FINAL ASSESSMENT REPORT
Stratford Extension Project
(SSD 4966)

Environmental Assessment Report
Section 89E of the
Environmental Planning and Assessment Act 1979
April 2015

Cover Photo: The view to the northeast from the Stratford East Dam. The foreground and land rising to the left of the dam consists of rehabilitated mined lands.

April 2015
NSW Department of Planning & Environment
www.planning.nsw.gov.au

EXECUTIVE SUMMARY

This Final Assessment Report (FAR) of the Stratford Extension Project has been produced by the Department of Planning and Environment for consideration by the Planning Assessment Commission (PAC).

This FAR focuses on residual matters identified in the PAC's Review Report (April 2014), and responses to that report by the applicant (Yancoal Australia Limited) and Gloucester Shire Council.

The Review Report made 31 recommendations concerning:

- dealing with contentious areas, such as road funding contributions, appropriate compensation to neighbouring landowners and economic assessment of the project;
- reducing biodiversity impacts and Yancoal's Biodiversity Offset Strategy;
- improving environmental monitoring for the project;
- improving the text of draft conditions of consent, to improve their clarity and certainty of implementation, and addressing areas that were omitted; and
- areas for policy review by government agencies, including the Department.

The Department has reassessed the likely economic benefits of the project. It is considered that Yancoal would spend:

- $75 million of capital expenditure (all within NSW);
- $128 million each year; of which
  - $110 million would be spent in NSW; and
  - $45 million would be spent in the Gloucester and Great Lakes LGAs.

The project would directly employ up to 250 workers. The Department conservatively estimates that up to another 250 flow-on (ie indirect) job positions would result which would be a significant additional economic benefit to NSW for the project's 11 year life. Coal royalties from the project are estimated at $106 million (current dollars) and $62 million (Net Present Value).

The Department has given further consideration to how to best protect local Squirrel Glider colonies and their habitat and considers that a specific management plan is needed to support detailed and measurable outcomes. The Department also support's Yancoal's offer to purchase Properties 44 and 60 and include Property 44 in an enhanced Biodiversity Offset package.

The Department has made concerted efforts to find ways and means to eliminate, reduce, mitigate or offset residual impacts of the project. Eighteen of the 31 recommendations have been directly incorporated into the revised draft conditions.

The Department's recommendations diverge from those of the Review Report for the calculation of road maintenance contributions, responsibility for acoustic treatment of houses near the rail line at Wards River and the value of the project in terms of indirect employment and economic activity within NSW. In addition, the Department's views on the value of the project to indirect employment and economic activity to NSW diverge from those expressed in the Review Report.

The Department is satisfied that its recommended conditions are based on contemporary policy and best-practice and are equitable. It is also satisfied that the project is, on balance, in the public interest and recommends that it be approved subject to the recommended conditions of consent.

1. BACKGROUND

The Department's Final Assessment Report (FAR) for the Stratford Extension Project has been produced for the consideration of the Planning Assessment Commission (PAC), which must determine the project under the existing delegations from the Minister for Planning.

Other than for a brief description of the project, this report does not repeat any of the information and analysis contained in the Department's Preliminary Assessment Report (PAR) or the PAC's Merit Review Report, unless directly relevant to the assessment of residual matters. These documents are provided in **Appendices A** and **B**.

Stratford Coal Pty Ltd (a subsidiary of Yancoal Australia Limited, or Yancoal) is seeking approval to extend its Stratford operations to extract up to 21.5 million tonnes (Mt) of run-of-mine (ROM) coal over 11 years. **Table 1** provides a comparison of the existing and proposed operations at Stratford. Yancoal plans to extract up to 2.6 Mt per annum (Mtpa) of ROM coal from three new mining areas - the Avon North Open Cut (ANOC), the Stratford East Open Cut (SEOC) and an extension of the Roseville West Pit (see **Figure 1**).

The Avon North Open Cut is proposed to be developed northeast of the Stratford Main Pit and would yield about 4.3 Mt of ROM coal. Following completion of mining, the void would be used for water storage and then for the co-disposal of fine and coarse coal rejects from Stratford's Coal Handling and Preparation Plan (CHPP).

The Stratford East Open Cut is proposed to be developed south of the Stratford Main Pit and would yield about 9.6 Mt of ROM coal.

The Roseville West Pit Extension involves the extension of open cut mining west and south of the existing Roseville West Pit and would yield about 7.3 Mt of ROM coal. It would also involve the further excavation of the previously mined and backfilled Roseville Pit to allow access to the deeper Roseville Seam.

Table 1: *Comparison of existing/proposed operations at Stratford*

Aspect	Existing	Proposed
Rate of ROM Coal Production	Up to 2.1 Mtpa (Stratford pits). Up to 1 Mtpa Bowens Road North Open Cut (BRNOC).	Up to 2.6 Mtpa.
Mine Life	Mining operations end in 2013. Processing and export till 2019.	• Mining operations to end in 2025. • Processing and export to end in 2025.
Hours of Operation	Seven days a week: • 7 am to 7 pm (BRNOC); • 7 am to 10 pm (Roseville Pit); • CHPP operation approved 24 hours per day; • loading and despatch of product by rail 24 hours per day; • unloading of ROM coal from the Duralie shuttle train between 7 am and midnight.	Seven days per week: • 7 am to 7 pm (BRNOC); • 7 am to 6 pm (Roseville West Pit Extension); • 7 am to 6 pm (recovery of CHPP rejects for re-processing); • 24 hours (Avon North Open Cut); • 24 hours (Stratford East Open Cut); • no change to CHPP hours; and • no change to hours of rail operation.
Operational Workforce	About 125 people (including Yancoal staff and on-site contractors) were employed at Stratford. Numbers were reduced in October 2013 to 71, and by July 2014 stood at 50.	• At full development, the project operational workforce would be in the order of 250 on-site personnel. • Construction/development activities would require up to 30 people for short periods.
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	• Continued use of existing approved infrastructure, subject to minor modifications. • Realignment of a 132 kilovolt (kV) power line. • Realignment of Wheatleys Lane and

	ablution buildings, heavy vehicle servicing, parking and washdown facilities.	Bowens Road, and Wenham Cox Road.
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.	• Progressive augmentation of the existing water management system, which would be designed and managed so no stored water would overflow. • Development of up-catchment diversion systems in advance of open cut operations.
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: • extension of the Stratford Waste Emplacement and increase in its height to approximately 196 m AHD; and • extension of the Northern Waste Emplacement and increase in its height to approximately 165 m AHD.
Final Voids	Two final voids: • BRNOC final void; and • Stratford Main Pit final void	Three final voids: • Roseville West Pit Extension final void; Avon North Open Cut final void; and • Stratford East Open Cut final void.

2. PAC'S MERIT REVIEW REPORT

In producing its *Stratford Extension Project Review Report*, the PAC drew on a wide range of information, including technical reports in Yancoal's environmental impact statement (EIS) and submissions received from individuals, special interest groups and government agencies. The PAC drew on information provided by:

- a public hearing it conducted in Gloucester on 19 February 2014 at which 36 verbal presentations were given;
- written submissions made to the PAC (18 individual and 22 form letters);
- inspections and meetings by the PAC with Yancoal and Gloucester Shire and Great Lakes Councils (GSC and GLC);
- the Department's PAR;
- the PAC's own enquiries, such as with local real estate agents and government agencies;
- the project EIS;
- submissions received during the exhibition of the development application; and
- Yancoal's Response to Submissions (RTS) and other supplementary information provided by Yancoal in response to questions from the PAC and Department.

The Review Report made 31 recommendations addressing:

- contentious areas, such as road funding contributions, appropriate compensation to neighbouring landowners and economic assessment of the project;
- reductions to biodiversity impacts and Yancoal's Biodiversity Offset Strategy;
- improvements to environmental monitoring for the project;
- improvements in the text of draft conditions of consent, to improve their clarity and certainty of implementation, and addressing areas that were omitted; and
- areas for policy review by government agencies, including the Department.

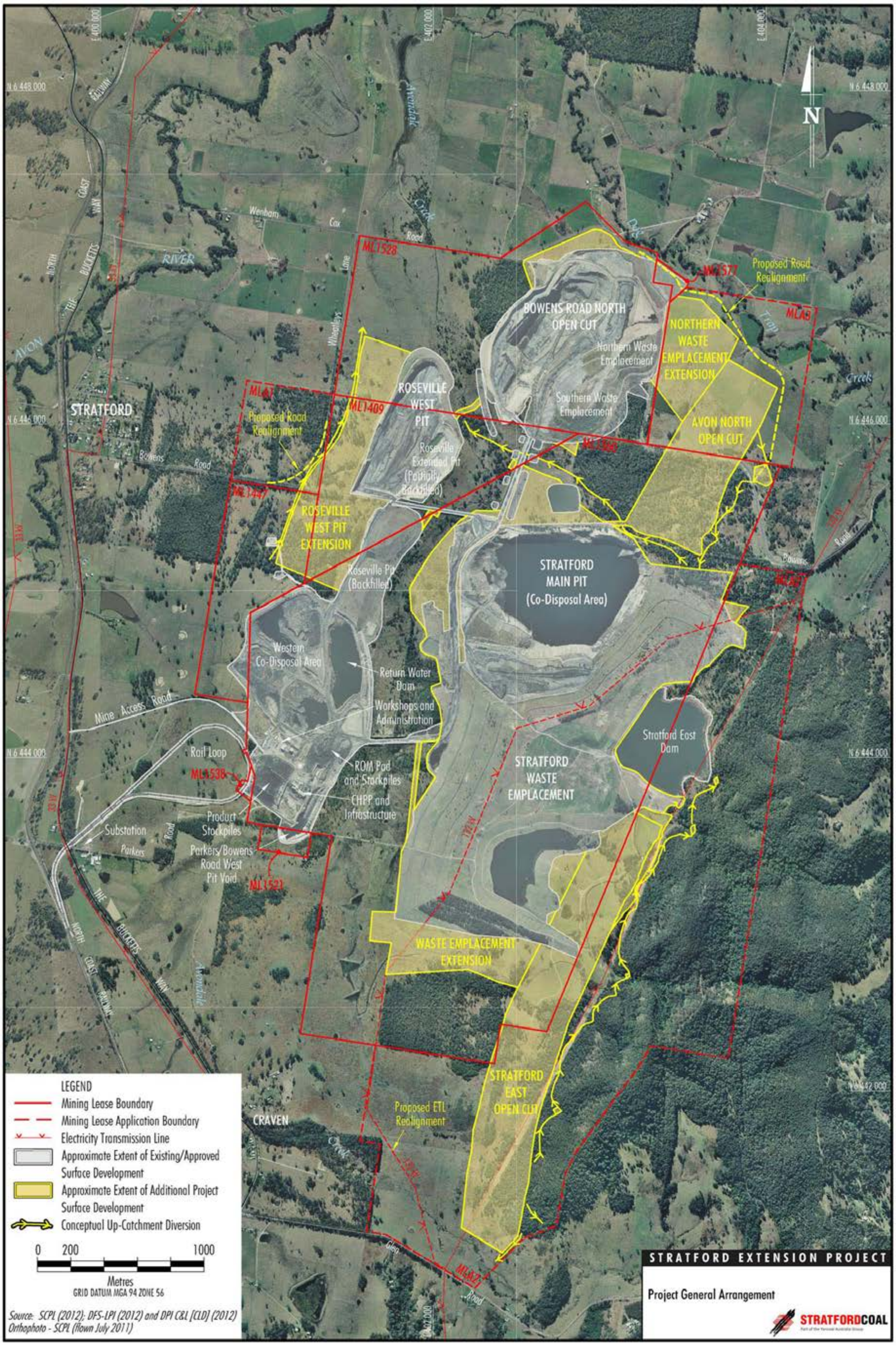

Figure 1: *Existing and proposed mining areas*

Most of the PAC's recommendations are readily implemented. In particular, recommendations for changed wording of conditions of consent are relatively straightforward. The Department is in full agreement with 18 of the PAC's recommendations. These have been included in revised draft conditions of consent.

However, there are a number of recommendations that are not readily implemented, for a variety of reasons. These reasons include:

- recommendations relating to policy review (such as the upcoming review of the *Industrial Noise Policy*) which are not yet available;
- where the intent of the recommendation can be achieved in another way that is as efficient and effective, such as records of train movement times;
- where the Department considers that there is a better way to improve biodiversity outcomes, such as with Squirrel Gliders;
- where the Department does not consider the recommendations to be equitable when compared with other users of public services, such as for road maintenance contributions or recommended noise mitigation at certain residences in Wards River; and
- where the PAC's proposed approach to an issue has since been overtaken by State policy development, such as whether noise limits should be applied at parts of a landowner's property other than at its residence or the use of a 'lifestyle' category for certain properties near the mine .

The PAC's 31 recommendations are set out in full in **Table 2**. The Department has given detailed and careful consideration to each recommendation. The recommendations which have been supported in full by the Department are clearly identified, and are not further addressed in this report. The only recommendations which are considered in detail in this report are those where the Department has concerns over either their full or partial implementation. These 13 recommendations are considered in detail, by subject area, in **Section 3** of this report. This report therefore focuses on what might be termed residual matters.

The Department has also carefully considered (see **Appendix C**):

- Yancoal's response to the PAC report;
- GSC's response to the PAC report, as well as further information sought and obtained from GSC;
- further information sought and obtained from Yancoal, the Division of Resources and Energy (DRE) of the Department of Trade and Investment, Regional Infrastructure and Services and The Australia Institute about the significance of the coal resources and royalty payment calculations (see also **Appendix D**);
- responses from two nearby landowners, about 'lifestyle property' compensation;
- the State's new *Voluntary Land Acquisition and Mitigation Policy* (December 2014); and
- a recent EPA position paper on licensing of 'railway systems activities' (September 2014).

