

3 December 2013

Mr Clay Preshaw  
Senior Planning Officer  
Department of Planning & Infrastructure  
GPO Box 39  
SYDNEY NSW 2001

Dear Clay,

**WALLARAH 2 COAL PROJECT  
WYONG SHIRE COUNCIL LATE SUBMISSION - RESPONSE**

**1 INTRODUCTION**

**1.1 BACKGROUND**

The 'Development Consent Application' and supporting 'Wallarah 2 Coal Project Environmental Impact Statement' (EIS) (Hansen Bailey, 2013) was placed on public exhibition for eight weeks from 26 April 2013 to 21 June 2013.

A total of 748 submissions (including 20 regulatory agencies) were received by the Department of Planning & Infrastructure (DP&I) during and following the eight week public exhibition of the EIS. The 'Wallarah 2 Coal Project Response to Submissions' (Hansen Bailey, 16 September 2013) (RTS) was prepared on behalf of WACJV to support SSD-4974 under section 78A(8A) of the EP&A Act. The RTS responded to the submissions raised by stakeholders during the public exhibition period.

DP&I provided the RTS on 17 September 2013 to the 20 regulatory authorities who provided a submission to the public exhibition of the EIS. The majority of regulators provided subsequent responses. Various meetings with regulators were held and the 'Wallarah 2 Coal Project Residual Matters Report' (Residual Matters Report) dated 30 October 2013 provided detailed responses to any residual regulatory issues. Office of Environment and Heritage provided further comment dated 1 November 2013 to which WACJV provided a response dated 8 November 2013.

## 1.2 DOCUMENT PURPOSE

Wyong Shire Council (WSC) has subsequently provided a further comment following closure of the exhibition period dated November 2013 (see **Appendix A**). This letter report responds to the issues raised in the WSC comments of November 2013.

## 2 WSC SUBMISSION RESPONSES

This section reproduces the submission from WSC and prepared by Earth Systems dated November 2013 in italics and indented. WACJV's responses are shown in plain text. Each item from Table 3-1 is listed in the following sections. Items from Table 3-2 have been allocated a letter A through P (row 1 to 16) in order to facilitate responses. Items identified with a 'Yes' in Table 3-1 as being addressed are not repeated in the following sections (Finding Numbers 12, 18, 20, 21 and 22).

Similarly, items from Table 3-2 which are identified with a 'Yes' as being addressed are not repeated in the following sections (Finding Letters D, E and F).

It should be noted that in relation to surface water and groundwater issues, NSW Office of Water (NOW) has provided a submission to DP&I dated 1 November 2013 in response to the Residual Matters Report which concludes '*the Office of Water accepts that the proponent has adequately addressed its concerns*'.

In relation to subsidence, Trade and Investment NSW – Division of Resources and Energy (DRE) provided a submission to DP&I dated 3 October 2013 noting that '*DRE has no additional comments*'.

### 2.1 STRUCTURE AND APPROACH

#### 2.1.1 Finding Number 1 and Letter B - Air Quality and Water

*The response provides no justification as to why construction impacts were not clearly separated from operations impacts and fails to articulate the extent of construction impacts for most parameters.*

##### Air Quality

*The air quality impact assessment is fundamentally flawed and air quality exceedances are anticipated during operations, thus the assumption that construction impacts will necessarily be compliant with emissions criteria cannot be justified with certainty.*

Earth Systems are incorrect in this statement. The air quality impact assessment does not predict any exceedances during operation, either as an increment from the project alone or cumulatively (when background is considered). Compliance during operation is predicted to represent compliance during construction on the basis that construction phase emissions are significantly less than operation phase emissions and operations comply with air quality goals.

*Ambient conditions for 24-hour PM10 often exceed criteria in the region (>16% if measured days), thus air quality impact criteria during both construction and operations will exceed air quality criteria under various meteorological conditions.*

The NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in NSW includes a section on “Dealing with elevated background concentrations (Section 5.1.3). In this section the EPA required that the proponent must demonstrate that no additional exceedances will occur as a result of the proposed activity and that best practice management practices will be implemented. Both these requirements are satisfied in the air quality impact assessment.

*Emission factors for the construction phase were taken from USEPA (1995) and NERDDC (1998) instead of the more up-to-date and Australian emission factors, available from the National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Mining (2012).*

Earth Systems are incorrect in this statement. Although published in 2012, the NPI emission factors are not “more up-to-date”. They are, in fact, based on the USEPA (1995, 1998), NERDDC (1998) and SPCC (1993), as described in the first paragraph of Appendix A of the NPI manual.

#### Water Quality

*Construction phase impacts are not addressed. The justification in the Response to Submission points to erosion and sediment control planning that relies on the completion of various components of Project construction (e.g. sediment dams). No controls are recommended for minimising erosion and sediment control at the outset of construction and potential impacts from hydrocarbons and other construction phase water quality are not considered, nor are management measures provided*

The management of stormwater quality during the construction phase would be addressed through the implementation of a construction phase erosion and sediment control plan as part of the Site Water Management Plan, based on a typical best practice approach. Such a plan is usually developed as part of detailed documentation for construction because the appropriate control measures depend on the construction sequence. The risks associated with construction phase impacts for the project are not significantly greater than any other construction project.

#### **2.1.2 Finding Number 1b and Letter I – Closure Planning**

*Although it is recognized that WACJV intends to develop a Rehabilitation and Closure Plan, no indication in the response is provided with respect to the approach to closure planning, impact assessment and post-closure risk mitigation.*

Should WACJV be granted a Development Consent, DP&I will stipulate the particulars that need to be addressed in relation to closure planning which shall be outlined in the Rehabilitation and Closure Plan. Consistent with contemporary DA's in NSW, this plan will be developed in consultation with relevant regulators to the approval of DP&I.

### **2.1.3 Finding Number 2 and Letter J – Risk Assessment**

*Since submission of the 2013 EIS additional investigations have been undertaken and additional mitigation measures derived (refer to Table 11, Response to Submissions, 2013) which are not captured in the revised risk assessment.*

The primary purpose of the risk assessment process is to prioritise and focus the required environmental assessments for the Project EIS. Mitigation and management measures were then developed based on the outcomes of these environmental assessments. Any residual matters will be addressed in conditions of Development Consent and post-approvals required by DP&I. The risk assessment is not required to be revisited.

### **2.1.4 Finding Number 3 – Environmental Management System**

*The response specifies the intention of WACJV to develop an Environmental Management System while Table 11 outlines the plans and strategies that would form the basis of the EMS.*

Noted. The EMS will be developed as described in Table 11 and outlined in any future Development Consent.

### **2.1.5 Finding Number 4 and Letter O – Environmental Audits**

*Response has addressed recommendation to have independent environmental audits conducted, however no further detail is provided regarding the proposed nature of the audit, frequency, etc.*

Should a Development Consent be granted to WACJV for the Project then it will detail the parameters of any required Environmental Audit.

### **2.1.6 Finding Letter G – Mine Design and Layout**

*Although little heavy vehicle movement is expected on internal roads, it is still necessary to determine potential disturbances or impacts caused by heavy vehicles on local environment (e.g. dust, noise, vibration).*

As the Project is proposed to comprise an underground mine, very limited heavy vehicle movements within the mine will occur, primarily in relation to deliveries to site from external roads. Internal roads are shown on Figure 19 and Figure 21 of the EIS for each of the Tooheys Road and Buttonderry sites, respectively. There are no heavy vehicles hauling materials within the site.

## **2.2 STAKEHOLDER ENGAGEMENT**

### **2.2.1 Finding Number 5 – Stakeholder Engagement Evidence**

*Although different methods of engagement were employed as stated in the response, the only examples and evidence provided to substantiate the statement was a newsletter and one example of a residential letter.*

*No meetings minutes or other evidence from meeting are presented. Therefore, it is not possible to determine if stakeholders adequately engaged and if raised concerns were accurately captured and addressed*

Section 5 of the EIS outlines the stakeholder engagement carried out for the Project. Additional information is provided in Section 3.24 of the EIS. As stated in Section 5.3.4 of the EIS, the Community Reference Group meeting minutes are supplied on the Project website. Additionally, Section 3.24.1 of the RTS discusses the adequacy of the community consultation.

## **2.2.2 Finding Letter H – Stakeholder Engagement Plan**

*Although the RTS states that WACJV will continue to undertake consultation with stakeholders, it does not specify a strategy, plan of how consultation will be undertaken and does not provide an indication of a grievance mechanism, a best practice approach typical of impact assessments.*

Should a Development Consent be granted to WACJV for the Project then the consent will detail the parameters for the Community Consultative Committee (CCC), complaints register and public access to information requirements. Noise and Air Quality management plans will also detail the process for addressing complaints specific to noise and air quality impacts.

