



# Stratford Extension Project Review Report

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April 2014

The Stratford Extension PAC Report©  
State of New South Wales through the NSW Planning Assessment Commission, 22 April 2014.

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## Executive Summary

The Stratford Extension Project is a proposed extension of the existing Stratford open-cut coalmine located 10km south of Gloucester in the Gloucester Local Government Area. Three mining areas are proposed, with approval sought to extract 21.5Mt of ROM coal over 11 years to 2025 at a rate of up to 2.6Mt pa. The coal would be processed on-site using existing facilities and be transported by rail to the Port of Newcastle for shipment overseas. The coal from this project is high quality and is used extensively for blending with coal from the Duralie mine located 20km further to the south. Coal from Duralie is also processed at Stratford.

The Minister for Planning and Infrastructure requested the Planning Assessment Commission to review the Stratford Extension Project and to conduct public hearings as part of this process. The Minister requested the Commission to review the merits of the project paying particular attention to the potential night-time noise impacts. The Chair of the Planning Assessment Commission appointed Dr Neil Shepherd AM (Chair), Mr Joe Woodward PSM and Ms Donna Campbell to constitute the Commission.

The Commission examined the documents referred to in the Terms of Reference, including the Department of Planning and Infrastructure's Preliminary Assessment Report. The Commission also received written submissions, held a public hearing, visited the site and surrounds and met with the Proponent, Gloucester Shire Council, Great Lakes Council and the EPA. The public hearing was held on 19 February 2014 at Gloucester and 36 verbal representations were made. Following the public hearing the Commission put a series of formal requests for further information to the Proponent to which the Proponent responded. The Proponent's final response was received on 1 April 2014.

Reviewing the merits of a project proposal at this stage of the assessment process involves comprehensive assessment, within the statutory framework, of the predicted benefits and predicted environmental impacts of the project. The review should also identify issues that the consent authority will need to consider carefully before making a determination, and whether they should be resolved prior to determination.

It may be possible, on the information available, for the review to draw firm conclusions as to the merits of the project based on the likely outcome of the balancing required under s.79C of the Act. But this balancing is the statutory responsibility of the consent authority and there is opportunity in the period between review and determination to address issues and make changes to the project to increase benefits to the region or NSW and/or reduce environmental impacts. Consequently the consent authority may come to a different view of the overall merits of the project to the Commission conducting the review.

The benefits claimed for this project by the Proponent are extensive. They include: a net production benefit to Australia of \$145-174m, State Royalties of \$130m, Commonwealth taxes of \$39m, capital investment value of \$75M, direct and indirect output of \$340m per annum in the NSW economy, an increase in workforce at the site to 250 plus 464 indirect jobs, and \$29m in non-market benefits of employment. The initial task is to examine just what is included in these claims. For example, some of these figures are discounted to Net Present Value (NPV) and others are not (e.g. a claim of State Royalties of \$130m becomes \$84m when discounted to NPV in the Department's Preliminary Assessment Report) and the net production benefit to Australia of \$174m includes the \$29m in non-market benefits of employment whereas the \$145m figure does not include this \$29m.

The Commission examined the basis for the claims in detail and concludes that, with the possible exceptions of capital investment and direct employment at the mine, the claims have not been substantiated. In fact, the Commission's conclusion is that further assessment should proceed on the basis that the net production benefit to Australia is likely to be around \$23m, royalty payments no more than \$47m and that, without robust evidence to the contrary, jobs generated outside the mine site are likely to be few.

There is a range of reasons for the Commission's conclusions. The principal ones are:

- that the estimation of benefits and costs is based on modelling techniques that have been severely criticised by the courts, academics, public authorities and a major economic consulting firm. The criticism is directed at the validity of using the modelling technique for the purpose (e.g. use of Input-Output Analysis for calculating indirect job creation) and also at the way one of the modelling techniques (Choice Modelling) has been conducted;
- the inclusion of estimates of doubtful validity (e.g. the \$29m for non-market benefits of employment);
- the failure to account properly for the distribution of benefits and impacts;
- the use of coal prices that are so substantially above the current market prices and forward pricing projections that they produce benefit estimates that are simply not credible. In this context the Commission notes that the net benefit estimates are very sensitive to movements in coal price (a 20% reduction in price altered the NPV from \$145m to \$23m) and that the State royalty payments and Commonwealth taxes are both linked to coal price; and
- the current operation is under economic pressure as evidenced by the decline in production to 1.2Mtpa of the approved 3.1Mtpa and a decline in direct employment at the mine from 125 to 71 jobs. This situation is not consistent with the benefits claimed for extending this project, especially given the even lower production limit of 2.6Mtpa proposed for the extension.

There are a number of other potential benefits for a project proposal that must be considered within the statutory framework. They include whether the project is in close proximity to existing infrastructure, whether the project is related to any existing mine, and whether other industries are dependent on the development of the resource. The project satisfies these requirements, although dependence of other industries may be limited to a small number of local contractors.

The residual impacts of the project cover a wide spectrum, but relatively few of them are of major concern. Those of major concern could be significant in determining whether development consent may be granted if left unresolved. The Commission considers that noise and impacts on biodiversity are the two most significant, but that aspects of impacts on water, air and transport will need to be addressed before the project is submitted to the consent authority for determination.

The Commission's finding is that the draft consent conditions relating to noise (attached to the Preliminary Assessment Report) are not consistent with either the INP or the judgment of Preston CJ in *Bulga Milbrodale Progress Association Inc. v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48. The Commission has provided alternative conditions in its recommendations to remove these inconsistencies. These include conditions relating to the measurement of noise, low frequency noise, and treatment of temperature inversions and gradient winds. Changes are also recommended to improve the reporting of actions taken to minimise noise under conditions in which the noise limits do not apply. The net effect of these changes is to further restrict the meteorological conditions under which exemptions from noise criteria might apply, improve the monitoring of noise, and improve the transparency of the Proponent's actions to control noise.

The issue of night-time noise has been considered in detail (see Term of Reference 2). The Commission's conclusion is that night-time operations should be permitted in the Avon North and Stratford East Pits unless compliance monitoring indicates that predictions cannot be met. A formal independent review is recommended after two years of operations. In addition the Commission recommends that a suite of operating restrictions designed to minimise noise be specified in any consent.

Dependence of the project on a real-time noise monitoring and response system to manage noise impacts is of concern to the Commission. While these systems are commonly touted as the panacea for controlling noise emissions from open-cut coal mines, the fact is that no robust study on their effectiveness has been undertaken. Moreover, the data from these systems are currently unable to be used as evidence for regulatory action.

The lack of an effective compliance assessment mechanism for responding to complaints about exceedances of the noise criteria is a significant weakness in the overall noise management system for this project (although the same issue exists across the rest of the industry). Routine compliance monitoring is proposed to be conducted at monthly intervals throughout the year, but by its nature this is not designed to detect many of the incidents that result in exceedances, nor to detect compliance with respect to individual noise complaints. The regulators (Department and EPA) also do not have the resources to either monitor sensitive receivers continuously or to respond to many of the complaints. Until a solution is found to this problem the Commission considers that the scepticism in the community about noise controls and their enforcement will remain.

Biodiversity impacts were raised in submissions and in the public hearing. The Commission's findings on biodiversity are based in part on a detailed examination of the Proponent's claims concerning potentially significant impacts regarding just one of the 33 threatened species of fauna likely to be present in and around the Project Area. For this species (Squirrel Glider) the Commission finds that the impacts would be significant and that the proposed mitigation strategies would be ineffective. The Commission has recommended that significant improvements are required to the proposed mitigation strategies and that an offset strategy targeted at this threatened species will also be required. The Commission also recommends that a cautious approach be taken to claims of non-significant impacts on the other 32 threatened species.

As for the offset strategy proposed for biodiversity impacts that could not be avoided or mitigated, the Commission notes that it is based in part on a false premise concerning the conservation status of a large parcel of land with high conservation value that is situated between two of the proposed offset properties. There is in fact no instrument that would ensure conservation in perpetuity over this land.

The Commission also identified numerous other issues with the suitability of the four properties identified as offsets including the very substantial areas requiring revegetation, infrastructure intrusions (including AGL gas wells, houses and re-located transmission line) and the fact that the Office of Environment and Heritage (OEH) is not prepared to include these properties in their current condition in the conservation agreement program under their control.

The Commission recommends that the offset strategy be revisited in the absence of the voluntary conservation agreement (VCA) over the linking property, that the strategy be expanded to include enhanced protection for Squirrel Gliders, and that a legally robust mechanism for conserving the proposed offset areas in perpetuity be developed prior to determination of the project.

The other residual impacts considered important by the Commission include the proposed 600m creek diversion, the risks posed by the final voids, the impacts on some receivers from rail noise, impacts on road infrastructure, dust contamination of rainwater tanks and the potential impact of the project on real estate values. These are discussed in the report and recommendations made for mitigation or management.

Overall the Commission considers that on the information currently available, the merits of the project are too finely balanced for evaluation against the criteria in s.79C. The Commission has found that the benefits of the project are considerably less than those claimed and that even the Commission's recommended levels of benefits to be used for further assessment may be optimistic. However, the Commission considers that the residual impacts of the project can be reduced to a low level if the recommendations in this review report are adopted. If this occurs, and the relevant actions and/or commitments are in place prior to submission of the project for determination, it ought to be possible to consider approval of the project subject to conditions. This outcome would be based on balancing low residual impacts against some (albeit smaller than originally claimed) benefits to the region and NSW.

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## Glossary

<b>ARTC</b>	Australian Rail Track Corporation
<b>BRNOC</b>	Bowens Road North Open Cut
<b>CHHP</b>	Coal Handling and Preparation Plant
<b>Commission</b>	Planning Assessment Commission constituted for this review and public hearing, Dr Neil Shepherd (Chair), Mr Joe Woodward PSM and Ms Donna Campbell
<b>DGRs</b>	Director-General's Requirements
<b>EEC</b>	Endangered Ecological Community
<b>EIS</b>	Environmental Impact Statement
<b>EP&amp;A</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>EPA</b>	Environment Protection Authority
<b>EPBC Act</b>	Commonwealth Environmental Protection and Biodiversity Conservation Act 1999
<b>GSC</b>	Gloucester Shire Council
<b>GLC</b>	Great Lakes Council
<b>IESC</b>	Commonwealth Independent Expert Scientific Committee
<b>INP</b>	NSW Industrial Noise Policy
<b>LGA</b>	Local Government Area
<b>Mtpa</b>	Million tonnes per annum
<b>Mining SEPP</b>	<i>State Environmental Planning Policy – Mining, Petroleum, Production and Extractive Industries 2007</i>
<b>N&amp;BAR</b>	Noise and Blasting Assessment Report, prepared by SLR Consulting Australia Pty Ltd, 24 October 2012
<b>NPV</b>	Net Present Value
<b>OEH</b>	Office of Environment and Heritage, formerly DECCW and now incorporating NSW Heritage Office
<b>PAC</b>	Planning Assessment Commission
<b>PAR</b>	Planning and Infrastructure's Preliminary Assessment Report
<b>P&amp;I</b>	Planning and Infrastructure (previously the Department of Planning and Infrastructure). Referred to in this report as 'the Department'
<b>PM<sub>10</sub></b>	Particulate matter with an aerodynamic diameter smaller than 10 micrometres
<b>PM<sub>2.5</sub></b>	Particulate matter with an aerodynamic diameter smaller than 2.5 micrometres
<b>PSNL</b>	Project Specific Noise Level
<b>RMS</b>	Roads and Maritime Services
<b>ROM</b>	run-of-mine Coal
<b>RTS</b>	Proponent's Response to Submissions
<b>SSD</b>	State Significant Development
<b>The Proponent</b>	The applicant under Part 4 of the EP&A Act 1979, in this report being Yancoal Australia Limited. 'Proponent' includes the Proponent's EIS consultants.
<b>The proposal</b>	The subject of the application under Part 4 of the EP&A Act 1979, in this report being the Stratford Extension Project. Mainly referred to as 'the project'.

<b>TS</b>	Threatened Species
<b>TSC Act</b>	Threatened Species Conservation Act 1995
<b>VCA</b>	Voluntary Conservation Agreement under the National Parks and Wildlife Act 1974
<b>Warkworth</b>	Bulga Milbrodale Progress Association Inc. v Minister for Planning and Infrastructure and Warkworth Mining Limited [2013] NSWLEC 48
<b>Warkworth Court of Appeal</b>	Warkworth Mining Limited v Bulga Milbrodale Progress Association Inc [2014] NSWCA 105

## **1. Introduction**

On 6 December 2013 the Minister for Planning and Infrastructure, the Honourable Brad Hazzard MP, requested the Chair of the Planning Assessment Commission to conduct a review of the development application for the Stratford Extension Project.

Ms Gabrielle Kibble AO chair of the Commission nominated Dr Neil Shepherd AM, Mr Joe Woodward PSM and Ms Donna Campbell to constitute the Commission for the review and Dr Shepherd was appointed to chair it.

## **2. The Commission's Review Task and Legal Framework**

### **2.1 Terms of reference for review**

Section 23D of the *Environmental Planning and Assessment Act 1979* (EP&A Act) provides for the Minister to request the Commission to conduct a review of a development application for a project and to hold a public hearing into the matter the subject of the review.

The Minister's terms of reference for this review are dated 6 December 2013 and are to:

1. *Consider the Department of Planning and Infrastructure's preliminary assessment of the merits of the Stratford Extension Project, including the EIS for the project, submissions, the response to submissions, and any other additional information provided to the Department during the assessment process or the PAC during the review process;*
2. *Review the merits of the Stratford Extension Project, paying particular attention to the potential night-time noise impacts of the project;*
2. *Hold public hearings during the review as soon as practicable after receiving the Department of Planning and Infrastructure's preliminary assessment of the project; and*
4. *Submit its final report on the review within one month of holding the public hearings unless the Department of Planning and Infrastructure agrees otherwise.*

A public hearing was held in Gloucester on 19 February 2014 and is discussed below. The Department of Planning and Infrastructure agreed to the Commission's request for an extension of time for completion of this report until 17 April 2014. This was sought as a result of the complexity of the issues to be considered and the need to obtain responses to a series of questions the Commission wished to put to the Proponent arising out of the public meeting and its consideration of the submissions and the Environmental Impact Statement (EIS). The Proponent's response was received on 1 April 2014.

### **2.2 New assessment process**

This is the first review of an application for a coal mine conducted by the Planning Assessment Commission under the provisions of Part 4 of the EP&A Act. Up until now coal mine reviews have been conducted by the Commission under the provision of Part 3A of the Act. This has been repealed and replaced by Part 4.

This is also the first review of a coal mine application under new provisions of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP). These new provisions came into effect on the 4 November 2013.

The process for assessing a development under Part 4 and the new provisions in the Mining SEPP are discussed below.

### **2.3 Part 4 assessment process**

The Act provides that the Minister is the consent authority charged with the responsibility for determining this project application as it is State significant development (SSD).<sup>1</sup>

The project application cannot be determined until the Commission's review has been completed and the Commission's findings and recommendations must be considered by the consent authority in deciding whether to approve or refuse the project.

Under a current instrument of delegation, the Minister has delegated his future consent authority role to the Commission. While the Department's Preliminary Assessment Report (PAR) recommends that the Commission approve the project subject to conditions, the Commission will not consider the project application in the role of a consent authority until it is requested to do so following the release of the Commission's review findings and recommendations.

In evaluating the application the consent authority must take into account the relevant matters under section 79C of the Act.<sup>2</sup> Broadly, these can be summarised as the likely impacts of the project including the environmental impacts, the social and economic impacts in the locality, submissions made in relation to the application and the public interest. The consent authority must also consider relevant planning instruments, and in particular, the Mining SEPP as well as the findings and recommendations arising from this review.

One significant consequence of a public hearing by the Commission, as in this case, is that objectors and the Proponent lose the merit appeal rights they would otherwise have had. That is, they lose the right to appeal to the Land and Environment Court against the consent authority's final determination.<sup>3</sup>

### **2.4 Mining SEPP**

The Mining SEPP was amended in November 2013 (after the EIS for this project was prepared and exhibited) to include provisions that now apply to the consideration of this project application.

Clause 12AA requires the consent authority to consider the significance of the resource that is the subject of the application having regard to the economic benefits of developing the resource both to the State and to the region. This is defined to include a consideration of employment generation, expenditure, including capital investment and the payment of royalties.

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<sup>1</sup> The project falls within the definition of State significant development as declared under State and Regional Development State Policy 2011. Section 89C of the EPA Act provides that the Minister is the consent authority for State significant development.

<sup>2</sup> Section 89H

<sup>3</sup> Section 98(5)

The consent authority must also consider any advice by the Director-General of the NSW Trade and Investment, Division of Resources and Energy as to the relative significance of the resource in comparison with other minerals across the State.

Importantly, clause 12 AA goes on to provide that the significance of the resource is to be the consent authority's principal consideration under Part 3 of the Policy. This is defined to mean that the weight given to any other matter required to be considered under Part 3 is to be proportionate to the importance of that other matter in comparison with the significance of the resource.

The other matters in Part 3 that must be considered by the consent authority predate clause 12 AA and can be summarised broadly as:

- Compatibility of the proposed mine with other land uses;
- Compatibility of the proposed mine with other mining, petroleum production or extractive industry uses;
- Ensuring the proposed mine is carried out in an environmentally responsible manner;
- The efficiency or otherwise of the development in terms of resource recovery;
- Whether there is a need for controls on the transport of materials by public roads; and
- Whether there should be controls aimed at ensuring the rehabilitation of land that will be affected by the project.<sup>4</sup>

Clause 12AB is another important new provision. It identifies non-discretionary development standards which if met prevent the consent authority from requiring more onerous standards. The standards relate to cumulative amenity noise levels, cumulative air quality levels, airblast overpressure, ground vibration, and aquifer interference. A note to the clause makes it clear that the clause does not prevent the consent authority from imposing conditions to regulate noise, air quality, blasting or ground vibration impacts that are not the subject of the development standards.<sup>5</sup>

The Commission notes that the consent authority is required to consider the significance of the resource in accordance with the Mining SEPP and to carry out an evaluation of the project as a whole in accordance with section 79C of the Act. The relationship between these provisions is discussed below in 2.5 in the context of the recent court decisions concerning Warkworth mine.

## **2.5 Commission's approach to evaluation of the project**

The Commission has carefully considered how it should approach its review role in the evaluation of this project, particularly in light of the loss of appeal rights as a result of the public hearing.

The terms of reference for the review are broad requiring the Commission to consider the merits of the proposal in the context of the EIS, the submissions and any other additional information provided to it.

In reaching its findings and recommendations, the Commission has taken account of the legal framework within which the final determination must be made by the consent authority, and in particular section 79C of the EP&A Act and the Mining SEPP.

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<sup>4</sup> Cls 12-17 of the Mining SEPP

<sup>5</sup> Section 79C (2) and (3) provide for the application of non- discretionary standards in the evaluation of the project

The Commission has also considered the very recent Warkworth court decisions<sup>6</sup> relating to the merit assessments of mining proposals raising similar issues. These are discussed in more detail in various sections of the report, particularly in relation to the assessment of noise and biodiversity impacts on the one hand and economic benefits on the other.

It is relevant to note here that the manner in which the public interest is considered by the decision maker is a central issue in the Warkworth Court of Appeal decision handed down on the 7 April 2014 ( paras 278 to 303 ). It is relevant to this review because, as noted above, consideration of the public interest is a requirement of section 79C of the Act when evaluating this project.

The Commission has observed that there appears to be a misperception in some sections of the community that the Mining SEPP makes economic considerations override the requirement to consider the public interest. This is not the case. It is true that the Mining SEPP requires consideration of one aspect of the project, the significance of the resource, with a strong focus on economic benefits. However, the SEPP does not and cannot remove the requirement to consider the public interest when evaluating the project under section 79C of the Act.

The Court of Appeal found that the public interest embraces ecologically sustainable development and that community responses are relevant to consideration of the public interest. The Commission has adopted this approach.

This report identifies and makes recommendations in respect of those issues that the Commission considers require closer consideration than is provided in the Department's Preliminary Assessment Report (PAR). The Commission is satisfied that the other issues arising from the project (including some major issues such as cumulative impacts, rehabilitation, etc) have been adequately analysed and addressed in the PAR. Accordingly, that analysis is not repeated in this report.

### **3. Project Description**

Yancoal Australia Limited (the Proponent) currently operates open cut mining at the Stratford Mining Complex which includes the Roseville West Pit and the Bowens Road North Open Cut (BRNOC). Other areas (Stratford Main, Roseville, Roseville Extended and Parkers/Bowens Road West Pits) at the complex have been mined and since filled and/or rehabilitated or used for waste rock and water storage.

Three new mining areas are proposed:

1. Avon North Open Cut - located north east of the Stratford Main Pit
2. Stratford East Open Cut – located to the south of the Stratford Main Pit
3. Roseville West Pit Extension – continuation of open cut mining of the existing Roseville West pit to the west and south.

The three proposed mining areas are known as the Stratford Extension Project. Further detail on these is included in section 3.2. The project is located within the Gloucester Valley about 100km north of Newcastle. The Bucketts Way is the main road through the Gloucester Valley which connects to the Pacific Highway approximately 12km north of Raymond Terrace. From the Pacific Highway to Gloucester the road winds for approximately 80km through a number of small villages which include Stroud, Craven and Stratford. The project is located within the Gloucester Local Government Area. The southern portion of the Gloucester Valley is located within the Great Lakes

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<sup>6</sup> Bulga Milbrodale Progress Association Inc. v Minister for Planning and Infrastructure & Warkworth Mining Limited [2013] NSWLEC 48 (Warkworth) and Warkworth Mining Limited v Bulga Milbrodale Progress Association Inc [2014] NSWCA 105

Local Government Area. Whilst the project is not within the Great Lakes Local Government Area the haulage routes are located within this region.

### **3.1 Background and Existing Operations**

The Stratford mine is one of two operating mines in the Gloucester Valley. The Bucketts Way is the main road through the valley and Stratford mine is located on the eastern side of the Bucketts Way near the villages of Stratford and Craven. The mine is about 100 km north of Newcastle and 10km south of Gloucester.

A second mine, Duralie Coal Mine, is located about 20km south of the Stratford mine. Both mines are owned by Yancoal Australia Limited. (see Figure 1 )

The Stratford mine is operated by Stratford Coal Pty Limited, a wholly-owned subsidiary of Yancoal. It has been operating since 1995 under two Ministerial development consents, which allow extraction of up to 3.1 million tonnes per annum (Mtpa) of run-of-mine(ROM) coal including 2.1Mtpa for the Stratford pits and 1Mtpa for the Bowens Road North open cut. Currently the mine is producing about 1.2Mtpa.

Since 1995, mining has been completed in several areas within the mine site including the Stratford Main, Roseville, Roseville Extended and Parkers/Bowens Road West pits. These pits have either been filled and rehabilitated or are being used for waste rock and water storage as part of the on-going mining operations.

Although there are two pits available for coal extraction, the Roseville West Pit and the Bowens Road North, only the Bowens Road North pit is active. The Roseville West Pit was suspended in October 2013 with a corresponding reduction in the number of employees at the mine. Mining at the site uses the conventional open cut methods: drill-and-blast and truck-and-shovel. Coal is delivered from the pits to the ROM coal pad by haul trucks prior to its transfer to the Coal Handling and Preparation Plant (CHPP) for processing. The CHPP is approved to operate 24 hours a day and 7 days a week and has capacity to process up to 4.6Mtpa of ROM coal. Currently the plant only processes about 2.9Mtpa. Product coal from the CHPP is stockpiled on site before transported by rail to Newcastle for export. Loading and transporting of coal operates 24 hours a day.

The CHPP facility also processes ROM coal from the nearby Duralie Coal Mine. However, the shuttle train from Duralie is not allowed to operate between 1am and 6am.

### **3.2 The proposed extension (the subject of current application and Commission review)**

The Proponent has indicated that it intends to surrender the mine's existing Ministerial consents if approval is granted for the subject extension application.

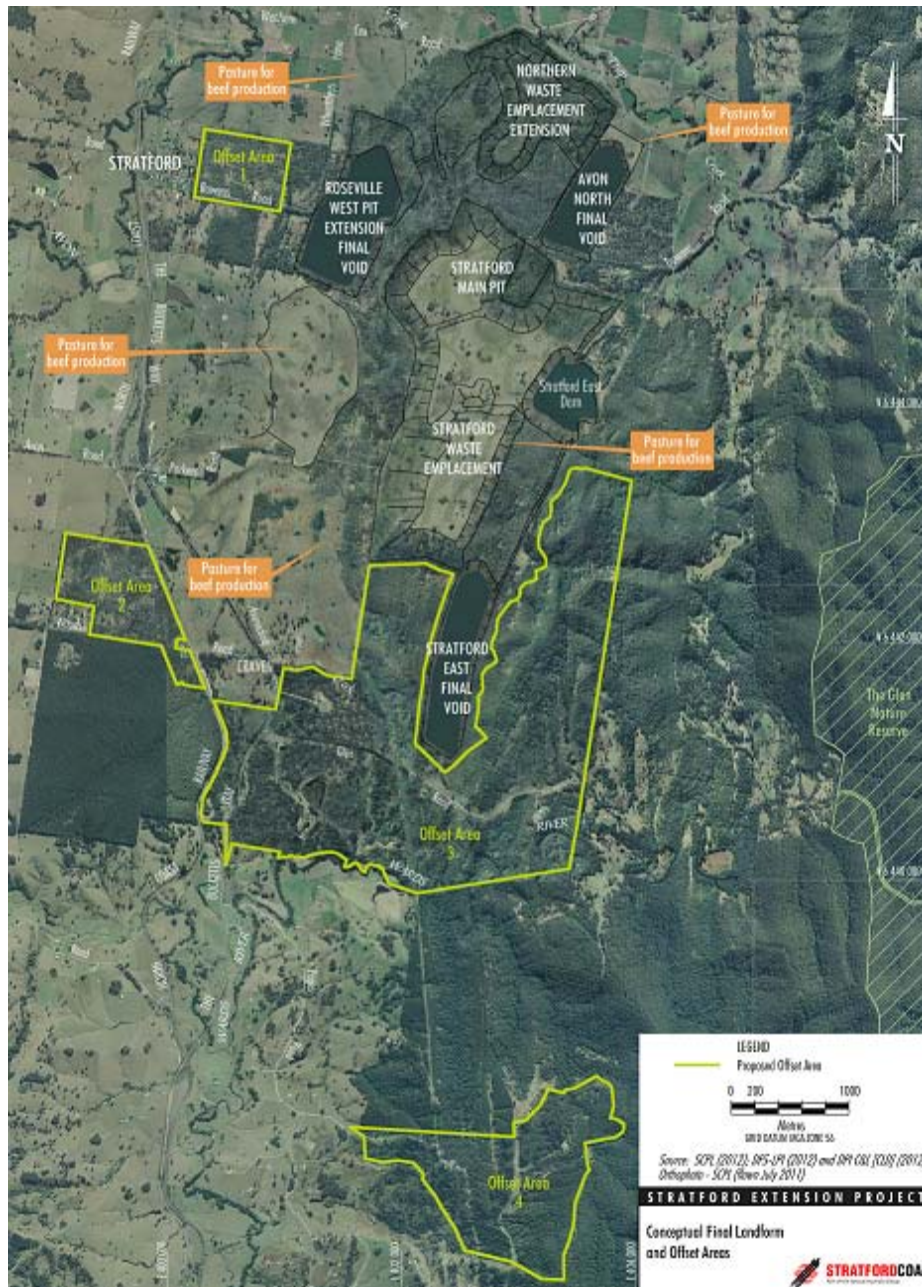
The proposed extension seeks approval to extract up to 21.5Mt of ROM coal over 11 years (to 2025) at a rate of up to 2.6Mtpa. The proposed extension involves 3 new mining areas: the Avon North Open Cut (the Avon North pit), the Stratford East Open Cut (Stratford East pit) and an extension of the Roseville West pit (the Roseville West extension pit) (see Figure 2).