Table 2: *PAC Recommendations and Summary of Departmental Responses*

	PAC RECOMMENDATION	D&PE RESPONSE
NOISE & BLASTING		
1.	**Background Noise Level** 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.	The review of the INP is not yet available. It is planned to be released for public comment in 2015, but this timing is not certain.
2.	**Low Frequency Noise** 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.	Included in revised recommended conditions of consent.
3.	**Strong Temperature Inversions** The consent should include an explicit requirement that the Proponent demonstrate, to the satisfaction of the EPA, that	Included in revised recommended conditions of consent.

	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 favourable under any conditions to those that would be obtained by use of a single 60m tower.	
4.	**Monitoring difficulties during rain and wind** 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.*	Included in revised recommended conditions of consent with minor revisions.
5.	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.	Requested paragraph removed from revised recommended conditions of consent.
6.	**Monitoring and reporting under meteorological conditions** 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.	Included in revised recommended conditions of consent.
7.	The following sub-clauses be included in condition 6, 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.*	Included in revised recommended conditions of consent.
8.	**Rail Noise** (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.	Addressed in **Section 3.4**. Noise impacts from 'worst-case' train movements have been assessed. The requirement to record the times of train movements to and from Stratford addresses this recommendation.
9.	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, p 22). 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.	Addressed in **Section 3.4**. The Department maintains the view expressed in the PAR that this is best and most equitably addressed by the use of EPA's Environment Protection Licences for rail operators.

10.	**Night-time Noise** 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.	Included in revised recommended conditions of consent.
11.	**Real-time Monitoring** 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.	Included in revised recommended conditions 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 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.	Addressed in **Section 3.4**. The Department agrees with the intent of this recommendation and considers that it is a 'policy' recommendation and will present it to the current review of the INP.
12.	**Acquisition and mitigation remedies** 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 Department does not support this recommendation as it is not consistent with the *Voluntary Land Acquisition and Mitigation Policy*. It is discussed in **Section 3.4**.
13.	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.	Included in revised recommended conditions of consent. The Department considers that direct measurement of noise impacts to be preferred to recalibration of the model predictions to determine access of additional properties to remedial options.
14.	**Negotiated agreements** 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.	Addressed in **Section 3.4**. Yancoal has checked its agreements and is satisfied with them.
15.	**Blasting** 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.*	Included in revised recommended conditions of consent.
AIR QUALITY		
16.	**Cumulative air quality** 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*	Included in revised recommended conditions of consent.

	relevant conditions of this approval.	
17.	**Acquisition of properties** 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****.*	The Department does not support this recommendation as it is not consistent with the *Voluntary Land Acquisition and Mitigation Policy*. It is discussed in **Section 3.6**.
18.	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 Department does not support this recommendation as it is not consistent with the *Voluntary Land Acquisition and Mitigation Policy*. It is discussed in **Section 3.6**.
19.	A revised acquisition criterion should be developed in consultation with NSW Health and the EPA before the project is determined.	The Department agrees with the intent of this 'policy' recommendation which is under consideration. The short-term criterion of concern has been removed from the recommended conditions. It is discussed in **Section 3.6**.
20.	**Contamination of rainwater tanks** 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.	Department has re-examined this issue and made its results available in **Section 3.6**. Safeguards are included in proposed conditions. However, impacts from the mine are predicted to be very low (<10% of total dust fallout). The Department does not recommend the general provision of water filters.
WATER		
21.	**Surface Water** 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.	Included in revised recommended conditions of consent.
22.	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.	Included in revised recommended conditions of consent.
23.	**Groundwater** 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.	Included in revised recommended conditions of consent.
BIODIVERSITY		
24.	**Squirrel Gliders** 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	Impacts of the project on Squirrel Gliders are reconsidered by the Department in **Section 3.3**.

<table>
<tr><td></td><td>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;
(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.</td><td>The Department has proposed the implementation of a comprehensive Squirrel Glider Management Plan that would meet the PAC’s recommendations and give this species enhanced habitat and connectivity to other areas of suitable habitat.</td></tr>
<tr><td>25.</td><td>Biodiversity Offset Areas
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.</td><td>Discussed in Section 3.3. All parties now acknowledge that a VCA is not in place for Property 44.

Yancoal has since offered to purchase Property 44 and include it in the BOS, which would enhance the quality of the BOS. Yancoal’s offer is included in its Statement of Commitments. The Department proposes that any purchase be in accordance with its framework for ‘voluntary acquisition’.

A number of legally robust mechanisms exist for the conservation of the four Offset Areas in perpetuity.</td></tr>
<tr><td colspan="3">TRANSPORT</td></tr>
<tr><td>26.</td><td>Inconsistencies in the background traffic data
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.</td><td>Included in revised recommended conditions of consent.</td></tr>
<tr><td>27.</td><td>Reasonableness of the contribution formula in the draft recommended condition
That the Gloucester Shire Council’s contribution formula be adopted for the calculation of contribution payments for the maintenance of The Bucketts Way.</td><td>The Department does not support the GSC’s contributions formula, as endorsed by the PAC for the reasons is discussed in detail in Section 3.2.</td></tr>
<tr><td colspan="3">IMPACT OF MINE ON REAL ESTATE VALUES</td></tr>
<tr><td>28.</td><td>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.</td><td rowspan="2">The Department does not support this recommendation. As discussed in Section 3.5, it does not consider that any distinction can, or should, be made between ‘lifestyle’ and other forms of private landholdings. In addition, it has been overtaken by the State’s new Voluntary Land Acquisition and Mitigation Policy.

Yancoal has also committed to purchase (at the owner’s request) two of the three so-called ‘lifestyle</td></tr>
<tr><td>29.</td><td>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</td></tr>
</table>

	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.	properties' (Properties 44 and 60).
ABORIGINAL HERITAGE		
30.	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.	Included in revised recommended conditions of consent. Requirements for recording sites and updating the AHIMS register covered by existing legislation.
NON-ABORIGINAL HERITAGE		
31.	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.	Included in revised recommended conditions of consent.

3. DETAILED CONSIDERATION OF PAC REPORT'S CONCLUSIONS AND RECOMMENDATIONS

3.1 Economic Benefits of the Project

The PAC Review Report was very critical of the assessment of economic benefits included in the EIS and other documentation prepared by Yancoal and generally reflected in the Department's PAR. The Review Report summarised the PAC's views as follows:

> *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.*[1]

The Review Report's overall conclusion was that:

> *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.*[2]

However, the Report also stated that:

> *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.*[3]

The Department considers that there are some significant additional matters regarding the economic benefits of the project that must be taken into account when the PAC acts as the Minister's delegate (ie as consent authority) and weighs up the public benefits and costs of the project under section 79C of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

The Department has reconsidered all relevant information available and sought clarification about the employment and economic impacts of the project from Yancoal, DRE and a number of other parties. The conclusion of this review is that it is considered that would be substantial benefits generated by the project in the local Gloucester, NSW and Australian economies. Some of these benefits are significantly greater than were concluded in the Review Report.

<u>Coal Prices</u>

The Report rightly considered that the achieved coal price was critical for the overall profitability and Net Present Value (NPV) of project. Without presenting calculations, the Report also concluded that the EIS had used *"coal prices that are grossly in excess of current market prices and future forecasts"*.[4] The Report referred to the Australia Institute's submission in support of this position.[5]

The economic modelling within the EIS was based on coal prices of A$178/tonne for metallurgical (ie coking) coal and A$111/tonne for thermal coal. As the Department's PAR pointed out, coal prices have fallen significantly since the height of the recent export boom, and there is a substantial possibility that they will fall further, or else remain flat over the next several years. The Australia Institute reported that current semi-soft coking coal prices were

[1] PAC Stratford Extension Review Report, p ii.
[2] Ibid, p iv.
[3] Ibid, p i.
[4] Ibid, p 76.
[5] Ibid, p 67.

A$129 and thermal coal prices were A$100 and that future forecasts were around these levels. However, there is no such certainty that such flat prices would remain the case over the full 11-year life of the project.

Yancoal, in its response to questions asked of it by the PAC, did not vary the previous prices included in its EIS, but rather defended the basis of its calculation, in the following terms:

> *With respect to the coal price assumed in the economic analysis presented in the EIS, it should be noted this coal price is based on SCPL's long-term coal price projections over the 11 year Project life. SCPL's view on long-term coal pricing is informed by long-term broker views, guidance from the major trading houses and customers, and by procuring commercially available long-term forecasts from independent industry experts. These projections have regard to the estimated world prices for thermal and metallurgical coal (which are typically estimated in United States Dollars [USD]) and likely future movements in the USD/AUD exchange rate.*[6]

Yancoal reiterated its position in later advice to the Department regarding the Review Report (see **Appendix C)**. It stated that the Review Report's reliance on the current spot prices quoted by the Australia Institute was "not more valid" than the prices used in the EIS, since spot prices were subject to continuous change, and that both coking and thermal coal from Stratford sold at above-market prices due to "unique characteristics (eg low sulphur content and high fluidity)."

The Department does not have any information which would call into question the legitimacy of Yancoal's position on these matters, and consequently accepts that position. Nonetheless, it is clear that a Final Investment Decision would not be taken by Yancoal's Board on the basis of the coal prices used in the EIS and its Socio-Economic Assessment (which was completed in June 2012). It is obvious that the Board would use the latest available coal price projections.

Future coal prices are critical for assessing the current NPV of the project, the returns to the NSW economy and projected royalty returns for the owner of the coal (ie the people of NSW, as represented by the State Government). It is perfectly reasonable for the Department and the PAC to consider these key matters in the light of current and forecast coal prices.

However, it must be recognised that it is also entirely within Yancoal's prerogative to delay commencement of the project until coal prices are more attractive, for a period of up to 5 years (or longer, if the project is first 'substantially' commenced). Thus, the real NPV of the project, and royalty returns to the State, may be significantly in excess of figures based on current coal prices. That is, coal prices leading to a negative or very low NPV may delay commencement of the project until forecast coal prices are sufficiently attractive for Yancoal to commence its capital investment and implement the project.

DRE has advised that:

> *At the present time, NSW export coal prices are at the bottom of the price cycle – thermal coal has been trading at just below A$90 per tonne for the last 6 quarters (Coal Services Pty Ltd data to the end of March 2014), with around $115 per tonne being paid for semi-soft coking coal. In comparison, the period prior to the last 6 quarters saw the NSW export thermal coal price in the range of A$115 to $96 per tonne.*
>
> *This demonstrates that coal price forecasting is inherently difficult for projects of over 10 years duration … For its royalty calculation, DRE has taken a conservative approach and has used a long term export thermal price of A$90 per tonne and A$115 per tonne for semi-soft coking coal. Coal Services data for 2012-13 indicates that Stratford produced a product mix of around one third metallurgical coal and two thirds thermal coal resulting in an average coal price estimate of A$98 per tonne.*

These figures are lower than those quoted in the Australia Institute's submission to the PAC in February 2014. The Department has used this average coal price for the following royalty and economic benefits calculations.

[6] Stratford Coal – Response to the PAC Stratford Extension Review Report, p 41.

Coal Royalties

The Review Report noted Yancoal's estimates of coal royalty income to the NSW Government of $130 m over the life of the project, discounted to $84 m NPV, based on the very high coal prices quoted above. The $84 m figure was also included in the Department's PAR. However, the PAC accepted a revised royalty calculation prepared by the Australia Institute and included in its submission to the PAC. This estimate was $47 m NPV. The PAC also considered that this figure might reduce further if production was not maintained at the project's predicted maximum production rates (ie 2.6 Mtpa).

The Department has investigated likely royalty payments carefully, including discussions with both DRE and Mr Rod Campbell of the Australia Institute. These investigations have led to a public apology from Mr Campbell to the PAC (*Newcastle Herald* 16/09/14) regarding erroneous royalty calculations in its submission to the PAC. Put simply, the source of the Australia Institute's error was an assumption that various royalty deductions applied by DRE are deducted from the actual royalty payment, rather than from the sale price of coal on which the royalty is then calculated.

The facts are as follows. Yancoal would pay a royalty of 8.2% of the gross sale price of its coal. It would then receive deductions to the gross value of that coal for:

- coal preparation costs ($3.50/tonne);
- coal research levy ($0.05/tonne);
- Mine Rescue Service Levy;
- Mine Subsidence Levy; and
- Commonwealth provisions for Long Service Leave.

These deductions apply to the sale price of the coal (the base on which the royalty is assessed), and are not direct deductions from royalty payments. As an example, 8.2% of the $3.50 deduction for coal preparation costs equates to a $0.29/tonne reduction in the coal royalty payment, not the full $3.50 that was wrongly assumed and applied in the calculations relied upon by the PAC. Some of the other available deductions are set dollar amounts, or else calculated on land value or a percentage of payroll, and therefore cannot be pre-calculated as any particular number of cents/tonne. Nevertheless, DRE has advised that, at the most, these additional deductions would total $1.00/tonne, and that total deductions would therefore total no more than $4.50/tonne from Yancoal's sale price, which in turn would reduce total royalty payments by $0.37/tonne. An example of DRE's royalty calculation worksheet is included as **Appendix D**.

The Department has also identified that Yancoal's EIS contained two separate figures for total expected product coal production for the project. While the main body of the EIS reported 13.8 Mt, Appendix P (the Socio-Economic Assessment) reported 12.7 Mt. It was the latter figure used by most, if not all, parties undertaking economic assessment of the project. Yancoal has confirmed that the correct figure is 13.8 Mt, based on amended production figures for Years 7 to 11 of the project.

DRE currently expects the project to generate about $10 million a year in royalties on average, or $106 million in total. This total equates to $62 million on a NPV basis (see **Appendix C**). DRE's estimates are based on recent coal prices, the use of DRE's royalty calculation worksheets and the corrected yearly coal production forecasts.

On this basis, the Department considers that the best 'current' estimate of future coal royalty payments is $62 million NPV. The Review Report's acceptance of the Australia Institute's calculation of "no more than $47 million" NPV is too low. The $84 million NPV calculated by Yancoal on the basis of its much higher coal prices, and quoted in the PAR, appears unreasonably high under current and forecast market conditions.

