resources
 - money into a fund will not protect biodiversity in the area

Water resource

- Ground water modelling is flawed.
 - No direct determination of the height of the drainage zone above overlapping extractions.
 - Inappropriate location of bores to gauge the impact of multi seam extraction.
 - Misinterpretation of piezometer data from bores GW1 and RV20.
 - Groundwater model insufficiently calibrated.
 - Disagreement with predicted losses.
 - Inconsistencies between models for estimated water loss.
 - Piezometers that would provide information on the presence of a water bearing shear plane from Cataract Reservoir is not addressed in the GeoTerra Report.
 - Insufficient information to assess the risk and consequence of a drainage zone intersecting water bearing shear plane.
 - GW1 effectively measures the drainage height for single seam extraction, not multi seam extraction.
 - Groundwater model is not fit for purpose.
- Need to consider cumulative impacts of other mines within the Sydney water catchment
- Water catchment area
 - Water resources and catchment area should be protected in accordance with previous government policy and position
 - Should be protected in accordance with the buffer zones stipulated by Water NSW, which still has outstanding concerns
 - Section 34B “Special provision for development in Sydney water catchment relating to water quality” of the *Environmental Planning and Assessment Act 1979* should be considered
 - No social contract for coal mining in the water catchment area
 - Any loss of water from the catchment due to coal mining should be costed at market rate and paid by the miner
 - If Cataract reservoir is compromised how will water security be guaranteed
 - NSW Chief Scientist and Engineer states *there is insufficient data available to provide a deep and reliable understanding of mining in the catchment*
- A water expert says geochemical tracer tests are needed to better understand the risks regarding the connectivity between Cataract Dam and the mine.
- Potential flooding impacts, including inundation of a school, should there be a connection between the mine and Cataract Reservoir.
- Various studies have indicated different baseflow and stream flow losses.
- Having regard to the Mining SEPP water should be the primary consideration.
- Poor management of runoff will lead to dirty water, which will encourage further pollution through algae growth.

Independent Risk Assessment

- Members of the Independent Risk Panel (IRAP) were not independent but had a historical association with mining. Those appointed to the panel differed from the Commission's recommendation.
- Independent Risk Assessment (IRA) notes that there is a high risk to swamps.
- OEH disagree with the risk assessment undertaken.
- Triple seam mining is risky.
- The IRAP found 29 medium level risks to water quality and quantity. The Department's response was most of these are unavoidable but unlikely to be significant. The Department dismissed the risks identified.
- IRA does not address health impacts. – Other methodologies available to assess risk, for example Health Impact Assessment.

Historical Actions and Reputation of Company

- Previous collapse of longwall at Wongawilli indicates bad mining practices
- The pollution incident on 6 December 2015 at Belambi Creek would not have occurred if the company had complied with the outstanding conditions of consent
- Another outstanding conditions of consent in relation to the coal emplacement area (slag heap), with the potential for slag heap to collapse, combust and catch fire
- Company has misrepresented itself to shareholders in terms of reserves and quality of coal
- The company does not pass the *fit and proper person* test within the meaning of the section 380A of the Mining Act 1992 (NSW)
- Questionable financial capacity to comply approval conditions and technical competence
- Poor reputation of parent company
- Approval of the current application would allow the company to defer its obligation to rehabilitate the site.
- The approval requirements to realign Bellambi Creek and flood mitigations works are yet to be undertaken.

Economic Considerations

- The Company
 - Jindal's (parent company) share price is down 30% in the last year and 87% in the last five years.
 - Wollongong Coal share prices have declined almost 100% over the last five years and its reported net debt has risen by over \$100m in the six months to September 2015 reaching \$694m.
 - Senior executive turnover and parlous financial state may affect staff safety and the Company does not have the capacity to safely undertake the project or financial capacity to undertake rehabilitation
 - The capacity of Jindal to continue to underwrite and sustain Wollongong Coal Limited is under pressure due to significant deterioration in Jindal's core business in India.
- Cost / Benefit
 - The net present value of the proposal is negative at current export coal prices and currency rates, particularly once rehabilitation costs are incorporated.
 - Global coal market is in structural decline. Links between China and coal demand contribute significantly to the decline.
 - History is the proof that the current system internalise any benefits to foreign companies but externalises much of the clean-up costs to the community.
 - Royalties have diminished with the review of the economic assessment to the extent that the project provides only a small economic benefit.
 - Community will be \$2m - \$7m worse off should the project proceed
 - The method used for the cost/benefit analysis is inappropriate. Environmental offsets cannot be used as an argument to ignore social costs of environmental impacts. The concept of value is conflated with that of offset costs in the Economic Assessment. Social cost of carbon emissions is understated in the economic assessment. The social cost of the noise and air pollution needs to be calculated in comparison to the "no mining" scenario. Regional economic impact analysis is not relevant. The non-market employment benefits should be ignored and any value to the alternate use of the land should be deducted from the benefits. It is debatable whether the social benefits will outweigh the social costs and therefore the precautionary principle should continue to comply.
- Seaborne coal market is chronically oversupplied where demand is declining. Russell Vale if successful will contribute to this oversupply.
- A Transition Plan is needed to move jobs away from reliance on mining and towards sustainable energy. Encourage the PAC to take a leadership role.