**Figure 1 Mine Location**





**Figure 2 Proposed Mine Extension**



The Avon North pit would be developed to the north-east of the already completed Stratford Main pit and produce about 4.3Mt of ROM coal from the Avon seam. Access to the Avon North pit will be via an extension of the haul road north of the Stratford main pit through the northern waste emplacement extension area. A 600m section of the Avondale Creek will be diverted to accommodate the southern portion of the Avon North pit. Following completion of mining, the void would be used for water storage and then for the co-disposal of fine and coarse CHPP rejects.

The Stratford East pit would be developed east and south east of the Stratford waste emplacement area and would produce about 9.6Mt of ROM coal. Access to the pit will be via a new haul road running from the western and southern end of the Stratford waste emplacement and its extension area. The operation of this pit requires the relocation of an existing 132kV power line and associated easement.

The Roseville West extension pit is a continuation to the south and west of the existing Roseville West pit and would produce about 7.3Mt of ROM coal. It is also proposed to excavate the previously backfilled Roseville pit to further mine the Roseville seam.

The proposal, if approved, would require the clearing of approximately 105ha of native vegetation and 195ha of non-native vegetation. A biodiversity offset strategy is proposed. It involves 935ha of land which includes areas of native woodland and areas proposed for rehabilitation.

The Department's<sup>7</sup> preliminary assessment report ('PAR') includes a summary table, which compares the existing and proposed operations of the Stratford mine and is reproduced below for easy reference.

**Table 1: Comparison of existing/proposed operations at Stratford (taken from the PAR)**

Aspect	Existing	Proposed
Rate of Production	Up to 2.1 Mtpa (Stratford pits). Up to 1 Mtpa (BRNOC).	Up to 2.6 Mtpa.
Mine Life	Mining operations to end in 2013. Processing and export to end in 2019.	Mining operations to end in 2025. Processing and export to end in 2025.
Hours of Operation	Seven days a week: <ul style="list-style-type: none"> <li>7 am to 7 pm (BRNOC);</li> <li>7 am to 10 pm (Roseville Pit);</li> <li>CHPP operation approved 24 hours per day;</li> <li>loading and despatch of product by rail approved 24 hours per day;</li> <li>unloading of ROM coal from the Duralie shuttle train approved between 7 am and approx. 12 midnight.</li> </ul>	Seven days per week: <ul style="list-style-type: none"> <li>7 am to 7 pm (BRNOC);</li> <li>7 am to 6 pm (Roseville West Pit Extension);</li> <li>7 am to 6 pm (recovery of CHPP rejects for re-processing);</li> <li>24 hours (Avon North Open Cut);</li> <li>24 hours (Stratford East Open Cut);</li> <li>no change to CHPP hours of operation; and</li> <li>no change to hours of rail operation.</li> </ul>
Operational Workforce	Approximately 125 people (including The Proponent staff and on-site contractors) have been employed at Stratford. In October 2013, employee numbers were reduced from around 125 to 71.	<ul style="list-style-type: none"> <li>At full development, the project operational workforce would be in the order of 250 on-site personnel.</li> <li>Construction/development activities would require up to 30 people for short periods.</li> </ul>
Waste Rock Emplacement (including backfill)	Combination of in-pit and out-of-pit waste rock emplacement.	Continued placement of mine waste rock to in-pit and out-of-pit emplacements including: <ul style="list-style-type: none"> <li>extension of the Stratford Waste Emplacement until reaching a maximum elevation of 196 m AHD; and</li> <li>extension of the Northern Waste Emplacement until reaching a maximum elevation of 165 m AHD.</li> </ul>
General Infrastructure	Access roads, electricity supply and distribution, rail loop, CHPP, train loading and unloading infrastructure, coal stockpiles, coal handling equipment, diesel storage, administration, workshop, stores and ablution buildings, heavy vehicle servicing, parking and washdown facilities.	<ul style="list-style-type: none"> <li>Continued use of existing approved infrastructure, subject to minor modifications.</li> <li>Realignment of a 132 kilovolt (kV) power line.</li> <li>Realignment of Wheatleys Lane and Bowens Road, and Wenham Cox Road.</li> </ul>

<sup>7</sup> During the period of the review the former Department of Planning and Infrastructure (the Department) was re-named Planning and Infrastructure (P&I). Unless indicated otherwise, references to 'the Department' in this review report refer to P&I. For consistency with the documentation relevant to this review 'the Department' has been used throughout.

Aspect	Existing	Proposed
Coal Trains	Average of 2.5 product coal trains per day with a peak of 5 product coal trains per day.	Average of 2.5 product coal trains per day with a peak of 6 product coal trains per day.
Water Supply	Mine water supply obtained from runoff recovered from mine operational areas, waste rock emplacements, CHPP rejects co-disposal areas (ie Stratford Main Pit) and open pit dewatering.	No change to key sources of water supply.
Water Management	On-site water management system comprising water management dams and collection drains, runoff diversions, sediment control, and irrigation of water from the Stratford East Dam on rehabilitated waste rock emplacements that drain directly to mine water storages.	<ul style="list-style-type: none"> <li>• Progressive augmentation of the existing water management system, which would be designed and managed so no stored water would overflow.</li> <li>• Development of up-catchment diversion systems in advance of open cut operations.</li> </ul>
Final Voids	Two final voids: <ul style="list-style-type: none"> <li>• BRNOC final void; and</li> <li>• Stratford Main Pit final void</li> </ul>	Three final voids: <ul style="list-style-type: none"> <li>• Avon North Open Cut final void;</li> <li>• Roseville West Pit Extension final void; and</li> <li>• Stratford East Open Cut final void.</li> </ul>

### 3.3 Other Operations

The Stratford Mine Complex is located within the Gloucester Valley Basin. There are a number of existing and proposed projects in the vicinity of the Complex that may interact with the proposed project. These include:

#### 3.3.1 AGL Gloucester LE Pty Ltd (AGL) Gloucester Gas Project

The first stage of the Gloucester Gas Project was granted approval by the Planning Assessment Commission in December 2010. The project includes the extraction of coal seam gas within the Gloucester Basin including the development of 110 gas wells, central processing facilities and the construction and operation of a high pressure gas transmission pipeline from Stratford to Hexham. The project is mostly adjacent to the Stratford Mining Complex but some wells are proposed within the project area and also within the proposed biodiversity offset areas.

#### 3.3.2 Gloucester Resources Limited (GRL) Proposed Rocky Hill Coal Project

The proposed project involves mining of four open cut pits, a coal handling and preparation plant and a rail load out facility. Approximately 2Mt of ROM coal would be extracted from the pits each year. The project is located approximately 5km north of the existing Stratford Mining Complex. The proposed Rocky Hill Coal Project EIS was exhibited by the Department from August 2013 to October 2013.

#### 3.3.3 Duralie Coal Mine Extension (owned by Yancoal)

The Duralie Coal Mine extension was approved in November 2011 and is also owned by Yancoal. The mine is located approximately 20km south of Stratford and has approval to mine up to 3Mt of ROM coal per year. This coal is transported to the existing Stratford Mine Complex for processing at the CHPP.

#### 3.3.4 Other Exploration Activities

Exploration activities undertaken by Gloucester Resources Limited, AGL and Yancoal are expected to have minimal impact on the Stratford Mining Complex according to the EIS.

### 3.4 The Department's Preliminary Assessment Report (PAR)

The Department has carried out a preliminary assessment of the project application and its report has been submitted to the Commission for consideration as part of the review process.

The PAR considered the proposal, its statutory context, public and agency submissions, and the Proponent's responses to submissions. The report identified the following key issues:

- Noise and blasting;
- Air quality;
- Surface water;
- Groundwater;
- Biodiversity;
- Roads and Traffic;
- Aboriginal heritage; and
- Social and economic impacts.

The report concluded that night-time noise can be a sensitive issue for nearby residents and after consideration of various alternatives regarding the project's hours of operation, the Department has recommended that operations in Avon North and Stratford East open cut pits should be approved on a 24 hour basis. The Department did not believe that eliminating night-time mining would significantly reduce the night-time noise levels for residents. However, it recommends real time night-time noise monitoring at Stratford and Craven villages and that some or all of its operations be reduced or cease should the monitoring indicate that operations are approaching any of the relevant noise criteria.

The proposed development would result in the removal of 195ha of non-native vegetation and 105 ha of native vegetation including 13.5ha of *Cabbage Gum Open Forest or woodland on flats of the North Coast and New England Tablelands* Endangered Ecological Community (EEC). However, the Department stated that clearing of the EEC would not result in a significant impact as the community was well represented in the region and that the Biodiversity Offset Area contains 30ha of this vegetation type. The proposed Biodiversity Offset Area includes 490ha of existing native vegetation, 435 ha of cleared land and 10 ha of native plantation trees.

The report states that the project would result in a number of important social and economic benefits such as increasing employment, a capital investment of \$75 million and a contribution of \$84 million of royalties to the NSW Government.

Potential environmental impacts on surface water, groundwater, aquatic ecology, Aboriginal and non-indigenous heritage, blasting impacts, road and traffic, agricultural production and visual amenity were also assessed. Whilst acknowledging that the project will increase some of the mine's existing impacts, the Department considers these would not be significant and can be minimised, managed and offset through appropriate conditions of consent.

The Department stated that the existing conditions of approval have been strengthened and updated to ensure consistency with other recently approved NSW coal mines. The report concluded that the application should be approved subject to conditions because:

*“On balance, the Department believes the proposed development represents a logical progression of existing mining operations at the Stratford Mining Complex, that the site proposed for the development is suitable, and that the benefits of the proposed extension significantly outweigh any potential costs.”*

The Terms of Reference for the Commission’s review of the project include a requirement to consider the PAR amongst other sources of information concerning the project. The PAR includes a draft suite of conditions recommended by the Department to minimise adverse impacts.

## **4 Commission Activities**

### **4.1 Public Hearings and Submissions**

In accordance with the Commission’s terms of reference, a public hearing was held on Wednesday, 19 February 2014 at the Gloucester Soldiers Club. A total of 36 verbal submissions were made to the Commission at the hearing, comprising seven special interest groups, individuals, the Proponent, local business representatives and Gloucester Shire Council. All those seeking to be heard were heard. Eighteen written submissions and 22 form letters were also provided to the Commission. A summary of the issues raised at the public hearing is provided in Appendix 3 of this Report. The submissions are publicly available and can be accessed from the Commission’s website, along with written presentations that were provided to the Commission during the public hearing.

All submissions made to the Department on the EIS were provided to the Commission for consideration but some commercial in confidence correspondence between the Proponent and Department was not supplied to the Commission.

### **4.2 Documents, Meetings & Site Inspections**

Through the course of the review the Commission accessed a wide range of documents including:

- The Proponent’s Environmental Impact Statement (Resource Strategies Pty Ltd, November 2012);
- Submissions from government agencies and the public made to the Department and directly to the Commission;
- The Proponent’s:
  - Response to Submissions (Resource Strategies Pty Ltd, not dated);
  - Additional Information provided by the Proponent to the Department;
- The expert review commissioned by the Department (Independent Review of Groundwater Assessment by Dundon Consulting Pty Ltd, June 2013).

During the review, the Commission met with representatives from Great Lakes Council (Monday, 17 February 2014), Gloucester Shire Council (Wednesday, 19 February 2014), the Environment Protection Authority (Thursday, 27 March 2014), and the Proponent (Tuesday, 18 February 2014 (on site), Tuesday, 4 March 2014 and Wednesday, 9 April 2014). Summaries of these meetings are provided in Appendix 4.

The Commission visited the site on Tuesday, 18 February 2014 with the Proponent. The Commission also met on multiple occasions.

## 5 Comments and findings relating to the Terms of Reference

### 5.1 Noise and Blasting

#### 5.1.1 Noise Assessment

The Commission considered noise issues raised in the assessment reports and submissions, including: operational, rail, road traffic, cumulative, night-time noise and sleep disturbance impacts.

The assessment of noise and its management is dealt with in the NSW Industrial Noise Policy (INP). The steps in the process are summarised by Preston CJ in his judgment in *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48 (*Warkworth*) decision as involving the following main steps:

1. Determining the project specific noise levels (PSNL) for intrusiveness and amenity that are relevant to the site or the area.
2. Measuring and determining existing background and ambient noise levels, using the method relevant to the expected level of impact.
3. Where the proposed development is expected to produce annoying noise characteristics, adjustments are to be applied to the noise levels produced by the development in question.
4. Predicting or measuring the noise levels produced by the development in question, having regard to meteorological effects (such as wind, temperature inversions).
5. Comparing the predicted or measured noise level with the project-specific noise levels (PSNLs) and assessing impacts.
6. Considering feasible and reasonable noise mitigation strategies where the PSNLs are exceeded.
7. Negotiation between the regulatory/consent authority and the proponent and between the community and the proponent to evaluate the economic, social and environmental costs and benefits from the proposed development against the noise impacts.
8. The regulatory/consent authority sets statutory compliance levels that reflect the achievable and agreed noise limits for the development.
9. The regulatory/consent authority may require the proponent to provide at-receiver mitigation measures or acquisition of properties where the noise levels are predicted to be above the PSNL. Alternatively, private negotiated agreements may be made between the proponent and the affected landowner.
10. Monitoring of environmental noise levels from the development to determine compliance with the consent/licence conditions.

The first step of determining the PSNLs involves selection of the industrial noise criteria. The industrial noise criteria set out in Section 2 of the INP are "best regarded as planning tools" and are intended "to protect at least 90 per cent of the population living in the vicinity of industrial noise sources from the adverse effects of noise for at least 90 per cent of the time" (INP, 1.4.1 p 3). The INP sets two separate noise criteria to meet environmental noise objectives: one to control intrusive noise impacts for residences, and the other to protect and maintain noise level amenity for residences and other land uses (INP, 1.4.4, p 4).

The Commission notes that, in practice, the controlling criterion for a mine is generally the intrusiveness criteria since it is the more stringent.

#### 5.1.1.1 Background Noise level

The Noise and Blasting Assessment Report (N&BAR) (p14) states the background night-time noise was measured on previous occasions and concluded the Rated Background Level (RBL) for the project is 30 to 33dB(A). The INP states that where the rating background level is found to be less than 30dB(A), then it is set at 30dB(A). (INP 3.1.2, p 24)

This level of background night-time noise was raised in some submissions, including by GSC, who stated that the levels in rural areas are often lower than 30dB(A), especially at night. This is important as the project specific noise level (PSNL) is normally set at 5dB(A) above the default minimum background level even if the actual background noise is less than 30dB(A). This means residents could be subjected to substantially more than a 5dB(A) increase in noise.

The practice of using a default minimum greater than the level of actual background noise is a common complaint about projects in rural areas and the Commission has raised it in previous consideration of coal mining proposals (see Maules Creek Coal Project Determination Report, 23 October 2012, p14, Coalpac Consolidation Project Report, 14 December 2012). The Environment Protection Authority (EPA) has advised that the INP is currently being reviewed and this issue is being addressed, but recommends the 30dB(A) default minimum be used in the interim.

The Commission requested further information from the Proponent about the actual measured background noise levels in the area. The Proponent's response dated 31 March 2014 (Appendix 7), referred to background noise monitoring information that was contained in the EIS for the Project confirming the RBL of 30 to 33dB(A). These background noise levels were measured in 1994 and ideally the Commission would have preferred more contemporary monitoring. The Proponent has advised this is not able to be done because the background levels would be influenced by the operation of the existing Stratford Mining Complex. In this instance the Commission recommends acceptance of the EPA's advice that the default level of 30dB(A) be used. However, the Commission notes the position adopted by Preston CJ in Warkworth that would appear to require monitoring of background noise levels at a wide range of locations to establish RBLs specific to the areas predicted to be impacted by noise from the project.

**Recommendation:** If available, any outcome of the review of the INP that relates to background noise levels in rural areas should be taken into account prior to determination of this project.

#### 5.1.1.2 Noise Criteria

The Department's assessment in the PAR is generally in accordance with the INP although the Commission has identified some issues that require further consideration.

In general the PAR identifies the project specific noise levels (PSNLs) based on an allowance of 5dB(A) above the day, evening and night rated background noise levels (RBLs). However, some of the noise criteria set out in Schedule 3 of the Department's draft conditions of consent provide for noise levels significantly higher than these PSNLs. No explanation is provided for this difference. It would appear the properties listed in Table 4 may have negotiated agreements, but this should be clarified and the higher levels justified.

This issue was addressed by Preston CJ in Warkworth (para. 339) where he noted that higher levels had been adopted representing the predicted noise levels rather than the desirable PSNL levels and that no adequate justification was provided for this difference: *"The twin reasons given, that setting higher limits accords with Departmental practice since 1994 and with what is able to be achieved by the Project, are not cogent reasons for departing from the PSNLs recommended by the INP."*

#### 5.1.1.3 Low Frequency Noise

Some submissions, including by GSC, expressed concern about the potential for low frequency noise from the project and cite experience with low frequency noise from the existing Stratford mine operations. Low frequency noise has annoying characteristics and the INP requires this to be taken into account. Concern was expressed that low frequency noise was not assessed adequately in the EIS.

The INP provides a method for assessing low frequency noise by comparing A and C weighted noise levels. If the difference is more than 15dB then low frequency noise is prevalent and a modifying factor, normally 5dB(A), should be added to the predicted A weighted noise level before comparison with the PSNL.

The EIS stated there would be no predominant low frequency noise, but this was not assessed in accordance with the INP. In response to a request from Department, the Proponent provided a supplementary report by SLR Consulting (27 June 2013) for low frequency noise assessment. Further noise measurements were conducted using both A and C weightings and the differences were 10 and 13 dB. As this is less than the 15dB difference trigger in the INP, the report concluded that no adjustment to the noise levels is required to account for low frequency noise.

The Commission requested further justification from the Proponent as the supplementary report provided only very limited information upon which to make a judgment about low frequency noise. The Proponent's response, 31 March 2014 (Appendix 7), provided additional information including a list of source controls, acoustic barriers and operational constraints aimed at reducing low frequency noise. Reference was also made to a current EPA review of the INP including assessment of low frequency noise.

On the information available the Commission accepts it is not necessary to provide an adjustment factor for *all* the modelled noise predictions. However, if during regular attended compliance monitoring or monitoring for regulatory enforcement (eg. at a residence in response to a complaint) it is evident that low frequency noise is present, then monitoring capable of assessing the low frequency noise component must be undertaken. Depending on the results the appropriate modifying factor should be applied to the noise levels prior to comparison with the PSNLs.

**Recommendation:** The conditions in any consent should require that an appropriate noise modification factor for low frequency noise be applied during compliance testing at any individual residence if low frequency noise is prevalent (i.e. in accordance with the INP) and before comparison with the specified noise limits in the approval.

#### 5.1.1.4 Temperature Inversions and Gradient Winds

Several submissions expressed concern about the night-time operations and one resident claimed that the noise from the existing Stratford mine was annoying at up to 5km from the mine, particularly under temperature inversion conditions.

The Commission accepts the concerns raised by many of the local residents about noise impacts from the existing Stratford mining operation and from the proposed Stratford Extension project. These impacts are likely to be greatest at night under temperature inversions and these are the conditions when exemptions to the noise limits may apply under the Department's draft conditions of consent. The Commission is also cognisant of the NSW policy position as established in the INP.

The INP establishes the NSW policy position on temperature inversions and gradient winds. It acknowledges their potential to enhance the propagation of noise. It also acknowledges that it is not



always practical to control the noise and prevent its propagation in all circumstances. Accordingly, it provides a temperature inversion exemption and a gradient wind exemption in prescribed circumstances while expecting the operator to take all reasonable and feasible measures to minimise the noise even when the exemptions apply.

If moderate (Class F) temperature inversions are a feature of the area (that is, they occur more than 30 percent of the time in winter) the INP provides that the mine is exempt from the noise criteria only if a strong temperature inversion (Class G) is occurring. If on the other hand, strong inversions (Class G) are a feature of the area, the inversion exemption never applies.

In relation to gradient winds, the INP provides an exemption from complying with the noise criteria at a receiver if the wind is blowing from the source in the direction of the receiver at a speed of more than 3m/s. The speed is to be measured at the source at a height of 10m above ground level.

A further factor that may contribute to resident concern is the fact that the INP states that noise cannot be measured when the wind speed at microphone level (averaged over a 15 min period) is greater than 5 m/s (INP Section 3.4 p29), or when there is rain or hail. (INP Section 5). The consequence of this is that it is not possible to determine if the mine is complying with its noise limits during these events, even if compliance is required.

Unfortunately for affected residents, the project noise may be loudest for the affected residents when these specified meteorological conditions are occurring. Temperature inversions in particular occur overnight and in the early morning.

The Commission has considered this issue carefully because the Minister's Terms of Reference required the Commission to pay particular attention to the potential night-time noise impacts of the project.

For the current proposal the EIS states, and the PAR agrees, that the mine site will experience moderate (Class F) temperature inversions 30% of the year and strong (Class G) temperature inversions 10% of the year. Therefore Class F temperature inversions are taken to be a feature of the area for the purposes of the INP.

The draft conditions of consent provided by the Department specify noise limits in Table 4, clause 4 of Schedule 3 with a note that the noise should be measured in accordance with Appendix 6. Appendix 6 provides the following:

1. *The noise criteria in Table 4 in schedule 3 are to apply under all meteorological conditions except the following:*
  - (a) *during periods of rain or hail;*
  - (b) *average wind speed at microphone height exceeds 5 m/s;*
  - (c) *wind speeds greater than 3 m/s measured at 10 m above ground level; or*
  - (d) *temperature inversion conditions greater than 3°C/100 m.*

As drafted, these conditions would exempt the Proponent from complying with the noise criteria under each of the circumstances listed above.

Preston CJ addressed these purported exemptions in the INP in detail in his judgment in Warkworth. In summary, at paragraph 360 he found that two of the identical provisions to those in Appendix 6(1) of the draft conditions for this project were not consistent with the INP in that they attempted to exclude operation of the noise criteria under the conditions specified rather than just exclude monitoring of the criteria.

The Judge found that the conditions as drafted allowed the mine to emit noise at any level during the conditions specified, which could include something as common as extended periods of rain<sup>8</sup>. Instead, he found that the mine should be required to comply with the noise criteria at all times except for periods of temperature inversion that were not a characteristic feature of the area and where the wind speed from mine to receiver measured in accordance with the INP is greater than 3m/s.

The Commission considers the Department's draft condition will need to be amended to reflect the intent of the INP as interpreted in the judgment of Preston CJ in Warkworth.

The Commission notes there are several versions of these exemption conditions, each different in their effect. These include the recommended condition in the INP, the Department's draft recommended condition for this project, and the more recent advice from the EPA for the proposed Moolarben Coal modification application (EPA letter to the Department dated 26 February 2014). The EPA notes that the latter recommended condition has been reviewed for legal compliance enforcement and approved by the EPA Executive as the standard condition that should be used.

These other versions of recommended consent conditions for meteorological exemption conditions are provided below.

1. INP Section 9.2 p 47  
*The noise limits apply under all meteorological conditions except;*
  - *during rain and wind speeds greater than 3 m/s; and*
  - *from 6 pm to 7 am during intense inversions, which are indicated by cloud cover less than 40 per cent and wind speeds less than 1.0 m/s.**Note: Wind data should be collected at 10 m height.*
2. EPA recommended condition for Moolarben (dated 26 Feb 2014)  
*The noise limits set out in condition L5.1 apply under all meteorological conditions except for the following:*
  - (a) *Wind speeds greater than 3 metres/second at 10 metres above ground level; or*
  - (b) *Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level<sup>9</sup>; or*
  - (c) *Stability category G temperature inversion conditions.*

The recommended conditions variously attempt to provide exemptions in three circumstances:

- (a) strong temperature inversions;
- (b) gradient winds; and
- (c) monitoring difficulties during wind and rain.

The Commission met with the EPA on 27 March 2014 to discuss these issues. Each of these will be dealt with separately here. Again, this discussion focuses on the current project where moderate, Class F inversions are predicted to be a feature of the area.

(a) Strong Temperature Inversions

The common intent of the conditions is to require compliance with the noise limits except when there are strong inversions (since strong inversions are not a feature of the area).

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<sup>8</sup> The Commission notes the Department's draft consent for this project contains a separate condition requiring reasonable and feasible measures to minimise noise when exemptions apply.

<sup>9</sup> Note that Class F inversions are considered a characteristic feature of the area for this Moolarben project.

The proposed exemption clause in the condition recommended in the INP, (*from 6 pm to 7 am during intense inversions, which are indicated by cloud cover less than 40 per cent and wind speeds less than 1.0 m/s*) was intended to provide a practical means of determining when a strong inversion is likely to be occurring. Over time this condition has proven to be unworkable from a compliance perspective. Hence it is no longer used, although the INP has not been updated to reflect this.

The EPA advised that the proposed exemption clauses (b) and (c) in the condition recommended by the EPA for Moolarben are able to be monitored continuously with a 10m high weather tower and are able to be enforced for compliance purposes. Therefore these are the standard recommended clauses that should be applied for relevant mining projects. The Commission notes, however that clause (b) relates to Class F temperature inversions and this is inconsistent with the INP, which states clearly that the exemption should only apply under Class G temperature inversions where Class F temperature inversions are a feature of the area. Therefore clause (b) should not be included for this project.

The proposed clause (d) in the Department's recommended conditions for Stratford (*temperature inversion conditions greater than 3°C/100 m.*) is different from the EPA recommended standard clauses. The EPA, however, advised that under certain circumstances it would approve this alternative if the Proponent is willing to install a 60m high weather tower to monitor the temperature lapse rate over this height. The Proponent has indicated its desire to do this for the current project. The EPA advised that although this is acceptable there is a slight advantage for the Proponent in terms of this clause being less stringent than the standard clause. The EPA advised this would normally underestimate the noise level at the receiver by approximately 1dB(A).

The Proponent has sought to minimise the extra cost by building two 10m towers on natural features that provide the required height differential for measurement. However, this should only be acceptable where the Proponent can demonstrate to the satisfaction of the EPA that this arrangement produces identical results to those that would be achieved by use of a single tower (or alternatively, results that would be no more favourable to the Proponent than those that would be obtained by use of a single tower). The Commission notes that it may be possible to use a calibration factor to correct the twin tower results to give the equivalent of a single tower result.

In the context of this project, where noise is a critical issue and Class F temperature inversions are a feature of the area, the Commission considers it unfortunate that the Proponent has opted for the inversion measurement option in the INP that requires more complex measurement arrangements and provides a potentially lower level of protection to receivers. The consent conditions will therefore need to be prescriptive to ensure that the Proponent complies with the inversion measurement requirements to the letter.

As for the proposed twin tower arrangement, the Commission accepts that the Proponent should be able to minimise costs, but this should not come at the expense of those impacted by the Proponent's activities.

**Recommendation:** The consent should include an explicit requirement that the Proponent demonstrate, to the satisfaction of the EPA, that the measurement arrangements will deliver results under all conditions that:

- are able to be transformed accurately and repeatably to those that would be obtained by the use of a 60m tower; and

- are no more favorable under any conditions to those that would be obtained by use of a single 60m tower.

(b) Gradient Winds

The exemption clause recommended in the INP, i.e. *during rain and wind speeds greater than 3 m/s (at 10m height)*, appears to confuse two issues by combining rain which may affect noise monitoring equipment, and wind speed at 10m which is a measure of gradient winds. In addition the clause is silent on the wind direction that, according to the INP and as pointed out by Preston CJ, needs to be from the noise source to the receiver for the inversion exemption to apply.