The Review Report also considered that royalty figures quoted in the EIS should be further reduced if Stratford does not achieve the maximum ROM coal production rate sought in the application (ie 2.6 Mtpa).[7] In this regard it noted that recent production at Stratford (1.2 Mtpa) was substantially less than its maximum approved ROM coal production rate (3.1 Mtpa).[8] However, Yancoal's EIS contained clear information which indicated that this maximum rate was only ever expected to be achieved in Year 10 of the project.[9] For most years of the project, ROM coal production was estimated in the EIS as between 1.5 and 2.1 Mtpa. Yancoal responded to the Review Report by saying that it was "incorrect" to assume that the project may not operate at the proposed production profile and that there was "no basis" for linking existing production to the proposed production profile.

It is true that, if the proposed production profile was extended by 'spinning out' the project life or deferring coal production, this would reduce overall royalty payments on a discounted NPV basis. However, it is the total amount of coal produced over the life of the project, rather than the annual rate of production, that is most relevant to royalty payments. That is, current dollar royalty payments would be made on each tonne of coal, whenever it is mined during the project life, and the total current dollar royalty payments would be the same, ie $106 million.

Employment Generation
In its response to the PAC's questions, Yancoal reiterated the position set out in its EIS that the project would provide up to 250 direct jobs at Stratford, 105 indirect jobs in the region and 464 indirect jobs across all of NSW (a total of 714 direct and indirect jobs). The Review Report viewed this as being overly optimistic, particularly as coal prices are currently low. In particular, the Review Report drew a picture where direct employment was directly related to coal production, which in turn closely reflected coal prices.

Employment numbers at Stratford have fallen since 2013 when 125 employees were needed to operate the mine, including 34 pieces of mobile mining equipment. As of August 2014, there were 50 employees at Stratford with activities restricted to recovery of coal rejects, coal processing and the receipt and dispatch of coal by rail. Due to the extraction of all easily recoverable coal from approved mining areas and difficult mining conditions in the Roseville West Extension open cut, no coal was being mined on site.

The Department has considered whether Yancoal's estimates of direct employment are reasonable. The EIS indicates that Yancoal plans to use up to 64 to 67 pieces of mobile equipment during the project (based on the noise impact assessment). The Department considers it reasonable to estimate it would take twice the workforce (ie 250 employees) to operate twice the number of pieces of mobile equipment.

Another way to estimate the likely workforce is to consider that, say 2.2 operators would be needed to cover 24 hour operations and also cover annual and sick leave. So, to operate 67 pieces of equipment, 148 workers would be needed. Once the CHPP, train loading operations, maintenance, supervisory, environmental and technical services are considered, the Department considers that Yancoal's workforce estimate of 250 is reasonable.

Likely direct employment numbers are important not just for estimating the benefits of direct employment (and the basis for predicting indirect employment flow-on) but they also form the basis of Yancoal's offer to make an annual community enhancement contribution to GSC of $550 per employee. Nonetheless, it should be noted that neither Yancoal nor the Department's PAR suggested that the number of 250 direct employees was anything other than a peak number. It must be accepted that this number would scale up following commencement of the project, and scale down towards project completion (unless a further mine expansion was subsequently sought and approved).

In regard to indirect employment, the Report concluded that "*the contribution of indirect employment generation to project benefits be assessed as insignificant without further robust evidence as to the quantum".* The Department's contrary view is that these benefits are real and significant, even if the quantum is difficult to determine.

[7] PAC Stratford Extension Review Report, pp 66-67.
[8] Ibid.
[9] Stratford Extension Project EIS, Table 2-3, Indicative Coal Production and Processing Schedule, p 2-28.

The EIS used an indirect employment multiplier of 2.86 to estimate that 714 indirect jobs would be supported by the project within NSW. There is debate as to what is an appropriate indirect employment multiplier, which both the Australia Institute and the PAC have highlighted, but there appears to be little debate over whether projects such as Stratford actually do create flow-on employment.

As is evident from submissions made at the PAC's public hearing in Gloucester there are local businesses that have been established in Gloucester to service the local mines and in doing so have created indirect employment. The data from the EIS indicates that 58% of the Stratford workforce resides in the Gloucester or Great Lakes LGAs. The expenditure of each of these workers supports the employment of local providers of goods and services. 100% of workers reside within the State and so help support employment and economic activity within NSW.

Some indirect employment is relatively easy to identify - such as rail and rail maintenance workers, port coal loader and port workers, and contractors who provide mine support services such as environmental and geological services. Then there is the layer of indirect employment arising from those who provide health, education, retail and entertainment services to mine employees and their direct families. A third layer of indirect employment is then created by the expenditure of those whose employment results from the first two layers.

The Department recognises that, due to difficulties in providing sufficient attractive housing stock, both direct and indirect employment within the Gloucester LGA may not be significant. However, all the employment generated by the project would be captured within NSW, particularly since Yancoal's corporate office is located in Sydney.

The Department has no evidence to indicate that 2.86 is a flawed indirect employment multiplier. Indeed, the NSW Minerals Council has claimed a multiplier of around 5.5 in survey data for the 2012-13 year, and DRE uses a multiplier of 4.0. Neither the Australia Institute nor the PAC suggested a more appropriate or reliable multiplier.

Nonetheless, for the purposes of weighing up the 'balance' of the project, the Department suggests using a conservative multiplier of 2.0. On this basis, an additional 250 jobs would be generated within NSW during full employment at the mine, and when combined with direct employment, would result in 500 people in NSW being employed who would not otherwise be employed, given that the State's unemployment rate is hovering at about 5.8% and the coal industry is shedding rather than employing workers.

Overall the Department considers the project would provide significant employment benefits, in the order of 500 direct and indirect positions within NSW.

Net Production Benefit of the Project

The Review Report concluded that the net production benefit (NPB) of the project to Australia is likely to be around $23 million NPV, and that even this level "may be optimistic".[10] The basis for this conclusion was Yancoal's own reassessment of project NPB to Australia on the basis of a 20% reduction in its assumed coal prices (while not allowing any reductions in the cost of production). Neither the Australia Institute nor the PAC presented any different figure.

The Report rightly considered that the achieved coal price was critical for the overall profitability of the project and concluded 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 Proponent will be able to make a profit."*

However, while it accepts that the current NPV of the project is substantially less than Yancoal's original estimates (given the current climate for coal prices), the Department does not consider that the $23 million figure should be seen as either accurate, or final, or determinative. It is an indicative figure, which simply demonstrates that the project is highly sensitive to overall achieved coal price. It is fair to consider that the project may not be rapidly developed by Yancoal at current coal prices, but (as indicated above) it is also likely that the NPB of the

[10] PAC Stratford Extension Review Report, pp ii & iv.

project would be considerably higher if Yancoal does proceed to Final Investment Decision. On this basis, the Department considers that the benefits stated by the Review Report are likely to be too low, if and when the project proceeds to development.
The Department agrees that the overall NPB is a critical point in the economic analysis of the financial benefits of the project. However, once the project is commenced, in any ensuing environment of low coal prices, it is the company's ability to make profits and pay dividends that is first and most affected. As Yancoal is predominantly a foreign owned company, reduced company profits and dividends do not in themselves lead to a reduction in economic activity within Australia.

What remains of particular interest is how much of the money spent by Yancoal in operating the mine is spent in the local region, NSW and Australia. As the assessment has previously indicated, the project involves a capital investment expenditure of $75 million, which would all be spent in NSW, with 45% spent in the Gloucester and Great Lakes LGAs. Yancoal also states that it costs $128 million a year to run the Stratford mine, of which $110 million would be spent in NSW and $45 million would be spent in the two local LGAs.[11]

If the project is approved and operated, all monies spent on wages, payments of government royalties, fees, changes and taxes would remain in Australia and would be a significant direct and indirect economic benefit. The Gloucester and Great Lakes LGAs would benefit in particular, although the direct benefit would be constrained by the limited availability of housing for additional mine workers in the Gloucester area.

DRE's economist has recently calculated that, based on the revised tonnages and assuming a 2016 start date, the project would generate $1,352 million in export revenue in current dollars and $790 million NPV of export revenue – using a 7% discount rate.[12]

The Department is of the view that, overall, the economic benefits of this project are greater than recognised in the Review Report and are significant to the NSW economy.

Conclusion
DRE's economist has recently calculated that, based on the revised tonnages and assuming a 2016 start date, the project would generate:

- $106 million in coal royalties in current dollars;
- $62 million NPV in royalties – using 7% discount rate;
- $1,352 million in export revenue in current dollars; and
- $790 million NPV of export revenue – using 7% discount rate.[13]

The Department considers that these are significant and real economic benefits that deserve substantial weight in the decision as to the merits of the project based on the balancing required under section 79C of the EP&A Act.

3.2 Contributions to Maintain and/or Upgrade The Bucketts Way

Background
The consideration of whether Yancoal should contribute to the annual maintenance, regular resealing and complete end-of-pavement-life rehabilitation of The Bucketts Way has been a vexed issue throughout the assessment of the Stratford project.

Yancoal and GSC have taken very different views on whether these various contributions should be made and, if so, their size. The Department previously attempted to arbitrate a reasonable and equitable outcome, which was then reflected in the contributions formula advanced by Yancoal late in the assessment process and then included (with the Department's endorsement) in the PAR.

The key background facts are as follows:

[11] The local economy is defined by Yancoal as the Gloucester and Great Lakes LGAs.
[12] DRE's analysis, based on average coal price of $98; $4.50 discount to average coal price for royalty calculations and 13.8 Mt of product coal, provided to DP&E by email 5 September 2014.
[13] Ibid.

- Stratford Coal Mine is located within the Gloucester LGA, and is serviced by a mine access road which connects with The Bucketts Way 15.13 km south of Gloucester and 4.12 km 4.12 km north of the north of the Gloucester/Great Lakes LGA boundary;
- south of the LGA boundary, The Bucketts Way continues for some 55 km within the Great Lakes LGA, and thence a further 10 km within the Port Stephens LGA;
- Duralie Coal Mine (also owned by Yancoal) is located in the Great Lakes LGA, some 20 km south of Stratford Coal Mine;
- The Bucketts Way is a listed 'regional road', and each local council receives an annual grant from Roads & Maritime Services (RMS) for its maintenance (currently $8,340/km for GSC);
- Stratford Coal Mine has not been required to pay GSC for maintenance of The Bucketts Way throughout its 17-year life to date; and
- Duralie Coal Mine has (since 2010) been required to pay GLC an annual contribution of $59,688 (indexed) for maintenance of The Bucketts Way, which will continue until 2019.

Both GSC and GLC initially sought annual contributions from Yancoal for maintenance and upgrade of The Bucketts Way, but each proposed that these contributions be calculated on differing bases.

The PAR proposed that Yancoal make contributions to both GSC and GLC for both annual maintenance and regular resealing, proportionate to the number of heavy vehicles entering and leaving the site as a percentage of total heavy vehicle traffic on The Bucketts Way, throughout the 11-year life of the project. GSC made a submission to the PAC proposing an alternate formula for funding, based on regular resealing and complete end-of-pavement-life rehabilitation but reflecting the same proportionality. Effectively, Yancoal was being asked for a proportionate annual contribution over 11 years to a total of three regular reseals over 30 years (@ $48,000/km each) and complete end-of-pavement-life rehabilitation after 30 years (@ av $989,859/km).

The PAC considered these matters and conducted its own further investigations. The Review Report concluded that:

> *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 [by the Duralie mine] for the maintenance of the Bucketts Way. A contribution of $10,000 per annum is payable [by the Duralie mine] to the GSC for the provision of community infrastructure in addition to $30,000 for specified community works and an education fund.*
>
> *… When a calculation was carried out [for the Stratford Extension Project] 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.*[14]

The Review Report then recommended:

> *That the Gloucester Shire Council's contribution formula be adopted for the calculation of contributions payments for the maintenance of the Bucketts Way.*[15]

GSC supported the PAC's recommendation while Yancoal opposed it, as it considered that its own proposed contributions formula was proportionate to its impacts and was equitable, while the GSC formula was not.

The Review Report was silent on whether the GSC formula should also be applied in Great Lakes LGA, where GLC had sought 11-year road funding on the basis of a much simpler

[14] PAC Stratford Extension Review Report, pp 60-61.
[15] Ibid, p 61.

calculation, based on the expected increase in heavy vehicle traffic (not existing mine-related heavy vehicle traffic) and pavement reconstruction.

The Report stated that the GSC formula would deliver a similar funding outcome as Yancoal's contribution to GLC for maintenance of The Bucketts Way, as provided for under the existing Duralie approval. Unfortunately, this is not correct. The statement appears to be based on GSC's submission to the PAC, which calculated the annual payment under its proposed formula to be $56,935. However, the formula in that submission (as quoted in the Review Report) had northbound and southbound traffic factors transposed. Once this error is removed, the correct payment under the GSC formula would be $29,324. Further, if the formula was then applied to Great Lakes LGA, then it would require an additional annual payment of $190,434 to GLC by Yancoal. If implemented, this would more than triple Yancoal's current contributions to GLC, while still leaving GSC with only about 10% of the total payments for The Bucketts Way.

Due to these significant continuing differences and uncertainties, the Department has re-visited its recommended contributions formula and sought further information from RMS, GSC and GLC. It has also considered the Ulan Road Strategy and referred to documents available on GSC's website.

Consideration of Duralie Mine Contributions

The Department agrees with the PAC that it is relevant to consider the road maintenance contributions contained in the Duralie Coal Mine project approval, as this is a similar-sized coal mine which is also owned by Yancoal and which uses The Bucketts Way.

Under the Duralie Extension Project approval granted in November 2010, Yancoal is required to pay an annual indexed contribution of $59,688.09 to GLC for the maintenance of The Bucketts Way, from the date of the project's approval until its expected cessation in 2019. The Department has confirmed that this figure was negotiated and agreed between the previous owner of the Duralie Coal Mine (Gloucester Coal) and GLC and then reflected in the project approval via conditions. Prior to the 2010 approval, a modification to the existing 1999 development consent in July 2006 required Gloucester Coal to pay GLC an annual indexed contribution of $32,620.94 for maintenance of The Bucketts Way, commencing on 30 April 2007.