## **2.3 WATER**

### **2.3.1 Finding Number 6 – Water Quality Impacts**

*While suspended sediment will likely be the primary water quality pollutant during construction, it is one of a number of potential pollutants that require management (e.g. hydrocarbons, acid and metalliferous drainage, etc.).*

*Although the mine water management system has been designed to ensure no uncontrolled discharges, the RTS admits the possibility of an uncontrolled discharge to occur in an extreme event, however no mitigation measures or contingency are provided.*

*Furthermore, inferring that impacts to Wallarah Creek will be minimised because flood conditions and dilution are assumed to reduce impacts, there is no further investigation to support this assumption. Dilution is also not an adequate means of reducing impact, which depends on the nature of potential contaminants (chemical and physical), etc.*

*The assumption that passive treatment for potential contaminants in the Entrance Dam will ensure discharge is of suitable quality does not consider the range of potential water quality issues that may occur.*

The proposed water management strategy for the project does not rely on dilution to reduce impacts. It prevents impacts by being designed for zero discharge under all climatic conditions experienced in the last 120 years. An extreme rainfall event beyond any event experienced in the last 120 years could, theoretically, result in overflow from mine water dams at the Tooheys Road site. However, the risk of environmental harm occurring is low because:

- The area captured in the mine water management system at the Tooheys Road site is about 36 hectares, compared to a catchment area of about 400 hectares for Wallarah Creek, thereby diluting any overflow by a factor of 10;

- Extreme rainfall would result in fresh water inflow to the mine water system, improving the water quality of any overflow; and
- The volume of any overflow could be reduced or eliminated by transferring water for temporary storage underground.

Since there is no coal handling at the Buttonderry site, the range of pollutants likely to occur in runoff to the Entrance Dam is similar to other catchments with industrial land use. These pollutants can be managed using urban stormwater best management practices, consistent with any other industrial site.

### **2.3.2 Finding Number 7 and Letter C – Acid and Metalliferous Drainage**

*The 2013 EIS Appendix C Geology Report or RTS do not indicate that a geochemical analysis was undertaken to test for AMD, rather a desktop analysis was relied upon.*

*However, the Soils and Land Capability Impact Assessment (EIS 2013) found the “potential of acid sulphate soils (ASS) and potential acid sulphate soils (PASS) to occur in the south of the Project Boundary along the lower reaches of the Jilliby Creek and Little Jilliby Creek, and along the unnamed waterway adjacent to western boundary of the Buttonderry Site” (page 8). Furthermore, the report states that “any activities in sections of the Project Boundary within or close to these areas (e.g. construction and final rehabilitation of the Buttonderry Sites...800 meters from an area with a potential for ASS and PASS to be present) should take into account the potential presence of ASS and PASS and ensure such soils are appropriately assessed and managed.” (Page 8, EIS 2013). ASS are soils that typically contain significant concentrations of pyrite. When exposed to oxygen coupled with sufficient moisture, they oxidise and result in sulphuric acid generation.*

Section 7.19.3 of the EIS states “A review of the potential distribution of Potential Acid Sulphate Soils (PASS) and Acid Sulphate Soils (ASS) shows that there is no area which contains a high probability of PASS and ASS forming within the Project Boundary. There is a low probability of occurrence in the south of the Project Boundary along the Jilliby Creek and Little Jilliby Creek and along an unnamed waterway adjacent to the northern boundary of the Buttonderry Site. Infrastructure Areas do not occur within these low probability areas.”

Additionally, as noted in Section 3.18.14 of the RTS “*management measures for PASS and ASS, in the unlikely event that they are uncovered, will be provided in the Soil and Land Capability Procedure.*”

### **2.3.3 Finding Number 8 – Water Treatment Plant Monitoring**

*Although the WTP monitoring point will be located at the release point from the WTP as part of the monitoring program, baseline conditions at the discharge point have not been captured and therefore will not provide a baseline comparison of impacts including cumulative impacts.*

*Furthermore, no indication is provided of when the WTP release sampling point will be installed. If it is installed after Project activities commence (e.g. construction, operations) begin, it will not be possible to distinguish between existing baseline conditions (prior to project activities and potential Project impacts/influences) and Project impacts.*

The proposed discharge point for the WTP is located on a small ephemeral gully, about 200 metres upstream of its confluence with Wallarah Creek. Monitoring of water quality on this small gully is difficult because flows are relatively small and occur only for a short period after rainfall. In addition, there is no baseline data set for this gully. The proposed water management strategy is based on ensuring no adverse impact in Wallarah Creek, which is the receiving watercourse for all runoff from the Tooheys Road site. Wallarah Creek has a good baseline data set, with more than 60 samples taken over about 6 years for some parameters.

### **2.3.4 Finding Number 9 – Untreated Mine Water Overflow**

*Response does not directly address concerns regarding potential overflow of the MOD specifically, such as reference to a design criteria of MOD and mitigation measures to prevent overflow.*

*Although the mine water management system has been designed to ensure no uncontrolled discharges, the RTS admits the possibility of an uncontrolled discharge to occur in an extreme event, however no mitigation measures are provided and no contingency plan proposed.*

*Furthermore, the detailed design of mine water dams should be undertaken in conjunction with the EIS and finalized before obtaining environmental approvals in order to adequately categorize residual impacts following mitigation measures considered in the design criteria.*

See response under Section 2.3.1 above. Detailed design of infrastructure is usually undertaken following determination for State Significant Developments in NSW in consultation with relevant regulators.

### **2.3.5 Finding Number 10 – Groundwater Parameters**

*The response does not state a rationale for only conducting a limited range of parameters and does not indicate an intention to implement a more comprehensive monitoring program.*

*Furthermore, it indicates that data collected from relevant piezometers was only over a course of 2 years collected more than 10 years ago. As a result referenced parameters may not adequately represent current groundwater properties in the Project Area.*

Table 11 of the RTS notes “*In consideration of the findings from the groundwater and surface water assessments, the Water Management Plan will ensure that the monitoring program as described is implemented and maintained so that the modelled predictions and assumptions can be verified and any potentially unforeseen water impacts can be identified and managed.*” It should also be noted that in relation to surface water and groundwater issues, NOW provided a submission to DP&I dated 1 November 2013 concluding ‘*the Office of Water accepts that the proponent has adequately addressed its concerns*’.

### **2.3.6 Finding Number 11 – Groundwater Impact Mitigation**

*The response does not adequately articulate mitigation measures for potential groundwater impacts nor does it adequately address the need for a more rigorous monitoring protocol to identify potential impacts.*

Table 11 of the RTS notes “*In consideration of the findings from the groundwater and surface water assessments, the Water Management Plan will ensure that the monitoring program as described is implemented and maintained so that the modelled predictions and assumptions can be verified and any potentially unforeseen water impacts can be identified and managed.*” It should also be noted that in relation to surface water and groundwater issues, NOW provided a submission to DP&I dated 1 November 2013 concluding ‘*the Office of Water accepts that the proponent has adequately addressed its concerns*’.

## **2.4 AIR QUALITY AND GREENHOUSE GAS**

### **2.4.1 Finding Number 13 & Letter A – Approved Methods**

*The Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) lists the statutory methods for modelling and assessing emissions of air pollutants from stationary sources in the state. It is referred to in Part 4: Emission of Air Impurities from Activities and Plant in the Protection of the Environment Operations (Clean Air) Regulation 2002 (the ‘Regulation’). Industry has an obligation to ensure compliance with the requirements specified in the Regulation.”*

If approved, the Project will operate under, and comply with, an Environmental Protection Licence (EPL) issued by the EPA under the *Protection of the Environment Operations Act 1997* (POEO Act).



*The modelling for predicted impacts (Sections 8.1 –8.7 of the EIS) and associated contour plots consider emissions from Project-related operations alone. Predicted impacts from the Project must be summed with respective background concentrations to determine total impact for each parameter and averaging period. Instead, the impact assessment compares predicted emissions from Project operations alone against the impact criteria, giving the impression that concentrations of applicable parameters will be compliant with impact criteria. As ambient conditions exceed guidelines on occasion, exceedances will occur, which will be exacerbated with Project emissions.*

Earth Systems are incorrect in this statement. Both incremental and cumulative impacts are presented in air quality impact assessment. Contour plots are presented for project alone impacts while cumulative impacts are presented in tabular form for each receiver location. Cumulative impacts for 24-hour PM<sub>10</sub> are based on a probabilistic approach.