- Offsets are reliant on the company being able to deliver.
- Proposal will create long term damage to water catchments and biodiversity for short term benefits.
- Coal subsidies prop up uneconomic coal extraction and encourage expansion that would otherwise not occur.
- Mining only employs 2.6% in the Illawarra.

Climate Change

- extracting and burning fossil fuels would have adverse impacts on climate change
- The University College of London published a report in January 2015 saying 95% of Australian coal reserves need to stay in the ground for the world to have a 50% chance of staying within 2 degrees Celsius. Developing Russell Vale coal mine flies in the face of this compelling scientific logic.
- Climate change was not addressed in the Commission's first review report even though there were six submissions made on the topic.
- Impacts of climate change on water supply will result in decreases in inflows to reservoirs, reduction in water levels (increase droughts and more frequent hot and extremely hot days), and potential increase in pollution (increase bushfires and runoff) and damage to infrastructure.

Traffic and Transport

- The staff car park should be sealed and line marked.
- No other city is subject to the same high levels of bulk haulage by road.
- Consultation for the Traffic Control Plan should be expanded to include the Council and residents.
- Coal should be transported via conveyor belt rather than road.
- Conditions of consent should restrict coal transport to 1Mtpa. A conveyor belt or the Maldon-Dombarton rail line should be constructed to transport production above this level.
- Previous government position was coal was to be transported by rail with only residual approval to be transported by road and those to be subject to stringent conditions.

Uncertainty and residual Issues

- Uncertainty remains regarding the risk and potential impacts.
- Agencies still have residual concerns including Independent Expert Scientific Committee, OEH and Water NSW
- Emplacements are annex from mine – where is waste to be disposed?

Amenity Impacts

- The predicted noise levels from the mine will exceed the project specific noise levels at certain locations.
- Noise mitigation measures at private residences should be considered.
- Recommended conditions of consent are insufficient as they rely on the applicant identifying what is *reasonable and feasible* in relation to noise and air quality.
- No other mine in Australia is as close to residential areas.
- Visual evidence of coal dust pollution within houses, and outside including on clothes line.
- No assessment of methane generated by the project.
- The Stockpile will be 33 metres high leading to further air pollution and erosion issues.

Health – Particulate Matter

- Impact on the health of miners and others such as black lung.
- Concern about particulate matter including diesel particles and residual issues in relation to dust control.
- Need for community access to information to enable people to take precautionary action such as staying indoors when dust level is high.
- There are local, regional and global health concerns. Local concerns include increased air pollution risks from coal stockpiling, loading and truck transport. Regional health concerns include threats to our water catchment area. Global health concerns include greenhouse gas emissions, climate change and health impacts overseas.
- There are no safe levels of exposure to particulate matter without effect. Risk increases with concentration and duration of exposure.
- Will an independent health expert be helping to ensure that the sampling provides a clear indication of exposure levels in living areas?

- No health impact assessment to identify health loss and guide additional *reasonable and feasible* noise and air quality mitigation measures.
- Question whether the air quality modelling included the impact of the increase truck traffic?
- Russell Vales mine's air pollution is 165 times greater than that of the nearby Dendrobium mine.

Biodiversity

- The installation of piezometers has impacted on vegetation and biodiversity.
- Any permanent changes in water flow and groundwater would impact on vegetation, particularly the threatened species.
- Inadequate standard of surveys and assessments particularly in relation to terrestrial fauna and therefore inconsistent with the Director General's Requirements.