The basis on which these figures were derived is not known. Yancoal has reported that they resulted from high level 'negotiation'. However, GLC in its submission for the Stratford Extension Project sought to relate future payments to the 'increase in daily trips' by project-related trucks, rather than to the percentage of total truck movements that are project-related. Yancoal has also confirmed that, due to indexing since 2010, it currently pays GLC $64,626.74. This figure is equivalent to $1,175/km annually for the maintenance of the 55 km of The Bucketts Way within GLC.

Duration of Project's Impact and Contributions

The other preliminary matter to consider is the period of time that should be reflected within Stratford's road contributions. This would appear to be a simple matter, in that the Stratford Extension Project is expected to produce coal for a total of 11 years.

However, the Review Report expressed "concern" that:

> *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.*[16]

In total, the Stratford operations could extend for a longer period than the assumed 30-year design life of The Bucketts Way, notwithstanding that there is no agreed (or even tentative) schedule for replacement of the pavement, although its design life was reached around about

[16] Ibid, p 59.

the Year 2000. On this basis, the Review Report concluded that contributions to GSC for both resealing and long-term rehabilitation of the road should be included in the contributions formula, as had been proposed by GSC.

The Department is unaware of any mine or extractive industry anywhere in the State where operations under a previous approval, or potential operations not yet subject to an application, have been taken into account when setting road maintenance or other local contributions. This includes the Duralie Coal Mine, where the contributions payable since late 2010 for the 9-year life of the Duralie Extension Project relate to annual maintenance, but with a component likely to be used on regular resealing.

The Department's view is that its assessment should be based on the scope of the application submitted for determination. Road contributions should be based on the life of the Stratford Extension Project and not re-visit formerly-approved operations, nor extend to potential future development applications. To extend conditions beyond the impacts of the project under assessment is to go beyond the scope of the project and is opposed by the Department.

Funding of Eventual Reconstruction
The next question is whether Yancoal should provide a proportional contribution to the eventual replacement of the pavement of The Bucketts Way, which is assumed to have a 30-year design life. The GSC formula incorporates this contribution, whereby the total cost of replacement (calculated at just under $1,000,000/km on average, to be indexed annually) is divided by 30 to derive an annual figure, which is then payable throughout the 11-year mine life.

GLC's submission following exhibition of the EIS also sought a contribution from Yancoal for the upgrade of The Bucketts Way within its LGA. GLC noted that average daily heavy vehicle movements south of Stratford were predicted in the EIS to increase from the present 30 to 36, and that total heavy vehicle movements (existing, project related, Duralie related, and also related to both the approved AGL Gloucester Gas Project and the proposed Rocky Hill Coal Project) would peak at 430 per day. GLC provided a detailed estimate of $12,646,000 to upgrade 9.63 km of The Bucketts Way that does not comply with current design standards and which is in very poor condition. This estimate was sourced from GLC's unsuccessful 2012 application to the *Hunter Infrastructure and Investment Fund* to upgrade The Bucketts Way.

On the basis of the 6 additional southbound truck movements within the anticipated total of 430, GLC sought a contribution properly calculated as $176,456.81. It did not indicate whether this contribution should be a cash payment or contributed equally over the 11-year project life.

In the Department's opinion, the long-term reconstruction of The Bucketts Way is a capital works program that should be funded by the parties generally responsible for providing road assets for use by the entire community (ie the State and Commonwealth Governments).

The State Government has committed, over time, to various upgrade programs of The Bucketts Way. In addition, GSC has been successful in attracting Commonwealth funding under its Blackspots and Roads of National Importance Programs for some works. The Department notes that $8 million of grant funding from the Commonwealth for capital works on regional roads within Gloucester Shire is planned to be spent during 2014-15 (with $2 million to be allocated for the section of The Bucketts Way south of the township of Gloucester and therefore of interest to this project).

Following GSC's submission in response to the Review Report, the Department asked GSC to provide further information regarding its position on reconstruction and the original source, validity and currency of the costings that it proposed to the PAC. The Department also asked whether GSC had:

- spent any of its own rating income or other funds to maintain or improve The Bucketts Way over the past 5 years, other than funds from State or Commonwealth grants; and
- any proposals, plans, pre-commitments or budgeted outlays for any such expenditure over the next 5 years.

GSC replied in January 2015, providing the bases for its costings for renewal of The Bucketts Way. It also stated that, as its local road network is grossly underfunded, "*Council is not in a position, and it would be considered grossly negligent, to expend ratepayers' funds on what has been classified as a Road of National Importance*". In summary, in recent years GSC has not spent any of its own funds on maintaining or improving The Bucketts Way, nor does it have the intention to do so in the future.

All local councils have the ability to seek matching RMS funds (ie 50/50) for larger rehabilitation and development works on regional roads under the RMS's Repair and Improvement of Regional Roads Program (REPAIR Program). This includes road pavement rehabilitation, sealing of shoulders, road widening and bridge repairs and replacement.

Both councils therefore have the ongoing ability to seek further special funding for major upgrades of The Bucketts Way, either from the State Government via the REPAIR Program or the Hunter Infrastructure Fund; or from special Commonwealth roads programs such as the Blackspot Program and Roads of National Importance Program.

However, in the Department's view, the level of funding required for pavement replacement is generally quite beyond small rural councils, and is not generally expected from them, even on a 50:50 basis. Therefore, in the Department's view, consistent with the advice it received from GSC in January 2015, it is unlikely that either GSC or GLC would ever be able to fund or undertake replacement of the pavement of The Bucketts Way from their own resources.

The Department also notes that no other private party contributes on an annual basis to a 30-year replacement program for The Bucketts Way. This includes the Duralie Coal Mine and AGL's Gloucester Gas Project. GSC has confirmed that no other private party currently contributes to the general maintenance of The Bucketts Way, and none make any provision for its replacement.

Finally, the sole example in the State where mines have been asked to contribute to long-term road pavement replacement (the Ulan Road Strategy) involved all three mines in the Ulan-Wollar district. Each of these mines is very much larger than Stratford, and each has substantially greater mine-related traffic which together dominates all traffic on Ulan Road. At the time the Strategy was agreed, each of these three mines had an approved life extending to 2027 – 2031. Two have since sought life extensions to either 2038 or 2042. The circumstances regarding the Stratford Extension Project and The Bucketts Way are substantially different.

For these reasons, the Department cannot support the inclusion of eventual replacement costs within the annual formula for road maintenance for Stratford.

Regular Resealing

GLC sought no separate consideration of regular resealing within its submission following exhibition of the EIS. However, the proposed GSC formula adopted in the Review Report proposes three reseals over an assumed 30-year design life. It is generally agreed by all parties that a reseal of regional roads such as The Bucketts Way is required about every 10 years. Thus, this formula double-counts the third reseal as it would form a component of the rehabilitation works at the end of the 30-year design life. Therefore the maximum number of reseals that should have been included in GSC's formula is two.

Further, GSC has not presented any information that suggests that The Bucketts Way is in need of an immediate reseal in the vicinity of Stratford. There is no evidence that the formula should take into account an immediate reseal, and then a further reseal in 10 years. Instead, the available evidence supports the conclusion that a single reseal will be required during the 11-year life of the project.

The contributions formula advanced by Yancoal and then included in the PAR allowed for a cost of \$48,000/km for resealing. This figure was based on contract costs for works undertaken on The Bucketts Way for GSC by a private contractor in October 2013 of \$48,370/km (ex GST). GSC has since confirmed that this figure did not include an allowance for project management or other on-costs.

Ongoing Road Maintenance
It is common for development consents for mines and extractive industries to provide for contributions to local councils for the maintenance of local roads. It is less common for such approvals to provide for the maintenance of regional roads, where RMS makes substantial annual grants for their maintenance. The RMS's Regional Road Block Grant Program (which addresses ongoing maintenance and repairs, including regular resealing) provides for payments to all local councils which manage regional roads, with the payments calculated via a standard formula which takes account of the total length of regional roads within the LGA and the amount of traffic on those roads. Nonetheless, development consents are increasingly providing for maintenance of regional roads, and this position is supported by the Department.

The Bucketts Way is owned and managed by GLC and GSC (and, further south Port Stephens Council). Since it is a declared regional road, each of these councils receives annual contributions from the RMS. In its 2013 submission to the Department, GSC indicated that it received an annual contribution from RMS of $8,340/km for this purpose. This equates to a total of $160,545 annually for the 19.25 km of The Bucketts Way south of Gloucester township.

All parties are agreed that heavy vehicle traffic is the best way to consider impacts to The Bucketts Way, since damage to roads is exponentially proportionate to axle loads. Key facts relating to Stratford's heavy vehicle use of The Bucketts Way are:
- few Stratford-related trucks travel north of the mine (ie to and from Gloucester), with the mine only contributing 2.8% of such heavy vehicle traffic (as quoted in Yancoal's EIS); and
- most Stratford-related trucks travel south of the mine (ie to and from Duralie, Newcastle or Sydney), but this still only accounts for 8.6% of such heavy vehicle traffic (as quoted in the EIS).

This means that mine-generated impacts on the 15.13 km of road between the mine and Gloucester should be lower than those on the 4.12 km south of the mine entry before the shire boundary with Great Lakes LGA. The existing Duralie approval already provides for substantial funding from Yancoal for road maintenance south of this boundary. Consequently, trucks travelling between Duralie and Stratford are already subject to maintenance payments to GLC, but not to GSC.

The Department considers that a reasonable figure for ongoing annual maintenance of regional roads is $3000/km. This was the figure agreed to by all parties under the Ulan Road Strategy (December 2011). Ulan Road is a similar road to The Bucketts Way, but is subject to substantially higher levels of heavy vehicle traffic. It should be noted that this figure is substantially less than the RMS's annual block grant to GSC, which gives some indication of the scale of allowance made for heavy maintenance and/or resealing under the Regional Road Block Grant Program.

It is also material to note the other income that GSC already receives (or will receive) from Yancoal. In terms of income from land rates, GSC levies mining operations at a higher rate than adjacent farmland. In GSC's adopted 2014/15 Operational Plan and Budget, the rate for mining land is 4.285 cents per dollar of rateable land value, which is 11.6 times greater than for adjacent land rated as farmland. Over the 3 years to 2014-15, the rate for mining land has increased by 35%, while decreasing by 13% for farmland. Stratford is currently the only land rated as 'mining land' and is anticipated to pay $152,118 during the current financial year.

The draft development consent also provides that GSC would receive untied payments from Yancoal's proposed Community Enhancement Fund on the basis of $550 for each person employed at Stratford each year. For the proposed maximum employment level of 250, this would provide GSC with $137,500 each year.

The Department believes that as the proportion of GSC rate income from mining has increased, it is reasonable for a portion of this income to be directed to the maintenance of local roads and The Bucketts Way. Nonetheless, the Department also believes that Yancoal should also contribute to ongoing maintenance of both local and regional roads, on a basis which is proportionate to its use of those roads.

GLC's submission sought a road maintenance payment of $11,785.08 per annum, in 2010 dollars. This figure was based on consideration of the Duralie funding formula agreed between GLC and Gloucester Coal in 2010. The submission added the 2010 road maintenance contribution of $59,688.09 to the 2010 bridge inspection contribution of $11,022.18 before apportioning it across Duralie's 36 daily truck movements to the south. The resulting figure of $1,964.18 per annum per daily truck movement was then applied to the proposed increase in southern truck movements from Stratford (ie 6), to derive the final figure.

However, in the Department's view, no additional requirement for bridge inspections arises from any additional truck movements. Also GSC has not sought a contribution for bridge inspections. On this basis, GLC's request has been recalculated as $10,771.12, in current dollars.

It should be noted that this figure is a total annual amount, rather than an amount per kilometre. If it was recalculated as an amount per kilometre, it equates to $196.84 (current dollars), which is drastically different to that sought by GSC. This is explained by it being an incremental amount, to be added to the existing funding derived from Duralie.

Finally, it is the Department's view that the surface condition of The Bucketts Way is worse on average within Great Lakes LGA than within Gloucester Shire, ie there are more sections of degraded pavement within Great Lakes than in Gloucester.

Separate or Equal Consideration of the Two Councils

The last question to consider is whether the two councils should be treated equally or differently in respect of road maintenance payments. GLC and GSC have sought very different funding amounts for road maintenance calculated on very different bases. It remains open to the PAC to apply separate funding formulae which partly (or fully) reflect what each council has sought. Alternately, a single formula or approach can be derived which treats each council equally.

As is noted above, GLC receives an annual payment (currently $64,626.74) from Yancoal's Duralie Coal Mine for general maintenance of The Bucketts Way. GSC receives no such payment from Yancoal in respect of either Duralie or Stratford. Both councils also receive RMS Block Grants.

The Department considers (perhaps with all or most other parties) that an important element in an equitable distribution of maintenance funding from Yancoal's two mines in the Gloucester Valley for The Bucketts Way is to redress the present imbalance between contributions to GSC and GLC. In this respect it is important to note that many heavy vehicles making deliveries to Stratford will have already stopped to make deliveries at Duralie (or vice versa). Further, some heavy vehicles travel solely between the two mines. On any analysis, GLC is already compensated for each of these trips under the provisions of the Duralie approval. Further, if its contributions are considered on a per kilometre basis, GLC receives compensation for its full 55 km of The Bucketts Way for trucks which travel solely between the two mines, or else originate from the north, even though the road only extends within Great Lakes LGA for 16 km north of Duralie.

For these reasons, the Department does not consider that recommended contributions to GSC and GLC should be assessed under a single, combined formula. The two councils should be treated differently.

Determination of an Appropriate Funding Formula

The Department shares all parties' view that Yancoal should contribute to the maintenance of The Bucketts Way and that these contributions should be determined on an equitable basis. The Department's view is that the Stratford mine should contribute roughly the same as the Duralie mine in total, but that these funds should be directed to both Councils, as opposed to the Duralie approval which only directs funds to GLC.

Effectively, there are two ways to determine an appropriate funding formula for such contributions in respect of Stratford. The first is a detailed calculation based on a per kilometre allowance for annual maintenance costs and resealing costs over the 11-year life of the project, multiplied by a factor to reflect the percentage of project-related heavy vehicle movements. This approach is basically the same as that applied by Yancoal and in the Department's PAR. However, it could be updated to reflect more current per kilometre costs for both resealing and road maintenance.