The exemption clause (b) in the Department's recommended condition separates out the rain issue but still omits the wind direction component. Similarly the EPA recommended 'standard' condition (EPA letter re Moolarben) also omits the wind direction in clause (a).

The EPA acknowledged this omission in its meeting with the Commission. The Commission's view is that for the proposed exemption clause for gradient winds to be valid, it must include the requirement for the wind direction to be from the noise source to the receiver.

(c) Monitoring difficulties during rain and wind.

The intent of the INP is to acknowledge the limitations of noise monitoring during rain and wind when the weather can artificially increase the measured noise levels. Preston CJ has pointed out that this should not translate into a condition that purports to exempt the Proponent from complying with the noise limits under such rain or wind circumstances.

The proposed exemption clause in the INP i.e. *during rain and wind speeds greater than 3 m/s*, is inappropriate because it combines two unrelated factors, as discussed above. The Department's proposed clauses (a) and (b) separate out the rain and gradient wind issues, but introduce hail as an additional exemption in (a).

This clause (a) has two problems. One is that, as explained above, rain or hail should not be an exemption from the need to comply with the noise conditions. Secondly, it would suggest that any minor rain or drizzle would provide an exemption. This would be a particular problem with the Stratford project as the Proponent has submitted that it can comply with optimistic dust control efficiencies because they have such high rainfall (1000mm a year), and between 100 and 160 rain days a year.

The proposed EPA 'standard' condition (EPA letter re Moolarben) omits any reference to exemptions applying to rain or hail. This is consistent with the EPA advice in its meeting with the Commission that the ability of noise monitoring equipment to operate under adverse weather conditions has progressed substantially since the INP was released in 2000 and these exemptions are no longer appropriate or necessary.

The Commission therefore supports the removal of clause (a) in the Department's recommended condition.

**Recommendation:** Condition 1, Appendix 6 be amended to read:

1. *The noise criteria in Table 4 in schedule 3 are to apply in relation to a receiver under all meteorological conditions except -*
  - (a) *under temperature inversion conditions greater than 3°C/100m; or*

- (b) *when wind in the direction from the source to the receiver is measured at a speed of greater than 3m/s at 10m above ground level.*

The above discussion identifies problems with the INP that have been highlighted by Preston CJ and acknowledged by the EPA and the Department. These issues will no doubt be addressed in the current review of the INP. In the meantime, care needs to be taken to ensure any references to the INP in conditions of approval are still appropriate.

The Department's proposed condition 5 of Appendix 6 states:

5. *Unless the Director-General agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:*
- (a) *monitoring locations for the collection of representative noise data;*
  - (b) *meteorological conditions during which collection of noise data is not appropriate;*
  - (c) *equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and*
  - (d) *modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.*

As it stands clause (b) would provide inappropriate exemptions under some meteorological conditions.

**Recommendation:** Condition 5, Appendix 6 be amended by omitting paragraph (b). Any specific requirements or modifications relating to monitoring under different meteorological conditions should be contained in a specific condition rather than by reference to the INP.

#### 5.1.1.5 Monitoring and reporting under meteorological conditions.

The Commission considers it is important that residents know how often they are likely to be subjected to noise levels above the specified noise limits and that they are able to confirm if the elevated noise level was caused by exempted temperature inversion conditions, by exempted gradient wind conditions, or by some other elevated noise source from the mine operations not permitted by the consent conditions.

The Commission sought further advice from the Proponent about how each noise complaint was assessed during 2011, 2012 and 2013 and how many complaints occurred when adverse meteorological conditions applied. The Proponent responded on 31 March 2014 (Appendix 7), with some information on their real-time monitoring and complaints handling procedures at the Stratford mine and provided a breakdown of complaints made to the Proponent for an eight month period during 2013.

Of the 27 complaints received during this limited period, the conclusion by the Proponent for 26 of them was that 'it is likely that the noise levels at the complainant's property were below the noise criteria.' On the other occasion it was raining at the time and wind speed was greater than 3m/s and the conclusion was: 'the noise limits do not apply under these weather conditions and therefore the operations were considered to be compliant at the time of the complaint.'

Unfortunately this information does not provide definitive information for the Proponent, the complainant, or the regulator as to whether the mine was in legal compliance with the noise limits. The Proponent has confirmed that compliance can only be determined with attended monitoring, but it is apparent that attended monitoring was not conducted at the residence for any of the noise complaints. Instead, the real-time monitoring system and meteorological monitoring station was

used to assess 'likely' compliance. Attended monitoring is conducted quarterly under the current consent (note it is proposed to increase this to monthly under the proposed conditions of consent) and therefore is not used to monitor specific complaint incidents.

The Commission notes that the Proponent claimed in its submission at the public hearing that it was compliant with the noise criteria in the current consent. The evidence provided to the Commission by the Proponent indicates that it has no legally sound basis on which to make this claim in relation to incidents involving noise complaints.

The Commission also requested information on how often conditions might occur that would lead to exemptions from the noise limits under the recommended conditions in the Department's PAR and how they would be measured and communicated to affected residents.

It is apparent from the Proponent's response dated 31 March 2014 (Appendix 7) that exemption from the noise limits would apply when strong temperature inversions occur, that is, for 10 percent of the time, plus during rain, near surface wind, and gradient winds when the proposed exemptions would be permitted. These have not been quantified. The Proponent also listed the noise mitigation measures that would be implemented to minimise the noise under these adverse meteorological conditions. These measures are contained in the EIS. The Commission considers it unsatisfactory that the Proponent is unable to quantify the impacts on receivers associated with the proposed exemptions on which it seeks to rely.

The monitoring and reporting conditions in the Department's draft approval conditions provide a reasonable mechanism for keeping the residents informed, but the Commission considers there should be better communication back to the residents regarding project performance under adverse meteorological conditions, including whether the project is or is not in compliance for any specific complaint.

**Recommendation:** An additional condition be included requiring the Proponent to record when the real-time monitoring and management system detects any potential exceedance of the noise limits and when meteorological conditions are such that exemption from the noise limits applies. In addition a record should be kept of the specific reasonable and feasible measures that were taken to minimise the noise impact at the time. This information should be made available to the public on the Proponent's website, and be reviewed annually by the Community Consultative Committee.

Condition 6 Schedule 3 of the Department's draft conditions specifies the components that are to be included in the noise management plan. The Commission considers additional monitoring and reporting measures should be included because of the particular sensitivity of noise for this project.

**Recommendation:** The following sub-clauses be included in condition 6, Schedule 3 (Note: similar requirements were included in the PAC Determination for the Boggabri Coal Project, July 2012 at Condition 13 of Schedule 3):

- b) *describe the measures that would be implemented to ensure:*
  - *compliance with the relevant conditions of this consent;*
  - *the noise impacts of the project are minimised during meteorological conditions when the noise limits in this approval do not apply; and*
- d) *include a monitoring program that:*
  - *includes monitoring of inversion strength at an appropriate sampling rate to determine compliance with noise limits; and*
  - *provides for the biennial validation of the noise model for the project.*

### 5.1.2 Rail Noise

All coal will continue to be transported from the Stratford mine by rail. Also coal from the Duralie mine will continue to be transported by rail on the main North Coast railway line to the Stratford coal processing plant where it is blended with the Stratford mine coal and then transported by rail to the Port of Newcastle.

The proposed project would maintain the same daily average of 2.5 laden coal trains a day, but the daily maximum would increase from 5 to 6. These additional trains would most likely operate during the night because of line scheduling on the North Coast rail line.

The PAR (p22) states that the additional 2 trains (one laden, one empty) generated by the project during peak periods (which would be infrequently) would generally use the line during the night-time period. There is no indication, however, how often these peak periods occur or for how long.

The daily average of 2.5 laden trains a day will provide some limitation on this, but this is the same daily average as the current approval for Stratford. The new project only has a recommended approval for up to 2.6Mtpa compared to the existing approval for 3.1Mtpa for the Stratford and Bowens Road North Open Cut operations (PAR p7). The draft conditions of consent (Schedule 2, Condition 8) limit the maximum number of laden trains to two per night but there is no limitation on how often this may occur.

**Recommendation:**

- (i) The frequency and duration of 'peak' periods should be clarified prior to final determination of the project to allow an informed assessment of the night-time impacts of this proposed change; and
- (ii) A condition should be added to require regular reporting of the frequency and duration of night-time train movements.

These additional movements would increase the cumulative night-time noise and lead to exceedances of the acceptable rail noise criteria at all residences within 66m of the rail line. The PAR states that all but 5 of these residences are entitled to additional noise mitigation under the Duralie approval conditions. The EPA advises that noise mitigation should be provided by the Proponent for these additional residences because the Proponent will be responsible for approximately one third of the peak rail movements.

The Department does not agree with the EPA recommendation because the noise is a cumulative impact from several sources, and instead proposes the EPA require Australian Rail Track Corporation (ARTC) to provide mitigation and seek to recover costs from the various contributors of the noise. While this appears reasonable in principle, the Commission sought further advice from the EPA regarding the practicality of imposing such a condition on ARTC. The EPA advised (verbal advice 31 March 2014) that there are potential legal and practical problems with such a direction and it would be necessary to seek further legal advice. If the approach recommended in the PAR fails to materialise because the EPA is constrained in imposing such a requirement on the ARTC, then the affected residents would be left with no noise mitigation options.

**Recommendation:** A condition be added that requires the Proponent to provide noise mitigation measures within two years of commencement of operations at the five residences near the rail line that are entitled to noise mitigation (see PAR, P22). A note should be added that this condition would not apply if the EPA imposes an effective requirement on the ARTC EPL to mitigate the noise at these residences within two years of the commencement of operations.

Noise from rail loading was identified as one of the significant causes of complaint in the submissions. The Proponent is currently constructing noise barriers and bunds along the rail line to the coal loading area. This will reduce the noise from the current Stratford operations as well as the proposed mining operations.

GSC claimed that the Duralie shuttle was not included in the noise assessment for the proposed extension. The Commission requested further information from the Proponent. The Proponent's response, dated 31 March 2014 (Appendix 7), provided further information advising that the Duralie shuttle on the main railway line was approved for the Duralie project and therefore does not require further assessment for this project. In regard to the private spur line the Proponent advised that the modelling is based on two coal exporter trains on the rail loop, one loading and one waiting, and this would be more conservative than one exporter train and the Duralie shuttle train. As this represents a worst case scenario, separate assessment of the Duralie shuttle on the rail loop was not necessary.

### **5.1.3 Sleep disturbance**

The INP recognises the impacts of short-term noise events on sleep and adopts a sleep disturbance criterion of no more than 15dB(A) difference between the impulsive noise,  $LA_1$  (1 minute) and the prevailing background noise level  $LA_{90}$  (15 mins). The INP (Application Notes, June 2011) acknowledges that the current sleep disturbance criteria in the INP are not ideal.

The EPA carried out a review of acceptable standards for sleep disturbance in 1999 (Environmental Criteria for Road Traffic Noise, EPA, 1999) and this was subsequently updated in the NSW Road Noise Policy (OEH 2011) but the conclusion was similar.

Other criteria in more recent EPA guidelines (e.g. the NSW Road Noise Policy (OEH 2011) suggest internal noise levels of 50 to 55dB(A) are unlikely to cause awakening. An internal level of 50dB(A) is generally equivalent to an external level of 60dB(A).

The Proponent has used the INP criterion for the environmental assessment of this project. The Commission agrees this criterion is the most appropriate given there is no other more relevant sleep disturbance standard available.

Therefore the appropriate night-time noise criteria for the current project should be the background level of 30dB(A) plus 15dB(A) to determine the appropriate maximum acceptable  $LA_1$  (1 minute). These criteria have been adopted for the project assessment resulting in a night-time PSNL of 45dB  $LA_1$  (1minute).

The N&BAR (P20) refers to night-time operations in 2011 when the differences at Stratford and Craven were 4 and 11dB(A) respectively between the  $LA_{90}$  (15 min) and  $LA_1$  (1 min) and predicts that only one property would exceed the 15dB(A) difference. The PAR concludes that only one property would be over and this property is identified for acquisition (P21).

The Commission accepts that this assessment is consistent with the INP.

### **5.1.4 Night-time noise**

The PAR has recommended the Avon North and Stratford East open cut pits should be approved on a 24-hr basis. The reasons given for this are:

- eliminating night-time operations would only decrease the noise by about 1 dB(A) at Stratford and this is not perceptible to most people;
- eliminating night-time operations would extend the length of mining by 1 to 6 years;



- net production benefit to Australia would fall by \$21M to \$58M; and
- more extensive waste emplacements would be required.

The claims for reduction in net production benefit are discussed in the economics section of this review (Section 5.6).

The Commission notes that eliminating night-time operations would reduce noise at Stratford village by about 1dB(A) when assessed against the night-time PSNL for the project. However, some receivers would see reductions ranging up to 11dB(A) between the night-time operational noise and the real background noise level at their residence. The PAR proposes conditions to address the impacts on those receivers with the elevated noise levels by requiring negotiated agreements, mitigation measures at the receiver or acquisition of the most affected properties.

The Department has provided a draft set of conditions including the use of real-time monitors to monitor and manage operations to meet the noise limits. The Commission has a reasonable degree of confidence in the predictions, but considers future ongoing night-time operations should be conditional upon satisfying compliance with the approved noise limits. The Proponent accepts that this is a reasonable requirement.

**Recommendation:** An independent review of compliance with conditions of consent for night-time operation be conducted immediately after the first two years of operation. Further night-time operation should only be permitted if there is satisfactory compliance with these conditions. Reviews should be conducted every two years thereafter until such time that the Director-General is satisfied that full compliance can be achieved consistently.

The Proponent also advised the Commission that it would impose operating restrictions at night to minimise noise impacts. These restrictions included transport of overburden to waste dumps, operation of particular classes of machinery, plus other measures.

The Commission considers that these operating restrictions should be included in detail in the operating conditions to identify to all parties the activities that are or are not allowed at night. Under normal circumstances this detail could be left to the noise management plan but, given the sensitivity of the noise issue, it is considered that it should be dealt with in the consent itself. It may be that a review step would be appropriate to determine whether additional controls on operations or other adjustments might be appropriate in light of experience with the night-time operations. This could be linked to the review required for the previous recommendation.

### 5.1.5 Cumulative noise

The INP states that the predicted noise needs to be assessed for both the intrusive noise and the amenity (cumulative) noise and the project should meet the tighter of these two criteria.

The method for assessment of cumulative noise is set out in the INP in Section 2.1. Under this method the predicted noise levels for the project are compared to a set of noise levels specified in the INP with the objective of protecting the noise amenity in the area and of limiting any increase in noise levels from multiple industrial sources.

Table 2.1 of the INP identifies that the acceptable night-time amenity noise level for a residence in a rural area is 40dB(A) when averaged over the night-time period from 10pm to 7am. The Noise and Blasting Assessment Report in the EIS states the total noise from all industrial sources is less than 34dB(A) averaged over any night. While this is below the acceptable level of 40, the INP also takes account of new noise sources that might cause a creep in the cumulative noise for the area and

Table 2.2 of the INP provides for adjustments to the acceptable level where a new source approaches the acceptable level.

Specifically Table 2.2 states that where the predicted amenity noise level is 6dB(A) below the acceptable level (as is the case for this project where the acceptable amenity level is 40dB(A)<sub>(10pm-7am)</sub>) then the new source should not exceed the acceptable level specified in the Table (i.e. 40dB(A) minus 1dB(A)). That is, it should not exceed 39dB(A)<sub>(10pm-7am)</sub>. The project is predicted to comply with this noise level.

The PAR (p21) states that cumulative noise impacts were assessed including the Gloucester Gas Project, Duralie Coal Mine and the proposed Rocky Hill Coal project against the INP recommended amenity criteria and there were no exceedances of the amenity criteria.

For the current project the Commission accepts the assessment and agrees that the determinative noise criteria will be the *intrusive* rather than the *amenity* criteria. This means that the non – discretionary development standard in clause 12AB (3) of the Mining SEPP is not relevant to the determination of this project,

#### **5.1.6 Real-time monitoring**

While the Commission accepts the potential benefits of real-time monitoring and management systems, the accuracy and reliability of these systems to both enable and test compliance with consent conditions has not yet been adequately demonstrated.

The Commission requested further information from the Proponent on this issue. The Proponent's letter dated 31 March 2014 (Appendix 7) provided a comprehensive response on the performance of the real-time monitors at Stratford and Duralie mines and how this information is used to inform decisions to reduce the impact of noise on residents. They also pointed out that the real-time system complements a suite of noise mitigation measures proposed for the project.

The Commission does not discount the value of the real-time monitoring system in managing noise impacts, but notes that this system does not enable definitive compliance checking for noise impacts at residences. As acknowledged in the Proponent's letter of 31 March 2014 (Appendix 7), such compliance checking requires attended noise monitoring at the residences, in conjunction with the information from the real-time noise and weather monitoring stations to determine wind speed and direction and temperature inversion conditions.

GSC submitted that Yancoal is unable to utilise real-time monitoring during the day because the current system is unable to distinguish effectively between traffic and other noises. The Proponent responded that the system also includes audio recordings so it is possible to listen to the specific noises to determine the difference between mine and traffic noises.

The attended noise monitoring program (currently quarterly, but to become monthly) is not a substitute for determining compliance in response to individual complaints. Further, there is no requirement for the Proponent to do anything that can be used for compliance purposes following complaints. This is compounded by the fact that it is not practical for either the EPA or the Department to respond on site to each individual complaint to check the noise level for compliance.

This issue is particularly important for this project because the predicted noise impacts at a number of residences fall just below the levels at which mitigation or acquisition would be required. If the predictions under-estimate the noise impacts (i.e. they are inaccurate) more properties may become significantly noise-affected.

The Commission considers there needs to be an improved process for determining compliance with noise complaints that can involve the real time monitoring system and/or noise measurement at individual residences. There would then be two sources of information, either of which could be used as evidence for compliance purposes.

**Recommendations:**

1. The Proponent should be required to conduct a review of the proposed real time monitoring and management system to determine how the system could be designed and used to determine definitive compliance with noise limits. This should be completed within one year of the date of consent.
2. Real-time monitoring and management systems have been in operation at mines for a number of years but the Commission is not aware of any review of their performance to date. The Commission considers there would be value in a comprehensive independent review of the reliability and accuracy of these systems so that consent authorities can have confidence that they can be relied upon as an effective part of the noise management system.

**5.1.7 Acquisition and mitigation remedies**

Where a private residence is affected by excessive noise, it has been standard practice for conditions of mine consents to provide for mitigation measures at the property to reduce that impact, or for acquisition of the property if the predicted noise is significantly above the PSNL. It has also been standard practice to include a condition for these options to take effect when 25 percent of private land is impacted even though a residence may not be.

The Commission did depart from this model in the specific case of mines located in a broad-acre agricultural area near Boggabri in north-western NSW. However, for reasons discussed in the Determination Report for one of these mines (Boggabri Coal Mine Determination Report, Planning Assessment Commission, 18 July 2012) the Commission recommended that the precedent be limited to equivalent land-use circumstances and not be extended to more settled areas (see p.11).

The standard condition relating to the 25 percent of land is not included in the Department's draft consent conditions for this project and there is no explanation offered to support its omission. The Commission considers that such a condition provides a reasonable degree of protection for property owners where land sterilisation might limit future development options and should be attached to any approval for this project.

**Recommendation:** Land acquisition should be included as an option if the noise criteria are predicted to be exceeded on more than 25 percent of privately owned land. Note that this may require reassessment of the properties potentially impacted and increase the number of properties in Table 1, Schedule 3.

The draft conditions as proposed do not allow specifically for mitigation or acquisition options to be triggered if during operation the predicted noise levels are not achieved in practice. There are two obvious situations and one that is more obscure. The first is where the property was predicted to be impacted below the level at which mitigation or acquisition remedies would become available (i.e. for this project 37dBA and 40dBA respectively). The second is where the property was predicted in the assessment to be impacted at levels that would have attracted mitigation remedies only (i.e. between 37dBA and 40dBA). The third is where there is a negotiated agreement to accept higher noise levels, but the predictions on which the agreement was based are now being exceeded.

If the actual performance of the mine results in exceedances of the predicted noise impacts at properties in these categories the Commission considers that there ought to be equitable access to the same remedies as would have applied if the predictions in the assessment had been accurate.

As it stands the only proposed remedy appears to be that contained in condition 4 of Schedule 4. This condition simply requires preparation of an independent report in response to a written complaint to the Director-General, identification of actions to bring the mine into compliance, and provision to the landowner of a copy of the report.

Whilst it would be most desirable to bring the mine into compliance, the Commission notes that there are numerous other provisions in the draft conditions that are designed to investigate, report, and take remedial action for non-compliance. In addition, an exceedance of the criteria in Schedule 3 is a breach of the consent itself (see Condition 2 of Schedule 5) and could result in prosecution. What is actually required is a condition that provides the property-owner with direct access to the same remedies as would have been available if the operational performance had been predicted accurately in the EIS.

One of the difficulties in the past has been deciding whether an 'exceedance' for the purposes of providing the property owner with access to remedies should be a single event or require multiple events. This was discussed at length in the Commission's Determination Report on the Boggabri Coal Project (PAC, Boggabri Coal Project Determination Report, July 2012 at pp13-14) with the conclusion that more than a single incident should be required to trigger access, but with no final resolution of what might constitute a 'sustained exceedance' for this purpose. The expression 'sustained exceedances' had been utilised routinely in mining approvals for some time prior to the Boggabri example, but without definition of what constituted 'sustained'.

The Department attempted to define 'sustained exceedances' for the Warkworth case, but ran into difficulty when Preston CJ calculated that the monitoring requirements laid down in the consent conditions would mean that 'sustained exceedances' as defined would be very difficult to demonstrate.<sup>10</sup> It is not clear to the Commission whether deletion of any remedies for property owners suffering exceedances in the draft conditions for this project is in response to this judgment or is simply an oversight. If it is a response to the judgment, the Commission considers that it is not acceptable to place property owners in an inequitable position when the fault lies entirely with the Proponent's assessment and/or operation of the mine.

**Recommendation:** A scheme be included in the conditions that provides for:

- a mechanism for complaint, investigation and report (the framework for this exists in Condition 4 of Schedule 4);
- the investigation to include sufficient monitoring to enable recalibration of the model predictions for the property in question; and
- if the revised predictions indicate that the property should now receive remedial options, a requirement that the Proponent provide those remedies at the request of the property owner or enter into a negotiated agreement with the property owner to accept the higher levels.

Provided the investigation is independent and robust this recommendation should avoid the 'sustained exceedances' definitional problem and provide a fair and equitable outcome for two of the three circumstances outlined above. It does not deal with the negotiated agreements situation,

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<sup>10</sup> See Warkworth, paras 365 and 376

but the Commission considers that this may need to be considered in the context of the content of negotiated agreements for mining proposals generally rather than attempt to resolve it here.

#### **5.1.8 Negotiated agreements**

The proposed conditions provide concessions from the requirements to comply with some consent conditions where the proponent has a negotiated agreement with the affected landowner. The PAR refers to several landowners that have existing negotiated agreements although it is not clear if these agreements take into account any additional impacts from the proposed project.

The Commission sought further advice from the Proponent regarding the compatibility of the existing agreements with the proposed mining project. The Proponent responded (31 March 2014, Appendix 7) with advice that all but two agreements were negotiated in the basis of the new project inclusive of the night-time noise operations. The remaining two agreements were negotiated based on existing operations but covered future increases in noise levels by Stratford.

The Proponent has provided legal advice confirming that these two existing agreements would comply with the proposed condition 4, Schedule 3 of the Draft Consent for the project. It is apparent there is no particular reference to the proposed project in these agreements. The Commission considers that to be clear, these agreements should renegotiated to include the proposed project.

**Recommendation:** Any existing negotiated agreements with landowners should be reviewed and updated as necessary to take account of the proposed project and any relevant conditions of approval.

#### **5.1.9 Conclusions on noise**

The Commission has carefully considered all the relevant issues relating to likely noise propagation from the project and in particular night-time noise. The noise standards cannot be achieved at all residences or at all times. This is not unusual for mining proposals. Several factors influence the ability to meet the desirable noise criteria and these include limitations of available reasonable and feasible mitigation options, and adverse meteorological conditions including temperature inversions.

Normal practice has been to provide relief to affected residents through options for acquisition or noise mitigation at the receiver or through negotiated agreements. These have been included in the Department's PAR and draft conditions. The Commission has raised concerns about some of these and they are addressed in this review.

Preston CJ in Warkworth at para. 338 referred to the factors that need to be considered in order to evaluate the acceptability of the residual noise impacts after reasonable and feasible measures have been taken into account. He concluded that it requires a case-by-case examination of the PSNL and, effectively, whether there should be any allowance above the PSNL for acquisition or mitigation rights. The factors to consider are contained in the INP (section 8.2.1, pp 43-44) and include:

- (a) characteristics of the area and receivers likely to be affected;*
- (b) characteristics of the project and its noise;*
- (c) the feasibility of additional mitigation or management measures; and*
- (d) equity issues in relation to the costs borne by some for the benefit of others, the long term cumulative increase in noise levels, and the opportunity to compensate effectively those affected.*

The Commission has considered these issues in its review of the project. Subject to the inclusion of the changes recommended by this review the Commission considers that noise can be managed to a standard that would allow the project to proceed. The Commission has also recommended a review step at 2 years to determine whether the project is in compliance with the night-time noise criteria. If the project is not in compliance, then the approval for night-time operations should be withdrawn until the project can demonstrate that it can comply.

The Commission has reviewed the project with regard to the recently amended Mining, Petroleum Production and Extractive Industries SEPP Amendment 2013 discussed in Section 2.4 of this report. Clause 12AB *Non-discretionary development standards for mining* prevents the consent authority from requiring more onerous development standards than those specified in the clause. Noise standards are specified for cumulative amenity noise level, air blast overpressure and ground vibration. The draft consent conditions and recommendations of the Commission are consistent with this provision.

#### **5.1.10 Blasting**

The blasting noise and vibration standards used in the EIS and the PAR are appropriate and are consistent with the standards specified in the Mining SEPP.

Three residences are predicted to be exposed to blast levels exceeding these criteria. The PAR states that these already have negotiated noise agreements with the proponent. The Commission sought further advice on whether those existing agreements cover the proposed additional impacts from the project (see discussion in section 5.1.8 above). The Commission has recommended any existing agreements be renegotiated as necessary (see Recommendation at the end of section 5.1.8).

The Department's proposed conditions of consent limit blasting from 9am to 5pm Monday to Saturday and one blast per day with a maximum annual average of three per week. This is well within the relevant standards. Standard requirements are proposed for investigating and rectifying landowner's claims about structural damage to property.

Some submissions identified blast fume as a potential impact on health. The Commission considers this should not be a particular problem based on the assessment reports, but it should be monitored so action can be taken if necessary.

**Recommendation:** Condition 14, Schedule 3, be amended to include the following clause in the Blast Management Plan.

*include a specific blast fume management protocol to demonstrate how emissions will be minimised including risk management strategies if blast fumes are generated (see PAC determination of Maules Creek Coal Project, 23 October 2012.)*

The Commission considers that the Project is able to be approved with respect to blasting noise and vibration subject to the above concerns and recommendations being addressed.

The recommendation is consistent with the Mining SEPP.

## 5.2 Air Quality

### 5.2.1 Modelling and Predictions

The EIS and PAR specify the air quality criteria used for the project and these are generally consistent with the NSW and Australian air quality standards and the Mining SEPP.

The monitoring data suggest the current air quality for Stratford and the surrounding area is generally good and well within the acceptable ambient standards. The predicted emission levels are within the acceptable standards or are able to be controlled by modifications to the mining operations using the real-time monitoring and management system.