Aboriginal Culture

- Aboriginal community has not granted consent for the mining
- Further consultation with Aboriginal community is needed
- Outdated Pt 3A marginalises Aboriginal heritage.
- REF should give a voice to Aboriginal people

General

- Piecemeal character of this application is indicative of the way mining is assessed throughout NSW.
- Any future application for Wonga West should be refused.
- Approval conditions should include an agreed shutdown schedule to address rehabilitation and transition of jobs.
- The assessment should address the Regional Strategy including the transport of freight by rail rather than road.
- Proposal should be judged by worst case.
- Subsidence impacts are horrific.
- The coal reserve is not of sufficient significance to justify the potential impacts.
- The application is unclear regarding the amount of coal per annum to be extracted.
- Question whether the proposal is best practice, as multi seamed extraction has never occurred in Australia.

In support

Economic

- Mining has been part of the community since late 1800 and supports the community.
- Nearly 10% of jobs in the Illawarra rely on mining and there is continued pressure on jobs within the Illawarra due to downturn. The project would secure 300 jobs.
- The area has a high unemployment (6.7%) and youth unemployment rate (14.1%).
- Economic benefits include royalties, \$1.5 billion direct spending from mining and \$3 billion total estimated added value by mining in the region.
- 611 businesses in the Illawarra directly service the mining industry.
- The project would result in positive trade relations with India and is important to the reputation of Illawarra and Australia in terms of trade and investment security.
- 172 tonnes of coking coal are used per person per year indicating a need for the project.
- \$1 billion dollars has been invested into mining infrastructure.

Environmental and Social

- the company supports many environmental programs in the region including schools and has a positive relationship with the communities and local schools.
- Support and positive relationship with local school.

Risk Assessment Process

- Assessment is aligned with accepted national and international risk management standards.
- Focussed on the risks that might affect the quantity and quality of water in the Cataract Reservoir and the ecological health of upland swamps and creeks.

- A total of 138 risks were identified of which 30 were discarded as either not relevant or duplicated. Of the remaining 108 risks there were only two risks that were considered high. Both of the high risks related to specific upland swamps. Actions have been identified to address these risks.
- The Risk Assessment concluded there was no threat to Cataract Reservoir, and no threat to Sydney's water supply.

APPENDIX 4 NOTES OF MEETING AND SITE VISITS

Sydney Drinking Water Catchment Inspection		
Meeting note taken by Megan Webb	Date: Thursday, 28 January 2016	Time: 10:00am
Project: Russell Vale Colliery Underground Expansion Project		
Meeting place: Russell Mount Ousley Road		
<p>Attendees:</p> <p>Planning Assessment Commission Members: Mr Paul Forward and Dr Andrew Stoeckel</p> <p>Planning Assessment Commission expert: E/Prof Jim Galvin</p> <p>Planning Assessment Commission Secretariat: Megan Webb</p> <p>Wollongong Coal representatives: David Clarkson, Devendra Vyas, Brad Mecozzi, Ken Mills (STC Operations), Andrew Wu (Hansen Bailey) and Nathan Garvey (Biosis).</p>		
<p>The purpose of the visit is to inspect the area of the proposed longwalls, particularly the sensitive features identified in the assessment, including CCUS4 and Cataract Creek.</p>		
<p>The group walked along the edge of longwall 4 and 5, noting evidence of mining (rock fractures and holes) and swamp communities in this location.</p> <p>Swamp CCUS4 was traversed, the floristic composition and potential impacts (namely change to the vegetation of the swamp) was discussed. The water monitoring and outflow point was noted.</p> <p>The group then moved into the mined portion of Longwall 6, noting some evidence of mining (pothole).</p> <p>Heading towards Cataract Creek the group traversed part of the proposed longwall 7 and swamp CCUS5.</p> <p>The walk proceeded to Cataract Creek, joining at a point within the full supply level of Cataract Dam and then proceeded upstream on the southern bank.</p> <p>The approximate location of the dyke, and the transition points from claystone to Bulga Sandstone were noted during the walk.</p> <p>The inspection ended at the Cataract Creek culvert at Mount Ousley Road. (The group proceeded back to the parked vehicles on foot, beside Mount Ousley Road).</p>		
Documents tabled at meeting/to be provided:		
Inspection ended at 1:30pm		