However, this approach is complicated by a number of factors. Firstly, as identified in the Review Report, there is disagreement between GSC and Yancoal about traffic counts on The Bucketts Way. Traffic counts conducted on behalf of GSC and Yancoal over 14 and 7 day periods (respectively) in February and March of 2011 differed significantly, particularly in respect of the average daily heavy truck movements (183 vs 281). To overcome this discrepancy the PAC has recommended, and the Department supports, that traffic counters be installed to ensure that the proportion of mine-related heavy vehicles be accurately established. Secondly, there is no clear data available which would eliminate double counting between heavy vehicle movements which involve both Stratford and Duralie. This is particularly important when calculating contributions for the Great Lakes LGA, which already receives a significant payment from Yancoal. A related issue is that there is no easy way to differentiate between that part of The Bucketts Way in Great Lakes LGA north of Duralie (where vehicles may be simply travelling between the two mines) and the area south of Duralie (where vehicles are in all likelihood bringing deliveries to either mine, or else returning from those deliveries).

The second approach is to apply some existing formula (eg that which has been in existence at Duralie since November 2010) by extension to Stratford.

The Department has given careful consideration to these two approaches. Its view is that the detailed formula offers little benefit, once the big numbers associated with pavement replacement and two reseals are removed. The resulting amounts are low and of little real benefit to either council. They are also unreliable, in that the disputed traffic counts are a key component. Calculation of the totals is also dominated by the number of kilometres affected in each LGA, with the result that GLC (which has received significant amounts since 2007) would receive a substantially greater amount than GSC, which currently receives nothing.

Table 3 (see below) summarises the various funding proposals put forward for maintenance and replacement of The Bucketts Way to date. It also includes details regarding the existing funding relating to Duralie Coal Mine, and the Department's proposals regarding future contributions for Stratford. The Department's recommended approach is to apply Yancoal's existing payments at Duralie to its mine at Stratford, on a per kilometre basis. This figure makes some allowance for regular resealing as well as ongoing maintenance (given the additional benefit received from the RMS's Block Grants).

If a broadly-defined 'maintenance' contribution of $1,175/km were to be used for the Stratford Extension Project it would deliver $22,619 a year to GSC for the upkeep of The Bucketts Way, regardless of the percentage of heavy vehicle movements contributed by Yancoal (see **Table 3**). $1175/km per annum compares very favourably with the regional road Block Grants received by each local council. These grants are assessed by the RMS as being a reasonable contribution, equitably distributed across the State, for the regular maintenance of damage caused by *all* heavy vehicles. Yancoal is therefore being asked to contribute to this maintenance at a much higher rate than the RMS offers, based on its level of impact.

However, because GLC already receives compensation for all trucks travelling to Duralie (even if they are also travelling to or from Stratford), there is no basis for applying the total relevant truck movements to Stratford (36 from the south) to assessing GLC's entitlement. As GLC has proposed, the increase in truck movements from the south (6) seems a reasonable basis for the calculation of an equitable contribution (see **Table 3**).

Funds provided to each council should be retained specifically for works to The Bucketts Way. In this respect, the Department understands that retained funds from the Duralie mine are about to be used on the reconstruction of a section of The Bucketts Way within the town of Stroud. While financing only a minor portion of the proposed upgrading, the contributions from Duralie will supplement available GLC funds and improve this section of road for all users.

Table 3: *Yancoal's contributions to maintaining/upgrading The Bucketts Way (existing and proposed)*

	Gloucester Shire Council contribution - 19.25 km ($ annually)	**Great Lakes Council contribution - 55 km ($ annually)**
Duralie Coal Mine (existing)	0	64,626[1]
Stratford Coal Mine (existing)	0	0
Council requests for Stratford - Maintenance and/or Regular Resealing - Replacement - Total	 3,734[2] 25,590[2] 29,324[2]	 10,771[2] 16,095 26,886[2]
Yancoal's offer included in PAR *(maintenance and one reseal)*	5,729[3]	34,380[3,4]
PAC Review Report *(maintenance, three reseals and replacement)*	29,324[2]	190,434[3,4,5]
New DP&E proposal *(maintenance and one reseal)*	22,619	10,771[6]

Notes:
1. *Current dollars.*
2. *Errors in calculations removed.*
3. *The proportion of Stratford-related heavy vehicles using The Bucketts Way is as presented in the EIS – 2.8% of northbound and 8.6% of southbound heavy vehicles.*
4. *The proportion of Stratford-related heavy vehicles using The Bucketts Way is the same in GLC as for its section in GSC south of the mine entrance.*
5. *The GSC's road rehabilitation costings for the southern section of The Bucketts Way have been used for the GLC section of The Bucketts Way ($1,063,830/km).*
6. *The new proposal for GLC accurately reflects its request. It is equivalent to the $64,626.74 currently received by GLC from Duralie, divided by 36 daily truck movements to Duralie, multiplied by the 6 additional truck movements expected at Stratford.*

<u>Wenham Cox Road</u>
The PAC supports a road maintenance contribution to be paid to GSC to assist in the maintenance of Wenham Cox Road. Both the Department and GSC agree with this recommendation. Generally, traffic volumes on this road are low and maintenance costs should also be low. Yancoal proposes to realign and construct the eastern portion of this road. It would join an earlier diversion of the road constructed by Yancoal. These sections of the road would require minimal maintenance over the 11-year life of the project.

The Department therefore proposed that contributions be based on the proportion of heavy vehicle use of this road caused by Yancoal's mining and/or exploration activities. This would have to be carefully determined as total truck movements could fluctuate significantly due to exploration campaigns by both Yancoal and AGL. The Department's suggested mechanism is a joint annual inspection of Wenham Cox Road by Yancoal and GSC to establish maintenance works to be undertaken during the forthcoming year. Yancoal would then be required to provide a contribution to these works based on its proportion of heavy vehicle traffic on this road.

However, Yancoal considers that the costs involved in this detailed process would significantly exceed the likely proportionate costs that it then would be required to pay. Instead, Yancoal has proposed that it pay GSC an annual contribution of $5,000 and that both parties then avoid the expense of conducting traffic counts and joint road inspections. The Department has drafted a recommended condition of consent to allow either option to be used, at Yancoal's discretion. The Department also considers that it would be appropriate for GSC to use a proportion of its rate income from the Stratford mine to help maintain Wenham Cox Road.

3.3 Biodiversity Impacts and Proposed Mitigation Measures

<u>Background</u>
The Review Report gave particular consideration to the EIS's assessment of potential project-related impacts on nearby Squirrel Glider colonies and Yancoal's proposed Biodiversity Offset Strategy (BOS).

In regard to project-related impacts on Squirrel Gliders, the Review Report recommended that:

- *(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 area(s) assessed as highly suitable for Squirrel Gliders and where there is a reasonable prospect of colonisation from one of more colonies of Squirrel Gliders;*
- *(ii) that there be a significantly increased effort to protect the Squirrel Glider colony on the Crown Reserve;*
- *(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 the initial placement to development of suitable hollows in revegetated areas; and*
- *(vi) that other mitigation strategies proposed (glider poles, forage species supplementation, etc) be pursued.*[17]

In regard to Yancoal's proposed BOS, the PAC recommended that:

- *(i) in the absence of a VCA over Property 44 the biodiversity offset values of Offsets 2 and 3 be re-evaluated;*
- *(ii) additional areas of high conservation value be considered for addition to the proposed offset areas to compensate for the weaknesses in the package, particularly impacts on Squirrel Gliders; and*
- *(iii) a legally robust mechanism for conservation in perpetuity for each of the proposed offsets be resolved and specified in the draft conditions.*[18]

The Department broadly accepts the Review Report's recommendations. However, there are a number of matters which require discussion in regard to each issue. These matters impact on the strength of the position adopted by the PAC regarding the risks posed by the project to Squirrel Gliders, the most appropriate means to achieve the outcomes sought by the PAC and the future role to be played by Property 44 in biodiversity management.

<u>*Impacts on Squirrel Gliders*</u>

In regard to project-related impacts on Squirrel Gliders, the Review Report concluded 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.*[19]
>
> *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.*[20]

A key underpinning to these conclusions was the PAC's belief that:

> *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).*[21]

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[17] Ibid, pp 51-52.
[18] Ibid, p 55.
[19] Ibid, p 47.
[20] Ibid, p 51.
[21] Ibid, p 46.

However, Squirrel Gliders have been found in Offset Area 3. The Terrestrial Fauna Assessment (TFA), prepared by the Australian Museum and included in the EIS, records in several places that two individual Squirrel Gliders were recorded within Offset Area 3 (see **Figure 4**). The Department has confirmed with Yancoal that a further statement in the TFA that Squirrel Gliders had not been recorded "in the south eastern section of proposed Offset areas 3 and 4 …. despite extensive survey effort" was poorly expressed. More accurately, Squirrel Gliders had not been recorded in the *southeastern section* of Offset Area 3 *or* in Offset Area 4. They had been recorded in the *northwestern* section of Offset Area 3.

The four identified Squirrel Glider colonies reside in habitat that has been fragmented for many years. It would therefore seem to be the case that either these colonies are self-sustaining, despite their small area of habitat, or else (as the TFA suggests) "some level of connectivity is likely to have been maintained through linear habitats along watercourses…". The ability for colonies to survive in relatively small habitat patches is supported by two pieces of evidence. Firstly, the greatest density in Squirrel Glider records near the project (three of a total of nine) is found in a single small patch (18 ha) of reserved Crown land west of the Roseville West Pit Extension (see **Figure 4**). Secondly, the EIS reports from the scientific literature that the home range for a Squirrel Glider family group (ie a colony) is between 0.65 and 8.55 ha.[22]

One colony, to the north of the project, is sufficiently distant to be unaffected by the project but would also be unlikely to be a source of recruitment for any of the proposed Offset Areas. The other three colonies are located within or relatively close to the proposed mine extensions and would be affected by the proposed removal of vegetation and reduced movement corridors.

One record is within the footprint of the Avon North Open Cut, and this pit would remove about half of the overall habitat area and also block habitat connectivity to the east, leaving a relatively small and isolated habitat patch of some 25 ha. The Department agrees with the PAC that the project is likely to have a significant impact on this colony, but cannot accept that evidence has been adduced which supports the view that complete loss of this colony is "most likely". The isolated habitat fragment would provide an area of habitat about 3 times larger than the upper bound home range for a colony and so provide the potential for its survival, in an area significantly larger than the Crown reserve, which remains effective habitat.

The case is even less substantial in relation to the area west of the proposed Stratford East Open Cut, where again the PAC's assessment is that loss is "most likely". The Squirrel Glider records in this area are 500 m west of the proposed disturbance footprint of the pit, and well over 80% of the area mapped as potential habitat would remain intact. It is also worthy of note that some of the Squirrel Glider records from the significant colony in the Crown reserve are at the same or an even closer distance to the existing disturbance of the Roseville Pit. The proposed additional disturbance in the Roseville West Pit Extension would not encroach closer to the Crown reserve than 400 m.

The strong position adopted in the Review Report appears to rest on the potential impacts of the loss of foraging habitat (as against home range) and loss or reduction of potential connectivity between habitat areas. However, no strong evidentiary position is put in support of this view. The Department is therefore not as pessimistic as the Review Report in assessing the loss of two or three colonies as "most likely", nor can it endorse the view that "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*".

Nonetheless, the Department agrees with the PAC that the project would place these three colonies at some risk, and that the risks should be reduced as far as practicable. The TFA in fact reported that the project is likely to have a significant impact on these colonies by the loss of 93 ha of mapped potential Squirrel Glider habitat.

On this basis, the Department generally agrees with the intent and outcomes of the Review Report's six recommendations regarding Squirrel Gliders, and the question becomes how best to implement them.

[22] Stratford Extension Project EIS, Appendix F – Terrestrial Fauna Assessment, p C-100.