*Maximum daily PM10 used a Monte Carlo statistical simulation to randomly select values, rather than use maximum available PM10. While there may be merit in using a statistical approach, The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DECC, 2005) specifies the use of maximum measured volumes in cases where measurements were not taken often enough to include them in the model, and advises consulting Air Technical Advisory Services Unit of the DECC otherwise.*

Pacific Environment has discussed this statistical probability approach with the Air Technical Advisory Services Unit of the NSW EPA and has adopted this approach in numerous air quality impact assessments for mining and other operations, most of which are reviewed by the NSW EPA. Furthermore, the EPA has reviewed this air quality assessment and they did not find an issue with the use of this statistical probability approach for cumulative 24-hour PM<sub>10</sub> assessment.

*A cumulative impact assessment should capture total impacts (background concentration summed with predicted Project-related inputs) combined with anticipated future development. The cumulative impact assessment does not adequately consider the combined effects of Project emissions, future development (e.g. Warnervale Town Centre construction) and ambient conditions*

A cumulative assessment has been completed and is presented in Section 8.8 of the air quality impact assessment, based on the existing ambient environment. At a distance of over 3 km from the Project, the construction of the Warnervale Town Centre is not expected to have any noticeable cumulative impact above that described in the air quality impact assessment.

#### **2.4.2 Finding Number 14 – Air Quality Impact Mitigation and Monitoring**

*The proponent has committed to developing an Air Quality Management Plan (AQMP). The AQMP has not been included in the EIS.*

*The future AQMP will provide an (undisclosed) number of PM10/PM2.5 particulate monitors. There is no commitment for ambient air gases or odour monitoring from the potentially odorous ventilation stack.*

*It is accepted that the rail corridor is used by all train movements, though a monitor between the corridor receptors and site may prove beneficial. .*

There is little basis for requiring ambient monitoring of “gases or odour”. The ventilation stack will emit mine ventilation air. Mine ventilation air is required to have low enough pollutant levels to ensure occupational health and safety for underground mine employees. When mine ventilation air is emitted from a ventilation stack, pollutant concentrations are further dispersed and diluted and ambient air quality concentrations are significantly lower than the safe levels that underground miners are exposed to.

The balance of evidence suggests that fugitive emissions from coal transportation do not present a significant risk to the community. Notwithstanding this, the proponent is committed to best practice emissions controls on coal transportation including water spraying the coal surface during train loading as well as best practice load profiling.

#### **2.4.3 Finding Number 15 – Energy and Greenhouse Strategy**

*A commitment has been shown to provide Greenhouse Gas mitigation measures in a future Air Quality Management Plan (AQMP). An AQMP has not been included as part of the EIS.*

*WACJV should clarify the wording/timing of the Energy and Greenhouse Strategy, as to whether “within” refers to 2 years prior to or after commencement of longwall mining. And the timing of anticipated greenhouse mitigation measures contained within the Strategy.*

The commitment to develop a greenhouse strategy within 2 years of commencement of mining is to allow adequate time to gather data on methane levels within the seam and to investigate the feasibility of long term methane capture and utilisation. The timing of the GHG mitigation measures will be dependent on the outcomes of the options study for capture and utilisation (flaring versus beneficial re-use). Consistent with contemporary DA's in NSW, this strategy will be developed in consultation with relevant regulators to the approval of DP&I.

## **2.5 NOISE AND VIBRATION**

### **2.5.1 Finding Number 16 – Road Transport of Coal**

*The Noise study noted that coal maybe transported by road when regular train freight is not available. This represents a potential “worst-case” emission scenario for both noise impacts and air quality impacts to the community*

This statement is not included in the noise study for the Project. As stated in reference point 34 of Table 11 of the RTS document, “the Project will not transport any coal to port via the road network”.

### **2.5.2 Finding Number 17 – Exceedance of Project Specific Noise Criteria**

*Mitigation measures specific to the Project Specific Noise Criteria (PSNC) are not addressed in the RST and therefore mitigation measures specific to these exceedances are not provided.*

As described in Section 7.8.3 of the EIS, the PSNC are not predicted to be exceeded at any privately owned residences during construction and operations. Mitigation measures to be included in the Noise Management Plan are listed in Section 7.8.4 of EIS. Consistent with contemporary DA's in NSW, this plan will be developed in consultation with relevant regulators to the approval of DP&I.

## **2.6 ECOLOGY**

### **2.6.1 Finding Number 19 – Offset Calculations**

*The response does not include the calculations conducted to determine offsets or include details of the Biodiversity Offset Package. As a result it is not possible to determine the accuracy or suitability of methods used in determining offsets.*

Table 63 of the EIS provides a complete breakdown of the area of each vegetation type to be disturbed and the area of each vegetation type within the Biodiversity Offset Areas (BOS). Table 64 of the EIS provides further information regarding habitat for Threatened flora and fauna species within both the impact area and BOS. All of the values are provided. It is unclear what additional information is required.

Each of the Commonwealth Department of the Environment (Previously SEWPaC) and OEH dated 4 October 2013 and 1 November 2013 respectively have reviewed the quantum of offsets proposed for the Project and are satisfied it meets their requirements.

## **2.7 COMMUNITY HEALTH AND SAFETY**

### **2.7.1 Finding Number 23 and Letter L – Air and Water Impacts on Community Health and Safety**

*Given the information gaps and recommendations provided in this Report, responses related to community health and safety with respect to water and air quality are not adequately addressed.*

*Comprehensive baselines are required to establish existing water quality, air, and traffic conditions in order to assess potential impacts, develop comprehensive monitoring and management plans.*

Significant baseline monitoring data has been collected for the Project for water, air and traffic.

Baseline water quality monitoring for the Project commenced in 1996 and continued until 2004. Following a hiatus, monitoring resumed and has been undertaken without interruption since 2006. Surface water sampling has been conducted at 14 sites for a range of water quality parameters: pH, salinity, temperature, dissolved oxygen, TSS, TDS, heavy metals and organic compounds.

Baseline air quality monitoring for the Project commenced in 1996, which provided monthly averages for dust fallout levels. In addition, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations were measured by high volume air samplers (HVAS). Air quality monitoring was discontinued in early 2004 but recommenced in late 2006 and has continued to date.

Baseline traffic data surrounding the Project was obtained from permanent Roads and Maritime Services stations between 1995 and 2004 and supplemented with turning traffic volumes, queue lengths and site inspections in both wet and dry conditions at appropriate intersections during multiple traffic studies for the preparation of the 'Wallarrah 2 Coal Project Environmental Assessment' (International Environmental Consultants Pty Limited, 2010) and the EIS.

## **2.8 IMPACTS BEYOND DGRS**

### **2.8.1 Finding Number 24 – Contingency Plan for Disasters**

*A Disaster Risk Management Plan ensures natural and human-induced emergencies associated with the Project are addressed. This Plan should be inclusive of specific Contingency Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion. Disaster risk management should have been included in the revised risk assessment of the 2013 EIS. The lack of this contingency plan is consistent with the general lack of contingency plans in the RTS.*

As part of conditions of development consent, DP&I will require a suite of management plans to be developed. DP&I will stipulate if any of these management plans are required to consider any 'emergency contingencies'.

## **2.8.2 Finding Number 25 and Letter M – Impacts to Buttonderry Waste Management Facility**

*Although the longwall panels are located over 1 km from the waste management facility there may be potential impacts to the facility due to subsidence, loss of geotechnical integrity, etc. Given the socio-economic and environmental significance of the facility to the area, impacts should be assessed and included in the risk assessment.*

As stated in the RTS “Each of the Waste Management Facility and the Buttonderry Surface Facilities area are located outside the [Subsidence Impact Limit] (SIL) and as such interactions between the waste site and coal extraction are considered highly unlikely.” Consultation will be carried out with WSC to encourage sharing of monitoring data from the Buttonderry Waste Management Facility to identify any potential impacts and to facilitate appropriate adaptive management responses.

## **2.9 MANAGEMENT AND MONITORING**

### **2.9.1 Finding Number 26 and Letter N – Management and Monitoring**

*An ESMMP type plan was not adopted in the 2013 EIS. The proponent has indicated a plan will be developed in the future.*

*Without a plan to review simultaneously with the EIS it is not possible to ascertain the efficacy of the management strategies to avoid and minimise impacts.*

Consistent with contemporary DA's in NSW, this plan will be developed in consultation with relevant regulators to the approval of DP&I.