NSW Health challenged the prediction in the EIS that the proposed mitigation measures for dust would achieve 90 percent control level for the proposed mine especially given the EPA Pollution Reduction Program goal is 80 percent and this control level is considered best practice. (NSW Health submission dated 18 Jan 2013).

Following a request for information by the Department, the Proponent advised that the dust control at Duralie Mine is 95 percent providing the surface moisture content is greater than eight percent. Given the importance of this number in the modelling of PM<sub>10</sub> dust levels, the Commission requested further justification from the Proponent as to how this high level of control could be achieved and monitored throughout the duration of the project under all weather conditions.

It is necessary for the Commission to gain a high degree of confidence in the prediction of particulate emissions because of the difficulty in determining the origin of dust from multiple potential sources during the operational phase.

The Proponent responded (dated 31 March 2014, Appendix 7) that the predicted 90 percent control efficiency would be achieved because:

- a) Monitoring in 2013-14 indicated average dust control efficiency ranged from 92-93 percent
- b) SCPC will increase watering if necessary to achieve 90 percent control
- c) Rain falls on 100 to 160 days a year with a total of approximately 1000mm/yr.
- d) The water balance predicts sufficient water with 99.9 per cent reliability over the duration of the project.

The Commission accepts that this high level of dust control can be achieved based on the information available, but notes it will require a high level of diligence particularly on hot windy days and during drought conditions.

### 5.2.2 Cumulative air quality

The AQIA has modelled worst-case years for the project and taken into account the AGL Gloucester Gas Project and the proposed Rocky Hill Mining Project. The PAR (p.25) states the cumulative average annual PM<sub>10</sub> concentrations will range between 10-16µg/m<sup>3</sup> compared to existing levels of 11µg/m<sup>3</sup> and background level, without existing mining of 8µg/m<sup>3</sup>. This prediction is well within the current standard of 30µg/m<sup>3</sup>.

The predicted cumulative 24hr PM<sub>10</sub> emissions will exceed the criteria at three locations close to Stratford for 1 to 5 or 6 days a year. The Department advised that these are generally within the allowable 5 days a year under the Air NEPM standard. However, it needs to be noted that the NEPM provides for up to 5 days a year exceedance of the air standard for unanticipated events such as bushfires or dust storms. These concessions are not intended for predicted exceedances from a mining project.

The Department notes two things in this context: that these predictions are overestimated as some emissions have been double counted and in any event the proposed real time monitoring system will aid management of dust-generating activities on high risk days (PAR p28). The Commission accepts that cumulative emissions should be able to comply with the air quality standards if there is strict compliance with the proposed draft conditions of consent. The Commission considers that measures including relocating or suspending certain operations under conditions of risk should be considered and this should be made clear in the conditions.

**Recommendation:** Condition 19 (e), Schedule 3 should be amended to read:

*Operate a comprehensive air quality management system on site that uses a combination of meteorological forecasting, predictive and real time air dispersion modelling and real-time air quality monitoring data to guide the day to day planning of mining operations and implementation of both proactive and reactive air quality mitigation measures **(such as relocate, modify and/or suspend operations)** to ensure compliance with the relevant conditions of this approval.*

### 5.2.3 Acquisition of properties

The PAR does not recommend any properties need necessarily be acquired but condition 18 in Schedule 3 provides an option for acquisition if emission limits are exceeded on privately owned land.

The Department's draft conditions 16 and 18 provide triggers for further action or acquisition of properties. The usual practice is that the further action or property acquisition process is triggered by exceedances at any residence on privately-owned land **or on more than 25 percent of any privately-owned land**. The Department has omitted the latter part relating to the 25 percent of land for this project. No justification is provided for this deviation from past practice and the Commission considers the provision should be reinstated in full for this project. This issue was also discussed in the Noise section of this report at 5.1.7.

**Recommendation:** The Commission recommends that condition 16 be amended to read:

*16. The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria in Tables 6, 7 and 8 at any residence on privately-owned land **or on more than 25 percent of privately owned land**.*

**Recommendation:** The Commission recommends that condition 18 be amended to read:

*18. If particulate matter emissions generated by the development exceed the criteria, or contribute to an exceedance of the relevant cumulative criteria, in Tables 9, 10 or 11, at any residence on privately-owned land, **or on more than 25 percent of any privately-owned land** then upon receiving a written request for acquisition from the landowner the Applicant shall acquire the land in accordance with the procedures in conditions 5-6 of Schedule 4.*

The Commission has previously raised concerns about the proposed criterion of 150 µg/m<sup>3</sup> for exceedances of the PM<sub>10</sub>, (24 hour) levels as proposed in Table 10, Schedule 3 of the Department's recommended conditions. This level is well above the Australian NEPM Standard of 50 µg/m<sup>3</sup> and has been criticised by NSW Health. A further discussion of this issue is contained in the Commission's determination of Boggabri Coal mine (PAC Determination Report on the Boggabri Coal Mine Expansion Project, July 2012, Section 3). The Commission has been advised that the acquisition criteria are currently under review by the EPA, NSW Health and the Department.



**Recommendation:** A revised acquisition criterion should be developed in consultation with NSW Health and the EPA before the project is determined.

#### **5.2.4 Contamination of rainwater tanks**

Some submissions and presentations at the public hearing expressed concern about coal dust contamination of rainwater tanks. At the public hearing the Commission was provided with samples of tank water and filters allegedly contaminated by dust from the mine. These concerns were expressed by residents, Gloucester Shire Council and NSW Health. The residents requested water filters and monitoring of tank water quality. The PAR outlined the dust mitigation measures and concluded there would be minimal impacts on the tank water quality because of the low predicted dust deposition rates. Further comparisons between the tank water from Stratford and villages up to 30km away had no statistical difference in water quality. Nonetheless the Department has proposed a condition requiring a monitoring program for tank water.

The Commission requested further justification from the Proponent about the potential impact of coal dust on tank water at residences including: the potential health impacts, aesthetic impacts (i.e. discoloured water) and the cost of filtration systems and maintenance of these systems. The Proponent responded (31 March 2014, Appendix 7) providing additional information regarding health impacts, but not the aesthetic impacts or costs of filtration.

The Commission accepts there will most likely be some dust impact on roofs that will enter rain water tanks, but based on the predictions it should not be at a level that would lead to significant health impacts. However, the Commission considers that the aesthetic impacts of discoloured water in rainwater tanks gives rise to an identifiable economic impact on residents for which there is currently no compensation mechanism (i.e. the residents need to install and maintain filtration systems). This means that individual residences are acquiring a financial burden (albeit relatively small), but may not be receiving any of the benefits from the project. This issue should be examined by the Department with a view to developing an equitable solution for consideration prior to determination.

**Recommendation:** The Department examine the issue of discolouration of domestic water supplies by mine-generated dust with a view to providing an equitable solution for residents who require installation and maintenance of water filtration systems to manage this problem. The results of this examination should be made available to the consent authority prior to determination.

#### **5.2.5 Rail Transport of Coal**

Dust emissions from rail transport of coal were raised in submissions and addressed in the PAR (p28). The Department referred to recent studies by ARTC and the Coal Terminal Action Group and concluded that if the moisture content of surface coal in the rail wagons is greater than 5 percent then dust lift off would be minimal and as the coal from Stratford is generally 7-8 percent (and above 5 percent even in January and February) then this should not be an issue.

The Commission is aware that the EPA commissioned a peer review of the ARTC report by Dr Luke Knibbs, University of Queensland. Dr Knibbs (July 2013) concluded there was a major error in the statistical analysis and recommended reanalysis of the data. The Government asked the NSW Chief Scientist and Engineer to recommend a thorough independent review of the statistical analysis of the ARTC data. This review was conducted by Professor Louise Ryan (Review of Pollution Reduction Program 4.2 Particulate Emissions from Coal Trains, Sept 2013). She considered there were serious

limitations with the ARTC report and recommended a re-analysis of the data. Prof Ryan subsequently re-analysed the data at the request of the EPA (Re-analysis of ARTC Data on Particulate Emissions from Coal Trains, Prof Louise Ryan for NSW Environment Protection Authority, 25 Feb 2014). This review concluded:

*With regard to Question 1, our analysis shows that there are clear and statistically significant elevations in particulate concentrations when a train passes by the monitoring station. These concentration elevations are apparent for all four particle types, including TSP, PM10, PM2.5 and PM1. In answer to Question 2, there is no evidence that loaded coal trains have a stronger association compared with unloaded coal trains or freight trains. Our analysis suggests that the freight trains and coal trains (loaded and empty) all have similar profiles. The elevations are of modest magnitude, with an increase of approximately 2.4 to 2.8 ug/m3 relative to background levels for freight and coal trains (loaded and empty) for TSP. Corresponding increases for PM10, PM2.5 and PM1 are approximately 2, 0.7 and 0.12, respectively. In other words, there is approximately a 10% increase in the various kinds of particulate measurements associated with freight and coal trains.*

The Commission is unable to draw any firm conclusions from this work with respect to the current project. The Commission also acknowledges this finding has potential ramifications more broadly than for the current project and therefore recommends that the Department and EPA take this latest information into account before submitting a final assessment report and recommendation for determination of this project.

#### **5.2.6 Greenhouse Gas Emissions**

The EIS has modelled the predicted emissions of Scope 1, 2 and 3 greenhouse gases and the PAR has concluded that the direct contribution of the project to national and global GHG emissions would be very small and would be significantly outweighed by the positive aspects of the project, including contribution to employment and the NSW economy. In addition, refusing the project would not result in any measurable impact on global emissions because the coal would be sourced from other suppliers.

While the Commission considers these should not be the only factors in the consideration of GHG emissions, it notes the mine is relatively small by comparison with other mines and accepts the conclusion by the Department that the proposed emissions would be acceptable. The Commission supports the Department's recommended condition of approval that requires the Proponent to adopt all reasonable and feasible measures to minimize the release of greenhouse gas emissions from the site (condition 19(b) of Schedule 3).

#### **5.2.7 Conclusions on Air Quality**

The Commission has reviewed the EIS, the Department's PAR and submissions relating to air quality and considers the air emission impacts for this project should be able to be controlled to meet the emission standards providing the Commission's recommendations are addressed satisfactorily and the conditions are complied with.

### **5.3 Water**

#### **5.3.1 Surface Water**

The Department's PAR comments on the potential impacts on streams and downstream flows at pp31-35. The two major issues identified are the proposed diversion of a key tributary of Avondale Creek and the proposal to retain 3 final voids. The final voids also affect consideration of

groundwater impacts and will be discussed under section 5.3.2(b) below. The proposed creek diversion will be dealt with here.

The proposed diversion is substantial and therefore has risks attached to it. These are discussed in the Department's PAR at pp34-35 and there are recommended conditions to manage the risks. These include annual checks on stability of the diversion and monitoring of water flows and quality.

The Commission's residual concerns about the proposed diversion are:

- a) whether annual checks are sufficient early in the life of the diversion or whether there should be a greater emphasis on regular within-year inspections for the first couple of years until there can be sufficient confidence about stability of the diversion under a range of seasonal conditions to then rely on annual checks; and
- b) whether there should be clear performance outcomes set for the creek diversion in the conditions of consent. As it stands the creek diversion is left to the 'monitoring and reporting' section of the proposed Water Management Plan and there is no requirement for the diversion to be designed, engineered and constructed to a standard that would ensure it remained stable and performed adequately.

**Recommendation:** That the consent contain clear performance outcomes for the creek diversion. These will need to cover design parameters and how these will be certified and approved, performance expectations, monitoring and reporting, and requirements to repair or mitigate in the event of problems.

Similarly, there are no performance outcomes set for any of the other potential surface water impacts. Commonly, the draft conditions for a coal mine will include a table of water management performance measures. These are the performance outcomes against which the adequacy of subsequent management plans, are assessed. The Commission considers that these will need to be included and should cover, *inter alia*, the sediment dams, clean water diversions and storage, construction of the haul road crossing of Avondale Creek, water quality impacts and a nil discharge requirement for the mine under all weather conditions.

Guidance will also need to be given in the consent conditions concerning the performance outcomes expected for surface waters at the conclusion of the project. These are discussed briefly at p33 of the Department's PAR. In the Commission's view there should be some certainty as to the expected outcomes for surface water post-rehabilitation and the Proponent should be able to be held accountable for achieving them. Any conditions addressing this issue may need to be cross-referenced in the Rehabilitation Management Plan (Condition 48 of Schedule 3).

**Recommendation:** That an appropriate suite of performance measures be developed for the surface water impacts of the project and that these be included in consent conditions.

The Commission considers that the surface water issues identified above can be addressed adequately by the Department at the time of preparing its final assessment report and recommendations for consideration by the consent authority. The surface water issues are important, but the Commission expects that they can be managed appropriately through this process.

### 5.3.2 Groundwater

Groundwater has been a more controversial issue for this project than surface water. There are a number of concerns, but the main ones appear to be:

- (a) the potential cumulative impact on groundwater from the project, other proposed mines in the area, and coal seam gas projects;
- (b) validity of the modelling used; and
- (c) retention of three (3) final voids at the conclusion of mining.

The Department's PAR discusses these and other related groundwater issues at pp.34-39.

(a) Potential Cumulative Impact

This was raised by the Commonwealth Independent Expert Scientific Committee (IESC) and by many other submitters including Gloucester Shire Council and Special Interest Groups. The Proponent's Response to Submissions (RTS) essentially re-states the positions put in the EIS and does little to address the issues raised.

The RTS does note however that the predicted cumulative impacts and proposed management strategies were peer reviewed by Dr Franz Kalf (RTS 15.5.5) and the Department's PAR notes that an independent expert review was also commissioned by the Department (see PAR pp35-36). These reviews support the Proponent's contention that there will be little overlap in groundwater impact between the project and the proposed Rocky Hill Mine, but that there would be overlap with the impacts of the AGL coal seam gas project.

AGL's current conditions of consent limit their water extraction to 2ML per day, not the 4.4-6.6 ML/day used in the modelling for AGL's contribution to cumulative impacts for the Stratford project. The Department's PAR takes the position that the cumulative groundwater impacts have been predicted conservatively (i.e. over-predicted), that there are mechanisms to detect any unforeseen impacts (increased monitoring bores), and that the cumulative impacts can be managed. On the basis of the analysis provided the Commission accepts these conclusions.

(b) Validity of the modelling used

Groundwater modelling is not a precise science. However, provided there are sufficient robust data available and the appropriate models are used reputable groundwater experts can make reasonable predictions about likely outcomes. The prediction process isn't flawless (unexpected outcomes do occur), but the Commission considers that the approach of extensive groundwater modelling post-approval with a requirement to update the modelling predictions is sound provided it is supported by a requirement to adjust operations or take other remedial action if predictions are exceeded.

There is often dispute between groundwater experts about aspects of the modelling undertaken as part of the assessment process for coal mines. This project is no different, with some expert submissions (including the IESC) questioning aspects of the modelling. However, the modelling has been peer-reviewed twice (by Dr Franz Kalf for the Proponent and Mr Peter Dundon for the Department) and has also been reviewed by NOW. These reviews support acceptance of the modelling approach and its conclusions.

Potential impacts from groundwater depletion include water bores (stock and domestic use), reduction in base flow to streams, negative impacts on groundwater-dependent ecosystems, and negative impacts on alluvial aquifers. The Commission's view is that the weight of evidence suggests that the modelling is adequate and that the predictions can be accepted as a basis for an assessment that the impacts arising from groundwater depletion from this project are acceptable. This is reinforced by the requirements for expanded ongoing monitoring, regular review of the predictions based on the results, adaptive management if required, and compensation where appropriate.

(c) Final Voids

Many submissions on the EIS are critical of the inclusion of final voids in the project design. These include the Commonwealth IESC, Gloucester Shire Council and Special Interest Groups. The reasons for objecting to inclusion of final voids are wide-ranging and include, *inter alia*: impact on groundwater, high salinity levels in the pit lakes, lack of provision for long-term security and maintenance, and risks of overflow. Gloucester Shire Council has steadfastly maintained its opposition to the final voids and retains their proposed existence as one of its three critical issues for opposing the project. The Council also notes that the design of the proposed Rocky Hill Mine does not include voids.

At the review/determination stages of a project the proponents usually cite excessive rehabilitation costs as a reason for retaining final voids. These costs are based, however, on adjustments to the mine plan that has already been developed for the project. It is possible that the costs would be much lower if voids could not be included in the initial mine design.

There is clearly a groundswell of opinion to the effect that final voids are no longer considered to be 'best practice' (e.g. see IESC Report at p2). However, there is no policy position in NSW that discourages or prohibits final voids as part of open-cut mine design. The Commission's view is that the issue of whether final voids are an acceptable component of open-cut mine design in NSW should be examined by Government and a policy position should be established.

Until the Commission is presented with a policy position that discourages or prohibits use of final voids, the Commission's view is that it must consider each case on its merits. The technical advice concerning the impact of the voids proposed for this project is summarised in the Department's PAR at p39. It notes that water in the voids 'would not discharge from the voids, nor migrate from the site into the surrounding groundwater resources or affect the quality of base flow of surface streams'. However, there would be very small impacts on long-term flows to the Avon River because the voids reduce the available catchment area for surface water run-off (see PAR at p34).

The Commission's assessment of the available information supports the Department's conclusions concerning environmental risks from the final voids. The Proponent has also advised the Commission that the characteristics of the operation (particularly long narrow pits) would make it uneconomic to fill all voids and that the negative environmental consequences of alternative management of overburden may be greater than the voids themselves.

The issue remaining for the Commission about final voids is whether there is adequate provision for long-term security and maintenance of the voids. In the Commission's view it is the Proponent's responsibility to ensure that this is catered for. The Commission therefore requested that the Proponent address this issue and advise the Commission of the mechanism it proposes to ensure that this occurs.<sup>11</sup>

The Proponent's response is reproduced in Appendix 6 at pp.24-25. Summarised it states:

- The voids remain the responsibility of the holder of the mining lease until that is relinquished;
- The mining lease will not be relinquished until the relevant regulatory authorities are satisfied that the post-mining rehabilitation requirements have been met;
- The rehabilitation requirements will be specified in plans that have not yet been developed;

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<sup>11</sup> Commission's Questions to Proponent, 6 March 2014, Item 3.1, p.6 (Appendix 5)

- there are broad guidelines in existence including that *“All rehabilitation planning should address the objective of achieving an agreed post mining land use that, at a minimum, is safe, stable, non-polluting and sustainable”*;
- A bond is held by DRE to ensure that rehabilitation is completed; and
- The landholder will assume responsibility for the voids once the mining lease is relinquished.

The Commission considers that this response does not address the issue of the voids being maintained in a safe and secure condition in the long-term. The Commission notes that the quotation above includes the words ‘safe, stable, non-polluting and sustainable’. The Commission also notes that the proposed voids will contain highly saline water, that they will be a feature of the landscape in perpetuity (and in a potentially changing climatic regime) and that one of the proposed voids is close to the village of Stratford and another close to the village of Craven.

The Commission considers that if these voids are to be permitted then the consent must contain clear and unambiguous conditions that require no spillage from the voids to the rest of the catchment, no migration of saline water to surrounding aquifers or streams, that the voids are maintained in a state that ensures public safety and there is a mechanism to ensure that responsibility for any long-term maintenance runs with the land.

The requirement concerning no spillage will need to include design parameters for the voids<sup>12</sup> and the monitoring required to ensure it meets the design parameters in operation.

The Commission considers that delegating the performance measures for the final voids to the rehabilitation management plans is not acceptable given the sensitivity of the issue for this project.

**Recommendation:** That approval not be given to inclusion of final voids in the final landform unless there are clear and unambiguous conditions that require the voids:

- to be designed with adequate freeboard to ensure no spillage under any foreseeable conditions;
- to not be a source of saline groundwater for aquifers and streams;
- to be constructed to meet the design specifications; and
- to be constructed and maintained in a manner that ensures public safety.

The approval should also require a mechanism to be developed to ensure that responsibility for meeting the performance criteria extends beyond the life of the mine.

One remaining issue for this review is the absence of any specific performance measures for groundwater-related impacts in the Department’s draft conditions of consent annexed to the PAR. There is possibly an argument that these are catered for under Schedule 2 Condition 2(a) and (b), but these are very broad provisions and contain the words ‘generally in accordance with’, leaving the Proponent with wide latitude concerning compliance with any specific commitments.

Although specific performance measures for groundwater impacts are much less common than those for surface water impacts in mining approvals, the Commission recommends that they be developed for this project so that it is clear to those approving subsequent plans, etc. just what is intended to be achieved. It also provides a guide for adaptive management in the event that monitoring indicates problems are developing. As an example, the performance measures for

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<sup>12</sup> Capacity buffers are a common feature in conditions for leachate dams, etc. and are based on the estimated leachate volumes to be generated and inflow risks from severe storm events (e.g. 1:100 yr to 1:400 yr). The Commission considers that it should be feasible to specify what is required to be achieved by the final voids.

groundwater could include the final void requirements listed above and measures such as no impact on existing bores beyond those predicted in the EIS.

## **5.4 Biodiversity**

### **5.4.1 Introduction**

Careful consideration of biodiversity impacts of a mining project application under the SSD provisions of Part 4 of the Act is important in its own right (see the DGRs for the Stratford Extension Project in Vol. 1 of the EIS at Attachment 1), but has additional significance because the usual statutory protections associated with biodiversity issues are removed by either the nature of the project (e.g. the Native Vegetation Act) or by the SSD classification itself. Furthermore, by electing to have the Commission conduct a public hearing as part of a review under s.23D, the Minister in this instance has removed the right of third parties to appeal the merits of a subsequent decision to approve or refuse the project.

### **5.4.2 Flora and Fauna Survey**

The basis of any assessment of biodiversity impacts is the flora and fauna surveys. If these are not adequate it is impossible to draw any robust conclusions about the nature, extent or acceptability of impacts.

The survey techniques for flora presented in the EIS were the subject of multiple queries by OEH. These queries were mostly targeted at the appropriateness of sampling methods and the adequacy of sampling for threatened species. The Proponent's RTS (A5-1 – A5-5) covers these issues and provides adequate responses. The survey techniques for fauna were not challenged by OEH. It appears to the Commission that the flora and fauna surveys provide an adequate basis for impact assessment.

### **5.4.3 Impacts on Flora and Fauna**

The principal impact on flora is the clearing of 105ha of native vegetation and 195ha of non-native vegetation in the project area. In this context the Department's PAR notes at p40 'There are no threatened flora species, populations, endangered ecological communities (EECs) or critical habitat listed under either the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) or the NSW Threatened Species Conservation Act 1995 (the TSC Act)'. There is some doubt about whether the 13.5ha of Cabbage Gum open forest to be cleared has been properly defined as not being an EEC, but in any event there is 30ha of this type in the proposed offset properties.

The Department also notes that avoidance of impact is not an option.<sup>13</sup> However, this view is not shared by a number of submitters who argued that avoidance of areas with high densities of hollow bearing trees was both desirable and feasible (e.g. Gloucester Shire Council submission on the EIS). The Proponent's RTS attempts to deal with this by noting a number of adjustments to the original project proposal that reduce impacts on flora (see 15.10.10 at A15-84). However this misses the point: the Council is commenting on the project design in the EIS, not some previous design that may have had greater impacts. The response is also very generalised and it is not clear which initiatives are claimed to be directed at the issue raised by Council and the other submitters.

In this instance the Commission considers that the Proponent may well have been able to provide adequate justification for the need to clear the areas of high tree hollow density. However, they

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<sup>13</sup> PAR, p.40

have not done so and the Commission recommends that, unless adequate justification is provided prior to the project being submitted for determination, then careful consideration should be given to avoiding impacts on areas with >20 hollows / ha. Further comment on the issue of tree hollows will be made below in conjunction with impacts on fauna and the biodiversity offset strategy.

The potential impacts of the project on fauna are more complex. The Department has summarised these in the PAR at pp.40-44. Potential impacts occur on a wide range of species including 28 species listed under the EPBC and/or TSC Acts that have been recorded within the Project Area and a further 5 such species that are likely to be present. The Proponent's consultants are stated to have concluded that the only Threatened Species (TS) potentially significantly affected was the Squirrel Glider and that it could be significantly affected in the short-term by habitat removal and isolation of some known habitat areas.

The Proponent's consultants have argued that a range of measures would be implemented to ameliorate these short-term impacts on the Squirrel Glider and the Department's PAR appears to accept the proposition that these mitigation actions would result in an acceptable outcome when coupled with habitat improvements proposed for the medium-term (PAR p.43).

#### **5.4.4 Potential Impacts on Squirrel Gliders**

In the time available to conduct a review (one month from the public hearing is specified in the Minister's Terms of Reference<sup>14</sup>) it is not possible to examine in detail the Proponent's claims (or the Department's preliminary assessment) of the potential impacts on each of the 33 TS identified as present or potentially present in the Project Area, or of the likely efficacy of any strategies to avoid, mitigate or offset these impacts. However, in keeping with the introductory note to this section, the Commission decided that it should examine the material relating to at least one of these TS in some detail. The obvious choice was the Squirrel Glider, since it was the species identified as potentially being impacted significantly.

Commencing with the potential impacts, the Commission notes the conclusion in the EIS that the impacts are unlikely to completely extirpate the local population.<sup>15</sup> However, careful reading of the supporting information indicates that an equally tenable conclusion is that the impacts would lead to local extinction in the immediate vicinity of the Project Area.<sup>16</sup> The facts as presented in the EIS are:

- there are four main areas where Squirrel Gliders have been detected reliably in and around the Project Area;
- some connectivity is likely between these colonies;
- despite extensive survey work, Squirrel Gliders have not been found in the areas of native vegetation in Offset Areas 3 or 4 or Property 44 (i.e. they are rare or absent over much of the rest of the study area);
- populations in two of the four areas will be impacted by direct clearing and/or isolation of remnant habitat and in a third area by removal of foraging habitat. This third habitat area is based on the Crown Reserve, which has other significant limiting factors including small size; and

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<sup>14</sup> But note that one extension of one month was granted.

<sup>15</sup> EIS Appendix F, C104

<sup>16</sup> The more isolated northern population may not be impacted in the short-term, but in that context it is common knowledge that there are significant coal reserves to the north of the existing Project Area, a point made by a number of speakers at the public hearing.



- there is no certainty that individuals or family groups would continue to persist in all of the small patches.<sup>17</sup>

Under the circumstances the Commission considers that it should not adopt the Proponent's optimistic view of the outcome for Squirrel Gliders, preferring instead a precautionary approach to the available information. The Commission's assessment of this material is that the extent of the impacts on the two colonies within the Project Area will most likely lead to loss of these colonies. The impacts on the third colony (the Crown Reserve colony) are also likely to tip the balance in favour of loss, although this cannot be stated with certainty.<sup>18</sup>

The more concerning issue is that the surrounding areas of native vegetation do not appear to support existing colonies of Squirrel Gliders. No explanation is offered for this, although the assumption must be that Squirrel Gliders have not been able to utilise these areas despite likely dispersal attempts from the existing Project Area colonies. If the areas are in fact unsuitable, two things follow:

- there is no obvious source of colonists for the proposed revegetated areas (other than the one as-yet unimpacted colony to the north); and
- attempted relocation of individuals or groups into these areas is likely to fail.<sup>19</sup>

#### **5.4.5 Proposed Mitigation Strategies for Impacts on Squirrel Gliders**

As noted above, the Department's PAR appears to accept that the proposed mitigation actions would result in an acceptable outcome when coupled with habitat improvements proposed for the medium-term. The mitigation actions proposed are:

- provision of nest boxes
- provision of glider poles
- targeted planting of food trees
- revegetation of parts of the areas around existing habitat to provide habitat and vegetation linkages
- monitoring and radio-tracking of individuals.<sup>20</sup>

There are serious shortcomings with these proposed mitigation strategies (detailed below) and even the Proponent's RTS at 15.10.14 uses the words 'are likely to help ameliorate' not 'will ameliorate'. In other words there is no, or limited, scientific evidence that these strategies, either alone or in combination, will mitigate the impacts on Squirrel Gliders for this particular project.