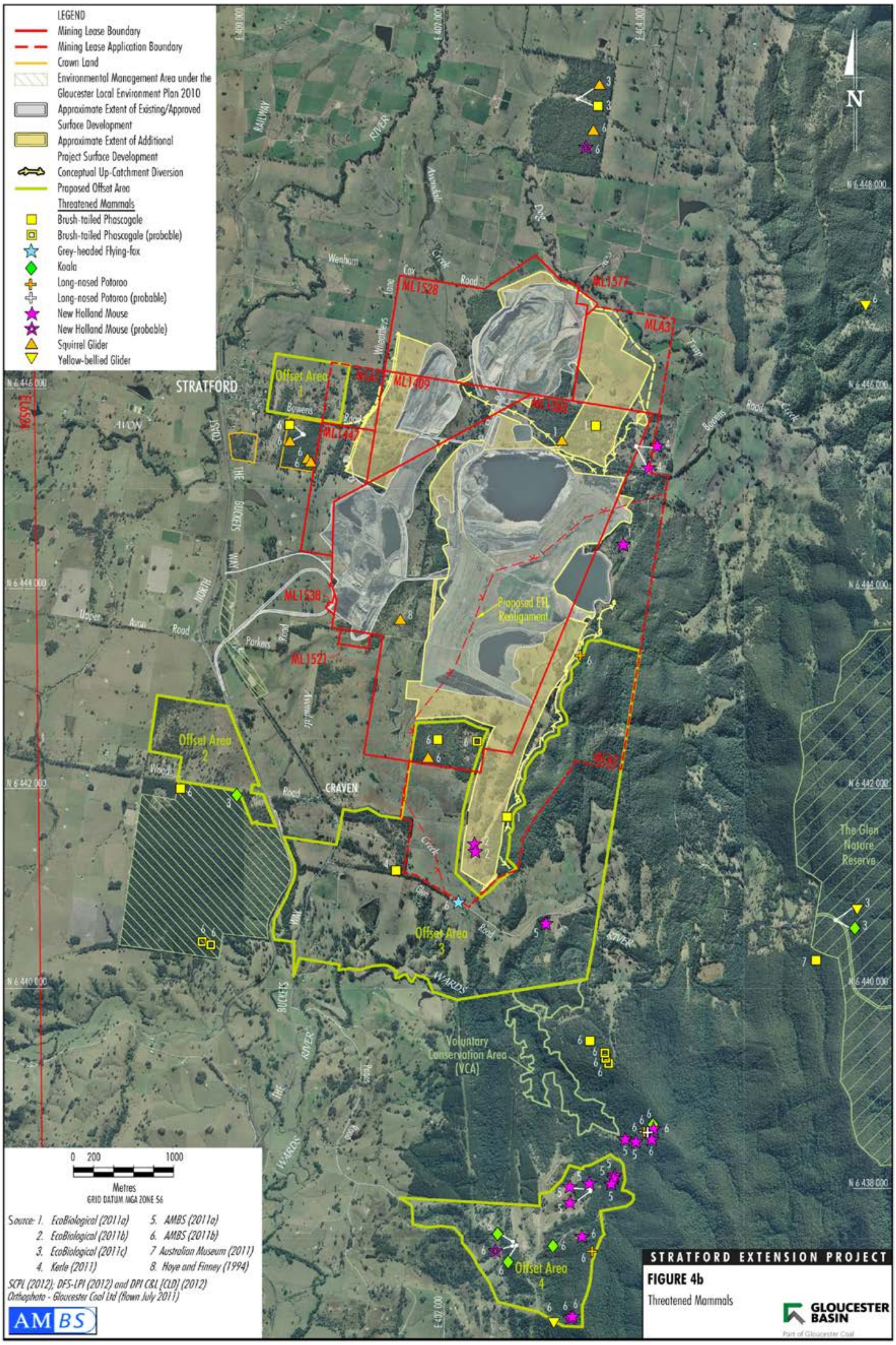

***Figure 4**: Threatened Mammal Records and Proposed Offset Areas*

Adequacy of Yancoal's proposed mitigation actions for Squirrel Gliders
The Department has considered how best to improve the chances for the three potentially-affected Squirrel Glider colonies to survive. The TFA mapped potential Squirrel Glider habitat within the project area.[23] This map also includes a large area of predicted Squirrel Glider habitat identified by OEH, and it is within this latter area that no Squirrel Gliders have been recorded, despite extensive survey effort.

The colony located in Offset Area 3 has sufficient habitat for the species' normal home range, but stresses on its survival would increase. Yancoal's long-term proposal is to enhance vegetation connectivity in a southerly direction. This is definitely a long-term mitigation action and in the meantime this colony would be under increased stress from reduced habitat and increased isolation.

The colony on the Crown reserve appears to not be significantly impacted by the project. As Offset Area 1 adjoins the Crown reserve, habitat enhancement actions could be started immediately. The area of suitable habitat could be expanded incrementally year on year as almost all of Offset Area 1 is considered to be potential Squirrel Glider habitat (see **Figure 4**).

Yancoal's previous offset proposal included 144 ha of potential Squirrel Glider habitat. The offset proposal also noted some 220 ha of contiguous potential Squirrel Glider habitat between Offset Area 2 and 3 (Property 44, discussed further below). The Department agrees with the PAC that Yancoal's offset strategy would be substantially strengthened, and the risks of impacts on Squirrel Gliders substantially lessened, if the conservation status of Property 44 was to be confirmed. The best way to achieve this would be for the property to be purchased by Yancoal and added to its Offset Strategy (see below).

The EIS reports that each colony of Squirrel Gliders would need an average of 7 hollow-bearing trees within its home range as den sites.[24] The Review Report was critical of Yancoal's proposal to provide nest boxes to compensate for the loss of tree hollows because it only proposed to maintain these for 11 years. The PAC compared this to the 140-240 years it may take for suitable tree hollows to develop in Blackbutt trees in the coastal ranges of the State.

The Department has also referred to the listing by the NSW Scientific Committee of *The Loss of Hollow Bearing Trees* as a Key Threatening Process under the *Threatened Species Conservation Act 1995* (TSC Act). For a eucalypt forest in an area of reasonably high rainfall, such as at Stratford, the Scientific Committee states that it would take 100-140 years for 50% of trees to develop useable hollows.

However, the proposed Offset Areas contain trees of various ages, some of which contain hollows and some of which will develop hollows within a much shorter timeframe than 100 years. The Department notes that the TFA includes mapping of tree hollows within the project area and proposed offset areas.[25] While much of the area is mapped at a density of 3 -10 hollows per half hectare, Property 44 and all other areas of valley-floor vegetation (including, somewhat curiously, the Crown reserve) are all mapped as <3 hollows per half hectare.

Yancoal's proposal is not only to provide suitable nest boxes, but to salvage hollow-bearing and stag trees from cleared vegetation and 'erect' these dead trees into areas of habitat enhancement. Benefits of this practice are that naturally-occurring hollows are retained for Squirrel Glider use and have a longer life than constructed nest boxes.

The Department supports maintaining nest boxes for more than 11 years. This can be readily extended to 20 or even 50 years by requiring a small bond for nest box inspection and maintenance within the mine's security deposit. This deposit is held by DRE and would not be released until final sign-off following successful rehabilitation of the site.

The Department also considers that Yancoal should develop a comprehensive management plan to guide the ongoing conservation of the three Squirrel Glider colonies. The at-risk nature

[23] Stratford Extension Project EIS, Appendix F – Terrestrial Fauna Assessment, Figure C-35, p C-103.
[24] Ibid, p C-100.
[25] Ibid, Figure 21, p 117.

of these colonies means that Yancoal's proposed mitigation measures must be implemented as quickly and as effectively as possible. The Department has recommended conditions of consent to ensure that this happens.

Overall, the Department recommends that Yancoal prepares a Squirrel Glider Management Plan as a priority. This plan would need to be approved, with specific actions underway, before any vegetation is cleared within 500 m of known colonies. The plan should give careful consideration to the following elements:

- as a priority, a census of all hollow-bearing trees is undertaken within the three colonies' home ranges and of all potential habitat in the project area and proposed Offset Areas;
- prior to any vegetation clearing within 500 m of any colony, that radio tracking and/or other suitable methods be used to establish the colony's home and foraging ranges;
- identification of the particular food resources being used by the Squirrel Glider colonies, including season-specific resources such as key winter-flowering nectar resource species;
- a vegetation clearing protocol to avoid impacts to individual Squirrel Gliders;
- relocation of all trees with suitable hollows to areas in use, or likely to be used, by Squirrel Gliders;
- rapid establishment of additional key food resource species to enhance the viability of the colonies, particularly in Offset Area 1, since the EIS notes that colony numbers can diminish by 50% in seasons of poor nectar production;[26]
- particular focus on protection of the Crown reserve colony and management of Offset Area 1 to expand the area of suitable nesting and foraging habitat;
- installation of nest boxes for Squirrel Gliders in sufficient numbers and density for either retention or establishment of colonies. The Department's position, in the absence of robust site-specific information, is that a minimum ratio of 3:1 be used for each hollow removed or destroyed (plus the use of 'replanted' hollow-bearing trees);
- design of a survey methodology to assess the rate tree hollow development in the Offset Areas, including revegetated areas;
- longterm management of nest boxes and relocated hollows for a period of between 20 and 50 years, depending on the census of existing hollow-bearing trees and assessment of tree hollow development;
- implementation of Yancoal's proposals for Glider crossings of haul roads and establishment of vegetation adjacent to these crossings;
- implementation of vegetation plantings containing forage species (particularly in Offset Area 3) to create recruitment and dispersal pathways for Squirrel Glider colonies; and
- if Yancoal acquires Property 44, then (unless ruled impractical by the relevant transport authority), glider crossings should be installed to span The Bucketts Way and North Coast Railway and provide connectivity to Offset Area 3.

The Department has drafted a specific consent condition to address the proposed elements of the recommended Squirrel Glider Management Plan.

Inclusion of Property 44 in Yancoal's Biodiversity Offset Strategy (BOS)

The Department and OEH were both satisfied with Yancoal's proposed BOS. However, the PAC placed great weight on the absence of an existing Voluntary Conservation Agreement (VCA) under the *National Parks and Wildlife Act 1974* over Property 44. The Review Report concluded that this significantly reduced the potential contiguity and corridor benefits otherwise associated with proposed Offset Areas 2 and 3, which are both adjacent to this large habitat remnant. Unfortunately, the TFA had erroneously reported that this property was subject to a VCA and placed substantial weight on the cumulative benefits of linking these areas. The PAC identified this error following a submission from the affected landowners. All parties now accept that no VCA is in place for Property 44.

Nonetheless, it is noteworthy that most of Property 44 is zoned for Environmental Protection under the Gloucester LEP (Zone E3) which places restrictions on land uses. This vegetation is also protected by the provisions of the TSC Act, since it is not subject to a mining lease.

[26] Ibid, p C-100.

However, as pointed out in the Review Report, while these mechanisms are impediments to vegetation clearing, they do not guarantee protection of the vegetation in perpetuity.

The Review Report made the following two recommendations relating to Property 44:

> *… in the absence of a VCA over Property 44 the biodiversity offset values of Offsets 2 and 3 be re-evaluated*; and
>
> *… a suitable mechanism be developed to assess impacts and compensate existing owners of properties that are appropriately identified as 'lifestyle properties' [which were separately noted to potentially include Property 44].*[27]

In its response to the Review Report, Yancoal addressed the PAC's concerns and offered to purchase Property 44, if requested by the owners. Should the owners decide to sell, Yancoal would include this property (exclusive of the residence and its immediate surrounds) in a revised BOS, which would on this basis include an additional 217 ha of vegetated land. Yancoal's offer to purchase Property 44 is also included in its Statement of Commitments (see Appendix 9 of the recommended conditions of consent).

The native vegetation in Property 44 appears to be in excellent condition and includes an additional 203 ha of *Spotted Gum – Grey Ironbark dry open forest of the lower foothills of the Barrington Tops, North Coast* which is considered to be a Dry Sclerophyll broad habitat type, and therefore potential Squirrel Glider habitat. It also contains 14 ha of *Weeping Lilly Pilly – Water Gum Riparian Rainforest of the Southern North Coast*, or Rainforest broad habitat type.

A number of threatened fauna species are known to occur on the property, including:

- Koala;
- Brush-tailed Phascogale;
- Varied Sittella;
- Speckled Warbler;
- Eastern Free-tail Bat;
- Eastern Bentwing Bat; and
- Little Bentwing Bat.

If Property 44 is conserved in perpetuity, then the broad habitat type suitable for Squirrel Gliders would be increased by 203 ha to 348.5 ha, compared to the 93 ha that would be destroyed by the project. The potential range for Squirrel Gliders would also be significantly extended by the proposed contiguity with and connectivity between Offset Areas 3 and 2.

The key issue in regards to Yancoal's offer to purchase this Property on request is whether it will receive such a request, and whether the terms of the offer that it then must make are acceptable to the owners. To facilitate this outcome, the Department proposes that conditions of consent require that, if the owners request that Yancoal purchase part or all of Property 44, then this purchase must take place according to the 'voluntary acquisition' terms of the consent. Effectively, this would provide the owners with a significant margin above the market value of the property via substantial allowances for relocation costs and disturbance.

However, the Department's support for the enhanced BOS does not extend to requiring the purchase of Property 44 as a condition of consent to allow the project to proceed. The Department recognises that the owners of Property 44 must be willing to sell their property to Yancoal, and that this cannot be guaranteed.

The Department also recognises that other avenues exist to conserve the habitat on Property 44 in perpetuity that don't involve purchase of the land. While land purchase would definitely facilitate integrated conservation and management, Yancoal could also negotiate an agreement whereby the property remained in the hands of the present owners, so long as it was conserved under an appropriate and enduring security mechanism, and was subject to management measures fully integrated with those for Offset Area 2 and 3.

[27] PAC Stratford Extension Review Report, pp 55 & 72.

Securing Offsets in Perpetuity

The Review Report took the view that there was a:

> *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.*[28]

The Department does not accept that there is a "lack of certainty" regarding such mechanisms.

However, more importantly, the State's biodiversity offset policy environment has advanced significantly since the Review Report was finalised. OEH has since released the *NSW Biodiversity Offset Policy for Major Projects*. This Offset Policy requires avoidance of impacts where possible, then minimising, mitigating and remediating (in that order). However, beyond this framework of impact minimisation, the Policy also recognises that trade-offs may be necessary. Where trade-offs are considered necessary, then developers should be required to provide suitable compensatory offsets for environmental impacts.

Within the Offset Policy, there is a clear preference for like-for-like direct offsets. However, the Policy also recognises that there may be limited capacity for like-for-like offsets. Therefore, the Policy makes provision for direct payments into an offsets fund (not yet established, but anticipated) or the funding or undertaking of important supplementary measures such as:

- actions outlined in threatened species recovery programs;
- actions that contribute to threat abatement programs;
- biodiversity research and survey programs; and/or
- rehabilitating degraded habitats.

Thus, alternatives to land-based offsets now exist.

Once the Offset Policy is fully implemented, the sole mechanism acceptable to OEH for securing land-based offsets in perpetuity will be biobanking agreements. However, OEH has advised mining proponents that, in the meantime, acceptable mechanisms include:

- biobanking agreements (preferred);
- dedication of land under the *National Parks and Wildlife Act 1974*;
- Trust Agreements under the *Nature Conservation Trust Act 2001*; and
- Property Vegetation Plans registered on title under the TSC Act.

The Department also accepts that Public Positive Covenants (PPC) and Restrictions in Use of Land (RUL) (instruments that provide for legal restraints on land portions under section 88E of the *Conveyancing Act 1919*) have a robust and enduring legal effect and can be used (in combination) to provide a high (and sufficient) degree of long-term security for land-based offsets. The Department has assisted in the development of template PPC and RUL instruments. These have recently been used at Yancoal's Duralie mine to secure that mine's offsets, as foreshadowed in the Review Report.[29]

OEH has not supported the use of VCAs for a number of years to secure offsets.