### **2.9.2 Finding Letter N – Environmental Management System**

*An Environmental Management System based on ISO14001:2004 ‘Environmental management systems -- Requirements with guidance for use’ is developed and implemented for the Project.*

An Environmental Management System will be developed based on ISO14001:2004 ‘Environmental management systems -- Requirements with guidance for use’.

### 3 CONCLUSION

We trust this response provides DP&I adequate information to ensure that WSC's issues as provided in its submission dated November 2013 have adequately been addressed by WACJV (and its specialists) in the EIS and RTS.

Should you have any queries in relation to this letter, please contact me on 02 6575 2003.

Yours faithfully

**HANSEN BAILEY**

A handwritten signature in purple ink, appearing to read 'D Munro', is shown within a light grey rectangular box.

Dianne Munro  
*Principal*

## **APPENDIX A**

### ***Regulatory Correspondence***

# Wallarah 2 Coal Project

Wyong, NSW, Australia

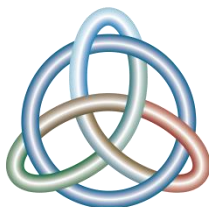
## Review of Response to Submissions to the Wyong Shire Council 2013 EIS Review

Prepared for



Wyong  
Shire  
Council  
CENTRAL COAST

By



**EARTH SYSTEMS**  
Environment | Water | Sustainability

**November 2013**





**EARTH SYSTEMS**  
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Revision Status / Number	Revision Date	Description of Revision	Approved By
RevDraft	November 2013	Draft	Nigel Murphy
Rev0	November 2013	Final	Nigel Murphy

# Executive Summary

Earth Systems was engaged by Wyong Shire Council to review the *Response to Submissions* (2013) provided by Wyong Areas Coal Joint Venture with respect to the findings and recommendations raised by Earth System in its review of the Wallarah 2 Coal Project 2013 EIS.

In the review of the 2013 EIS, Earth Systems concluded that the approach to the EIS deviated from standard practices (i.e. baseline assessment; impact assessment for construction, operations and closure; management and mitigation measures; residual impacts; and monitoring and reporting). In many cases, baseline conditions were inadequately addressed, impact assessments were underdeveloped and management and mitigation measures commonly pointed to management plans that would be developed in the future. These conclusions, in addition to specific data gaps for many components assessed in the EIS, were provided to WACJV in June 2013.

While the WACJV *Response to Submission* (RTS) acknowledged and responded to each of the issues identified in the 2013 EIS Review, many of the responses were inadequate and do not articulate measures to rectify the gaps identified in the EIS. These gaps render it impossible to determine residual impacts, particularly for the following:

- Air quality (construction and operations phases);
- Groundwater quality;
- Surface water quality for the controlled discharge point on the tributary to Wallarah Creek;
- Acid and metalliferous drainage (AMD); and
- Post-closure water quality, landform stability, visual amenity, etc.

The management and monitoring detail required to properly determine how impacts will be managed is still not provided, which leads to further uncertainty in the prediction of residual impacts.

Residual impacts are anticipated for air quality, however the extent of those impacts cannot be determined based on information from the EIS and *Response To Submission*. Residual impacts for water quality, noise and vibration, terrestrial habitat, and other criteria assessed cannot be adequately estimated without provision of the management measures that have been proposed for future management plans.

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# 1 Introduction

Earth Systems was commissioned in November 2013 by the Wyong Shire Council (WSC) to review the Wallarah 2 Coal Project Response to Submissions (RTS) in relation to the Earth Systems' review of the 2013 Environmental Impact Statement (EIS) and provision of recommendations.

The Wyong Areas Coal Joint Venture (WACJV) proposes to develop an underground coalmine known as the Wallarah 2 Coal Project (W2CP) (the Project), which would extract coal from beneath the Dooralong and Yarramalong Valleys in Wyong Shire, New South Wales using longwall mining techniques.

A chronology of the application process of the Project to date is summarised in Table 1-1.

**Table 1-1. Summary of the Wallarah 2 Coal Project Application Process.**

Date	Outcome
2010	Environmental Assessment (2010; referred to as the 2010 EIS) is submitted to the Director-General of the NSW Department of Planning (DoP) for assessment and approval under Part 3A of the NSW <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) and placed on public exhibition from 31 March to 2 June 2010.
March 2011	Development application for the Project is refused by the Minister for Planning due to: <ul style="list-style-type: none"> <li>• Uncertainty around subsidence;</li> <li>• Inadequate characterization of potential impacts to surface water quality, ecology (particularly in the western portion of site), cultural heritage; and</li> <li>• The Project was not considered to be consistent with the principles of sustainable development.</li> </ul>
November 2011	WACJV lodges a new application for development consent of a mining lease.
January 2012	NSW Government issues new Director General's Requirements (DGRs) for the Project ('New DGRs') to supplement DGRs issued in 2009. The new DRGs outline issues requiring comprehensive evaluation during the environmental assessment for Project approval.
July 2012	NSW Government issues supplementary DGRs to focus on the assessment of potential Project-related impacts on biodiversity, reinforcing Project obligations under the Environmental Protection and Biodiversity Conservation Act 1999 and the Environmental Protection and Biodiversity Conservation Regulations 2000.
April 2013	WACJV prepares a second Draft EIS (herein the 2013 EIS) to meet the regulatory requirements of EIS in NSW, address issues identified in the 2010 EIS refusal and meet the original and supplementary Director General Requirements.
April 2013	Draft EIS is placed on public exhibition from 26 April 2013 to 21 June 2013.
September 2013	Hansen Bailey on behalf of WACJV prepares a Response to Submissions document (RTS) responding to 748 submissions received during the public exhibition of the 2013 EIS.
October 2013	Hansen Bailey on behalf of WACJV prepares a subsequent Residual Matters Report.

WSC has engaged Earth Systems to review Hansen Bailey's responses on behalf of WACJV to the issues and recommendations identified by Earth Systems in its review of the 2013 EIA. As such, the objectives of this Report are to:

- Determine if the responses provided in the RTS adequately address issues and concerns raised by Earth Systems' review of the 2013 EIS;
- Indicate if the recommendations provided by Earth Systems in its review of the 2013 EIS were considered and addressed in the response; and

- Identify any other areas of uncertainty and or where further investigations and assessments are required prior to Project determination and/or during the construction, operation and closure stages of the Project.

## 1.1 Project Overview

The Project is located approximately 9 km to the northwest of Wyong township in New South Wales (refer to Figure 1-1). The proposed mining area is located within the declared Wyong Mine Subsidence District and the Hue Hue Mine Subsidence District, which together extend west of the F3 Sydney – Newcastle Freeway.



**Figure 1-1 Project Location** (Source: Hansen Bailey, 2013a)



Two primary surface facilities are proposed for the Project. The main coal handling and rail loading facility are referred to as the Tooheys Road Site and would be located adjacent the northeast corner of the F3 Freeway and the Motorway Link Road intersection. The Buttonderry Site would include ventilation shafts, office and employee facilities and be located to the south of the Buttonderry Waste Disposal Facility off Hue Hue Road. The majority of the underground extraction area lies beneath the Yarramalong and Dooralong Valleys and Wyong State Forest.