The Commission has investigated the likely efficacy of some of these proposed mitigation strategies in order to understand whether the claims made concerning their influence on population survival are sustainable.

#### **5.4.6 Nest Boxes and Tree Hollows**

The proposed provision of nest boxes at a 1:1 ratio and for a limited time was raised with the Proponent<sup>21</sup> who responded that nest boxes would not be required for an extended period because tree hollows would develop in mature remnant vegetation in the offset areas, negating the need for

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<sup>17</sup> EIS, Appendix F, C101-104

<sup>18</sup> Offset Area 1 is proposed to provide supporting habitat for this colony in the medium-term.

<sup>19</sup> Unless hollows are the limiting factor – but see the discussion on tree hollows and nest boxes below.

<sup>20</sup> EIS, Appendix F, Section 6-12, pp.101-106

<sup>21</sup> Commission's Questions to the Proponent (Appendix 5) at pp.6-7

nest boxes over time. The Commission was also advised that some fauna species recorded in the Project Area (e.g. gliders and microbats) use small tree hollows ( $\leq 5\text{cm}$  diameter) which take less time to develop than larger tree hollows.<sup>22</sup> The Commission was also referred to Section 6.2.3 of the Fauna Assessment in Appendix F of the EIS for a description of the nest box program to be implemented for the project.<sup>23</sup>

The first comment to make is that the proposed nest box program described in 6.2.3 is non-specific. It consists of a series of general statements about the categories of the areas in which nest boxes might be placed, mentions 'target species' without further elaboration, and states that the appropriate ratio for nest box numbers and placement would be determined at some later time once surveys were completed. It notes that existing nest boxes would be taken into account (a total of 13 – none of which are described as being for Squirrel Gliders) and that a variety of additional nest box sizes would be ordered. The ratio of nest box provision is stated to be a minimum of 1:1 for lost tree hollows.

There is no mention of the Threatened Species described as likely to be significantly impacted (the Squirrel Glider) and, despite its dependence on tree hollows for survival, no specific program of nest box replacement is identified in 6.2.3.<sup>24</sup>

Section 6.2.3 also makes an unsubstantiated statement to the effect that the nest box program is likely to assist in the short- to medium-term for some species (unspecified) until existing regrowth vegetation becomes sufficiently mature to develop hollows.

No evidence is supplied to support this and the Commission's research of the issue indicates that development of hollows may take considerably longer than suggested in the EIS. A recent study by Parnaby *et al* 2011<sup>25</sup> put the age of mature north-western NSW ironbarks in the 500-1000 year range (with some likely to approach 2000 years) and suggested that development of hollows suitable for arboreal fauna takes hundreds, not tens, of years.

The study drew on a wide range of data from other parts of Australia as well as from the study area in the Pilliga. In relation to the hardwoods in the Pilliga (mainly ironbarks) the first hollow formation takes around 200 years, with some species taking over 300 years. For the faster-growing Blackbutt (eastern coastal range) hollows suitable for arboreal fauna take 140-190 years to develop and large hollows 200-240 years.

The conclusion concerning hollow formation in the Project Area must be that, even if a most optimistic view of tree maturity and hollow formation is adopted, there will be many decades before the re-vegetated areas develop hollows suitable for arboreal fauna (including Squirrel Gliders). The more tenable position is that at least 100-150 years will be required.

It follows that, if nest boxes are to play a role in supporting colonies of arboreal fauna in areas where natural tree hollows have been removed, then these nest boxes will be required for the period from impact to hollow development in the revegetated areas. This may be over 100 years and can only

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<sup>22</sup> Proponent's Response to the Commission's Questions dated 24 March 2014 (Appendix 6), p.38

<sup>23</sup> Proponent's Response to the Commission's Questions dated 24 March 2014 (Appendix 6), p.37

<sup>24</sup> There is however a more detailed description of mitigation strategies for Squirrel Gliders in Section 6.12, Appendix F of the EIS. This includes information on the design and placement of nest boxes for Squirrel Gliders. Relevant aspects are discussed later in this section.

<sup>25</sup> Parnaby, H., Lunney, D., and Fleming, M. (2011) 'Four issues influencing the management of hollow-using bats of the Pilliga forests of inland New South Wales', in *The Biology and Conservation of Australasian Bats*, Royal Zoological Society of NSW, pp.399-420

really be determined by repeated surveys of the revegetated areas to see whether hollows have developed.<sup>26</sup> A similar approach would need to be taken to existing areas of regenerating grassland in the proposed Offset Areas.

This is a very different position to that adopted by the Proponent in its response to the Commission's questions concerning the nest box program.<sup>27</sup> The Proponent states that the nest boxes will be placed in the Offset Areas and be monitored and maintained during the life of the mine. It also asserts that nest boxes would not be required for 50-100 years because tree hollows would develop in existing mature trees over a shorter period.

There are two main problems with the Proponent's response. The first is that, apart from the Crown Reserve colony adjacent to proposed Offset Area 1, extensive surveys of the other offset areas and their surrounds have not located Squirrel Gliders. Placing nest boxes for Squirrel Gliders in these areas is therefore not a sure-fire proposition for Squirrel Glider conservation.<sup>28</sup>

The second is that the claims concerning hollow development potential in revegetating areas are not credible as a strategy for mitigating impacts in the period between mine closure and maturation of revegetated areas: the project proposal is only for 11 years.

The evidence available to the Commission is clear: development of hollows will take a very long time and there will be a substantial gap in hollow supply while trees are maturing and hollows are developing. The only way to demonstrate that suitable hollows are developing any faster than this will be by survey. The Commission expects that this will need to be undertaken for many decades beyond mine closure.

The EIS in Section 6.12 of Appendix F discusses the proposed nest box program for Squirrel Gliders in a little more detail. It notes that Squirrel Gliders have been known to use nest boxes and cites a range of studies that indicate utilisation ranges from around 6% to 50%. It suggests that two nest boxes would be installed for each potential hollow that was removed. This is double the ratio proposed in the Proponent's response to the Commission, but still at the very optimistic end of the utilisation spectrum cited in Section 6.12. A ratio of 4:1 would appear to be more in keeping with the data presented.

Section 6.12 does not identify the locations where the nest boxes would be placed (c.f. the much more detailed material on the glider poles), or provide any detail on the maintenance regime or any information on the timespan over which an individual nest box might be used by Squirrel Gliders. (There is evidence from studies in Feathertail Gliders that utilisation of individual nest boxes may cease after a few years.)

The section also notes in relation to nest boxes that they have 'the potential to reduce the impacts of the loss of hollow bearing trees to some extent'. No evidence is provided as to what 'some extent' may mean. In the absence of hard evidence that nest boxes can provide a complete solution to the medium-term shelter requirements for Squirrel Gliders that have been displaced by clear felling of their existing habitat the Commission concludes that 'to some extent' provides no level of assurance that the nest box program will be effective in these circumstances. The role of nest boxes in augmenting the supply of hollows in areas that have been partially cleared or become isolated is

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<sup>26</sup> Parnaby *et al* came to a similar conclusion concerning provision of nest boxes for bats in the Pilliga. However their conclusion was that hollows on the re-vegetated areas would be in short supply for 300-500 years.

<sup>27</sup> Proponent's Response to Commission's Questions dated 24 March (Appendix 6), pp.37-38

<sup>28</sup> Unless availability of hollows was the only limiting factor. The reasons for absence in the surrounding areas are in fact unknown and multiple factors must be present for Squirrel Gliders to inhabit an area.

equally uncertain and this also applies to placement of nest boxes in areas of revegetation where hollows have not yet developed.

The Commission notes that the Proponent claims a 90% utilisation of nest boxes at the Duralie mine site, but no detail is provided about species or timeframes.<sup>29</sup> Without this information it cannot be considered in the context of mitigation strategies for Squirrel Gliders.

The section also refers to some other problems with nest boxes, including invasion by bees and non-targeted species and suggests that ongoing maintenance would be required to ensure that these invaders were not restricting access by Squirrel Gliders. These, and other, potential invaders were also identified by Parnaby *et al*<sup>30</sup> in their assessment of nest boxes as a substitute for tree hollows for other arboreal mammals.

The Commission notes that the Proponent has committed to monitoring and maintenance of the nest boxes only until mine closure. The Commission has already indicated that this period falls well short of the period that nest boxes would be required if they were to provide shelter until replacement tree hollows develop.

#### **5.4.7 Monitoring and Radio-tracking**

The presentation of monitoring as a short-term mitigation strategy is misleading. Monitoring will not mitigate any impacts. Its function is simply to record the impacts. Monitoring may be useful in some circumstances for guiding adaptive management, but it is difficult to see how this would be the case here given the substantial temporal separation between impact and possible recovery of populations.

The Department's PAR mentions monitoring of individuals and fitting radio collars (p.43), but these activities will not mitigate impacts and the fact that they are to be 'reported on Yancoal's website' suggests they will be of limited duration.

#### **5.4.8 Supply of Forage Species**

Section 6.12 of Appendix F of the EIS outlines a program of augmentation of Squirrel Glider food supplies in strategic areas. It relies on the planting of fast-growing species such as banksias and acacias, supplemented by planting of canopy species. The Commission's concern with this proposal is that, while it seems superficially attractive, there is no in-depth analysis of the species of flora required to provide an all-year-round food supply for Squirrel Gliders and whether their establishment and growth rates would be sufficiently rapid to compensate for the project impacts. For trees, this is clearly not the case and it is also doubtful for some of the mid-storey species.

#### **5.4.9 Revegetation in Areas of Decreased Grazing Pressure**

Appendix F also claims that, with decreased grazing pressure over the last 50 years, some of the landscape has begun to regenerate and opportunities for hollow-dwelling fauna are likely to improve over time. This statement concerning opportunities for hollow-dwelling fauna is totally non-specific in relation to species, timeframe and extent of the regeneration. The statement also clearly implies that the regeneration is not yet in a state that would support hollow-dwelling species, even though it is up to 50 years old. This suggests that the possible contribution of the regeneration areas within the proposed offsets, and rehabilitation areas within the Project Area, will be of minimal benefit to

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<sup>29</sup> Proponent's Response to Commission's Questions dated 24 March 2014 (Appendix 6), p.37

<sup>30</sup> Parnaby *et al*, *op cit* at pp.408-409

Squirrel Glider populations even in the medium-term. This is entirely consistent with the Commission's views arising from its consideration of the nest box and tree hollow issue.

The Commission's findings in relation to short- to medium-term impacts on the three Squirrel Glider colonies in and immediately adjacent to the Project Area are:

- (i) that two colonies will almost certainly be eliminated and the third is at serious risk of elimination;
- (ii) that the mitigation strategies proposed are unlikely to alter these outcomes and that the claims made for the strategies are largely unsubstantiated and lack rigour; and
- (iii) the Proponent's survey data indicates that Squirrel Gliders are rare or absent in the Project Area and surrounds apart from the four colonies identified in the EIS.

The long-term impacts on the Squirrel Glider population depend on three things:

- extant populations in surrounding areas that can colonise any existing suitable habitat in the Biodiversity Offset Areas that is currently vacant;
- successful rehabilitation of offset and enhancement areas to provide additional habitat (i.e. replacing cleared or otherwise impacted areas in the Project Area); and
- successful colonisation of the rehabilitated areas.

Of these the suitability of revegetated and rehabilitated areas is best described as both very long-term and uncertain. But it is the only one that will enhance the existing population levels. In this context it must be noted that any as yet unidentified existing populations in the offset areas are not currently under threat. Providing them with improved legal protection will not alter their population levels. It should reduce future threats, although the recent propensity of mining applications to include mining through areas previously set aside for wildlife conservation purposes provides little assurance that these offset areas will remain secure. This project also proposes to mine through an area of 88.7 ha that was previously set aside to provide for a wildlife corridor linking existing areas of native vegetation with a heavily vegetated area to the east of Stratford.<sup>31</sup>

The Commission's finding is that the Proponent's claimed improvement to the status of the Squirrel Glider populations in the long-term is dependent on a number of factors that are not based on robust evidence concerning likely success. In the short- to medium-term Squirrel Glider populations in the Project Area will decrease significantly due to clearing of habitat and isolation of remnant habitat areas. There are no avoidance strategies and the mitigation strategies proposed fall well short of credibility. This leaves only the proposed offset areas for consideration as a compensatory option.

### **Recommendations**

The Commission recommends:

- (i) that in light of the real risks of elimination of the Project Area Squirrel Glider colonies and the doubtful efficacy of the proposed mitigation strategies, the Biodiversity Offset Strategy be expanded to include additional area(s) containing known colonies of Squirrel Gliders and/or areas(s) assessed as highly suitable for Squirrel Gliders where there is a reasonable prospect of colonisation from one or more known colonies of Squirrel Gliders;
- (ii) that there be a significantly increased effort to protect the Squirrel Glider colony on the Crown Reserve;

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<sup>31</sup> Department's PAR p.44 referring to a requirement in the 1994 consent for the Stratford mine. The Proponent's Response to Questions (Appendix 6) at p.38 notes that this area was not intended to be secured in perpetuity, but to be managed in a prescribed way. The Commission contends that mining through the area is inconsistent with the intent of the 1994 management prescription.

- (iii) that suitable nest boxes be supplied in the ratio of 3:1 to 4:1 for each suitable hollow removed from within the possible home ranges of the impacted colonies;
- (iv) that a survey methodology be designed and implemented to assess tree hollow development in revegetated areas over the post-mining period;
- (v) that a program of nest box maintenance and replacement be developed that extends from initial placement to development of suitable hollows in revegetated areas; and
- (vi) that the other mitigation strategies proposed (glider poles, forage species supplementation, etc) be pursued.

#### **5.4.10 Biodiversity Offset Areas**

These are discussed at pp.44-45 of the Department's PAR. According to advice to the Commission at the public hearing from the owner of property 44<sup>32</sup> there is one significant error in the PAR and that is that there is no Voluntary Conservation Agreement (VCA) over Property No 44.<sup>33</sup> This property is shown as being subject to a VCA in Figures 12 and 13 of the PAR (pp.41 and 42). This is a large property to the southwest of the Project Area and its importance lies in the substantial area of native vegetation it contains and its relationship to the proposed Offset Areas 2 and 3.

One of the stated purposes of Offset Area 3 was to link Property 44 (and presumably Offset Area 2) with areas of native vegetation to the east of the Project Area. These areas include a property to the east that is covered by a VCA, Offset Area 4 and The Glen Nature Reserve. Figure 13 of the Departments' PAR even shows a linking arrow from Property 44, through Offset Area 3, to the east of the Project Area. Although Offset Area 3 is large (655ha) and contains remnant areas of native vegetation that provide habitat for a range of TS (see EIS, Appendix F, Section 7.2.8) it contains a large proportion of cleared land that would need to be rehabilitated. This is a long-term proposition and success cannot be guaranteed. Offset Area 3 will also host the re-located electricity transmission line and this could result in clearing up to 35ha of this Offset. The location of this proposed clearing is not known to the Commission.

Offset Area 2 abuts the northern boundary of Property 44 and is stated to expand on existing areas conserved under VCAs. Offset Area 2 would appear to have considerably less value in the absence of an adjoining VCA since, although it has some native vegetation remnants (see Proponent's EIS, Appendix F, Section 7.2.8), it consists mostly of cleared land that would require a long-term revegetation strategy to be of significant conservation benefit on its own and would itself be an isolated remnant if Property 44 were to be developed at some future date (see Fig 13 of the Department's PAR).

In the Commission's view, while the proposed offset areas would retain their existing intrinsic biodiversity values, the Biodiversity Offset Strategy would appear to be in jeopardy in the absence of a VCA over Property 44. Offsets 2 and 3 would have greatly diminished value and these comprise a substantial proportion of the total area proposed for offsets.

The Proponent maintained reliance on the VCA status of Property 44 in its first response to the Commission's Questions (Appendix 6) on biodiversity. However in the second version of the response on the same questions (Appendix 7) there is a note to the relevant table (Table 1) to indicate that there is no VCA over Property 44. Instead there is a claim that the property is zoned

<sup>32</sup> See Figure 6 of the Department's PAR on p.20 for location of Property 44

<sup>33</sup> This misconception appears to underpin material in the Proponent's EIS (see Appendix F section 7 and also Section 6.12), in submissions on the EIS (e.g. by Gloucester Shire Council), in the Proponent's RTS and the Department's PAR. The Commission has no reason to doubt the claim by the Property Owner.

‘Environmental Management’ under the Gloucester LEP and that this provides ‘protection of its conservation values and restrictions on development of the area’.

There is a major flaw with this proposition. A VCA ensures protection of the conservation values of the property in perpetuity and the protected status runs with the land. Land zoned ‘Environmental Management’ is not protected in perpetuity: it can be rezoned as a result of an application by the owner or by a change in the LEP. Both occur regularly in NSW. The Commission’s view remains unaltered: in the absence of a VCA over Property 44 there is no Biodiversity Offset Strategy: there is only a collection of individual offset properties with whatever intrinsic characteristics they possess.

Offset Area 4 appears to contain areas of high habitat value, but it also contains a substantial proportion of cleared land that would require significant revegetation effort. In this context it should be noted that OEH was opposed to including cleared areas requiring revegetation in conservation agreements (see OEH submission on the EIS dated 19 December 2012 at p.6). There are two issues arising from this. The first is that the proposed offset areas contain significant proportions of such land (from Figure 13, over 50%). The second is that the precise mechanism for ensuring conservation of these areas is unspecified (see OEH submission cited above and Condition 31 of Schedule 3 of the Department’s draft recommended conditions). Although draft Condition 31 purports to conserve these areas in perpetuity, there may well be no legal mechanism currently available that would be suitable for land in the condition of the proposed offsets. In the Commission’s view leaving such an important issue unresolved at the consent stage is not tenable in these circumstances.<sup>34</sup>

Offset Area 1 presents a different set of issues. It is small and isolated from other areas of native vegetation<sup>35</sup>. It is not part of a wildlife corridor and is in close proximity to the village of Stratford. Furthermore, it contains a low density of hollow bearing trees and is mostly regrowth rather than mature native woodland. However, it does appear to have some value for at least one TS (Grey-crowned Babbler) and may provide foraging habitat for others, including the Crown Reserve colony of Squirrel Gliders.

The Proponent’s RTS claims that Offset Area 1 will be linked to other habitat areas through the ‘Biodiversity Enhancement Area’ (see 15.10.3 p.A15-18). This must be viewed with caution. The ‘Biodiversity Enhancement Area’ is rehabilitated land and the long-term success of revegetation on land rehabilitated after open-cut mining has yet to be demonstrated in NSW. Most areas being rehabilitated for biodiversity purposes are less than 20 years old and there have been some significant failures that are thought to be due to the altered soil profiles in the rehabilitated areas. Rehabilitation of mined areas for biodiversity purposes is best described as a ‘work in progress’.

Other issues raised concerning the proposed offset areas include the existence of residences on the areas and the proposed placement and operation of the gas wells from the AGL project, particularly in Offset Area 3. The Proponent’s consultants and the Department are of the view that these impacts can be managed successfully. However, Gloucester Shire Council questioned this (see Gloucester Shire Council submission on the EIS) and the Commission notes that there is no robust evidence provided by either the Proponent or the Department to support their position. The effect of these intrusions need to be considered not only on the basis of the area involved, but also in

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<sup>34</sup> Note that at the meeting between the Commission and the Proponent to advise the Proponent of residual matters of concern (9 April 2014), the Proponent advised that it was finalising a conservation mechanism based on a covenant over land for offset properties at the Duralie Mine. This mechanism may be suitable for offset properties that OEH will not agree to include in the VCA system., but at this stage the Commission is not in a position to recommend its suitability or otherwise.

<sup>35</sup> With the exception of the adjacent 17ha Crown Reserve.

terms of edge effects and whether the activities associated with the intrusions could have a wider impact on some species (e.g. disturbance from noise or lighting, or predation by domestic pets).<sup>36</sup>

The OEH submission on the EIS supports the offset strategy as presented in the EIS as representing a reasonable proposal. However, that presumably rests in part on the existence of a VCA on Property 44, since without that the proposed linkages are not secure and the value of the isolated remnants of native vegetation in Offset Areas 2 and 3 must diminish. OEH also notes the substantial areas of cleared land in the proposed offset areas and states that these areas are not suitable for a conservation agreement at this stage.

The Commission raised some of its initial concerns about the proposed Biodiversity Offset Strategy with the Proponent.<sup>37</sup> The Proponent responded.<sup>38</sup> Some of the issues have been covered in the previous paragraphs, but some require further exploration here.

The Commission's concerns with the size of the Biodiversity Offset package were based not on size *per se*, but on the multiple negative aspects of the properties making up the package. To the initial concerns can now be added the lack of a VCA over Property 44 and the apparent absence of the significantly impacted TS (Squirrel Gliders) from Offsets 2, 3 and 4. The Duralie Extension Project decision in the Land and Environment Court is not relevant to the determination of size of the offset package required for the Stratford Extension Project. Offset Areas are required to compensate for the residual impacts of this project and that requires an assessment of the merits of the package as proposed for this location.

The Proponent raises the issue that the DGRs require '*a comprehensive offset strategy to ensure the development maintains or improves the terrestrial and aquatic biodiversity values of the region in the medium to long term*'. The Commission considers that this is not a limiting expression and interpreting it in this way would restrict the use of offsets to compensate for residual biodiversity impacts that occur in the short term. For example, the Commission considers that the impacts on the Squirrel Glider colonies in the Project Area will be significant and that the mitigation strategies as proposed are unlikely to be successful. An offset strategy targeted at Squirrel Gliders therefore cannot be some medium- to long-term concept that rests on a vague hope that a new source of Squirrel Gliders will somehow 'find' the revegetated areas: it must be able to demonstrate conclusively that it will improve the maintenance and enhancement of Squirrel Glider populations in the short-term.

The Commission described the potential success of revegetation of grassland areas in the proposed offsets as 'uncertain'. The Proponent has taken exception to this. However, the Proponent's comments are not relevant to the issue raised by the Commission. The Commission has not suggested at any point that the grassland areas were to be restored to their pre-existing condition (i.e. re-creation of the pre-existing ecosystem). This is a vastly different proposition to simply allowing the area to revegetate in the absence of livestock grazing supplemented with planting of species to provide specific food sources or habitat for TS.

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<sup>36</sup> The Proponent asserts in its Response to the Commission's Questions (Appendix 6) at p.35 that these impacts have been assessed in the EIS at 7.2.10 of Appendix F. Examination of this section reveals a list of infrastructure types and an unsupported statement to the effect that the potential impacts would not preclude the area from being a suitable offset for the project. No information about how this assessment was made is provided.

<sup>37</sup> Commission's Questions to Proponent, (Appendix 5), pp.6-7

<sup>38</sup> Proponent's Response to Commission's Questions 2-6, (Appendix 6) at pp.26-38



The uncertainty arises from two sources:

- First, the revegetation of these grassland areas will take a very long time before a full range of mature trees with hollows will develop. As discussed earlier this process involves hundreds, not tens, of years; and
- Second, the period of maintenance, monitoring and auditing is only for the life of the mine. This is considerably shorter at 11 years than the period required to demonstrate successful revegetation.

Under the circumstances the Commission considers 'uncertain' to be the correct description. However, that doesn't mean the strategy should be abandoned. All it means is that the weighting given to offsets containing substantial areas requiring revegetation should be approached with caution, particularly given the recent assessment by Parnaby *et al* concerning the overly optimistic estimation of vegetation maturity timeframes prevalent in Australia.<sup>39</sup>

The Commission finds that there are significant weaknesses in the proposed Biodiversity Offset Strategy. They include:

- Incorrect identification of Property 44 as being subject to a VCA and consequent lack of security for the substantial area of native vegetation that Offset Areas 2 and 3 are supposed to link to and enhance;
- Substantial areas of cleared land requiring rehabilitation and revegetation and the lack of certainty concerning the outcome;
- Unsuitability of the offset areas in their current state for inclusion within the conservation agreement structure managed by OEH;
- Lack of certainty concerning availability of a legally robust mechanism for securing the conservation status of the offset areas in their current condition. A condition in a consent that defers resolution of this critical question until after approval is given is inadequate; and
- Multiple incursions into the proposed offset areas by residences, gas wells and a relocated transmission line, the potential impacts of which are poorly defined.

### Recommendations

The Commission recommends:

- That in the absence of a VCA over Property 44 the biodiversity offset value of Offsets 2 and 3 be re-evaluated.
- That additional areas of high conservation value be considered for addition to the proposed offset areas to compensate for the weaknesses in the package identified in this review, particularly impacts on Squirrel Gliders.
- That a legally robust mechanism for conservation in perpetuity for each of the proposed offsets be resolved and specified in the draft conditions.

There are a number of references in this review report to the Warkworth case and the Proponent also refers extensively to the case in their Response to the Commission's Questions on biodiversity (Appendix 6). The Commission has therefore extracted a number of principles from the judgment that are relevant to assessment of the impacts on Threatened Species and the proposed Offset Strategy in the project under review<sup>40</sup>:

- at para 146 – where there are significant impacts on key habitats of TS, consideration must be given to measures proposed to avoid, mitigate and offset the impacts in order to determine the acceptability of the project;
- at par. 147 – the priority order for these measures is avoidance, mitigation and offsets;

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<sup>39</sup> Parnaby *et al*, *op cit*

<sup>40</sup> Emphasis added

- at para. 182 – proposed mitigation measures may be worthwhile, but not necessarily significantly mitigate the impacts;
- at para 202 – the offsets must provide sufficient, measurable conservation gain for the particular components of biological diversity impacted by the project (in that particular case referring to EECs, but equally applicable to TS);
- at para. 205 – where a project impacts on a specific ecological community, any offset must relate to the same ecological community that is impacted (equally applicable to TS – as has been found in other Land and Environment Court cases);
- at para. 206 – evidence must establish that the viability or numbers of the populations of the TS in the offset areas would improve to an extent equal or greater than the populations or numbers under threat in the Project Area and surrounds;
- at para. 206 – a reliable, quantitative assessment is required;
- at para. 207 – assertions at a generalised level about presence or absence of either TS or their habitat do not amount to a reliable, quantitative assessment; and
- at paras 210 and 211 – in relation to the difference between extant habitat and habitat requiring rehabilitation there is a need to distinguish between the upfront value of extant habitat and the possible long-term value of areas requiring rehabilitation. The rehabilitation uncertainties are identified (in the Warkworth case in the context of EECs, but the general principle is the same).

The Commission considers that, on the basis of material already raised in this review report, a rigorous assessment of the Proponent’s proposals for mitigation and offsetting project impacts on Squirrel Gliders against these principles results in a finding that proposals are grossly inadequate.

The Commission recognises that this review has focused on only one of the 33 TS that have either been recorded in the Study Area or may utilise the area. In the time available it is not possible to provide any level of scrutiny to the others. However, the discrepancy between the conclusions about the Squirrel Glider in the EIS (which are carried through into the Department’s PAR) and the conclusions in this review should make a consent authority cautious about accepting the EIS conclusions on other TS at face value. In relation to biodiversity impacts not discussed above, the Commission is generally satisfied with the adequacy of their treatment in the Department’s PAR.