Given the development of the Offset Policy since the Review Report and the range of long-term security mechanisms currently acceptable to either the Department or OEH, the Department does not consider that its standard conditions regarding long-term security for offsets are inadequate or that they need to specify a single preferred mechanism. The Department has instead proposed a condition which reflects the range of currently acceptable mechanisms.

3.4 Noise Impacts

Of the 15 recommendations in the Review Report, the Department has endorsed 10, cannot yet act on two, proposes a different approach to one, and cannot support two. The Department's views on these final five recommendations are presented below, together with some minor comments regarding some other recommendations which are supported.

[28] Ibid, p 55.
[29] Ibid, Footnote 34 on p 53.

<u>*Industrial Noise Policy (INP)*</u>

The Review Report recommended that:

> *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.*[30]

The review of the INP is not available. It is planned to be released for public comment sometime during 2015, but this timing is not certain.

<u>*Real-Time Monitoring*</u>

The Review Report recommended that:

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.*[31]

The Department has included a condition of consent for the first of these recommendations in the terms proposed by the PAC. However, it also notes that, to the Department's knowledge, all previous attempts to utilise real-time noise monitoring as a basis for prosecution by the EPA have failed when challenged in the Land and Environment Court. It would appear that attended noise monitoring is still required to assess compliance with noise conditions.

In respect of the second recommendation, the Department agrees with its intent. However, considers it is a 'policy' recommendation, rather than one that can be acted upon in determining the Stratford Extension Project. The Department will therefore take forward this recommendation through its participation in the current review of the INP.

<u>*Negotiated Agreements*</u>

The Review Report recommended that:

> *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.*[32]

Yancoal is satisfied that the agreements which are in place cover all impacts from the project.

The Department does not see its role as including careful review of private agreements between mining applicants and neighbouring landowners. Instead, the Department has retained the noise limits for properties subject to negotiated agreements in Table 4 of Schedule 4, which is accordance with the new *Voluntary Land Acquisition and Mitigation Policy* (see below). If for any reason, a negotiated agreement is not in place or is ineffective, then Table 4 provides the noise levels that the Applicant must meet.

<u>*Acquisition and Mitigation Remedies*</u>

The Review Report recommended that:

> *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 this may require reassessment of the properties potentially impacted and increase the number of properties in Table 1, Schedule 3.*[33]

[30] Ibid, p 21.
[31] Ibid, p 33.
[32] Ibid, p 35.
[33] Ibid, p 33.

The Department cannot support this recommendation. Since the Review Report was finalised, the State Government has adopted a new *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments.*[34]

A draft of this policy was publicly exhibited in November 2014. Following subsequent adoption of the Policy by Cabinet, amendments to the Mining SEPP made in December 2014 require all consent authorities to consider any applicable provisions of the Policy before determining any application for development consent for State significant development, including applications that are on foot, such as Stratford.

The Policy states:

> *"voluntary acquisition rights should only be granted where (inter alia) the noise generated by the development would contribute to exceedances of the recommended maximum noise levels in Table 2.1 of the INP on more than 25% of any privately owned land **where there is an existing dwelling or where a dwelling could be built under existing planning controls**"*; and
> *"Because the application of voluntary mitigation rights are intended to protect human health and amenity, those rights **should not be applied to** vacant land." (emphasis added)*

The Department has reconsidered the project in the light of the new Policy. The relevant noise emission level from Table 2.1 of the INP is 45 dB(A). In respect of Property 34, the existing residence would not experience levels greater than 35 dB(A) nor would more than 25% of the associated exceed the land acquisition trigger of 45 dB(A).

The owners of Property 47 requested that an approved location to build a second house on the property is assessed. Yancoal's RTS stated that "Review of the air quality and noise contours presented in the EIS indicate that the proposed dwelling … would not exceed the relevant criteria during the Project".

On the basis of the new Policy, no vacant privately-owned properties (or privately-owned properties with a residence where the residence itself is not affected) need to be referenced in the conditions of consent for noise or air quality measures.

<u>*General Rail Noise Impacts*</u>
The Review Report recommended that:

> *(i) The frequency and duration of 'peak' periods [for rail movements] 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.*[35]

The first half of this recommendation relates to the anticipated frequency and duration of the project's proposed maximum of 2 additional train movements per day (moving from a maximum of 5 laden and 5 empty trains per day to a maximum of 6 laden and 6 empty trains per day). The Report sought that this clarification takes place prior to determination. However, the frequency and duration of these peaks will relate to a complex combination of ROM coal production rates at both Stratford and Duralie, processing capacity at Stratford, stockpile capacity at both Stratford and Duralie, available train paths, availability of stockpile and loading capacity at the coal terminal at the Port of Newcastle and the arrival and departure schedules of export coal carriers. Neither Yancoal nor the Department consider that such peaks can be accurately predicted.

The Department's preliminary assessment was based on the worst-case of maximum night-time rail movements over the standard, relevant 9-hour night-time period. For all other times, train noise levels would be at lower levels than those assessed. The recommended conditions are based on the assessed maximum.

[34] The policy is available on the Department's website at the following address: http://planspolicies.planning.nsw.gov.au/index.pl?action=view_job&job_id=6806
[35] PAC Stratford Extension Review Report, p 29.

The second half of the recommendation proposes that Yancoal be required to report on the frequency and duration of night-time rail movements. The Department supports this recommendation. Proposed conditions require Yancoal to record and report the time of *all* train movements to and from Stratford.

Rail Noise Impacts at the Village of Wards River

The Review Report recommended that:

> *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, p 22). 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.*[36]

In essence, the Report recommended that Yancoal be required to undertake noise mitigation works at five residences in the village of Wards River predicted to be affected by cumulative rail noise. An exception provided that Yancoal would not have to fulfil this condition if the EPA instead required ARTC to mitigate the noise at these residences within the same timeframe.

The Department's PAR had previously reported that:

> *The project would have only a marginal effect on rail noise impacts for residents living near the North Coast rail line as:*
> - *LA_{max} pass-by noise levels would not change (ie individual trains would be no noisier);*
> - *the daily average of 2.5 laden product coal trains would not change;*
> - *the daily maximum number of laden coal trains would increase, but only from 5 to 6.*[37]

The Department has not changed its assessment or its advice on this matter.

In September 2014 the EPA released a position paper reviewing its regulation of railway systems activities. Its preferred position is that each rolling stock operator, as well as the ARTC, should hold an Environment Protection Licence (EPL) which would make them directly responsible for their environmental performance and accountable to the EPA regarding noise and other environmental impacts.[38]

On this basis, the Department considers that management of rail noise at Wards River (or anywhere else on the North Coast line, or any other public railway line in the State) is best managed by the EPA under reasonable and equitable conditions of EPLs held by both the ARTC (as at present) and all rolling stock operators (as proposed in the position paper).

In this scenario, Yancoal is effectively a single customer of a particular rolling stock operator, which is conducting business on an asset owned and managed by ARTC. In the Department's opinion, it is not equitable that a single customer of a single rolling stock operator be made to implement noise reduction measures caused by the cumulative use by all operators using the ARTC asset, including Country Rail which is responsible for 6 scheduled passenger trains per day including a high speed XPT which passes through Wards River at around 3 am each day. It is also noted that the great majority of homes at Wards River were built quite close to the railway, and have generally been subject to rail noise for several decades or more.

The Department is also aware that the Rail Noise Steering Committee (comprising high-level representatives of all key NSW noise regulators) is working with ARTC to ensure a Noise Abatement Program (NAP) is developed and rolled out across the ARTC network. The primary intent of this NAP would be to address existing sections of rail lines where high levels of rail traffic noise are being experienced. This NAP is the most appropriate mechanism to investigate any excessive rail noise at Wards River and to require mitigation strategies, if necessary.

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[36] Ibid, p 29.
[37] DP&E Preliminary Assessment Stratford Extension Project (SSD 4966), November 2013, p 22.
[38] Review of Regulation of 'Railway Systems Activities' under the *Protection of the Environment Operations Act 1997*, September 2014, EPA, http://www.epa.nsw.gov.au/resources/epa/14657railpospap.pdf

The Department's position also reflects Appendix 2 of the EPA's Rail Infrastructure Noise Guideline (RING) which lists a number of environmental assessment requirements for rail traffic generating developments (such as Stratford), including:

> *"Where the L_{Aeq} noise level increases are more than 2 dB(A), which is equivalent to approximately 60 per cent of the total line or corridor rail traffic, and exceeds the relevant noise assessment trigger level, strong justification should be provided as to why it is not feasible or reasonable to reduce the increase."*[39]

The Stratford EIS contains calculations that, under worst case operating conditions, combined with the highest possible number of night time train movements, there would be a potential 0.6 dB(A) increase in existing noise levels. This is far less than the 2 dB(A) trigger required to implement reasonable and feasible management practices. On average, the increase would not exceed 0.2 dB(A), which is very low.

Finally, the Department notes that the RING also requires that, for rail traffic-generating developments:

> "*At property (architectural) treatments should be considered for affected receivers, **if reasonable**.*"[40] *(emphasis added)*

The Department considers that the burden of 'reasonableness' has not been satisfied In regards to Stratford's impacts at Ward's River. Simply because Yancoal could 'afford to pay', does not mean that it is reasonable or equitable that Yancoal 'should pay'.

The Department therefore confirms its support for its previously-recommended conditions of consent relating to rail noise management. The Department recommends that the conditions of consent do not specifically address rail noise, other than general requirements within the noise operating conditions to minimise rail noise and to use only approved rolling stock.

The matter of management of the existing, long-term rail noise impacts at Wards River should therefore be left to the EPA and ARTC, and managed via EPLs, NAPs and related pollution reduction programs in a consistent and equitable fashion across the State.

3.5 Potential Compensation for 'Lifestyle Properties'

The Review Report recommended:

> *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 (ie 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. (emphasis added)*
>
> *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.* [41]

For the purposes of its review, the PAC defined a 'lifestyle property' as "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".[42] The PAC also recommended that Properties 23, 44 and 60 (at least) be considered in such a scheme.

The two recommendations, taken together, propose that any impact above the Project Specific Noise Levels (PSNLs) at a 'lifestyle property' is subject to mitigation, compensation or acquisition on request. Effectively, this proposal is contrary to the longstanding provisions of the

[39] Rail Infrastructure Noise Guideline, p 28.
[40] Ibid.
[41] PAC Stratford Extension Review Report, pp 72-73.
[42] Ibid, Footnote 74, p 71.

INP, in that it proposes that a 'lifestyle property' would be subject to voluntary acquisition where there is *any* exceedance of the PSNLs, whereas under the INP any other property would only be offered acquisition where the PSNLs are exceeded by >5 dB(A).

The Department does not support the inclusion of compensation measures within the Stratford development consent for 'lifestyle properties' for a number of reasons, including the following:

- no such 'lifestyle' compensation measures (beyond those relating to exceedance of noise or dust criteria) have previously been applied at any other mine in NSW;
- there is no basis for such compensation within either the INP or the State's new *Voluntary Land Acquisition and Mitigation Policy*; and
- it is difficult on any equitable basis to establish whether a property is or is not a 'lifestyle property', or is partly a 'lifestyle property'. The NSW Farmers' submission in response to the Review Report said that the distinction made in the Report between 'lifestyle' and 'agricultural' properties is "*an artificial and unsubstantiated finding".* As NSW Farmers stated, a residence on an agricultural property does in itself provide 'lifestyle' benefits.

The Department also notes a number of relevant decisions of the Victorian Civil and Administrative Tribunal judgements, including *Perry v Hepburn SC* [2007] VCAT 1309 and *Acciona Energy Oceania Pty Ltd v Corangamite SC* [2008] VCAT 1617. The latter of these held that: *"although many people wish to maintain a peaceful setting, tranquillity is not the test upon which reasonable expectations in a Farming Zone is based. An area's tranquillity is not something the Planning Scheme seeks to protect* per se." While these judgements related to noise produced by wind farms against a desire for rural amenity, they are equally relevant to other permissible sources of noise within a rural zone.

Nonetheless, the Department has given careful consideration to the PAC's proposals, below.

<u>*Protection of Residential Amenity*</u>

The Department has specifically considered those properties nominated as potentially being 'lifestyle properties' by the PAC (Properties 23, 44 and 60). The predicted noise impacts under noise enhancing conditions (a temperature inversion combined with drainage flow winds from the mine towards the residence) are set out in **Table 4**. Also included, for comparison purposes, are the noise results at the most-affected privately-owned residence (Cr7). This property is the only remaining privately-owned property where the PSNLs are predicted to be exceeded by > 5dB(A). The Department therefore recommended in the PAR that the owners of Property Cr7 be given the right of acquisition on request.

Table 4: *Predicted Night-time Noise Levels (Intrusive) under Adverse Meteorological Conditions*[43]

Property	Project Year 2 (dB(A))	Project Year 7 (dB(A))	Project Year 10 (dB(A))
23 – Bagnall	37	29	25
44 – Cross & Jane	38	39	39
60 – Healy & Greenwood	30	37	39
Cr7 – Pryce Jones	40	43	41

The residences on Properties 23, 44 and 60 are predicted to receive mine noise levels of 37 - 39 dB(A) under adverse meteorological conditions. These noise levels are exceedances of 2 dB(A) and 4 dB(A) of the relevant PSNLs (35 dB(A)). In keeping with both the INP and the new *Voluntary Land Acquisition and Mitigation Policy,* such impacts are not sufficient for any of these properties to be acquired or their owners compensated, (except by way of a negotiated agreement in place of the mitigation).

The PAR recommended that the owners of each of these properties be afforded the right of noise mitigation on request. On that basis, each of these landowners would be eligible to

[43] Stratford Extension Project EIS, Appendix C - Noise and Blasting Assessment, Table 32, pp 42-43.

receive mitigation measures for their house such as noise insulation of the house façade, provision of double glazing and the installation of air conditioning.

The *Voluntary Land Acquisition and Mitigation Policy* states that: "*the application of voluntary mitigation rights are intended to protect human health and amenity."* The aim of the mitigation measures is to enable the residents to go about their usual indoor activities without interference from the mine, and in particular, to gain a restful night's sleep. In other words, with the mitigation measures in place, the amenity of these residents would be substantially preserved, at the cost of small changes to their daily activities, such as keeping windows closed to reduce noise and to allow the air conditioning to be effective.