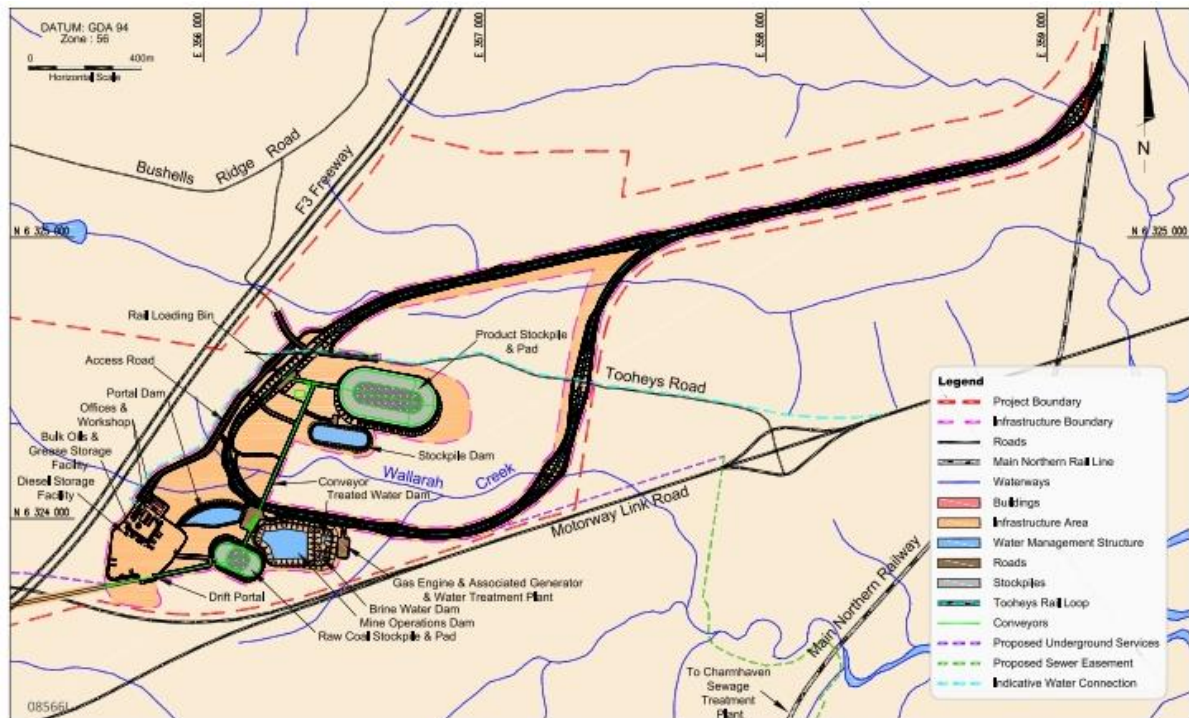


Figure 1-2 Tooheys Road Site (Source: Hansen Bailey, 2013a)

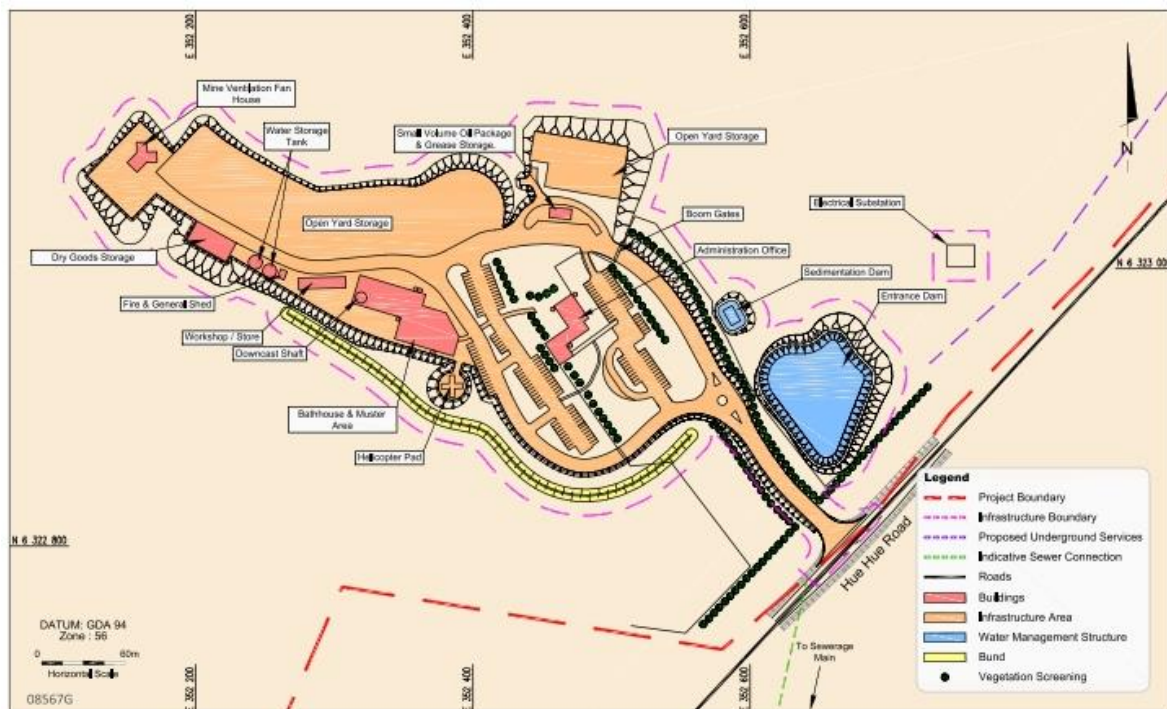
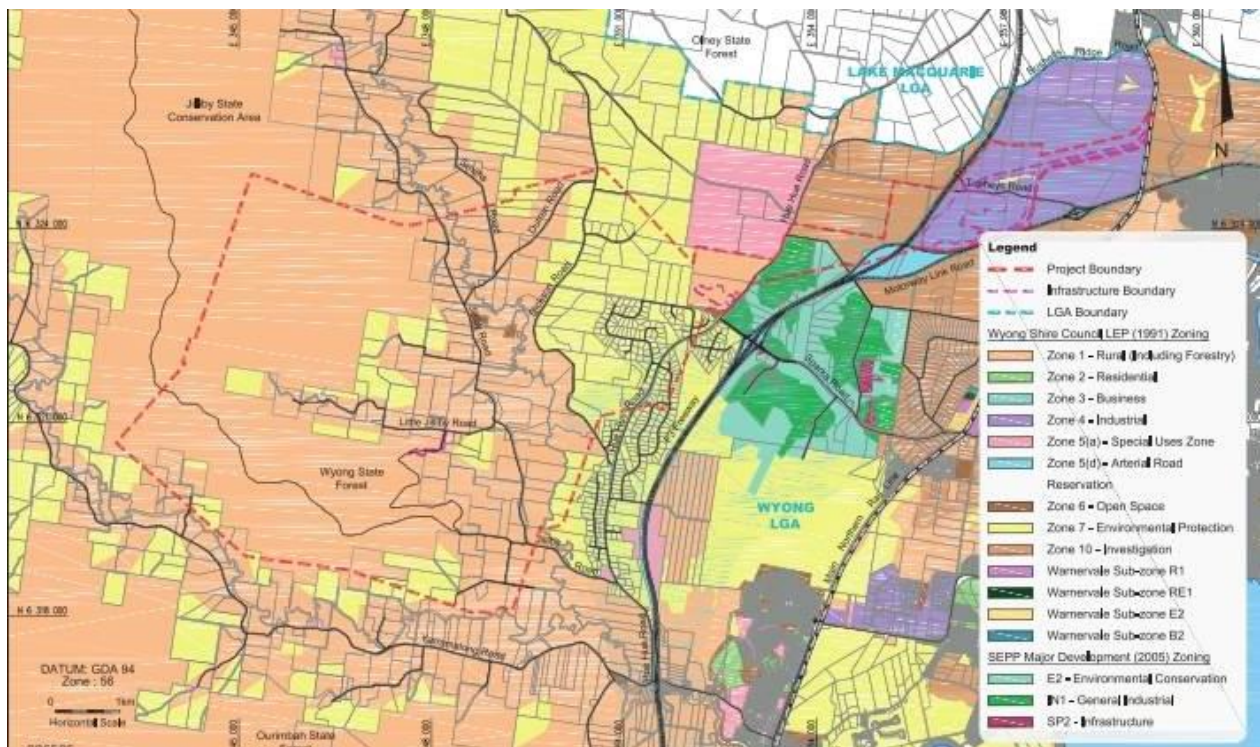


Figure 1-3 Buttonderry Site (Hansen Bailey, 2013a)

WACJV proposes to extract of up to 5 million tonnes per annum of run-of-mine (ROM) coal from the Wallarah-Great Northern Coal Seam for a period of 42 years using longwall mining methods. The Project is described in full in Chapter 3 of the 2013 EIS.

Key land uses within the Project Application Area range from light industrial, commercial and housing developments to small townships and small farms (Figure 1-4). The Tooheys Road Site is located between the F3 Freeway and an active clay quarry and tile factory. The Buttonderry Site is situated adjacent to the Wyong Employment Zone (WEZ) and the Buttonderry Waste Management Facility. The proposed Warnervale Town Centre (WTC) is located southeast of the Project sites while the Blue Haven residential area is located approximately 3 km to the north east of the Tooheys Road Site. A sewage treatment plant is located approximately 2 km to the south east of the Tooheys Road Site



**Figure 1-4 Surface Facilities and Surrounding Land Uses** (Source: Hansen Bailey, 2013a)

The Jiliby State Conservation Area and Wyong State Forest are located to the west of the Project area. Jiliby Creek flows to the southeast before merging with the Wyong River which feeds Tuggerah Lake. Wallarah Creek flows through the Tooheys Road Site to Budgewoi Lake.