Meeting with Department of Planning and Environment – Russell Vale Expansion Project Second Review		
Meeting note taken by Catherine Van Laeren	Date: Monday, 7 December 2015	Time: 4:15pm
Project: Russell Vale Colliery Underground Expansion Project		
Meeting place: Planning Assessment Commission		
Attendees: PAC Members: Mr Joe Woodward PSM, Mr Paul Forward, & Dr Andrew Stoeckel PAC Secretariat: Megan Webb and Catherine Van Laeren Department of Planning and Environment – Howard Reed, Sara Wilson		
The purpose of the meeting is for the Department to brief the Commission on the project.		
Issues discussed: <ul style="list-style-type: none"> • Current approval includes a condition that mining activity to cease at the end of December. The current application is a new application. Mine currently not undertaking mining activity. • Noise – Department advised that noise should not exceed existing levels. • Department advised that truck parking area is adequate with a fleet of 17 trucks proposed. Details are provided in the Department’s response to questions. • Department advised that flooding has been resolved with the Council. 		
Documents tabled at meeting/to be provided: Department’s written response to questions with notice from the Commission.		
Meeting closed at 4.15pm		

Russell Vale Underground Colliery Expansion meeting with the Office of Environment and Heritage		
Meeting note taken by Megan Webb	Date: Wednesday, 13 January 2016	Time: 1:15pm
Project: Russell Vale Underground Colliery Expansion		
Meeting place: Planning Assessment Commission Offices, Level 13 301 George St, Sydney		
Attendees: Commission Members: Mr Joe Woodward PSM, Mr Paul Forward, & Dr Andrew Stoekel Commission Secretariat: Megan Webb Office of Environment and Heritage: Derek Rutherford, Gabrielle Pietrini and James Dawson Department of Planning and Environment: Howard Reed		
The purpose of the meeting is to discuss the Office of Environment and Heritage's latest submission on the project and to brief the Commission on the Swamp Offset Policy??		
<p>Meeting details and actions</p> <p>The Commission provided an overview of the assessment process and status of this project within that process. I.e. that the Commission is conducting a second review, that will need to be considered in finalising the assessment, prior to any determination of the application.</p> <p>The status of the draft swamp offset policy was discussed, with OEH noting it forms part of the broader offset policy and indicating it's likely the final policy will be released in the coming weeks.</p> <p>It was noted that the project hasn't been assessed under the broader biodiversity offset policy. Department of Planning and Environment noted that as the project application was submitted back in 2009 it can be argued that the applicable policies are those listed in the Director-General's requirements from that time. The proposed application of part of the policy is allowable in this instance.</p> <p>The policy applies to impacts that cannot be avoided or minimised and it was noted there are limited minimisation options for this project.</p> <p>OEH expects at least seven swamps would experience greater than negligible impacts and that these will need to be offset. The proponent's risk assessment only identifies one swamp at high risk of greater than negligible impacts (CCUS4), one at moderate risk (BCUS4) and all others at low risk of impact. The proponent appears to suggest that impacts to swamps may be reversible in some cases, OEH does not accept this view, noting there is no way to remediate fracturing of rock beneath a swamp.</p> <p>It was noted that the proponent has not tabled any documentation to demonstrate it is able to meet the offset requirements for the swamps and there is some uncertainty about whether the full value of the swamps predicted to be impacted can be found.</p> <p>It was noted that the proponent has indicated that two swamps on its land would be suitable for offsetting, as they are within the Sydney Catchment Special Areas and these could be secured through a biobanking agreement or may be handed over to the reserve system. The potential to find other offsets was said to be limited.</p> <p>OEH explained that the Giant Dragonfly would require its own species credits, and that the species has been identified in other areas in recent times.</p> <p>The Commission asked about the triggers for the offsets and was advised the before and after condition of the swamp would be documented and compared to control swamps. Piezometers are said to observe impacts within days, weeks or months of the event</p> <p>OEH noted that the swamps that are predicted to be impacted by mining currently don't have any performance measure limits within the draft approval conditions. The Department agreed to review this. OEH also noted its preference regarding the wording of definitions in the conditions.</p>		
Documents tabled at meeting/to be provided: Department of Planning and Environment to provide updated conditions.		
Meeting closed at 2:20pm		