## 5.5 Transport

The conclusions of the Department’s PAR in regards to transport were:

- The proposed extension would have minor impacts on the performance of the surrounding regional and local road network. The assessment has regard to the cumulative impact on the road network performance and has assumed that the Gloucester Gas, Rocky Hill Coal and Duralie Coal Extension projects area were all in operation.
- The proposal will generate additional traffic through the doubling of the workforce and the extension of the life of the mine by 11 years;
- Both Gloucester Shire Council (GSC) and RMS consider a number of road upgrades are required to accommodate the proposed extension. These include:
  1. The proposed diversion of Wenham Cox/Bowens Road to be realigned generally in a South easterly direction from the entrance to 350 Wenham Cox Road to join to Bowens Road at a point 6.9km from The Bucketts Way junction;
  2. Upgrades to The Bucketts way, including the provision of northbound and southbound passing lanes;
  3. Widening of Wenham Cox Road and Wheatleys Lane to a provide two lanes and removal of obstructions on Wenham Cox Road; and

4. Intersection upgrades including:
  - a. Intersection of Wenham Cox Road and The Bucketts Way to provide protected right hand and left hand turning lanes;
  - b. The junction of The Bucketts Way and Bowens Road be upgraded to provide a protected right hand turn lane in The Bucketts Way;
  - c. The intersection of Wenham Cox Road and Wheatleys Lane be widened to provide adequate turning space for large vehicles; and
  - d. The intersection of the mine access road and The Bucketts Way.
- The PAR supports the upgrade of the Wenham Cox Road/ Wheatleys Lane intersection and the mine access road/The Bucketts Way intersection. However, the Department disagrees with the Council and RMS that the Proponent should pay for the upgrade of passing lanes on The Bucketts Way and the intersection upgrade of Wenham Cox Road/The Bucketts Way. It believes the upgrades cannot be justified principally because the Proponent is not the main user of The Bucketts Way and would be inequitable to make the Proponent pay the full cost of these works. It should also be noted that a contribution of infrastructure and services fund (\$550 per employee) payable to the GSC on an annual base has been recommended by the Department. The upgrading of the road infrastructure should be the responsibility of the Council and RMS.
- A new funding formula has been developed by the Proponent to calculate its annual contribution to the Councils for road resealing and maintenance. The assessment report supports the formula and considers it reasonable. Hence, it is included as one of the recommended conditions.

Following a careful review of the documents provided to the Commission including written and oral submissions made at the public hearing, the Commission identified 3 key issues in relation to the traffic and transport aspect of the proposal.

#### **5.5.1 Inconsistencies in the background traffic data**

There are discrepancies between the Proponent's and Gloucester Shire Council's (GSC) 2011 traffic counts. The Commission notes that in the Proponent's EIS (Appendix N Road Transport Assessment) the annual average daily traffic count for March 2011 (includes light and heavy vehicles) at The Bucketts Way South of Parkers Road was 2,092. However, the Council conducted a traffic count survey from February 2011 to March 2011 at the same location with an annual average daily count of 1,604. The discrepancy appears to be much greater than 6% as claimed in the Proponent's response to submissions.

GSC also advised that the annual average daily traffic count conducted by Council in August 2013 of 1,664 vehicles was significantly lower than the Proponent's predicted traffic count for 2013 which was 2,594 vehicles (EIS, Appendix N Road Transport Assessment).

It is noted that at the time the Proponent conducted its traffic survey GSC provided traffic data from 2008 and 2009. GSC traffic data from 2011 and 2013 was not available to the Proponent at the time of the assessment.

As the traffic counts directly affect the heavy vehicle percentage (which in turn affects contributions to Council's road maintenance), GSC has recommended that the Proponent should install an inductive loop vehicle classifying counting system at three locations: two on The Bucketts Way, one each side of the mine access road, and a third across the mine access road inside the mine gate which will monitor heavy vehicles from the mine and existing heavy vehicles. The counting system

should be connected to an integrated subscription data service with data provided direct to both the Proponent and GSC. The Commission agrees with this proposal.

### **Recommendation**

Should the project be approved a condition should be included that requires the number of heavy vehicles from the mine and existing heavy vehicles on The Bucketts Way to be monitored and reported directly to the Council and the Proponent. This will provide an accurate data set to which a contributions formula can be applied to ensure that the Proponent pays an equitable share of road maintenance.

#### **5.5.2 Reasonableness of the contribution formula in the draft recommended condition**

The Commission notes that the Proponent developed a formula to calculate road maintenance contributions to Council based on the percentage of heavy vehicles going south and north along The Bucketts Way to reflect the actual project impacts. As per the draft recommended conditions the formula is as follows:

*The Applicant shall pay GSC and GLC annual contributions towards the maintenance and resealing of The Bucketts Way in accordance with the proportion of heavy vehicles going to and from the site, with the first annual payment payable within 12 months of the date of this consent, and additional payments on each following anniversary of the date of this consent, until the cessation of mining operations on the site. Each payment is to be calculated as follows:*

##### **Gloucester Shire Council:**

- **Annual Resealing Contribution (\$)**  
$$\frac{[(15.1 \text{ km} \times \text{HV\% southbound}) + (4.1 \text{ km} \times \text{HV\% northbound})] \times \$48,000/\text{km}}{11 \text{ years}}$$
- **Annual Maintenance Contribution (\$)**  
$$[(15.1 \text{ km} \times \text{HV\% southbound}) + (4.1 \text{ km} \times \text{HV\% northbound})] \times \$3,000/\text{km}$$

##### **Great Lakes Council:**

- **Annual Resealing Contribution (\$)**  
$$\frac{55 \text{ km} \times \text{HV\%} \times \$48,000/\text{km}}{11 \text{ years}}$$
- **Annual Maintenance Contribution (\$)**  
$$55 \text{ km} \times \text{HV\%} \times \$3,000/\text{km per annum}$$

##### **Notes:**

- HV% = the percentage of heavy vehicles (HV) entering and leaving the site of total heavy vehicle usage on The Bucketts Way.
- A heavy vehicle is defined in accordance with the relevant Roads and Maritime Services definition, as a motor vehicle or trailer that has a Gross Vehicle Mass greater than 4.5 tonnes.
- The dollar values in the above formulae are subject to annual indexation in accordance with the Construction Index.
- The Applicant must prepare a Traffic Monitoring Program, in consultation with GSC and GLC and to the satisfaction of the Director-General, which contains suitable monitoring measures to accurately determine both the annual HV% and total heavy vehicle use on The Bucketts Way.

Using Proponent's traffic data and assuming the Gloucester Gas, Rocky Hill Project and Duralie Extension Project are all operating the annual resealing and maintenance contribution to GSC is estimated to be \$10,190 per annum.

The Department has supported the use of this formula and recommended it in its draft recommended conditions. GSC contends that the apportionment of cost should be based upon the consumption of the asset; with the input cost being the whole life cost of the pavement which includes the cost of resealing the asset during its lifetime. Council states that the cost to rehabilitate the road at the end of its design life (assuming 30 years) for The Bucketts Way south of the mine access road is \$1,063,830/km and for The Bucketts Way north of the mine access road is \$922,426/km. Contract costs to reseal the pavement is \$48,370/km and is required three times within the economic life of the pavement. GSC considers that contributions should be calculated as follows:

$$(15.13\text{km} * (((\$922,426/\text{km}) + (\$48,000/\text{km} * 3)) / 30 * \text{HV\% outhbound})) + (4.12\text{km} * (((\$1,063,830/\text{km}) + (\$48,000/\text{km} * 3)) / 30 * \text{HV\% northbound}))$$

The cost of road resealing and maintenance per kilometer estimated by GSC is substantially higher than that recommended by the Department in Appendix 4 of the draft recommended conditions.

The Commission is concerned about three matters:

- (i) any impact on the calculations that the assumptions concerning operation of Rocky Hill Mine and the AGL Gas Project may have had. Rocky Hill Mine has yet to be determined and the AGL Gas Project, although approved, is not certain to be fully operational in the near future.
- (ii) The Stratford Mine Complex has been in operation for approximately 17 years already. The current proposed extension is for 11 years (making a total of 28 years). There are also known reserves to the north of the area of the current project. The piecemeal approach to project approvals means that the cost of rehabilitating the road at the end of its 30 year design life is not factored into the contributions to Council. This appears to be inequitable.
- (iii) The use of the 50:50 contributions figures for Council and the RMS in the PAR. This is simplistic and the Council has advised that it may not reflect the actual contributions for the relevant sections of The Bucketts Way.

Given the GSC's concern and its proposed contribution formula, the Commission requested the Proponent to provide comments on GSC's proposition in its written questions to the Proponent dated 6 March 2014 (Appendix 5).

The Proponent's response to the Commission's questions advised that its offer to the GSC is fair and reasonable because it is consistent with:

- the contribution requirements of other mining projects in the State; and
- the *Practice Note for Development Contributions* issued by the then Department of Infrastructure, Planning and Natural Resources in July 2005).

The Proponent considers the GSC proposition is unreasonable because:

- The resealing rate of \$48,000 per km was based on advice from Ditchfield Contracting Pty Ltd which undertook works for GSC on the Bucketts Way at Craven.
- The maintenance rate of \$3,000 per km was based on the estimated cost in the *Ulan Road Strategy* (ARRB Group, 2011).
- It is not the Proponent's responsibility to fund the capital renewal of the Bucketts Way and therefore any contribution formula based on renewal costs is irrelevant.
- The requirement to provide funding for 3 reseals is unreasonable when resealing would only be required about once every 10 years.

- Other heavy road users have not been required to contribute to either the reconstruction or maintenance of the Bucketts Way.
- The Proponent has already agreed to make annual contributions to the GSC for community infrastructure and services.

The Commission sought further comment from GSC on the Proponent's response. By email dated 26 March 2014, GSC advised the Commission that:

- Council only requested the Proponent to pay their proportion of consumption of the asset provided by Council. It does not seek funding for capital renewal.
- Council's formula divides the whole of life cost of the asset (the Bucketts Way) by the proportion of heavy traffic accessing the Stratford mine.
- It is reasonable to request the contribution to the life cycle cost of the road which includes replacement cost and scheduled services (resealing) cost.
- The issue of contribution paid by other road users is irrelevant and outside the control of the Council.

The Proponent's response to the Council's proposed formula included 2 letters to the GSC (dated 9 August 2013 and 9 October 2013) and one letter to the Department (dated 28 October 2013). The Commission notes these letters included a table comparing contributions made by the other NSW coal mines and the proposed contributions made by the Stratford mine. However, the Duralie mine, the closest to the Stratford mine (about 20km to the south) is not included in the comparison table. The Commission further notes the similarity between the Duralie mine and the Stratford mine extension project as indicated in the table below:

	Duralie extension project*	Stratford mine extension
Annual run-of-mine (ROM)	3.0Mtpa	2.6Mtpa
Mine life	9 years	11 years
Total heavy vehicles traffic	36	47
The Bucketts Way North	24	11
The Bucketts Way South	12	36

Notes: \* Environmental Assessment Duralie Extension Project, Appendix H, Road Transport Assessment by Halcrow MWT, 4 November 2009

The Duralie mine is required to pay an annual contribution of \$59,688.09 to the Great Lakes Council for the maintenance of the Bucketts Way as well as \$100,000 for the provision of community infrastructure, \$11,022.58 for structural inspection of bridges, and \$120,000 for the Karuah Catchment Management Program.

For the GSC, no contribution is required for the maintenance of the Bucketts Way. A contribution of \$10,000 per annum is payable to the GSC for the provision of community infrastructure in addition to \$30,000 for specified community works and an education fund.

The Commission is not able to ascertain how the annual maintenance of the Bucketts Way was derived as it was not discussed in the Duralie Assessment Report.

The Commission used the Proponent's formula for a preliminary calculation based on the heavy vehicle traffic information contained in table 4.1 of the *Stratford Extension Project Road Transport Assessment* (prepared by Halcrow dated 28 April 2012). The results indicated that the Proponent would be required to make a significantly lower maintenance contribution compared to the current contribution made by the Duralie mine to the Great Lakes Council, notwithstanding the heavy vehicle traffic volume generated by this project is higher than the Duralie mine.

When a calculation was carried out using the Council's formula, the results were at levels similar to the Duralie contribution. On the evidence, the Commission considers the Council's formula would produce a contribution that is reasonable and equitable for the maintenance of The Bucketts Way.

#### **Recommendation**

That the Gloucester Shire Council's contribution formula be adopted for the calculation of contribution payments for the maintenance of The Bucketts Way.

### **5.5.3 Road Upgrades**

The Commission notes that both Council and RMS requested a number of upgrades to the mine access road, The Bucketts Way, Wenham Cox Road and Bowens Road. RMS stated that minimum design standards have changed and that road should be upgraded in accordance with the current Austroads Guide to Road Design. The Commission agrees with the Department that the mine access road/The Bucketts Way and the Wenham Cox Road/Wheatleys Lane intersection should be upgraded by the Proponent. As the heavy vehicle usage along the Wenham Cox Road is predicted to be 10% in year 1 and 25% in year 11 (Response to Submissions) the Commission does not believe an upgrade of Whenham Cox Road to provide turning lanes into The Bucketts Way is warranted.

However, the Commission does support a road maintenance contribution be paid to Council to assist in the maintenance of Wenham Cox Road. The Commission notes that the Department did not comment on the proposed upgrade of the Bowen's Road. However, RMS stated in their response to the RTS that, as the Bowens Road and The Bucketts Way intersection is located in a 60km/hr speed zone, no formal upgrade is required.

## **5.6 Economic considerations**

### **5.6.1 Economic assessment**

Recent amendments to the mining SEPP direct the consent authority to consider a number of matters when assessing the economic benefits of a mining project. The Proponent's EIS and RTS were produced before these amendments to the mining SEPP came into effect in November 2013. Consequently, it is not a simple task to apply the SEPP provisions to this project.

Clause 12AA is the principal provision. In sub-clause (1) it requires the consent authority to consider the significance of the resource having regard to two matters. The first is the economic benefits, both to the State and the region in which the development is being carried out, and the second is any advice from the Director-General of DTIRIS as to the relative significance of the resource.

For this project there is no advice from the Director-General of DTIRIS that meets the requirements of the second limb. However, there is evidence available to the Commission relevant to the matters the Director-General is required to consider under sub-clause (3). This is set out below under each of the parts of the sub-clause.

#### **(a) the size, quality and availability of the resource**

The overall significance of the resource in terms of NSW coal production is not addressed in the body of the Department's PAR. There is a statement in the Executive Summary at p2 that purports to cover the issue, i.e. *'The Project is considered to be a relatively significant coal resource, given its size, quality and availability ...'*. However, there is no justification provided for any of these conclusions.

The size of the resource is estimated as up to 21.5Mt of ROM coal to be extracted over 11 years at a rate of up to 2.6Mtpa. Three new mining areas are proposed (Avon North Open Cut, Stratford East Open Cut and an extension to the Roseville West Pit).<sup>41</sup> There is no comparison with other NSW resources that would allow assessment of relative significance based on the size of the resource. However, one submission at the public hearing provided comment on this issue in comparison with other mines, noting the relatively small annual ROM output proposed from Stratford and quoting a figure of 0.5% of NSW coal production and 0.1% of NSW estimated recoverable reserves.<sup>42</sup>

There is no advice in the PAR concerning the quality of the coal to be mined. There is a statement in the Executive Summary that the product consists of '*soft coking and thermal product coal*', but no details of the proportions are provided. The Proponent provided some advice on this issue during the site visit on 18 February 2014 and in its responses to formal questions from the Commission dated 24 March 2014 (Appendix 6) and 31 March 2014 (Appendix 7).

The Proponent's response asserts that the particular qualities of the Stratford coal (low sulfur but excellent coking qualities) make it unique in the Hunter Valley and provides access to the higher value Asian markets. Because of the lower sulfur content, blending Stratford coal with Duralie coal also provides access to the higher value Asian markets for the Duralie coal. Without access to these markets the viability of the Duralie operation would become questionable.<sup>43</sup> While these responses do nothing to define the proportions of semi-hard coking coal and thermal coal anticipated to be mined, the importance of the coking component has not been challenged in the review process and the Commission considers the claims made are reasonable.

There is no detail in the Department's PAR concerning availability of the resource. It is also not entirely clear what 'availability' means in this context. The Proponent asserts that 'availability' is tied to the extension of an existing mine, with infrastructure already in place.<sup>44</sup> However, given that these heads of consideration are specifically identified in sub-clauses 12AA(3)(b) and (c), it is unlikely that this was intended to constitute the meaning of 'availability' in sub-clause 12AA(3)(a).

If 'availability' means 'readily accessible', then there may well be some difficulty in establishing this for this project: the seams are variable in height (generally narrow), dip sharply westward, and the stripping ratio of overburden to coal is high. Also, the pit design means that there are significant restrictions on the amount of equipment that can be used concurrently.

However, if 'availability' includes an economic dimension (i.e. the Proponent believes that the resource can be accessed economically), then, with one exception, the issues in the previous paragraph become a matter for the Proponent rather than the consent authority.

The exception would arise if there were issues particularly associated with accessing the resource that rendered its environmental impacts unacceptable. For this project it is difficult to see what these might be since the magnitude of the impacts of most concern (noise and dust) are not tied to resource accessibility (although duration of these impacts can reasonably be associated with the high stripping ratio).

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<sup>41</sup> PAR p.5

<sup>42</sup> Submission by G. Healey quoting a February 2014 submission to the PAC by The Australia Institute authored by Rod Campbell (p.4)

<sup>43</sup> Appendix 6, Proponent's Responses to Questions 2-6, 24 March 2014, p.41

<sup>44</sup> Appendix 6, Proponent's Responses to Questions 2-6, 24 March 2014, p.41



(b) the proximity and access of the land to which the application relates to existing or proposed infrastructure

The project is an extension of an existing mine and would use an existing processing plant and an existing rail loop for loading and transport of the product. There are some improvements to the existing facilities proposed as part of this project.

(c) the relationship of the resource to any existing mine

As noted under (b), the project is an extension of an existing mine and is therefore directly related to it. However, the proposed project is also related to the Duralie Mine located some 20 km to the south. Coal from Duralie is transported to Stratford by rail for processing and, as outlined above, there is extensive blending of Duralie and Stratford coal to produce products to meet specific markets.

(d) whether other industries or projects are dependent on the development of the resource

The EIS makes substantial claims for flow-on economic benefits to the region and NSW. These are largely repeated in the Proponent's response to the Commission's Questions (Appendix 6, section 5.2 at pp.40-41). The magnitude of these claims has been challenged in several expert submissions. The Commission finds the criticisms persuasive and considers that a more robust study would be necessary to resolve the uncertainties. However, resolving these uncertainties may not be necessary to deal with the specifics of the issue in (d).

If the extension project did not proceed there would undoubtedly be negative impacts on businesses in Gloucester and the surrounding areas that depend on trade from the mine or depend on trade from the families of employees of the Proponent or its sub-contractors. The mine is a significant industry in the area and substitute sources of trade income or employment are not readily apparent to the Commission, particularly in the short-term. This point was made numerous times in the public hearing by employees, local contractors and associated businesses. The Proponent has advised the Commission that there is only 6 months of extraction available under the current consent and that mining will cease at that time in the absence of an approval. As noted above, the Proponent has also advised that non-availability of Stratford coal to blend with Duralie coal would threaten the viability of current markets and the longevity of the Duralie mine.

Turning to 12AA 1(a), this requires the Commission to have regard to '*the economic benefits, both to the State and the region in which the development is proposed to be carried out, of developing the resource*'. Matters considered to be relevant for the purposes of sub-clause (1)(a) are set out in 12AA(2) as follows:

- (a) employment generation,
- (b) expenditure, including capital investment,
- (c) the payment of royalties to the State.

Some information on 2(a)-(c) is contained within the economic assessment included as part of the EIS, with supplementary information contained in the Proponent's Response to Submissions (RTS).

Submissions on the EIS and to the Commission conducting this review have highlighted two main areas of concern with the economic analysis for this project.

The first relates to the methodologies used to produce the analysis. The adequacy of these methodologies for providing a properly balanced view of the potential costs and benefits of the project has come under serious and sustained criticism from economists, the judiciary, public authorities and a major economic consultancy firm. These criticisms include, *inter alia*, use of the

Input-Output (IO) modelling to produce employment figures<sup>45</sup>, the use of Choice Modelling (particularly the way it has been used to support mining projects),<sup>46</sup> and the failure to account properly for distributional aspects of costs and benefits.<sup>47</sup> These are not ‘arguments about the details of the economic assessment’.<sup>48</sup> They are fundamental criticisms of the basis for the assessment.

While the Department’s PAR notes the concerns, it states that *‘the Department generally accepts the economic analysis conducted by Gillespie, as the methodology used is in accordance with the Department’s draft Guidelines for Economic Effects and Evaluation in EIA which incorporates consideration of environmental impacts’* (PAR, p50). From the Commission’s perspective the criticisms appear sound and the issue of whether the analysis complies with guidelines that have been in draft since 2002 is largely irrelevant. The Commission’s task in this context is to assess the merits of the project (see TOR 2) and that involves in part an assessment of the costs and benefits of the project based on an assessment that is factually and methodologically robust.

The Commission acknowledges that much of the criticism of the methodologies used in this (and other recent) coal mining applications is relatively recent and that many of the assessments will have been done prior to proponents becoming aware of these developments. The question for the Commission in these circumstances is whether it is necessary to recommend that a new analysis be undertaken and assessed before a determination can be made on the particular project.

If the economic analysis were the sole determinant of the merits of the proposal then the Commission’s view would be that a new and more robust analysis would be required. However, as Preston CJ points out in the Warkworth case, the economic analysis is not the sole determinant: *‘At best, the two forms of economic analysis provided, the BCA and the IO, provide some information about some of the relevant matters that are to be considered in the ultimate task of weighting and balancing in determining whether or not the Project should be approved’*.<sup>49</sup> Preston CJ then went on to outline in detail the Court’s criticisms of the economic assessment.

From that criticism three important points emerge relevant to the project under review by this Commission. The first is that the methodological approaches used by the Proponent’s economic consultants in this project are similar to those used by the same consultants in the Warkworth case (i.e. the matters of concern are likely to be similar).

The second point is that no matter how well the economic analysis is executed, currently available analytical techniques are unlikely to be able to assess adequately the full range of non-market impacts and values of a project.<sup>50</sup>

The third point is that the analytical tools used do not account for the interaction between impacts and/or values. Each one is considered separately, but in reality they are part of a complex set of interactions with decisions or choices about one likely to affect decisions or choices about another.<sup>51</sup>

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<sup>45</sup> See Preston CJ in Bulga Milbrodale Progress Association Inc. v Minister for Planning and Infrastructure & Warkworth Mining Limited [2013] NSWLEC 48 (Warkworth) at paras 454-463 and Campbell, R. *op cit* at p.4

<sup>46</sup> See Preston CJ in Warkworth at paras 470-495

<sup>47</sup> See Preston CJ in Warkworth at paras 485-495 and Deloitte Access Economics ‘Economic and social impacts of the Warkworth Extension Project’, Report prepared for Singleton Council, August 2012. Note that this report contains a comprehensive critique of the same methodologies as those used by the Proponent in the Stratford Extension Project

<sup>48</sup> Department’s PAR at p.56

<sup>49</sup> Warkworth, *op cit* at para 453, p.156

<sup>50</sup> Warkworth, *op cit* at para 482, p.168

<sup>51</sup> Warkworth, *op cit* at para 484 p.169

Given the matters outlined above, the Commission considers that there would be little point in requiring that a new economic analysis be provided as a matter of principle:

- At this point in time the analysis is unlikely to resolve all the relevant methodological deficiencies identified in Warkworth; and
- The analysis is not the sole determinant of the merits assessment – it provides some information relevant to that assessment and there may be other ways to approach consideration of economic benefit for this particular project.

The second main area of concern with the economic analysis concerns the validity of the estimates of economic benefits to be derived from the project. Apart from specific concerns raised in submissions about employment figures, validity of the choice of region for estimating regional benefits, inclusion of estimates of ‘non-market benefits of employment’, etc., the main concern is that coal prices are currently substantially below those used in the economic analysis and current forecasts are that they will remain well below the levels used. Since the discrepancy in prices is greater than the sensitivity analysis parameters used in the EIS, the validity of the benefits estimates is doubtful.

The Department notes this problem on the PAR at p50: *‘A 20% decrease in coal prices (without other adjustments to the cost of production) would reduce the Net Benefit to Australia to \$23M. Current (November 2013) spot prices paid for coal loaded at the port of Newcastle are at, or even lower than, the lower value used in the sensitivity analysis. Accordingly, the project is likely to be under economic pressure as evidenced by Yancoal’s decision to suspend operations in the Roseville West Pit and reduce employment from 125 to 71 to reduce its production costs.’* but goes on to state *‘What would not drastically change are the inputs of the project to the Australian economy, although these may reduce or vary somewhat. Coal royalties, Commonwealth taxes, wages and payment for goods and services would all still be delivered at reasonably stable levels, even in times of low profitability for Yancoal’.*

Submissions to the Commission at the Public Hearing and written submissions based on the Department’s PAR agreed that the Net Benefit to Australia would be substantially reduced over the levels claimed in the EIS (i.e. claims of Net Production Benefit to Australia in the range of \$145 to \$174 m<sup>52</sup>, including around \$84m in revenue to the NSW Government in royalties and \$39m in Commonwealth taxes), but were highly critical of the Department’s assessment of impacts on the inputs to the Australian economy arising from reduced coal prices.<sup>53</sup>

On the subject of the Net Benefit to Australia there is agreement about the impact of reduced coal prices between one version of the Department’s estimates (see fn 52) and the submission to the Commission by Mr Rod Campbell of the Australia Institute<sup>54</sup>. Both arrive at a reduction of 84% over the EIS lower estimate of \$145 million to a figure of \$23 million. For the purposes of this review the Commission is prepared to accept that this is a much more realistic estimate of Net Benefit to Australia than that presented in the EIS.<sup>55</sup> If the discrepancy became material at the determination

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<sup>52</sup> The upper figure includes \$29m for ‘non-market benefits of employment’, the inclusion of which has attracted significant criticism.

<sup>53</sup> But note that there appear to be conflicting statements concerning Net Benefit to Australia on p.50 of the PAR. In one paragraph it refers to a reduction to \$23m (which is a very substantial reduction) and in the subsequent paragraph it states the opposite, suggesting relatively little change in the Net Benefit to Australia.

<sup>54</sup> Campbell, R., The Australia Institute, ‘Stratford Extension Project: Submission to the Planning Assessment Commission’, February 2014.

<sup>55</sup> But note that the Proponent disputes this in its two Responses to the Commission’s Questions dated 24 and 31 March 2014, Appendices 6 and 7 at p.41 and 3 respectively. The Proponent claims that its long-term contractual price for blended

stage the Commission considers that a new economic analysis would be required and that this analysis should be subjected to rigorous independent review. For reasons given later in this review, the Commission considers that this may not be necessary.

There is another issue here that will need to be explored by the Department. The EIS and the PAR refer to 'Net Benefit to Australia'. This is also considered to be the appropriate reference point for assessment by the economics experts in the recent *Warkworth* case in the NSW Land and Environment Court (see para. 465). However, the Mining SEPP is quite specific in its references to the economic benefits being assessed only in the NSW context (see sub-clause 12AA 1(a) and note its relationship to sub-clauses 12AA(4) and (5)). Since the Net Benefit to Australia and the Net Benefit to NSW are different, it is doubtful that the assessment to date has been undertaken in accordance with the requirements of the SEPP.