Major transport routes near the Project area include the F3 Freeway, Motorway Link Road and the Main Northern Railway Line.

## 2 Methodology

This Report was undertaken to review and evaluate the adequacy of the responses and information presented in the *Response to Submissions* (2013) as they pertain to the findings and recommendations provided by Earth Systems in its review of the 2013 EIS. To ensure a comprehensive review, Earth Systems undertook the following steps:

1. Review of the responses in the RTS (2013) against the Review of 2013 EIS conducted by Earth Systems (June 2013);
2. Determine if the findings were addressed;
3. Assess the suitability and comprehensiveness of the response against each finding identified and recommendations provided by Earth Systems in the Review of the 2013 EIS; and
4. Summarise key findings from this Report.

### 2.1.1 Literature Review

The following documents were reviewed during the preparation of this Report:

- *Walarah 2 Coal Project Response to Submissions* (2013);
- *Walarah 2 Coal Project Residual Matters Report* (2013);
- *Walarah 2 Coal Project Review of the 2013 EIS* (2013);
- *Walarah 2 Coal Project Environmental Assessment: Volumes 1 to 6* (2013) and technical appendices;
- *Walarah 2 Coal Project Environmental Assessment: Volumes 1 to 4* (2010) and technical appendices;
- *Director-General's Environmental Assessment Requirements* (January 2012) and *Supplement to the Director-General's Requirements* (July 2012);
- All relevant Federal and State legislation, policies and plans; and
- Relevant environmental, sustainability and environmental impact assessment (EIA) standards and best practice guidelines.



## 3 Review

### 3.1 Review of RTS

An analysis of the suitability and quality of the proponent's responses to the findings, queries and recommendations identified by Earth Systems are presented in Table 3-1. The review is structured according to the 13 findings highlighted in the Executive Summary and the 12 recommendations provided in the *Review of the 2013 EIS* (Earth Systems, 2013).

**Table 3-1. Review of WACJV's response to issues identified by Earth Systems in the 2013 EIS.**

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
<b>Structure and Approach</b>	1	<i>EIS does not adequately assess construction impacts; in particular related to air quality, water quality and transport.</i>	<b>No</b> , air quality and water quality impacts are further commented on, but the deficiencies are not addressed.	<p><u>Air Quality:</u></p> <p>"Section 7.1 of the AQGGA provided detailed dust emission estimates for a construction phase scenario. The estimated dust emissions during construction were found to be significantly lower (approximately 50% lower) than the estimated dust emissions during the operational phase." "Section 8 of the AQGGA demonstrated that the Project will comply with the air quality impact assessment criteria at all locations during the operational phase. Due to the lower emissions during the construction phase, it can be concluded that the construction phase of the Project would also comply with the air quality criteria under all modelled climatic conditions."</p> <p><u>Water Quality:</u></p> <p>"The water balance model is configured to represent the changing characteristics of the water management system over the 28 year Project life, including the construction period. The construction period represents the first three years of the Project life, which has been simulated in the water balance model."</p> <p>"There are predicted to be overflows from the Entrance Dam at the Buttonderry Site during the construction period ranging from 0 ML/year (during an extremely dry year) to approximately 65 ML/year (during an extremely wet year). Since there is no coal handling at the Buttonderry Site, the primary potential pollutant will be suspended sediment. The runoff will be suitable for release after treatment of sediment within the Entrance Dam. The proposed erosion and sediment controls are described in Section 6.3 of the SWIA. There is no coal handling at the Tooheys Road Site during Year 1. Groundwater inflows to the underground commence in Year 2 of the Project,</p>	<p>Section 3.5.1, 3.3.6, 3.11.7, 3.11.8</p>	<p>The response provides no justification as to why construction impacts were not clearly separated from operations impacts and fails to articulate the extent of construction impacts for most parameters.</p> <p><u>Air Quality</u></p> <p>The air quality impact assessment is fundamentally flawed and air quality exceedences are anticipated during operations, thus the assumption that construction impacts will necessarily be compliant with emissions criteria cannot be justified with certainty.</p> <p>Ambient conditions for 24-hour PM<sub>10</sub> often exceed criteria in the region (&gt;16% if measured days), thus air quality impact criteria during both construction and operations will exceed air quality criteria under various meteorological conditions.</p> <p>Emission factors for the construction phase were taken from USEPA (1995) and NERDDC (1998) instead of the more up-to-date and Australian emission factors, available from the National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Mining (2012).</p> <p><u>Water Quality</u></p> <p>Construction phase impacts are not addressed. The justification in the <i>Response to Submission</i> points to erosion and sediment control planning that relies on the completion of various components of Project construction (e.g. sediment dams). No controls are recommended for minimising erosion and sediment control at the outset of construction and potential impacts from hydrocarbons and other construction phase water quality are not considered, nor are management measures provided.</p>

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				corresponding with the construction of the required drift. The volumes of groundwater inflows are shown in Section 5.7 of the SWIA. The WTP will be operating from the end of Year 1 of the Project to treat any groundwater inflows and any rainfall runoff, with excess treated water to be discharged to Wallarah Creek in accordance with the water management strategy and the conditions of an EPL."		
	1	<i>EIS does not adequately consider closure planning and no assessment of potential closure impacts has been undertaken.</i>	<b>No</b> , a commitment to prepare a closure plan has been made; however, the lack of closure planning within the body of the report leads to uncertainty in the assessment of impacts.	<i>"Further detail on rehabilitation objectives to ensure a safe, stable and non-polluting final landform will be included in a Rehabilitation and Closure Plan for the Project to be developed in consultation with relevant regulators. It shall include information on relevant domains and discuss final landuse, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring. The timing of the preparation of the plan will be consistent with any conditions of Development Consent."</i>	Section 3.22	Although it is recognized that WACJV intends to develop a <b>Rehabilitation and Closure Plan</b> , no indication in the response is provided with respect to the approach to closure planning, impact assessment and post-closure risk mitigation.
	2	<i>The risk assessment and cost benefit analysis need to be re-rated based on the remaining knowledge gaps and uncertainties and the findings of further recommended studies.</i>	<b>No</b> , the risk assessment and cost benefit analysis has not been re-rated.	<i>"The BCA of the Project was based on the best available information about the Project, including information from a range of specialist assessments predicting the likely environmental, social and cultural impacts. The Economic Impact Assessment considered reasonable worst-case assumptions for the purposes of the impact assessment including the BCA...This analysis indicated that the results of the BCA were not sensitive to reasonable changes in the assumptions for any of these variables. In particular, significant increases in the values used for impacts of greenhouse gas emissions, agricultural impacts and forestry impacts had little impact on the overall economic desirability of the Project."</i>  <i>"Chapter 6 of the EIS provides a summary of Appendix F of the EIS which provides a detailed Revised Risk Assessment of the potential known Project risks in accordance with the WACJV Risk Assessment Matrix. The risk assessment was</i>	Section 3.17.2, 3.27.18	Since submission of the 2013 EIS additional investigations have been undertaken and additional mitigation measures derived (refer to Table 11, Response to Submissions, 2013) which are not captured in the revised risk assessment.

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				<i>undertaken in accordance with the DGRs which required they identified the key issues for further assessment."</i>		
	3	<i>Lack of Environmental Management System or a commitment to develop one.</i>	<b>Partially</b> addressed. A description of Environmental Management System was not provided, however an indication to develop one was included.	<i>"WACJV will develop and implement an Environmental Management System in consultation with the relevant regulators (and the Aboriginal community where relevant) consistent with Section 7 of this EIS to the approval of DP&amp;I which shall comprise (at least)" 17 strategies / plans.</i>	Section 3.25, Table 11 of Section 4.	The response specifies the intention of WACJV to develop an Environmental Management System while Table 11 outlines the plans and strategies that would form the basis of the EMS.
	4	<i>Lack of commitment to regular independent environmental audits throughout the project life cycle. However, there is a commitment to develop an Annual Review Report to systematically assess performance and identify areas for improvement.</i>	<b>Partially</b> addressed. A commitment to undergo Independent Environmental Audits is stated, however no indication of regularity or frequency provided.	<i>"WACJV will commission Independent Environmental Audits in accordance with any conditions of Development Consent."</i>	Section 3.27.14, Table 11 of Section 4	Response has addressed recommendation to have independent environmental audits conducted, however no further detail is provided regarding the proposed nature of the audit, frequency, etc.
<b>Stakeholder Engagement</b>	5	<i>2013 EIS does not indicate that WACJV has adequately engaged with the community during the environmental assessment process and consequently limited consultation has been conducted. The EIS does not provide</i>	<b>No.</b> No additional information is provided to determine if stakeholders were adequately engaged or if their concerns were accurately captured and addressed in the	<i>"As described in Section 5.3 of the EIS, various methods were employed to engage with the local community including local community meetings, focus groups and telephone surveys, five newsletters, direct correspondence, creation of a community reference group and Project information days."</i>	Section 3.24.1	Although different methods of engagement were employed as stated in the response, the only examples and evidence provided to substantiate the statement was a newsletter and one example of a residential letter.  No meetings minutes or other evidence from meeting are presented. Therefore, it is not possible to determine if stakeholders adequately engaged and if raised concerns were accurately captured and