Meeting with Water NSW – Russell Vale Expansion Project Second Review		
Meeting note taken by Catherine Van Laeren	Date: Monday, 7 December 2015	Time: 3:00pm
Project: Russell Vale Colliery Underground Expansion Project		
Meeting place: Planning Assessment Commission		
Attendees: PAC Members: Mr Joe Woodward PSM, Mr Paul Forward, & Dr Andrew Stoeckel PAC Secretariat: Megan Webb and Catherine Van Laeren Water NSW – Malcolm Hughes, Fiona Smith Department of Planning and Environment – Howard Reed, Sara Wilson		
The purpose of the meeting is to discuss issues in relation to water resources and any issues arising from the Department's Report. .		
<p>Discussion regarding the delineation of draw down zones in relation to the location of long walls.</p> <ul style="list-style-type: none"> • Hierarchy of zones – restricted / marginal zones. • Water NSW does not support longwall mining within the marginal zone – 35 degree angle of draw. Longwall mining appears to extend beyond the marginal zone. There should be no mining in that zone. • Department agree that no long wall mining should occur into the marginal area. The Department had based their assessment on advice from the Dam Safety Committee (DSC). Department advises that the DSC is satisfied with the location of the longwalls. • Action – The Department of Planning and Environment to seek clarification from the DSC and the applicant regarding the location and delineation of the draw down zones in relation to the proposed longwalls <p>Draft condition 11 of Schedule 3 outlines a role for the DSC in relation to Longwall 7. Discussion regarding the potential impact of changes in legislation governing DSC and their future ability to fulfil this role. Department advised that it was unaware of any proposal or intention to vary the role of the current DSC in such a way that would impact on the ability of either the current DSC or the future Dams Safety NSW to implement any of the conditions proposed for the project.</p> <p>Discussion regarding the cost to the company should there be a link between the reservoir and the mine causing flooding. Department advised as the panel is outlined during the first workings geological conditions can be ascertained. The draft conditions of consent address this concern.</p> <p>Water NSW raised that the predicted loss of water from the catchment to storage should be accounted for under the Water Management Act. Loss of water from the reservoir should be compensated in accordance with the current IPART approved value of \$2,276 per ML. IPART has set retail value of water to signal opportunity cost. The Department does not agree with this approach to pricing stating that the wholesale value of water is in the vicinity of \$80 per ML. The Department stressed that in the overall scheme the amount of water is very small being in the vicinity of 0.04 ML / year. Water NSW stated that the cumulative impacts need to be considered including the impacts on the swamps.</p> <p>Discussion concerning the TOR for the Risk Assessment Panel and their ongoing role. Water NSW raised that the TOR focused on the swamps and the scope should include a specific reference to water resources and the panel should include experts employed in water and groundwater modelling. The Department identified that all the high and medium risks related to swamps. The DSC are placed to provide expert advice on water resources. Water NSW maintains that the Risk Assessment Panel should be extended to include water resources expertise.</p> <p>Water NSW requested that the groundwater and surface water model should be validated every 2 years. The Department agreed to this provision.</p> <p>Water NSW is concerned regarding the difference in prediction between the baseflow loss of 0.041 ML /day in the groundwater assessment and the stream loss of 7.3ML/day in the surface water assessment. The Department consider that the modelling undertaken is adequate and the differences in predicted outcomes are due to the models servicing different purposes.</p> <p>Water NSW considers that the impacts to upland swamps should be restricted to negligible. Any offset should be located within the catchment. The Department will support the location of swamps within the catchment as a preferred position not a requirement.</p> <p>Water NSW is concerned that some of their recommended performance measures for subsidence impacts are not included as conditions of consent. In the Department's report the performance measure were to be further developed as</p>		

part of the future Extraction Plans.

Documents tabled at meeting/to be provided: Map and information regarding the delineation of draw down zones