The Department considers that the protection of the amenity of the occupants of a property is a substantial protection of their lifestyle. Mitigation treatments to reduce perceptible noise at residences to ensure a quiet living and sleeping environment ensure that key measures of lifestyle are retained.

The Department maintains its view that Properties 44 and 60 should be afforded the right of noise mitigation measures at the residence on request, and has recommended conditions to that effect. However, Yancoal has pre-empted further consideration of this matter by providing a commitment to offer to purchase these two properties in accordance with the procedures for property acquisition also contained in recommended conditions of consent.

The only other proposed 'lifestyle property' is Property 23 which would be mostly affected by the Avon North open cut. Predicted exceedances of PSNLs for the residence on Property 23 are limited in quantum and time. The maximum predicted noise level of 37 dB(A) would only occur during adverse conditions at night (inversion and drainage wind conditions) during the ^ years that the Avon North open cut would operate.

The Department considers this 2 dB(A) exceedance of the PSNL, only during inversion conditions over a 6-year period to be a small exceedance, best addressed by management of noise generating mine practices. In the absence of adverse conditions, night-time noise levels are predicted to be very low at around 24 dB(A). After Year 7 of the project, noise impacts are predicted to be below the PSNL at all times. If the provisions of the *Voluntary Land Acquisition and Mitigation Policy* are to be applied, then this situation does not warrant receiver-based treatments or controls. On this basis, the Department recommends careful control of mine practices, but neither noise mitigation measures at the residence nor any other form of compensation for Property 23.

Consideration of Impacts to 'Lifestyle Property' Values

The Department has considered the PAC's findings on this issue and a 2014 Valuer-General's report that investigated market impacts for properties in proximity to Coal Seam Gas (CSG) exploration and production.[44] This report specifically assessed the Gloucester district, where CSG and mining activities overlap. Importantly, it found no influence on Gloucester township residential sales, where prices have increased steadily over time. Secondly, due to the very low number of property sales, the report was unable to provide guidance on whether CSG activities have affected rural property sales in the Gloucester district.

The report also reported anecdotal evidence that potential 'lifestyle property' purchasers may be removed from the market in the vicinity of CSG operations, reducing the potential number of buyers and increasing the time to complete a sale at a satisfactory price. In the end, the report was unable to adduce evidence of any clear impact on prices from available sales data. The Department considers this to be an important finding.

Some private landowners (farmers, rather than 'lifestylers'; if this distinction can be made) have requested that Yancoal be required to purchase their properties as they consider that Yancoal is the only potential buyer. In particular, the Department considered strong representations

[44] NSW Land and Property Information, Study on the Impact of the Coal Seam Gas Industry on Land Values in NSW – Report for the NSW Valuer General, February 2014. See: http://www.valuergeneral.nsw.gov.au/__data/assets/pdf_file/0020/197003/Study_on_the_impact_of_the_Coal_Seam_Gas_industry_on_land_values_in_NSW.pdf

made by NSW Farmers on behalf of the owners of Properties 58 and 59, which are located south of Glen Road near where Yancoal purchased several adjacent properties in 2009. Yancoal has stated several times that it has no interest in purchasing Properties 58 and 59.

Both properties are predicted to receive mine noise levels below the relevant PSNL of 35 dB(A) and low levels of dust emissions. Based on physical impacts, the Department does not recommend that Properties 58 and 59 (or other properties similarly affected) are provided with acquisition rights. However, as a safeguard, the recommended conditions of consent require Yancoal to offer to acquire any property where noise and/or noise impacts exceed the relevant levels nominated in them. Notwithstanding, the Department does not expect these safeguard conditions to be triggered for these properties.

It is difficult to further assess the claim that Yancoal has skewed the property sale market to the extent that sale of Properties 58 and 59 cannot be made as, to the Department's knowledge, these properties have not been placed on the market for some time and Yancoal has not been in the market to purchase rural land in the Gloucester district for 4 or 5 years, other than lands predicted to be impacted close to the mine.

As shown by the Valuer-General's report on CSG operations, it is difficult to determine whether there is an effect or not, due to low sales volumes for rural properties. This is an area of continuing investigation by the Valuer-General.

Conclusion

Based on the evidence provided by the 2014 Valuer-General's report and in the absence of any hard evidence to the contrary, the Department is unable to identify any significant negative effect on the value of properties near the mine in terms of market appeal and/or price. Accordingly the Department believes that a suitable compensation mechanism as proposed to be developed by the PAC for 'lifestyle properties' is not justified.

As the Department is unable to justify a suitable compensation mechanism for impacts to 'lifestyle properties', the Review Report's recommendation becomes that the project meets the PSNLs at any such property. If noise impacts prove to be greater than the relevant PSNL, then the PAC considers the 'reasonable solution' should be one that involves mitigation and/or compensation for the impact to the satisfaction of the landowner or the acquisition of the property. The Department considers that the *Voluntary Land Acquisition and Mitigation Policy*, which postdates the PAC's report, does not support this approach.

In summary, the Department considers that all identified amenity impacts of the Stratford Extension Project, such as noise and air quality impacts, should be addressed in accordance with the new *Voluntary Land Acquisition and Mitigation Policy.* Application of the Policy provides for the mitigation of noise impacts at the residences on Properties 44 and 60 (if they are not earlier purchased by Yancoal, in accordance with the offer in its Statement of Commitments). The minor noise impacts at Property 23 are best managed by using best practice noise controls at source for mining operations during the period that these small exceedances of the PSNL may potentially occur. Property Cr7 would be afforded the right of acquisition on request.

3.6 Air Quality Impacts

The Review Report recommended the following changes to proposed conditions of consent:

> *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****.*
>
> *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.*[45] *(emphasis added by the PAC)*

For the same reasons as advanced in **Section 3.4**, the Department does not support the PAC's recommendation to extend the proposed acquisition on request of privately-owned land affected by air quality exceedances by the inclusion of the phrase *"or on more than 25 percent of privately owned land"* in recommended conditions 16 and 18 of Schedule 3.

The new *Voluntary Land Acquisition and Mitigation Policy* does not provide for air quality mitigation measures for vacant land and only provides for land acquisition measures where the relevant air quality criteria are predicted to be exceeded on *"more than 25% of any privately owned land where there is an existing dwelling or where a dwelling could be built under existing planning controls".*

The EIS reports that no privately-owned property is predicted to receive air quality impacts that would exceed this criterion. The Department supports the originally proposed form of the conditions, which remain in accordance with the new Policy.

The Review Report also recommended:

> *A revised acquisition criterion [for 24-hour cumulative PM_{10} impacts] should be developed in consultation with NSW Health and the EPA before the project is determined.*[46]

The PAC has also raised this issue in other reviews of mining applications, including the Coalpac Consolidation Project, Moolarben Coal Project and the Boggabri Coal Project.

The PAC has recommended that the Department's standard criterion of 150 $\mu g/m^3$ for short-term (ie 24 hour) total cumulative (ie all sources) PM_{10} emissions should be revised, given that the national 24 hour PM_{10} criterion is 50 $\mu g/m^3$. The PAC considers that the revised criteria should be developed in consultation with NSW Health and the EPA prior to any final approval of the project.

The Department confirms that the policy position in relation to both the short and long-term PM_{10} air quality criteria is currently under review. However the review process is likely to take some time. The Department has removed the 150 $\mu g/m^3$ cumulative criterion from its recommended conditions, but retained the incremental (ie project-related) criterion of 50 $\mu g/m^3$. In the interim, the Department does not believe that it is reasonable to delay approval of the Stratford Extension Project, or any other mining development application which is currently on foot, while it consults with other government agencies, such as NSW Health and the EPA, and further considers the PAC's recommendation during its review of air quality criteria.

The Review Report recommended that:

> *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.*[47]

In the PAR, the Department considered the impacts and quantum of mine-generated dust that may end up in domestic water supplies. The Department has re-visited this issue by considering the information in the EIS,[48] GSC's 'snap-shot' study into drinking water quality of the villages of Stratford, Barrington and Copeland,[49] a study undertaken by the University of Queensland into lead levels in drinking water at Camberwell in the Hunter Valley,[50] and a study

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[45] PAC Stratford Extension Review Report, p 38.
[46] Ibid, p 39.
[47] Ibid, p 39
[48] Stratford Extension Project EIS, Appendix G - Air Quality and Greenhouse Gas Assessment, Table 9.7, pp 93-96.
[49] Parkinson T and Stimson R, *Investigation into the Quality of Water in Rainwater Tanks at Stratford, Barrington and Copeland Villages, November 2010,* Gloucester Shire Council.
[50] Noller N, (2009), *Community Lead Issues at Camberwell NSW,* Centre for Mined Land Rehabilitation, The University of Queensland.

by researchers from the University of Newcastle into potential health impacts from trace elements in coal dust in rainwater.[51] All of these studies show that dust from mining operations is quite unlikely to cause health effects from drinking water collected from house roofs. Where elevated levels of some elements (such as iron, zinc and copper) have been identified, they are likely to have originated from the materials in which roofing, guttering and plumbing is constructed. For example, higher lead levels are likely to be caused by contact with lead flashing used to waterproof roof joins.

The discoloration of water supplies that was raised by residents at the PAC's public hearing and in the Review Report has also been re-considered by the Department. For residences in Stratford village, the predicted increase in dust from the project would be 0.1 g/m^2/month, or less. This represents around 9% of the total dust fallout from all sources for these residents. What was notable from GSC's "snapshot study" was that, of all the water supplies tested, only the Stratford Public School had a first-flush diverter fitted to improve the quality of drinking water. This device allows a small tank to fill with the first flush of rainfall that carries most of the dust deposited on a roof, so that the bulk of water collected in the main domestic supply tank is relatively free of sediment and other sources of pollution that may accumulate on roofs (eg vegetable matter and faeces from insects, birds, bats and arboreal mammals). The installation of such devices for all domestic water supply tanks has considerable merit, whether a house is located near or far from a mine. One appropriate mechanism to consider the need for, or desirability of, first-flush diverters would be in Councils' consideration of building applications.

The Department has recommended in its proposed conditions that Yancoal be required to install first-flush diverters, water filters and also be required to clean out water tanks if the project's air quality impact criteria are exceeded. However, these conditions are not expected to ever need to be applied, since air impacts from the project are predicted to be quite low. As an example, deposited dust from the project (which is most often referred to in amenity considerations), is predicted to be at the most 0.2 g/m^2/month, and no higher than 0.1 g/m^2/month for residences in Stratford village. When compared to the incremental air quality impact criterion of 2.0 g/m^2/month, it can be seen that no exceedances would be expected.

Overall, while the Department does not dispute that drinking water from residences near the mine is, or could be, discoloured, the evidence is that the mine would contribute less than 10% of total dust fallout and that the existing very good air quality that Stratford and its environs is expected to continue. Other sources of discolouration within rainwater tanks are expected to exceed the contribution from the mine by at least an order of magnitude.

4. CONCLUSION

With a capital expenditure of $75 million, annual expenditure of $128 million, of which $45 million would be injected into the local economy, the direct employment of up to 250 workers and a conservative estimate of the creation of up to another 250 positions, the Stratford Extension Project would provide a significant economic benefit to NSW for 11 years. These are significant and real economic benefits that deserve substantial weight in the decision as to the merits of the project based on the balancing required under section 79C of the EP&A Act. Whether this project is profitable is primarily Yancoal's concern. In any event (except not proceeding to mine the coal resource), the benefits would accrue to the NSW economy.

The Department has given careful consideration to the Review Report's 31 recommendations. Eighteen of these recommendations have been directly incorporated into revised recommended conditions (see **Appendix E**).

In a number of other areas, the Department has sought to apply alternative mechanisms to implement the PAC's proposals. In particular, further measures to protect Squirrel Gliders and their habitat are proposed. These are primarily based on Yancoal's offer to purchase Property

[51] Lucas, S A, et al, (2009) *Rainfall Harvesting and Coal Dust: the Potential Health Impacts of Trace Elements in Coal Dust in Rainwater,* Air quality and Climate Change, Volume 43 No. 2.

44 and include it in an enhanced Biodiversity Offset package and the consolidation of various proposed management measures in a Squirrel Glider Management Plan.

There are a few areas where the Department disagrees with the PAC's recommendations. The areas of greatest divergence are the:
- value of the project to indirect employment and economic activity to NSW;
- proposed formula for road maintenance contributions for The Bucketts Way;
- responsibility for acoustic treatment of houses near the rail line at Wards River; and
- compensation for potential noise impacts on 'lifestyle properties'.

The Department's rationale for these differing positions is set out in **Sections 3.1 to 3.6**, along with its recommendations of how to achieve improved outcomes through conditions of consent which address many of the PAC's intentions beyond those recommendations which are adopted directly.

The Department is satisfied that its recommended conditions are based on contemporary policy and best-practice and are equitable. It is also satisfied that the project is, on balance, in the public interest and recommends that it be approved subject to the recommended conditions of consent.

5. RECOMMENDATION

It is RECOMMENDED that the Planning Assessment Commission, as delegate of the Minister for Planning and Environment:
- **consider** the findings and recommendations of this report;
- **approve** the development application, subject to conditions; and
- **sign** the attached instrument of consent (**Appendix E**).

Howard Reed

Howard Reed 9.4.15
Director
Resource Assessments

Oliver Holm 9/4/15
Executive Director
Resource Assessments and Compliance

Marcus Ray
Deputy Secretary
Planning Services
13/04/2015

APPENDIX A: PRELIMINARY ASSESSMENT REPORT

APPENDIX B:
PAC MERIT REVIEW REPORT

APPENDIX C:
RESPONSES TO PAC REVIEW REPORT

(See attached CD)

APPENDIX D:
DRE'S COAL ROYALTY WORKSHEETS

(See attached CD)

APPENDIX E:
RECOMMENDED CONDITIONS OF CONSENT

(See attached CD)