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>sufficient information on the concerns raised by the community during consultation.</i>	EIS.			addressed.
<b>Water</b>	6	<i>EIS does not assess impacts on surface water quality or provide potential management and mitigation measures including a contingency planning for uncontrolled discharge.</i>	<b>No.</b> Impacts on surface water quality have not been assessed.	<p><i>"There are predicted to be overflows from the Entrance Dam at the Buttonderry Site during the construction period ranging from 0 ML/year (during an extremely dry year) to approximately 65 ML/year (during an extremely wet year). Since there is no coal handling at the Buttonderry Site, the primary potential pollutant will be suspended sediment. The runoff will be suitable for release after treatment of sediment within the Entrance Dam. The proposed erosion and sediment controls are described in Section 6.3 of the SWIA. "</i></p> <p><i>"As described in Section 5.3.1 of the SWIA, the mine water management system has been designed to ensure that there are no uncontrolled discharges (overflows) from the mine water storages (Portal Dam, Stockpile Dam and Mine Operations Dam) to the receiving environment under all historical climatic conditions."</i></p> <p><i>"It is possible that an event greater than the design capacity of the mine water storage dams could occur and potentially cause uncontrolled discharges to Wallarah Creek. During such an extreme weather event, it is likely that Wallarah Creek would be in flood and any uncontrolled discharges from the mine water storages would be significantly diluted by flood flows in the receiving water."</i></p>	Section 3.3.1, 3.3.6	<p>While suspended sediment will likely be the primary water quality pollutant during construction, it is one of a number of potential pollutants that require management (e.g. hydrocarbons, acid and metalliferous drainage, etc.).</p> <p>Although the mine water management system has been designed to ensure no uncontrolled discharges, the RTS admits the possibility of an uncontrolled discharge to occur in an extreme event, however no mitigation measures or contingency are provided.</p> <p>Furthermore, inferring that impacts to Wallarah Creek will be minimised because flood conditions and dilution are assumed to reduce impacts, there is no further investigation to support this assumption. Dilution is also not an adequate means of reducing impact, which depends on the nature of potential contaminants (chemical and physical), etc.</p> <p>The assumption that passive treatment for potential contaminants in the Entrance Dam will ensure discharge is of suitable quality does not consider the range of potential water quality issues that may occur.</p>
<b>Water</b>	7	<i>No assessment of potential acid and metalliferous drainage (AMD)</i>	<b>No.</b> No assessment of AMD has been conducted.	<i>"The Newcastle Coal Measures are not associated with marine incursions. As a result the coal seams and the surrounding sediments do not contain significant concentrations of sulphide minerals. Sulphur content of Newcastle Coal Measure coals is significantly lower than sulphur levels recorded in Greta coals. Analysed</i>	Section 3.23.3	<p>The 2013 EIS Appendix C Geology Report or RTS do not indicate that a geochemical analysis was undertaken to test for AMD, rather a desktop analysis was relied upon.</p> <p>However, the Soils and Land Capability Impact</p>

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				<i>values are typically less than 0.3%. There are no recorded events of AMD issues associated with contamination of water which has emanated from mines operating in the Newcastle Coal Measures."</i>		Assessment (EIS 2013) found the "potential of acid sulphate soils (ASS) and potential acid sulphate soils (PASS) to occur in the south of the Project Boundary along the lower reaches of the Jilliby Creek and Little Jilliby Creek, and along the unnamed waterway adjacent to western boundary of the Buttonderry Site" (page 8). Furthermore, the report states that "any activities in sections of the Project Boundary within or close to these areas (e.g. construction and final rehabilitation of the Buttonderry Sites...800 meters from an area with a potential for ASS and PASS to be present) should take into account the potential presence of ASS and PASS and ensure such soils are appropriately assessed and managed." (Page 8, EIS 2013). ASS are soils that typically contain significant concentrations of pyrite. When exposed to oxygen coupled with sufficient moisture, they oxidise and result in sulphuric acid generation.
<b>Water</b>	8	<i>Lack of immediate downstream sampling point of proposed Wallarah Creek tributary discharge site.</i>	<b>No.</b> A WTP monitoring point will be located at the release point; however this will not provide baseline data for basis of comparison.	<i>"Section 6.4 of the SWIA details the existing and proposed surface water monitoring program for the Project. Table 6.3 in the SWIA shows that the [Water Treatment Point] WTP monitoring point will be located at the release point from the WTP. The existing Wallarah Creek surface water monitoring locations W6 and W12 are located on Wallarah Creek downstream and upstream of the discharge location respectively and will continue to be utilised during operations."</i>	Section 3.3.3	Although the WTP monitoring point will be located at the release point from the WTP as part of the monitoring program, baseline conditions at the discharge point have not been captured and therefore will not provide a baseline comparison of impacts including cumulative impacts.  Furthermore, no indication is provided of when the WTP release sampling point will be installed. If it is installed after Project activities commence (e.g. construction, operations) begin, it will not be possible to distinguish between existing baseline conditions (prior to project activities and potential Project impacts/influences) and Project impacts.
<b>Water</b>	9	<i>Lack of contingency for potential overflow of untreated mine water from the Mine Operations Dam</i>	<b>No.</b> No contingency plan is provided.	<i>"The mine water management system has been designed to ensure that there are no uncontrolled discharges (overflows) from the mine water storages (Portal Dam, Stockpile Dam and Mine Operations Dam) to the receiving environment under all historical</i>	Section 3.3.1	Response does not directly address concerns regarding potential overflow of the MOD specifically, such as reference to a design criteria of MOD and mitigation measures to prevent overflow.  Although the mine water management system has



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		(MOD).		<p>climatic conditions...The discharge of untreated mine water is not part of the water management system design for the Project. As mentioned above, the mine water management system has been designed to avoid uncontrolled discharges to the receiving environment from mine water storages for all historical climatic conditions."</p> <p>"Detailed design of mine water dams will be undertaken in the detailed design stage of the Project, following the granting of the relevant approvals."</p>		<p>been designed to ensure no uncontrolled discharges, the RTS admits the possibility of an uncontrolled discharge to occur in an extreme event, however no mitigation measures are provided and no contingency plan proposed.</p> <p>Furthermore, the detailed design of mine water dams should be undertaken in conjunction with the EIS and finalized before obtaining environmental approvals in order to adequately categorize residual impacts following mitigation measures considered in the design criteria.</p>
<b>Water</b>	10	Insufficient groundwater parameters measured during baseline (i.e. only pH, conductivity and TDS were measured).	<b>No.</b> There is no justification or indication for the limited parameters measured.	<p>"It is acknowledged that baseline groundwater monitoring was fragmented, with water level, salinity and pH being monitored from 1999 to 2001 at many of the piezometers installed in the alluvial lands. Subsequently, access to these piezometers was not possible. However, it is important to note that the available data supports a quasi-steady state system for the important alluvial lands aquifer where the water table fluctuates over a predictable range in response to rainfall. Ionic speciation was also conducted on water samples collected on at least five occasions during 1998-1999...groundwater quality is not predicted to change as a result of the Project."</p>	Section 3.2.5	<p>The response does not state a rationale for only conducting a limited range of parameters and does not indicate an intention to implement a more comprehensive monitoring program.</p> <p>Furthermore, it indicates that data collected from relevant piezometers was only over a course of 2 years collected more than 10 years ago. As a result referenced parameters may not adequately represent current groundwater properties in the Project Area.</p>
<b>Water</b>	11	Limited groundwater mitigation measures presented requiring better articulation of groundwater quality mitigation.	<b>No.</b> No groundwater mitigation measures developed.	<p>"...Should future (rigorous) monitoring of the aquifer system identify deterioration in water quality that can be attributed to the Project, mitigation measures may include localised rerouting of rainfall runoff to enhance aquifer recharge or changes to the mine plan. Measures to mitigate impacts on groundwater quality will be detailed in the Water Management Plan."</p>	Section 3.2.5	<p>The response does not adequately articulate mitigation measures for potential groundwater impacts nor does it adequately address the need for a more rigorous monitoring protocol to identify potential impacts.</p>
<b>Water</b>	12	EPBC Act 'Water Trigger' Amendment (2013) has not been	<b>Yes.</b> The RTS indicates a pending decision regarding application of the	<p>"The EPBC Act Water Trigger Amendment 2013 was passed by parliament on 19 June 2013. The Minister has 60 days from the commencement of the Bill to decide whether the Project requires approval in</p>	Section 3.28.6	<p>60 days from June 19 is August 17. It would be expected that a decision would have been made prior to submission of the RTS; however this is not</p>