Meeting closed at 4.15pm

Meeting with Wollongong Coal – Russell Vale Expansion Project Second Review		
Meeting note taken by Catherine Van Laeren	Date: Thursday, 28 January 2016	Time: 9:30am
Project: Russell Vale Colliery Underground Expansion Project		
Meeting place: Russell Vale Colliery		
<p>Attendees:</p> <p>PAC Members: Mr Joe Woodward PSM PAC Secretariat: Catherine Van Laeren PAC Consultant: Dr Colin Mackie Wollongong Coal: Rhys Brett (Operations Manager) Dianne Munro (Hansen Bailey), Andrew Fulton (GES), Andrew Dawkins (GeoTerra)</p>		
<p>The purpose of the meeting was to discuss and review groundwater matters including technical issues regarding the water modelling.</p>		
<p>Andrew Fulton (AF) provided a background regarding the development of the water models for the project:</p> <ul style="list-style-type: none"> • 2012 – finite elements model that is no longer used; • 2014 – model for the PPR; • 2015 – iteration for project review; and • 2016 – iteration to respond to question raised by the PAC. <p>Discussion focussed on the questions (shown in blue below) forwarded to the applicant 18 January 2016.</p> <p><i>Question 1: Why are the Wongawilli seam and the overlying layer treated as strictly confined layers where drainable porosity is not taken into account when it is expected that the mined seam and the overlying strata will be completely dewatered during mining? What are the implications for model calibration?</i></p> <p>Andrew Fulton (AF) recognised that the layers should be unconfined and this will be reflected in the new iteration.</p> <p><i>Question 2: Why has the upper section of the Wongawilli seam been represented as the working section? What are the implications for model calibration?</i></p> <p>AF stated that the new iteration will measure to the base of the seam.</p> <p><i>Question 3: How was the scaling factor for Kh determined? Given the significant influence of the enhanced material properties on the groundwater systems, what are the likely implications for model calibration and model outcomes if an equivalent porous media approach was adopted?</i></p> <p>AF advised that additional groundwater data has allowed calibration and refinement of 2015 model. Sensitivity testing of the model will be undertaken in relation to the weighting of horizontal permeability.</p> <p><i>Question 4: Can the proponent provide an explanation as to why the scaling was applied over a stress period and to what extent the modified porosity has affected the estimated mine water influx? What are the implications for model calibration and the volumetric balance?</i></p> <p>AF acknowledged issue and advised that it will be addressed in the new iteration.</p> <p><i>Question 5 - How were the heads and conductance terms determined for individual cells?</i></p> <p>Discussion regarding the potential implications of setting boundary conditions particularly in relation to conductivity. AF advised that the boundary cells are located a sufficient distance from the project to not have any impact.</p> <p><i>Question 6 - Can the proponent provide an explanation for the adoption of similar values for widely differing lithologies?</i></p> <p>AF advised that the only lithology that needed adjustment was the porosity of the mudstone which will be addressed in the next iteration.</p> <p><i>Question 7 – How were the mine water influx estimates derived ?</i></p> <p>Discussion regarding data and replication of modelling results. AF advised that outcomes should be clarified in the next iteration.</p> <p><i>Question 8 – Were influx estimates only captured at the end of stress periods? If so, what are the implications for model calibration?</i></p> <p>CM advised that the model currently indicated that the water influx was estimated at the end of the stress period and</p>		

that it needed to be estimated throughout the stress period. AF advised that this would be correcting in the next iteration.

Question 9 – What is the cause of this regionally extensive complete loss of pore pressure and what field observations support this?

Discussion revealed that figures in the report were incorrectly labelled. AF advised that Wongawilli seam had been depressurized from previous Bulli workings. CM expressed remaining concerns regarding the section showing depressurized areas near the escarpment and suggested that those cells be deactivated and instead a seepage face be used.

Question 10 – Are there any factors other than mining that would generate the observed hydraulic gradients?

Review figure 30 to ensure that colour coding is not misleading. AF advised that there are no other explanations for depressurisation.

Question 11 - How does the pressure profile indicate enhancement and what is the enhanced vertical flow rate?

AF advised that further modelling need to be undertaken to provide response.

Question 12 – Why has the rate of 1825 mm/annum been adopted rather than the much lower rates? What are the implications in respect of model calibration and model outcomes?

AF advised that the higher rate had always been adopted but will undertake sensitivity testing.

General

Dr Mackie (CM) advised that the model is a tool to predict impacts and therefore needs to be correct and robust to provide confidence in those predicted impacts. AF advised that he was confident that the outstanding matters would be addressed in the next iteration. Joe Woodward advised that the onus was on the applicant to produce a robust model.