Turning to the assessment of impacts on the inputs to the Australian economy arising from reduced coal prices, the Commission notes the Department's claim on p.50 of the PAR (reproduced above). However, the Commission finds the criticism of the Department's assessment concerning impacts on these inputs to be persuasive. Campbell<sup>56</sup> in fact suggests that most of the Department's points are incorrect:

- *The value of the project to the Australian economy is intimately linked to coal prices. As discussed above, the claimed \$145 million in present value benefits to Australia is a heavy overestimate and in fact the project is marginal as shown by recent downsizing.*
- *Coal royalties in NSW are closely linked to coal prices, calculated at 8.2% of value less deductions. (NSW DII, 2008) They are also linked to production. With both price and production declining at Stratford, the PAR's estimate of \$84 million present value is a heavy overestimate. We suggest a central estimate of \$47 million.*
- *Commonwealth taxes are also heavily influenced by coal price. When producers are not making strong profits, the Commonwealth does not collect any tax.*<sup>57</sup>
- *Low prices are having an impact on employment levels at Stratford, a problem that will continue if analysts' long run forecasts are accurate.*

The Commission also received further advice on economic inputs to the NSW and regional economies from the Proponent<sup>58</sup>. The advice is generally in line with the EIS claims and the Department's summary in the Executive Summary of the PAR<sup>59</sup>. However, a claim for royalty payments to NSW of \$130m over the life of the project is included which is a \$46m (54%) increase over the \$84 m claimed previously and included in the PAR. The difference is due to the Proponent using estimates of total royalty payments not discounted to their net present value. Both figures are included in the EIS at Appendix P.

The Commission considers that there is one other problem with royalty payment estimates. They are based on predicted production rates sought in the application (i.e. 2.6Mtpa). However, coal mines in NSW rarely achieve their approved production limits. Stratford is currently producing around

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thermal coal is higher than the current market price. However, the Proponent does not state the period for which these higher prices apply and the Commission notes that Duralie coal is currently only available for blending until 2019. It is also not clear to the Commission why production has ceased in the Roseville West Pit in response to economic pressures if the 'long-term' contractual price is secure and adequate for profitable operations (see Department's PAR at p.50).

<sup>56</sup> Campbell, *op cit*, at p.4

<sup>57</sup> Note also that the tax payable to the Commonwealth is likely to be significantly over-estimated if calculated at the 30% company tax rate. There is evidence that effective taxation rates for mining enterprises are substantially below 30% (i.e. around 14-18%)

<sup>58</sup> Proponent's Responses to Commission's Questions, pp.40-41

<sup>59</sup> PAR, p.2

1.2Mtpa out of an approved 3.1Mtpa, a difference of 61%. If the 2.6Mtpa is not achieved then the royalty payments may fall substantially below those predicted.

The Commission considers that, in light of the comments above, it is unable to accept the Proponent's claims as credible. In this context note that Campbell<sup>60</sup> suggests that a royalty figure of \$47m is a more reasonable estimate, but even that may be significantly inflated if production is not maintained at 2.6Mtpa for the extension project.

The Commission's finding on this issue is that, although there is persuasive evidence that the Proponent's claims are exaggerated and that the Department's confidence in the economic analysis presented in the EIS is optimistic, the fact is that the Net Present Value (NPV) is still positive at \$23m and the estimate for royalty payments is still significant at \$47m.

It is more difficult to assess what may happen to the employment figures contained in the EIS. The Commission requested further information on this from the Proponent.<sup>61</sup> The Proponent simply restated the employment figures used previously (i.e. direct workforce increased to 250 on-site, 105 indirect jobs in the region and 464 indirect jobs in NSW).<sup>62</sup> This assumes that the project operates at full capacity over the projected life of the mine and is based on the economic analysis presented in the EIS. As indicated previously these projections are considered to be a gross over-estimate of the likely Net Benefit and, as noted in the Department's PAR at p.50, the project is, and may continue to be, under significant economic pressure.

The first issue is the use of IO modelling to assess indirect job creation resulting from the project. This approach came under sustained pressure in the Warkworth case.<sup>63</sup> It was also considered in the recent appeal on the Ashton Coal Mine Expansion approval (not yet decided) where the original IO modelling forecast of 520 indirect jobs was reduced to 2 indirect jobs by the Proponent using a different methodology.<sup>64</sup> The Commission's finding is that the Proponent's claims for indirect job creation cannot be relied upon and that the likely figures will be low.

The direct employment figures need to be viewed in the light of the economic pressure identified above. As the PAR points out at p.50 the workforce at Stratford has already been reduced from 125 to 71 in response to the current economic conditions. Given the forward coal price projections included in Campbell's submission it would seem reasonable to assume that there may be a number of occasions in the proposed life of the Stratford mine when substantial cutbacks would occur.

Because the economic benefits of the mine are finely balanced (and from the Proponent's perspective only partly linked directly to the profitability of Stratford itself) it is impossible to estimate with any certainty what will happen to employment numbers under any particular coal price scenario. The Commission considers that on the basis of the available information the best estimate is:

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<sup>60</sup> Campbell, *op cit*, at p.4

<sup>61</sup> Commission's Questions to Proponent, (Appendix 5), pp.7-8

<sup>62</sup> Proponent's Responses to Commission's Questions, dated 24 March (Appendix 6), Section 5.2 at pp.40-41

<sup>63</sup> Preston CJ in Warkworth at paras 454-463 on the issue of use of IO modelling to estimate employment generation for mining projects. The suggestion is that the actual employment generated may be much lower than the IO predicts and that the best that could be said in the Warkworth case (a substantially larger project) was that there would be some increase in employment but its quantum was uncertain.

<sup>64</sup> Submission by R. Campbell to the current Planning Assessment Commission Wallarah 2 Coal Project Review dated March 2014 at pp.6-7. Note also that the Proponent in Stratford (Yancoal) is essentially the same entity as the proponent in Ashton and has chosen to repeat the IO modelling forecasts as representing the indirect job creation benefits for this project in its response to this Commission, despite knowing that the claims are almost certainly grossly exaggerated.

- There will be some increase in employment attributable to the project and, fully operational for a sustained period, the direct employment levels may be consistent with the Proponent's forecasts;
- The current reductions in staff at Stratford and the forecast coal prices indicate that direct employment levels will fluctuate over the life of the project; and
- The resulting instability is likely to affect the flow on benefits to any regional employment generated because of the difficulty in adjusting skilled employee numbers in response to fluctuating demand.

The third matter to be considered under sub-clause 12AA(2) is 'expenditure, including capital investment'. The capital investment is stated to be \$75m (PAR p.2) and there are expenditure figures provided in the EIS (Appendix P). The Commission notes that the Proponent's capital investment figures were not challenged at the public hearing and considers that further examination of this issue is not warranted in this review.

The Department's comment quoted above about the project being under economic pressure was raised in the public hearings as a relevant matter that called into question whether any of the claimed benefits would be realised, even at the reduced level arising from reductions in the price of coal. This issue was raised with the Proponent<sup>65</sup> on the basis that there may be factors that would influence the Proponent's decisions concerning commencement and operation of the Stratford mine apart from the profitability of the mine itself. Examples include contractual obligations for either blended coal or transport capacity, future access to further reserves, etc.

The Proponent's response is provided in two sections.<sup>66</sup> In summary, the Proponent indicates that such other factors exist and that they are significant. The Commission accepts that both the existing Take-or-Pay contracts for access to rail and port facilities and the blending requirements for Duralie coal would provide significant incentive to commence and maintain the project for some time. (Duralie still has 10m tonne of raw coal available to extract and the Proponent advises that there are significant benefits from blending this coal with the higher quality Stratford coal.)

The Commission's view is that, if the Proponent is prepared to invest in the project then, provided there are identifiable benefits arising from the project, it is not a matter for the Commission to determine whether the investment is a sound business proposition or whether the Proponent will be able to make a profit. The Commission's interest is in whether the residual impacts of the project are such that they outweigh the benefits to NSW and region that can be established by robust analysis.

As noted above, even the critics of the economic analysis appear to accept that there will be some royalty payments to NSW, that there will be some flow-on economic benefits to the region and that there will be some direct employment generated. The Commission considers that this is sufficient to warrant moving to an examination of the impacts of the project and specific consideration of those residual impacts (i.e. those not able to be avoided, mitigated or offset successfully) that need to be weighed against potential benefits.

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<sup>65</sup> Commission's Questions to Proponent, (Appendix 5), p.8

<sup>66</sup> See Proponent's Responses to Commission's Questions, dated 24 March, (Appendix 6), p.39 and 31 March, (Appendix 7), Section 1.3, pp.9-11

### 5.6.2 Economic assessment of 24 hr operations

The final issue to be considered in this Section is the potential economic impact on the project of restricting night-time operations in the Avon North and Stratford East Open Cuts. The Commission sought further information from the Proponent on this.<sup>67</sup> The Proponent responded.<sup>68</sup>

The detailed response is summarised on p.7 and the claim is that restricting night-time operations would result in:

- *'A reduction in Australian net production benefit of the Project of **\$58 million (M)**.*
- *Yancoal paying **\$21M** for infrastructure that would not be utilised over the 10 year life of existing Take-or-Pay contracts.*
- *A reduction in the value of Duralie coal and consequent reduction in the value of the Duralie Coal Mine (DCM)'*

Taking each of these in turn, the claimed reduction in NPV of \$58m is explained in detail on p.9. However, the figure is based on the EIS claims of NPV for the project.<sup>69</sup> These are between \$145m and \$174m. These NPV figures have been found by the Commission to be a substantial over-estimate of the NPV for the project which, as discussed above, is more likely to be closer to \$23m. Even the Proponent refers to simply 'a positive NPV' when discussing the results of the coal price sensitivity testing on the NPV for the project.<sup>70</sup> There would presumably be some impact on NPV, but much less than claimed.

The second claim, concerning payment of \$21m for infrastructure that would not be utilised is plausible but, given the Commission's concerns about the veracity of the other claims in this section (e.g. NPV, employment, etc.) the quantum claimed must be viewed with caution. However, the conceptual basis for the claims is accepted by the Commission and it is logical that reduced production rates and extending the project would impact on the contractual obligations cited.

The third claim, impact on Duralie Coal Mine, is not quantified by the Proponent. The Commission is therefore not in a position on the information available to assess what the real impact on profitability might be over this 5-year period and whether the claim concerning 'Yancoal Board would need to consider the revised risk profile ...'<sup>71</sup> has any substance. All that the Commission can do is accept that there may be some unquantified impact on the profitability of Duralie if night-time operations are not permitted at Stratford and that the impact will be linked to the amount of Stratford coal required to improve the marketability of Duralie coal into the higher value Asian markets.

Overall, the Commission considers that there is likely to be an economic impact on the combined Stratford and Duralie projects if night-time operations are not permitted at Stratford, but the quantum of that impact is likely to be less than that claimed by the Proponent. If the issue became determinative then the consent authority would require a robust re-analysis to allow assessment of the quantum of the impact.

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<sup>67</sup> See Commission's Questions to Proponent, (Appendix 5), Section 1.3 at p.2

<sup>68</sup> See Proponent's Response to Questions, dated 31 March 2014, (Appendix 7), pp.7-12

<sup>69</sup> See Proponent's Response to Questions, dated 31 March 2014, (Appendix 7), p.9

<sup>70</sup> See Proponent's Response to Questions, dated 24 March 2014, (Appendix 6), p.9

<sup>71</sup> Proponent's Response to Commission's Questions, dated 31 March, (Appendix 7), p.7

### 5.6.3 Economic assessment - Conclusion

The Commission has made a number of findings critical of the economic analysis for this project and of the Proponent's insistence on repeating figures from the EIS that are simply not credible in its responses to the Commission's Questions. It would be easy in these circumstances to recommend that the economic analysis be rejected and that, before a consent authority could determine the project, a new analysis be submitted for assessment and that analysis be submitted for rigorous peer review by independent economic experts.

The Commission has considered this course of action very carefully. However, recognising that the economic analysis in the EIS is typical of analyses produced to support mining applications over many years and that sustained criticism of the approaches used have only been emerging over the last few years<sup>72</sup>, the Commission recommends as follows:

In the absence of a new economic analysis that has been independently reviewed -

- The estimates for project NPV and royalty payments to be used for assessment purposes to be restricted to \$23m and \$47m respectively.
- Direct employment estimates of 250 be accepted with the proviso that this may fluctuate downward in response to economic conditions during the life of the mine.
- The contribution of indirect employment generation to project benefits be assessed as insignificant without further robust evidence as to the quantum.
- That the 'non-market value of employment' be rejected as a component of the BCA.
- That if necessary, the residual environmental impacts of the project that are not able to be managed or mitigated successfully, be assessed against the benefits identified in the above recommendations.

## 5.7 Impact of Mine on Real Estate Values

This issue was raised in submissions and at the public hearing. The submitters contended that property values are negatively affected by the mine and that approval of the project would extend and/or increase this impact. The Department records the issue as one of the three key issues for people living at Stratford at p.12, but the only discussion of it is found in the section titled 'conclusion' pp.54-56 at p.56. This discussion deals with properties that are surrounded by mine-owned land and states that the Department investigated the issue and concluded that there is a difference 'between being located in close proximity to the mine and to mine-owned land' and that the impact on these properties is negligible.

The nature of the Department's investigation of this issue is not specified and there was strong criticism of the nature and extent of the Department's investigation and conclusions from multiple speakers. A NSW Farmers representative stated at the public hearing that the PAR does not accurately reflect what happened in the meetings concerning property valuations. Another submission<sup>73</sup> states on behalf of a number of the owners of the properties listed in the Department's PAR at p.56 that *'This statement does not accord with the facts. BGSPA can find no evidence that any of the identified landowners made such a claim. While it cannot speak for all of the landholders identified, none of those for whom it can speak either had contact from the Department, met with the Department or had their properties inspected by the Department.'*

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<sup>72</sup> The Commission's concerns were first raised in the review report on Bulli Seam Operations in July 2010, but have been repeated and expanded since that time. Other parties noted in the text have also made critical comment with increasing concern over this period.

<sup>73</sup> Barrington-Gloucester-Stroud Preservation Alliance, Submission to the Commission at the public hearing, February 2014, p.6



There are four aspects to this:

- (i) whether the PAR presents a proper description and analysis of the situation on which the Commission can rely;
- (ii) whether characterisation in the PAR of the properties as only being affected by mine-owned land is appropriate;
- (iii) whether the description of the impact on values is adequate/accurate; and
- (iv) whether the Department's conclusion concerning acquisition rights is tenable.

In relation to these:

- (i) The Commission has some difficulty relying on the Department's description and analysis when a number of credible participants at the public hearing allege that the Department's PAR does not represent an accurate record of activities associated with investigation of this issue. The Commission is not in a position to resolve the matter and therefore considers it prudent under the circumstances not to rely solely on the material presented in the PAR;
- (ii) Characterisation of the properties listed on p.56 as being surrounded by mine-owned land may be technically correct at this juncture, but ignores the increasing noise impacts on some of these listed properties as mining operations move southward in the Stratford East pit. For example, Property 60 will be entitled to mitigation measures for noise under the predicted noise impacts;
- (iii) The basis for the description of the impact on values being negligible is not stated in the PAR. The Commission therefore sought to interview by telephone the principals of the five listed real estate agents in the Gloucester area. Three responded with comprehensive interviews. The summarised conclusions from these interviews are:
  - (a) for Stratford village: possibly a very slight depression in price, but recently the few listed properties have sold close to their asking price. There would be an impact on who would enter the market with a decrease in 'lifestylers' and an increase in mine and mine-related industry workers and their families;
  - (b) For properties primarily involved in agricultural production: impact would depend on whether proximity to the mine had a potential impact on marketability of the product. Given that much of the current primary production in the area is grazing, the impact should be negligible; and
  - (c) For properties that could be characterised as 'lifestyle properties'<sup>74</sup>: the impact could be significant in that it would significantly restrict the market for such properties (Properties No 44 and 60 were described as lifestyle properties by their owners at the public hearing) but until these properties are marketed the full extent of any impact on price would be difficult to estimate;

It would appear that the impact on real estate values in Stratford village and on land currently used for primary production would be negligible. However, the impact on real estate values for rural lifestyle properties could be significant. The Department's assessment of negligible impact for this latter group does not appear credible and, since this conclusion was used to justify no relief, the question of whether relief is appropriate must be reconsidered.

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<sup>74</sup> For the purposes of this review a 'lifestyle property' is one that has been acquired for residential purposes on the basis of amenity derived from its rural/natural setting and is not intended primarily for agricultural production.

The current scheme of mining approvals provides specific types of relief for some property owners who are impacted above certain thresholds in specified ways (e.g. noise and dust). In addition to these, there is compensation available for economic impacts arising from the mining operations if there is a demonstrable economic impact on a property owner arising from the operations of the mine (e.g. loss of access to water, decreased development potential of land, etc.).

In the case of the lifestyle properties, the operations of the mine decrease the capacity for peaceful enjoyment of the property and, since that is what is attractive to a significant proportion of the potential market for the property, decrease either the capacity to sell the property and/or the price. The owners of Properties 44 and 60 both argued at the public hearing that if the extension project were approved the properties would not be able to provide the lifestyle enjoyment for which they were purchased and that both capacity to sell and selling price would be severely affected.

The Commission is satisfied that, given the fact that both properties are entitled to mitigation for noise (see Table 2 of Condition 2 Schedule 3 of the draft recommended conditions), the claims by the owners concerning lifestyle impacts are credible and the Commission is also satisfied on the evidence available that there are likely to be negative impacts on both the capacity to sell the properties and the sale price. The owners also claim that the mitigation options available cannot mitigate the impacts on lifestyle, a point also recognised by Preston CJ in Warkworth at para. 379.

The Commission notes that compensation for amenity impacts is not usually provided beyond the specific circumstances identified in Schedule 3 of the draft conditions of consent. However, the amenity impacts identified for these particular properties cause identifiable economic loss.

The difficulty for the Commission lies in how the extent of any economic impact could be determined equitably and how and when any compensation might be paid. Once an amenity impact is inevitable, the simplest mechanism would be to have the property valued, sell the property on the open market and have the Proponent pay the difference to the vendor. However, to be equitable the property would have to have been purchased before the mine extension proposal was known (at least pre-exhibition of the project proposal) and also the valuation would have to exclude any impact of proximity to the mine. It would also be necessary to constrain the operation of any compensation mechanism to the particular circumstances of this project. In this context the Commission considers on the information available to it that Properties 23, 44 and 60 would need to be given consideration in such a scheme.

The Commission has selected the PSNL as the trigger point for establishing amenity impact for the proposed mechanism. This is consistent with the views of Preston CJ as expressed in Warkworth (see paras. 336-338), although there would undoubtedly be some impacts on lifestyle below the PSNL. However, the Commission considers that the bar needs to be set high enough that it only captures clearly genuine cases.

### **Recommendation**

That a suitable mechanism be developed to assess impacts and compensate existing owners of properties that are appropriately identified as 'lifestyle properties' where the proposed project will have both an identifiable amenity impact on the property (i.e. noise impacts above the PSNL for the project) and a significant negative effect on the value of the property in terms of market appeal and/or sale price.

The only alternative to the above recommended solution may be to require compliance with the PSNLs in respect of these properties. Based on the points made in the Warkworth judgment:

- the proposed mitigation strategies are unlikely to be an acceptable solution to the noise impacts for these properties (see paras 328, 346 and 349);
- a proper evaluation of the acceptability of allowing impacts above the PSNL should be undertaken for these properties and reasons such as 'departmental practice' and 'what is able to be achieved by the Project' are not acceptable reasons for allowing such impacts (see para. 339); and
- if acceptable solutions cannot be found no allowance above the PSNLs should be available to the Proponent (see para. 340).

**Recommendation:** That in the event that a reasonable solution cannot be found for the lifestyle impacts on the properties identified, the project be required to meet the PSNLs at those properties. A "reasonable solution" in this context is one that involves mitigation and/or compensation for the impact to the satisfaction of the landowner or the acquisition of the property at fair market value by the Proponent in accordance with clauses 5 and 6 of Schedule 4 of the PAR draft conditions. However, if the landowner refuses both options (or their equivalent) then the predicted impacts should be allowed to occur.

## **5.8 Other Issues**

### **5.8.1 Aboriginal Heritage**

Conclusions of the Department's preliminary assessment in regards to Aboriginal Heritage were:

- The project would likely destroy possibly 10 known heritage sites (3 open scatters, 2 scarred trees of moderate significance and 4 isolated finds);
- It is not possible for these sites to be avoided without impacts to the economic and operational viability of the proposal; and
- There may be additional cultural items or sites within the project area particularly near the Dog Trap Creek.

The Department is satisfied that, following the implementation of all proposed mitigation measures the project should proceed in accordance with the Heritage Management Plan. The Commission notes that the standard conditions for mining projects to cover contemporary requirements for the protection, monitoring and/or management of heritage items associated with a mining project have been recommended in the draft recommended conditions.

In addition to these standard requirements, the Commission supports the recommendation made by the Office of Environment and Heritage (OEH) that evidence of Aboriginal stakeholder consultation should be kept by the Proponent and made available to the Department upon request and that all Aboriginal sites impacted by the project must have an Aboriginal Site Impact Recording form completed and be submitted to the Aboriginal Heritage Information Management System (AHIMS) register within 3 months of being impacted.

#### **Recommendation**

A condition be included that requires Aboriginal stakeholder consultation to be documented and provided to the Director-General as required and that an Aboriginal Site Impact Recording form to be completed and submitted to the AHIMS register within 3 months of the Aboriginal heritage item being impacted.

### 5.8.2 Non-Aboriginal Heritage

Conclusions of the Department's PAR in regards to Non-Aboriginal Heritage were:

- There are 5 items of local heritage significance and two places identified with heritage values near the project.
- None of the heritage items above are located within 300m of the proposed mining operations, there would be no direct impacts.
- The Gloucester Valley cultural landscape is important to the GSC and the community. The heritage assessment in the EIS considered that the existing and proposed rehabilitated mine landforms do not, and would not significantly detract from the overall valley landscape.

Following a careful review of the documents provided to the Commission including written and oral submissions made at the public hearing, the Commission considers that the cultural landscape of the Gloucester Valley should be a key consideration in formulation of the mine rehabilitation plan. The Commission also agrees with the Heritage Council that alignment of the 132kV electricity transmission line and road alignments should avoid any impact on the Stratford and Glen Railways and that should any archaeological relics be discovered, works must stop and an appropriately qualified heritage consultant must attend site to assess the finds.

The Commission recognises that the landscape would be altered as a result of the project. However, provided the rehabilitation is carried out to the required standard this should not prevent the proposal from going ahead.

#### **Recommendation:**

Conditions should be included that require the mine rehabilitation plan to consider the original land form of the Gloucester Valley and that the 132kV electricity transmission line and road alignments avoid any impact on the Stratford and Glen Railways.

### 5.8.3 Visual Impacts

The conclusions in the Department's PAR in regards to visual impacts were:

- The mine would permanently alter the landscape and the Department supports the proposed emplacement areas as any reduction in their height would necessitate an increased footprint.
- With appropriate management the Project Area could be reshaped to its visually approximate pre-mining conditions. A vegetative screen along the Glen Road is seen as critical to the Department to reduce visual impacts from the project.
- a draft condition is recommended requiring the Proponent to operate its lighting equipment on site in accordance with the relevant Australian Standard.

The Commission understands that the landscape would be altered as a result of the project and that there is a need for effective rehabilitation, vegetation screening and lighting mitigation measures. The Commission notes that the Department has recommended the following draft operational conditions requiring the Proponent to:

- implement all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the development;
- ensure no fixed outdoor lights shine above the horizontal;
- ensure no in-pit mobile lighting rigs shine above the pit wall and other mobile lighting rigs do not shine above the horizontal;

- ensure that all external lighting associated with the development complies with *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting* or its latest version;
- provide for the establishment and monitoring of trees and shrubs:
  - along the Glen Road; and
  - at other areas identified as necessary for the maintenance of satisfactory visual amenity; and
- ensure that the visual appearance of all buildings, structures, facilities or works (including paint colours and specifications) is aimed at blending as far as possible with the surrounding landscape, to the satisfaction of the Director-General.

The Commission is satisfied that the Department has adequately assessed the visual impacts.

#### **5.8.4 Other Issues – not specific to this project**

##### **Preliminary Assessment Report**

This is the first review of a coal mine to have the Department's Preliminary Assessment Report available to be considered as part of the review. This has been valuable for a number of reasons including:

- the report deals adequately with a multitude of issues that would otherwise need to be dealt with by the Commission *de novo*;
- it focuses attention on the major issues to be considered; and
- inclusion of draft consent conditions enables the Commission to check the proposed requirements against the discussion of the issue in the report and/or the Commission's own views.

However, it is not without risk for the Department because the Commission has been asked specifically to consider the report as part of the review and there will inevitably be differences in views on some matters. This may appear to imply wide-ranging criticism of the adequacy of the Department's report but, whilst some comments are indeed critical, these are a very small minority and need to be viewed in that context. Overall, the Department's PAR is a very useful contribution to the review process.

##### **Noise Assessment and Compliance**

The specific focus in the Terms of Reference on noise, coupled with the judgment of Preston CJ in Warkworth (which deals extensively with the issue in the context of an open-cut coal mine), has caused the Commission to examine the noise issue in detail at both an in-principle and project-specific level. The resulting section in this review report may be a useful guide for considering noise issues for this type of mine in the future.

However, one key issue remains unresolved and that is effective compliance monitoring in response to complaints about noise exceedances. It is important that effort is put into devising techniques for undertaking this monitoring, or for developing sources of data that can be used as a surrogate in legal proceedings. Until this happens the community will remain highly sceptical about the value of consent conditions and the *bona fides* of the Department in enforcing them.

## 6. Conclusion

The economic value of the project as described in the EIS and in subsequent documentation provided by the Proponent (e.g. the RTS) is not credible. There is a range of reasons for this conclusion set out in detail in Section 5.6 of this review. The main ones are the use of modeling techniques that have been severely criticized in recent court decisions (and elsewhere) such as Input-Output analysis and Choice Modelling, the inclusion of estimates of benefits that are regarded as invalid (social value of employment), and the use of coal prices that are grossly in excess of current market prices and future forecasts.

The result of consideration of the evidence is that the economic benefit to NSW of this project is much smaller than that claimed by the Proponent. However, the Commission considers that there will still be some benefits in terms of employment, capital investment and expenditure, and royalty payments. The Commission considers that claims for direct employment can be sustained provided the mine operates for long periods and Royalty payments of around \$47m should still occur. The Commission finds that based on current information an NPV for the project of \$23m could be used for assessment purposes.

The project has a range of residual environmental impacts. Those that the Commission considers particularly significant, that were specified in the Terms of Reference, or where the Commission has a different view to the position taken in the PAR have been discussed in some detail in the relevant sections of this review. They include, *inter alia*, impacts for noise, impacts from 24 hr operation, impacts on surface waters, the existence of final voids, impacts on air quality, impacts on biodiversity and impacts on road transport.

The majority of these residual impacts have possible solutions outlined in the recommendations. Some don't (e.g. final voids), but there are strategies available to manage these impacts to a level consistent with achieving the recommended performance measures.

Compliance will be critical for a number of these residual impacts, and noise in particular will require a strong compliance and review focus if the mine is to be approved. This is necessary for three reasons:

- the noise predictions are very close to the project-specific noise levels( PSNLs) at a number of residences: there is very little margin for error;
- achieving the predictions depends on a substantial array of ongoing Proponent-controlled mitigation measures; and
- the Commission is recommending the mine be allowed to operate at night subject to demonstrating satisfactory compliance. This is a very contentious issue in the community.

The Commission considers that these residual impacts will need to be addressed prior to the project being submitted to the consent authority for determination. Without this, on the evidence currently available to this Commission, the merits of the project are too finely balanced for evaluation against the criteria in s.79C.

Whilst a new economic benefits study could be undertaken in the hope of bolstering the benefits to the region and NSW, this would take time, would need to be subjected to rigorous independent scrutiny, and in the current economic climate may not yield any more favourable data than the estimates the Commission finds may be used for the assessment.