Documents tabled at meeting/to be provided: Nil

Meeting closed at 12:30pm

Meeting with Wollongong Coal – Russell Vale Expansion Project Second Review		
Meeting note taken by Catherine Van Laeren	Date: Tuesday, 8 December 2015	Time: 10:00am
Project: Russell Vale Colliery Underground Expansion Project		
Meeting place: Russell Vale Colliery		
Attendees: PAC Members: Mr Joe Woodward PSM, Mr Paul Forward, & Dr Andrew Stoeckel PAC Secretariat: Megan Webb and Catherine Van Laeren Wollongong Coal - Milind Oza (Chief Executive Officer) Rhys Brett (Operations Manager) David Clarkson (Group Environment Manager) Devendra Vyas (Technical Assistant to CEO) Consultants - Nathan Garvey (Biosis) Ken Mills (SCT Operations) Dianne Munro (Hansen Bailey) Andrew Wu (Hansen Bailey)		
The purpose of the meeting is to discuss any residual issues and issues arising from the Commission’s first review report.		
<p>Wollongong Coal (WC) presented a detailed presentation to the Commission. A copy has been included in the Commission’s records.</p> <ol style="list-style-type: none"> 1. WC provided a brief outline of the Underground Expansion Project (UEP). WC believes that due to the requirement for the Integrated Risk Assessment the process has been unprecedented in NSW. 2. WC provided a briefing on the financial position of the company including the reduction in debt. 3. WC addressed the PAC’s recommendations from the first review report. – Recommendation 1 Establishment of a risk assessment panel and undertake integrated risk assessment of the project particularly in relation to groundwater and subsidence. Discussion occurred regarding how the <i>likelihood</i> was derived. WC advised likelihood determine by panel by consideration of probability of occurrence, predictive models based on anecdotal evidence and understanding of experts on the panel. 4. Recommendation 2 –establishment of a network of piezometers within and surrounding the upland swamps. WC advised that analysis of data has indicated there is no relationship between subsidence and changes in swamps. Most changes are due to changes in climatic conditions. 5. Recommendation 3 – Having regard to any more definitive policy developed regarding triggers for offsets. 6. Recommendation 4 – Offset Policy and draft conditions of consent. WC advised that suitable offsets are still being investigated. Need to be consistent with the policy. The proponent noted that it own tow swamps within the Sydney Catchment Special Areas that are available for offset purposes. 7. Recommendation 5-6 Update of the economic assessment. – WC advised a review had been undertaken, In addition, an independent review had been undertaken by the Centre for International Economics commissioned by the Department. 8. Recommendation 7 – Further consideration of noise and justification of any deviations from the existing noise levels. WC outlined commitments made by the company and advised that they had already spent \$1m on noise mitigation. WC indicated that most of the old equipment had left the site and retro fitting of muffling to all underground equipment has been undertaken. 9. Recommendation 8-10 Assessment of PM2.5 levels. WC advised that modelling had been undertaken with no exceedance of the NEPM advisory standard. WC outlined company’s commitments. 10. Recommendation 11 - Requirement to realign Bellambi Creek. WC outlined the proposed flood mitigation works. 11. Recommendation 12-13 - truck movement and road maintenance. WC advised that they were negotiating VPA and would limit truck movements to previous approved haulage hours. 12. Recommendation 14 – investigation of noise mitigation for residents along Bellambi Road. WC advised: <ul style="list-style-type: none"> • a truck parking area was proposed with sufficient capacity to ensure that there was no queuing of vehicles on Bellambi Lane prior to trucking commencing each morning; • pavement of Bellambi Lane previously upgraded by the RMS; and • noise barriers would provide limited and barely discernible reductions. 13. Recommendation 15 – demonstrate the facilities can handle the additional volume without unacceptable impacts for local residents. WC advised that a simulation was run to confirm that the Russell Vale surface 		

infrastructure can accommodate a throughput of 3 Mtpa.

Documents tabled at meeting/to be provided: Wollongong Coal Presentation

Meeting closed at 12:05pm

Meeting with Wollongong Coal – Russell Vale Expansion Project Second Review		
Meeting note taken by Catherine Van Laeren and Megan Webb	Date: Thursday, 28 January 2016	Time: 1:30pm
Project: Russell Vale Colliery Underground Expansion Project		
Meeting place: Russell Vale Colliery		
<p>Attendees:</p> <p>PAC Members: Mr Joe Woodward PSM, Mr Paul Forward, & Dr Andrew Stoeckel</p> <p>PAC Secretariat: Megan Webb and Catherine Van Laeren</p> <p>PAC Consultants: Dr Colin Mackie and E/Professor Jim Galvin</p> <p>Wollongong Coal - Rhys Brett (Operations Manager); David Clarkson (Group Environment Manager); Devendra Vyas (Technical Assistant to CEO); Brad Mecozzi; Consultants - Nathan Garvey (Biosis); Ken Mills SCT Operations); Andrew Fulton (GES); Andrew Dawkins (GeoTerra); Dianne Munro (Hansen Bailey); and Andrew Wu (Hansen Bailey)</p>		
The purpose of the meeting to discuss any matters arising from the site inspection and groundwater meeting.		
<ul style="list-style-type: none"> • The proponent’s consultant provided a description of different types of upland swamps: headwater swamps, valley side and valley infill. It was suggested that all the swamps at Russell Vale east are headwater swamps. Monitoring was said to indicate that fracturing of the base of the swamps will not lead to the loss of swamps but rather to dryer swamps. If swamps were going to be lost then would have already occurred and be evident in areas that had previous been subject to mining. Likely to see a change in swamp characteristics but all swamps are not reliant on a perched water table. Headwater swamps have a greater reliance on groundwater flows. Further it was suggested that not all swamps contributed to base flows with CCUS4 showing no outflows 9 days after a significant rain event. • A discussion was held regarding potential impacts on Cataract Creek. The proponent advised the creek would be monitored and the panel layout allowed the longwall to be stopped should movement be greater than expected. • The potential triggers for any change to the mine plan were noted to be important. The Proponent advised that the guidelines for LW7 could be unacceptable perceivable impacts. Closure is a slow process which will allow time for management. • E/Prof Galvin questioned the criteria adopted for determining the tolerance of the swamps based on areas where there had been no previous movement. He highlighted that this area had already been subject to movement. The proponent advised that this was a standard OEH requirement rather than a measure specifically applicable to this mining scenario. • The outcomes of the previous meeting on groundwater were summarised for the whole group. The appropriate method to determine height of free drainage was discussed. The Tammetta method resulted in an overestimation of the height as it is normally applied to single seam mining. In using Tammetta in this situation, the proponent had multiplied the height by three to allow for the multi seam mine which produced an excessive result. Piezometer data indicated a lower level. • In relation to subsidence, contingencies should the old mine plans prove inaccurate were considered necessary and the proponent noted it has proposed a drilling program to verify the locations of key pillars within the actual workings. • In response to questions the proponent advised that mining of land around CCUS4 will not have a significant impact on water flows into the swamp. It confirmed that if it avoided the part of longwall 6 beneath swamp CCUS4 this would improve the outcome from the swamp. The subsidence associated with mining other parts of longwall 6 and all of longwall 7 would not affect the topography to a significant extent, so the catchment to the swamp should not be significantly impacted. The proponent reiterated the predicted impact to the swamp, associated with mining all of longwall 6, was a change in the vegetation within the swamp rather than a complete loss of the swamp. • Proponent advised that it would be an additional 2 weeks to provide information after today’s meeting. The Chair, Joe Woodward PSM, stressed that the matter needed to be resolved in a timely manner and the information provided should be robust. 		
Documents tabled at meeting/to be provided: Wollongong Coal Presentation		

Meeting closed at 2.50pm

Meeting with Wollongong Council – Russell Vale Expansion Project Second Review		
Meeting note taken by Catherine Van Laeren	Date: Tuesday, 8 December 2015	Time: 12:00pm
Project: Russell Vale Colliery Underground Expansion Project		
Meeting place: WIN Entertainment Centre		
Attendees: PAC Members: Mr Joe Woodward PSM, Mr Paul Forward, & Dr Andrew Stoeckel PAC Secretariat: Megan Webb and Catherine Van Laeren Wollongong Council – Ron Ziegly, Mark Reddon		
The purpose of the meeting is to discuss any residual issues that Wollongong Council had with the expansion project for Russell Vale.		
<ol style="list-style-type: none"> 1. Wollongong Council is still in negotiation with Wollongong Coal in relation to the Voluntary Planning Agreement. There was a potential for Bellambi Lane to be a focus for the VPA. 2. Impact on property values. The Council officers could not provide any details regarding land values in the area but stated that the turnover of property was low. 3. Council officers indicated that they had not received many complaints over the last five years but recognised that the mine was not operating at full capacity. 4. Officers indicated that the mine plan should be amended to protect upland swamps. 5. Discussion in relation to breach in development consent for the emplacement area. The Council acknowledged that the Company had breached approximately 18 conditions of consent. The Development Consent operates independently to the mine approval. Wollongong Council is the consent authority and regulator. Action currently being undertaken by Council seeking compliance. 6. Council officers indicated that the draft condition of consent in relation to further investigation of an on-site noise barrier within 6 months of commencement of operations, was satisfactory. 7. Council requested that conditions be imposed to ensure that flood mitigation works are undertaken ensuring the separation of dirty and clean water. 		
Documents tabled at meeting/to be provided: Nil		
Meeting closed at 12:30pm		