On the other hand, if the residual impacts identified can be reduced in line with the Commission's recommendations there will be very few residual risks and impacts to be considered in the balancing process. It ought then be possible to consider granting consent to the project subject to conditions. This outcome would be based on balancing low residual impacts against some (albeit smaller than originally claimed) benefits to the region and NSW.

## References

Barrington-Gloucester-Stroud Preservation Alliance, Submission to the Commission at the public hearing, February 2014

Bulga Milbrodale progress Association Inc v Minister for Planning and Infrastructure & Warkworth Mining Limited [2013] NSWLEC 48

Campbell, R., The Australia Institute. 'Stratford Extension Project: Submission to the Planning Assessment Commission', February 2014.

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Warkworth mining Limited v Bulga Milbrodale Progress Association Inc [2014] NSWCA 105

## APPENDIX 1

### TERMS OF REFERENCE

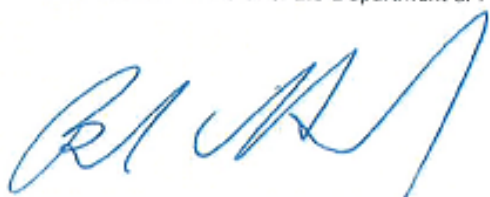
#### Request to the Planning Assessment Commission

#### Stratford Extension Project

Section 23D of the *Environmental Planning and Assessment Act 1979*  
Clauses 268R and 268V of the *Environmental Planning & Assessment Regulation 2000*

I, the Minister for Planning and Infrastructure request the Planning Assessment Commission to:

1. Consider the Department of Planning and Infrastructure's preliminary assessment of the merits of the Stratford Extension Project, including the EIS for the project, submissions, the response to submissions, and any other additional information provided to the Department during the assessment process or the PAC during the review process;
2. Review the merits of the Stratford Extension Project, paying particular attention to the potential night-time noise impacts of the project;
3. Hold public hearings during the review as soon as practicable after receiving the Department of Planning and Infrastructure's preliminary assessment of the project; and
4. Submit its final report on the review to the Department of Planning and Infrastructure within one month of holding the public hearings, unless the Director-General of the Department of Planning and Infrastructure agrees otherwise.



The Hon Brad Hazzard MP  
Minister for Planning and Infrastructure

Sydney

2013

06 DEC 2013



## **APPENDIX 2**

### **LIST OF SPEAKERS AT THE PUBLIC HEARING**

Hearing Date: Wednesday, 19 February 2014

Venue: Gloucester Soldiers Club

1. Gloucester Shire Council - Graham Gardener, Manager of Planning
2. The Barrington Gloucester Stroud Preservation Alliance - Graeme Healy, Chairperson
3. Ironstone Community Action Group Inc - Amanda Albury, Secretary
4. Anthony Fleming
5. Adam Glew
6. John Bowen
7. Andrew Jennings
8. Joel Wolfenden
9. Groundswell Gloucester - Julie Lyford
10. Hunter Environment Lobby Inc - Jan Davis, President
11. Rivers SOS - Catherine Fry
12. Health under Gloucester Skys - Dr Steve Robinson
13. Manning Clean Water Action Group - Christopher Sheed
14. R&D Technology Pty Ltd - Dallas Stokes, Managing Director
15. Yancoal - Frank Fulham, Chief Development Officer
16. Bruce O'Connor
17. Stuart Tomlins
18. Philip Greenwood
19. Tim Walker
20. Guy Cassar (represented by Adair Moar)
21. Jeffrey Kite
22. Brad Cooper
23. Kylie Taylor
24. Kylie Jane
25. Matthew Groves
26. Denise Gilbert
27. Cr Aled Hoggett
28. Ron Farley
29. Phil Moore
30. Greg Doepel
31. Graeme Healy
32. Marilyn Harrigan
33. Carol Bennett
34. Deborah Brooks
35. Amanda Albury
36. Paul Wenham

## APPENDIX 3

### SUBMISSIONS AND PRESENTATIONS MADE AT THE PUBLIC HEARING

Copies of the submissions along with the presentations and speeches made during the public hearing (that were later provided to the Commission in written form) are available on the Commission's website, <http://www.pac.nsw.gov.au>. A brief summary of the issues raised at the Public Hearing is provided below.

Issues	Submissions presented at the Public Hearing
<b>Comments supporting the project</b>	
Social and Economic	<p><b>Employment</b></p> <ul style="list-style-type: none"> <li>There were potential impacts on employment from both possible determinations (approval or refusal), with mining jobs impacted if the mine does not proceed and agriculture and tourism jobs in jeopardy should the mine proceed.</li> <li>Concern that families will be affected if the mine closes and jobs are lost.</li> <li>The proposal would provide job security and the mine will therefore benefit the community.</li> </ul> <p><b>Economic</b></p> <ul style="list-style-type: none"> <li>The mine provides employment opportunities in the area for both workers and contractors.</li> <li>The mine provides indirect economic benefits to local businesses in the area.</li> <li>Many locals are dependent on the mine for regular income.</li> <li>The mine would take advantage of existing infrastructure and would contribute to state royalties.</li> <li>Tourism cannot support a whole town. The mine is needed to support the community.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>The Proponent stated the mine's machinery will be noise attenuated to minimise noise impacts.</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>The Proponent claimed mine has a good history of environmental performance.</li> </ul>
<b>Comments objecting to the project</b>	
Social and Economic	<p><b>Employment</b></p> <ul style="list-style-type: none"> <li>There were potential impacts on employment from both possible determinations (approval or refusal), with mining jobs impacted if the mine does not proceed and agriculture and tourism jobs in jeopardy should the mine proceed.</li> <li>The short term nature of the mining jobs was compared to the potential for a sustainable long term future for the agriculture/tourism sector if responsible land management practices are pursued.</li> <li>The mining sector's vulnerability to coal price fluctuations was also noted.</li> </ul> <p><b>Social</b></p> <ul style="list-style-type: none"> <li>The social impacts of a drive-in, drive-out workforce.</li> <li>The mine should not come any closer to Stratford village.</li> <li>It was promised that the mine would close in 2013, however the Proponent is now seeking an extension of another 11 years.</li> <li>Lack of empathy from the Government and the Proponent in regards to those impacted by the mine.</li> <li>The current approach that includes the mine purchasing land and renting out the property at a low rate and removing occupants with the right to complain is not acceptable.</li> </ul>

Issues	Submissions presented at the Public Hearing
	<ul style="list-style-type: none"> <li>Public health impacts are a burden on the community and are not properly accounted for in the Cost-Benefit Analysis for the mine.</li> <li>Decrease in property values.</li> <li>Lifestyle of the local community will be impacted.</li> <li>Acquisition of impacted properties requested.</li> <li>Craven and Stratford village communities will be impacted.</li> </ul> <p>Economic</p> <ul style="list-style-type: none"> <li>Coal mining integral to the region, but should not come at the expense of rural industries.</li> <li>The project would not benefit the NSW economy: the benefits are grossly over-stated in the Environmental Assessment</li> <li>An independent economic assessment was called for.</li> <li>The proposed employment generation is only an estimate based on discredited methodology.</li> <li>The coal prices used in the economic analysis are substantially above current prices and current forecasts.</li> <li>Mining has short term economic benefits, but will sterilise the land in the long term.</li> <li>Loss in property values.</li> </ul> <p>Economic Modelling</p> <ul style="list-style-type: none"> <li>The economic modelling and methodologies are flawed and the benefits of the mine were grossly overstated in the EIS.</li> <li>The coal prices adopted for the modelling are over-estimated and unrealistic.</li> <li>Concerns about the assumptions used in the economic modelling.</li> </ul>
Health	<ul style="list-style-type: none"> <li>Human health impacts, especially from dust (PM<sub>10</sub> and PM<sub>2.5</sub>).</li> <li>Insufficient science on the human health impacts of coal mining.</li> <li>Need for further work on air quality standards and associated health impacts.</li> <li>Individuals should be examined and a health impact assessment should be mandatory.</li> <li>Health impacts have been observed within a 5km radius of the mine.</li> <li>There needs to be a government policy on mine setbacks from rural villages.</li> <li>Health impacts from mining 24 hr per day are not acceptable.</li> <li>Mental health impacts associated with sleep disturbance from 24hr mining.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>Currently the Proponent is unresponsive to noise complaints.</li> <li>Noise and vibration impacts are a real concern to the community. Particularly the proposal for 24 hour mining operations and sleep disturbance.</li> <li>The predicted noise contours are inaccurate.</li> <li>Noise criteria proposed in the Department's Preliminary Assessment Report are not acceptable.</li> <li>Increased noise impacts from increased rail use from the proposal.</li> <li>Concern raised regarding the accuracy of the prediction that Stratford village would only experience a 1dB(A) increase in the event of night-time mining.</li> <li>Low frequency (C weighted) noise should be considered properly in the assessment.</li> <li>Noise mitigation measures are not sufficient and the community cannot be expected to stay indoors all the time.</li> </ul>

Air Quality	<ul style="list-style-type: none"> <li>• Concern regarding emissions (particularly dust), but also including blast fumes, coal particulates, diesel combustion emissions and heavy metals.</li> <li>• There is no safe threshold for dust emissions.</li> <li>• Background air quality will continue to be diminished by the mine.</li> <li>• The mine would compound the existing cumulative air quality issues in the area.</li> <li>• There should be a policy and threshold regarding PM<sub>2.5</sub> and it should be monitored.</li> <li>• Adequacy of the Air Quality assessment, particularly in relation to, background estimates and source contributions used in the modelling.</li> <li>• 24hr per day air quality impacts are not acceptable.</li> <li>• Coal trains should be covered to reduce air quality impacts.</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Surface and groundwater impacts not considered to be adequately assessed.</li> <li>• Impacts from coal dust on the water quality of residential rain water tanks causing health and aesthetic impacts. It was requested that water filters be installed on residential rain water tanks.</li> <li>• Water quality impacts including mine discharges and generation of leachate.</li> <li>• Groundwater drawdown impacts.</li> <li>• Salinity in the groundwater and rivers/creeks will increase.</li> <li>• Requested a 1km protection buffer around rivers from the mine.</li> <li>• Water sources should be protected.</li> <li>• Stratford is a high rainfall area and there is a risk of flooding. Potential for dirty water discharge to rivers and creeks. Risk of dirty water overflows.</li> <li>• Water quality, particularly impacts on the Avon River, as well as aquifers.</li> <li>• Long term impacts of the proposed final voids on groundwater and rejection of final voids as acceptable practice.</li> </ul>
Final Voids	<ul style="list-style-type: none"> <li>• Apart from negative impacts of open voids on groundwater, they pose unacceptable risks to public safety, pose long-term maintenance risks and pose risks to surface waters in the event of overflow.</li> <li>• Voids should be designed so that overflow is not possible in rain events.</li> </ul>
Transport	<ul style="list-style-type: none"> <li>• The Bucketts Way needs to be maintained.</li> <li>• The proposed road diversion means that Council will be left with 2.6km of road to maintain in perpetuity.</li> <li>• Council does not agree with the traffic counts predicted in the Proponent's EIS.</li> </ul>
Visual	<ul style="list-style-type: none"> <li>• Visual impacts on the landscape.</li> <li>• The visibility of blast plumes was also of concern.</li> </ul>
Land	<ul style="list-style-type: none"> <li>• Mining is a once only use of the land.</li> <li>• Concerns were also raised regarding the ability to rehabilitate land after mining, both for future use and its long term stability/safety.</li> <li>• Concerned about the impact on Gloucester Valley over the years with the valley losing its appeal as a clean and attractive destination.</li> <li>• Land use will become sterilised.</li> </ul>
Adequacy of the assessment provided by the Proponent	<ul style="list-style-type: none"> <li>• The Environmental Impact Statement and Preferred Project Report are inadequate and outdated.</li> <li>• Concerns were raised about the modelling of various impacts, how the predictions have been derived and expressed and the suitability of criteria used, given the sensitive nature of the neighbouring operations.</li> </ul>

Cultural Heritage	<ul style="list-style-type: none"> <li>• Aboriginal heritage items will be negatively impacted by the project.</li> </ul>
Biodiversity	<ul style="list-style-type: none"> <li>• Mapping of flora and fauna is inaccurate.</li> <li>• Offsets need to be in perpetuity.</li> <li>• Impacts on threatened species and endangered ecological communities have not been properly accounted for.</li> <li>• Offsets have not been verified – no Voluntary Conservation Agreement in place on Property No 44.</li> <li>• Offsets are insufficient to compensate for impacts on EECs or Threatened Species.</li> </ul>
Climate change	<ul style="list-style-type: none"> <li>• Concerns about the project contributing to climate change.</li> <li>• Climate change and the risk of bushfires.</li> <li>• Need for coal power questioned given renewable technologies are available.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Opposed to 24 hr per day mining.</li> <li>• Cumulative impacts of mining and other operations in the area have not been adequately assessed.</li> <li>• The analysis of submissions in the Department's Preliminary Assessment Report is deceptive and not a true representation of the issues raised.</li> <li>• The Department's Preliminary Assessment Report is both inaccurate and misleading in its treatment of the property devaluation issue.</li> <li>• Community left with huge environmental burden once the mine closes.</li> <li>• A more strategic approach to mining in NSW is needed.</li> <li>• The mine will continue to expand northward until the whole resource has been removed.</li> <li>• The proposal will result in agricultural impacts and significantly altered lands.</li> <li>• The footprint of the proposed extension is not acceptable.</li> <li>• Poor community consultation and complaints response.</li> <li>• Negative impacts on local tourism.</li> <li>• Negotiation of agreements for landholders was abandoned by the Proponent.</li> <li>• Many of the conditions recommended by other government agencies have not been included in the draft recommended conditions.</li> <li>• Legacy of mining impacts for future generations.</li> <li>• Lack of transparency of the coal mining industry in managing and reporting its impacts.</li> <li>• Concerns that the mine may be unable to manage impacts and will be unable to rectify the situation given its marginal economic performance.</li> <li>• The defects of the project cannot be remedied with conditions.</li> <li>• The precautionary principle should be applied.</li> </ul>

## APPENDIX 4

### SUMMARY OF MEETINGS WITH OTHERS

#### Meeting with Great Lakes Council, 17 February 2014

- Concern regarding the cumulative impacts of the proposed Stratford Extension project, Duralie Extension project, Rocky Hill Coal Mine and Gloucester Gas project;
- Council raised concern that on some occasions that the Proponent did not adhere to the current conditions of approval and compliance was not adequately monitored by the Department;
- Mining industry is causing land use conflicts which is depleting the Council's resources;
- The Proponent has not carried out adequate consultation with the Great Lakes Council;
- Greater enforcement of the existing conditions of consent is required;
- Current traffic calming mitigation measures required to be implemented by the Proponent have not been completed and speed humps have not been installed;
- Community and Council have lost trust in the mine in terms of acting in an environmentally responsible manner;
- Council were not given a role in the strategic positioning of offsets, their suitability or viability. Offsets should be maintained in perpetuity. The current offsets are not adequate to compensate for the impacts on biodiversity;
- Concern raised regarding safety along The Bucketts Way and increased traffic due to 24hour mining;
- The Bucketts Way should be upgraded;
- Pavement width of The Bucketts way is not adequate;
- Night-time noise impacts are a particular concern to Council including rail noise from the Duralie mine. Cumulative noise impacts from Rocky Hill Coal Mine will be experienced by residents;
- The length of trains is increasing and with that comes greater noise disturbance;
- Mines should be taxed for their use of the rail network and their contribution to rail noise;
- There is no adequate mechanism for protecting residents affected by increasing rail noise or for providing mitigation measures. The argument that an individual mine does not contribute to the total impact is an unacceptable response.
- Council is concerned with the impacts to water and air quality. Water filters should be installed on residential rain water tanks to ensure safe drinking water; and
- Coal trains should be covered to minimise dust impacts.

#### Site Visit and Meeting with Proponent, 18 February 2014

##### Issues raised at the Site Visit:

- The Proponent indicated the mine currently has 6 months left to operate;
- An acoustic noise barrier wall was installed on the rail loop, which is 60m long and 6m high it is believed to decrease noise from idling coal trains by 7dB(A).
- Proposed to place the noise barrier around the whole 3km long rail loop;
- AGL and The Proponent currently under negotiations regarding land use conflict between AGL Gloucester Gas Project and the proposal. The Proponent stated a detailed mine plan and interfacing plan to minimise conflicts with well location installations and removal timetable was underway. Some of the proposed wells would not be able to remain for the full 15 years due to the proposal.
- The Roseville West Pit is located 1km from Stratford;
- All mining equipment will be contained on site;
- Mine has acquired a number of properties which are rented out;

- Stratford Open Cut Pit will be backfilled;
- Existing landowner agreements were reviewed over the last 12 months;

#### Issues raised at the Meeting:

##### Significance of the Project to The Proponent

- The proposal would produce approximately 15 million tonnes of product coal with an export value of at least \$1.2 billion over the life of the project;
- The coal at Stratford mine has unique fluidity characteristics and a low sulfur content;
- For the first 5 years of the project, coal from the project would be blended with coal from the Duralie Coal Mine to produce a high value coking coal product that maximises value from the available resources;
- 24 hour per day mining at Avon North and Stratford East is required to maintain continuity of ROM coal extraction for blending with Duralie coal;
- Without the proposal the value of Duralie coal would diminish and hence profitability of the Duralie Coal Mine would significantly decrease;
- Existing infrastructure (CHPP, ROM and product coal stockpiles, rail loading and unloading infrastructure, rail loop, haul roads, administration facilities, water storage infrastructure) will be used which will reduce environmental impacts;
- The Proponent claimed that the proposal will give the state royalties of \$130 million, have a capital investment of \$75 million and employ 65% of employees locally.
- The mine will contribute \$45 million dollars in terms of expenditure locally;
- \$340M per year direct and indirect output in the NSW economy;
- Local economic benefits due to flow-on effects;
- There were other economic factors important to the Proponent that made the proposed extension important, including existing liabilities under transport take-or-pay contracts.

##### Design

- Roseville West Pit will have restricted hours of operation due to its proximity to the Stratford village. Currently it has approval for day-time and evening. With the proposal this will be reduced to day-time only. Approximately 85% of the Roseville West Pit Extension is located within existing mining lease tenements. Overburden from Roseville West pit will be used to backfill Bowens Road North void and partial backfill of Roseville West void;
- Avon North Open Cut – Proposed to operate 24 hours per day. Noise will be minimised at the site by restricting haulage of overburden to the North Waste Emplacement Extension to daytime only and haulage of overburden to the Stratford Main Pit predominantly shielded by 6m bunds;
- Stratford East Open Cut – Proposed to operate 24 hours per day. To minimise potential evening and night-time noise, overburden removal would be limited to day-time only during concurrent operations with Avon North, and haulage of overburden to the Stratford Main Pit would be restricted to day-time only due to the elevation of noise sources;
- Bowens Road North void and Stratford Main Pit void would be backfilled with overburden from the proposal;
- Partial backfill of the Roseville West Pit, Avon North and Stratford East voids. Existing waste emplacements will be used;
- Dog Trap Creek and Avondale Creek and associated alluvium would be avoided;
- Certain vegetation types would be avoided (Smooth-barked apple – White Stringybark Shrubby Forest). Areas containing threatened fauna species records (Brush-tailed Phascogale and Squirrel Glider) would be avoided;
- Restricting 24 hr mining would extend the project by 1-6 years.
- The Commission requested more information regarding the economic loss caused by not operating for 24 hours per day;

- Real-time noise monitoring will be used similar to that currently being using at Duralie Coal Mine;
- In-pit overburden emplacement opportunities will be maximised;
- 8km of 6m high bunds would be implemented along haul roads and 4km of 6m high bunds/barriers around the rail loop would be constructed;
- Waste emplacement area will be bunded;
- Currently the mine operates during the day-time and evening;
- The Commission raised concerns about the adequacy of the offset proposals given the large areas to be revegetated, the fragmented nature of the proposed offsets and the extensive intrusions and impacts on those areas. Consideration of further offsets may be required. The Proponent responded that OEH considered the offsets adequate and that biobanking was not used in the development of the offset strategy;
- The Commission expressed the view that noise compliance was an issue and an approach which may be considered is allowing the mine to operate for 24 hrs for a limited period with an independent review to determine whether there were compliance problems. If the review concluded that predictions were not being met then the 24 hr operation would cease until the mine could demonstrate that it could comply;
- The Commission raised the issue of covering coal trains. The Proponent stated that this is not practically possible;
- The estimated price of coal used in the economic analysis was questioned by the Commission particularly in view of the current and forecast price being at or beyond the lower limits of the sensitivity analysis used;
- Rail noise was a concern to the Commission if use of the rail network was proposed to increase and no mechanism to provide mitigation measures to affected residents was available;
- 90% control factor for dust was raised by the Commission. The Proponent stated that the area had high rainfall and a 90% control factor could be achieved;

#### Meeting with Gloucester Shire Council, 19 February 2014

- The community has a number of concerns associated with amenity impacts and the future of Stratford village;
- AGL own 25% of the Industrial area;
- The Stratford village does not have a reticulated water/wasterwater system and therefore relies on water from rainwater tanks.
- The Proponent has not provided a strong justification for the proposal to come closer to the Stratford village;
- The Council is concerned with the visual impacts and rehabilitation.
- Other mines are requiring that no voids be left following completion of the mine. Council believes this approach should be taken at Stratford;
- Council submitted a number of mining principles to the Commission;
- Council is opposed to the proposed Rocky Hill mine however notes that Rocky Hill mine is not proposing to leave a mine void;
- Real-time noise monitoring was not currently effective during day-time;
- EPA stated that the  $LA_{Aeq}$  should be 36dB(A) however in the assessment report it was increased to 37dB(A);
- Council does not agree with the Proponent acquiring land, renting the properties and not allowing complaints to be made from these properties. Council believes these properties should be made uninhabitable for the duration of the mining impact. Occupants should not be precluded from complaining. A set of conditions which allows for medical advice and breaking the lease of the rental properties at no penalty should be included;



- Health impacts on the local school;

#### Noise

- C-weighted noise (low frequency noise) should be properly considered;
- If all noise mitigation measures proposed are not adequately implemented then Council is concerned noise exceedances will occur;
- Concern raised regarding the use of 30dB(A) as Rating Background Level. The INP allows for the minimum 30dB(A) to be less where appropriate. The “pre-mine” noise condition would have been much less. Baseline background noise data should be obtained;
- Atmospheric conditions have not been monitored in Gloucester as there is no weather station. Council believes two weather stations should be installed. Atmospheric conditions should be monitored should the project proceed;
- Lack of adjustment of noise criteria for temperature inversion;
- If there is an inversion event and an exceedance occurs then the Proponent does not consider the incident to be an exceedance;
- Council sought deletion of the Roseville West Extension Pit due to the unacceptable impact it would have on the Stratford Community;
- The noise predictions depend on a complex range of ameliorative noise measures that are difficult to regulate and are unlikely to be enforced. Existing detailed conditions from EPA have not been enforced;
- Council is opposed to 24hr operation of the mine.

#### Blasting

- Council requested a revised blast ground vibration criteria of 2mm/s be required as the Proponent has indicated that this is achievable;

#### Air Quality

- No current standard for PM<sub>2.5</sub> exists. However, when a standard is developed it should be enforced. Council requested that PM<sub>2.5</sub> be monitored and the results made publicly available;

#### Health

- It is Council’s position that properties subject to acquisition due to unacceptable health impacts should be rendered uninhabitable for the duration of that impact to ensure that NO person regardless of their socio-economic standing, is subject to health impacts;

#### Transport

- Long-term financial imposition on Council’s rate base regarding the maintenance of The Bucketts Way;
- The following intersection upgrades are needed to ensure public safety:
  - Intersection of Wenham Cox Road with The Bucketts Way (Solution: Construction type BAR/BAL intersection);
  - Intersection of Wheatleys Lane with Wenham Cox Road (Solution: Widen intersection on Wenham Cox Road);
  - The Bucketts Way – width, alignment and condition (Solution: Provide overtaking lanes).
- The proposed road realignment of Wenham Cox Road should be further realigned.
- The proposal will cause an inconvenience to existing road users;
- Traffic counts in the EIS are inaccurate. The traffic counts directly impact the contributions made to Council;
- Council requests the inclusion of a condition which monitors heavy vehicle movements on The Bucketts Way and on the access road to the mine site; and
- Road contributions proposed are an underestimate and should be revised.

## Meeting with Proponent, 4 March 2014 to discuss residual concerns

### Noise

- Further information requested about complaints and responses to complaints particularly during adverse weather conditions;
- Exemptions from the noise limits under temperature inversions discussed;
- Further justification for night-time operations requested;
- Applicability of existing negotiated agreements to the project proposal;
- Evidence for effectiveness of real-time monitoring and response systems and evidence for the reliability of Stratford's current system;
- Assessment of low frequency noise;
- Assumed minimum versus actual background noise level;
- Whether the noise assessment included impacts from the Duralie coal shuttle;

### Air

- Reliability of 90 percent dust control prediction;
- Coal dust causing potential health and/or aesthetic impacts in water from domestic rainwater tanks;

### Water

- Final voids – legal/financial mechanism(s) proposed for long-term maintenance/security of the final voids;

### Biodiversity

- Concerns with the proposed offset package;
  - size (sub-optimal ratio);
  - characteristics;
  - existing and proposed impacts within offset areas (e.g. AGL wells);
  - need for revegetation of significant areas and uncertainty of success;
  - stage of maturity of vegetation associations (impacts in short-medium term, but value of offsets is medium-long term); and
  - security – no proposed mechanism for 'in perpetuity' conservation;
- Proposal involves mining through existing wildlife corridor set aside as part of 1994 consent;
- Mitigation measures – impacts on Squirrel Gliders and apparent inadequacy of nest box proposals (ratio and provision for long-term maintenance);

### Cumulative impacts – AGL activities and agreement with the Proponent

### Transport

- Discrepancies between Proponent's Traffic Counts and those conducted by Gloucester Shire Council;
- Proposed road maintenance contributions (Appendix 4 Preliminary Assessment Report Draft Conditions);

### Economics of Project

- Validity of the models used for the economic analysis given extensive judicial and academic criticism;
- Validity of sensitivity analysis given magnitude of change in coal prices since the BCA was completed;

- Validity of the claims made for benefits for royalties, tax and employment in the EIS and at the Public Hearing;
- Evidence for the need for 24-hr mining.

#### Meeting with the Proponent on 9 April 2014

The Commission met with the Proponent on 9 April 2014 to discuss the Proponent's responses to the Commission's questions. The Commission advised the Proponent that there are still some residual issues that are of concern to the Commission. The issues are:

- Noise
  - Background noise level in view of the Preston judgment
  - Low frequency noise modification
  - Application of temperature inversion and exemption
  - Monitoring towers
  - Monitoring and compliance
  - Mitigation measures in relation to rail noise
  - Night time operation noise
  - Acquisition of noise affected properties
  - Review of noise predictions
- Air
  - Contamination of water tanks and aesthetic issue of discolouration of water
- Surface and ground water
  - Design parameters and performance outcomes of creek diversion and performance criteria for surface water
  - design specification and performance criteria for final void
- Real estate value
  - impact on life style properties
- Biodiversity
  - Impact on Squirrel Gliders
  - Proposed offset areas, particularly when there is no VCA with property number 44
  - Legal mechanism to secure offset areas in perpetuity
- Economic
  - Concern about the adequacy of the economic study
- Road maintenance contributions
  - Proposed contribution level significantly lower than the Duralie mine

## **APPENDIX 5**

### **Commission's Questions to Proponent dated 6 March 2014**

## **APPENDIX 6**

### **Proponent's Responses to Commission's Questions 2 to 6 dated 24 March 2014**

## **APPENDIX 7**

### **Proponent's Responses to Commission's Questions dated 31 March 2014**