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>considered.</i>	water trigger to the Project.	<i>relation to the new water trigger. In its submission, SEWPaC indicated that a decision on whether the water trigger applies to the Project was still pending."</i>		discussed in the RTS.
<b>Air Quality</b>	13	<p><i>The methodology for air quality impact assessment was not undertaken in a manner consistent with applicable legislation (DECC, 2005). Detailed modelling includes only Project emissions rather than Project emissions with baseline conditions. This provides a misleading assessment of likely dust levels that will be experienced by surrounding communities.</i></p> <p><i>Construction impacts and impacts associated with certain climatic conditions are not clearly outlined.</i></p>	<b>No.</b> The assertion that the modelling was conducted according to the <i>Approved Methods</i> is not accurate; therefore the fundamental issue was not addressed.	<i>"The AQGGA was completed in accordance with the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) (the Approved Methods). The submission from EPA confirmed that the air quality assessment was conducted in accordance with the Approved Methods. The Approved Methods is not legislation but rather a guideline for the completion of air quality assessments in NSW. "</i>	Section 3.5.2	<p>The Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) lists the statutory methods for modelling and assessing emissions of air pollutants from stationary sources in the state. It is referred to in Part 4: Emission of Air Impurities from Activities and Plant in the Protection of the Environment Operations (Clean Air) Regulation 2002 (the 'Regulation'). Industry has an obligation to ensure compliance with the requirements specified in the Regulation."</p> <p>The modelling for predicted impacts (Sections 8.1 – 8.7 of the EIS) and associated contour plots consider emissions from Project-related operations alone. Predicted impacts from the Project must be summed with respective background concentrations to determine total impact for each parameter and averaging period. Instead, the impact assessment compares predicted emissions from Project operations alone against the impact criteria, giving the impression that concentrations of applicable parameters will be compliant with impact criteria. As ambient conditions exceed guidelines on occasion, exceedences will occur, which will be exacerbated with Project emissions.</p> <p>Maximum daily PM<sub>10</sub> used a Monte Carlo statistical simulation to randomly select values, rather than use maximum available PM<sub>10</sub>. While there may be merit in using a statistical approach, <i>The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales</i> (DECC, 2005) specifies the use of maximum measured volumes in cases where measurements were not taken often enough to include them in the model, and advises consulting Air Technical Advisory Services Unit of the DECC</p>



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
						otherwise.  A cumulative impact assessment should capture total impacts (background concentration summed with predicted Project-related inputs) combined with anticipated future development. The cumulative impact assessment does not adequately consider the combined effects of Project emissions, future development (e.g. Warnervale Town Centre construction) and ambient conditions
<b>Air Quality</b>	14	<i>Predicted Project-related emission concentrations from dispersion modelling assume Project implementation of best practices. These estimates are only relevant provided these controls are implemented. It is unclear whether the EIS commits the Project to these management and mitigation measures.</i>	<b>No.</b> No clear explanation provided.	<p>“WACJV has committed to the implementation of all best practice dust management measures outlined in the AQGGA. Full details of dust management measures will be provided in an Air Quality Management Plan (AQMP), which the proponent will prepare in accordance with the conditions of the development consent for the Project. The AQMP will describe all best practice dust control and monitoring measures to be implemented, including the measures required by the EPA. All measures will be quantifiable, auditable, measurable and enforceable. The AQMP will include Key Performance Indicators (KPIs) for determining compliance with the plan and conditions of development consent. Although considered an unlikely occurrence due to the anticipated high moisture content of the Project’s resource, should spontaneous combustion be determined to be a risk in the future, it shall be considered in the AQMP with relevant management and mitigation measures incorporated to the approval of relevant regulators.”</p> <p>“As outlined in Section 11.3 of the AQGGA, the existing monitoring network will be updated or augmented with a number of continuous PM<sub>10</sub> / PM<sub>2.5</sub> monitoring instruments. These will provide near real-time data on dust levels in the local community. Full details and locations of monitors will be outlined in the AQMP.”</p> <p>“Continuous monitoring stations are not intended to be</p>	Section 3.5.5, 3.5.6	<p>The proponent has committed to developing an Air Quality Management Plan (AQMP). The AQMP has not been included in the EIS.</p> <p>The future AQMP will provide an (undisclosed) number of PM<sub>10</sub>/PM<sub>2.5</sub> particulate monitors. There is no commitment for ambient air gases or odour monitoring from the potentially odorous ventilation stack.</p> <p>It is accepted that the rail corridor is used by all train movements, though a monitor between the corridor receptors and site may prove beneficial.</p>

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				established along the rail corridor as suggested in some submissions. Such monitoring is not considered necessary since recent studies have determined that fugitive emissions are not a significant concern. In any event, dust levels within the rail corridor are the result of all train movements. Should it be required it would therefore be more appropriate for monitoring to be undertaken by the appropriate rail authority or government agencies, rather than an individual rail transport customer"		
<b>Greenhouse Gas</b>	15	Greenhouse gas emission mitigation strategies are very brief and do not demonstrate a sufficient level of commitment by the Proponent to reduce emissions and does not adequately address the terms listed in the Director-General's Environmental Assessment Requirements and the Supplementary Director-General's Requirements.	<b>Partial.</b> Commitments not thoroughly described.	<p>"Greenhouse gas mitigation measures are outlined in Section 10.6 of the AQGGA. Additional detail on GHG mitigation measures will be provided in the AQMP, which would be required as a condition of development consent. As stated in Section 7.6.4 of the EIS, WACJV will also develop an Energy and Greenhouse Strategy within 2 years of the commencement of longwall mining.</p> <p>Although the submission notes that the list of mitigation measures is brief, the proposed mitigation measures are significant in terms of GHG savings. For example, the proposed methane capture and utilisation has the potential to achieve a GHG reduction of more than 50% through flaring; with additional reductions achieved through the beneficial re-use of methane for on-site power generation (if feasible)."</p>	Section 3.6.4	<p>A commitment has been shown to provide Greenhouse Gas mitigation measures in a future Air Quality Management Plan (AQMP). An AQMP has not been included as part of the EIS.</p> <p>WACJV should clarify the wording/timing of the Energy and Greenhouse Strategy, as to whether "within" refers to 2 years prior to or after commencement of longwall mining. And the timing of anticipated greenhouse mitigation measures contained within the Strategy.</p>
<b>Noise and Vibration</b>	16	It is unclear whether the control measures identified in the Noise and Vibration specialist study are Project commitments or recommended best practices. The results of noise modelling are	<b>Partially</b> addressed.	"The Noise and Vibration Impact Assessment (Appendix N of the EIS) for the proposed development predicts that there will be no change in the L <sub>Amax</sub> noise level and only a marginal change in the L <sub>Aeq</sub> , 24Hr noise level in the vicinity of the rail line. Using the guidance provided in the 'WHO Methodological Guidance for estimating the burden of disease from environmental noise' (WHO, 2012) this marginal change will result in less than a 1% increase in sleep	Section 3.8.1	The Noise study noted that coal maybe transported by road when regular train freight is not available. This represents a potential "worst-case" emission scenario for both noise impacts and air quality impacts to the community

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>only valid if the recommended attenuation measures are committed to and implemented.</i>		<p>disturbance of the population in the immediate vicinity of the rail line."</p> <p>"Section 7.8.3 of the EIS identifies that noise modelling for a peak annual production output of 5 Mtpa shows that the additional rail traffic noise will marginally increase (1-2 dBA) the existing LA rail traffic noise levels on the Main Northern Rail Line. With respect to the LAmaseq, 24 hour noise levels, the Project is not expected to increase the existing levels.</p> <p>The OEH LA60 dBA criteria are shown to be satisfied at approximately 70 m from the rail line. As Blue Haven is greater than 500 m from the rail loop / rail line junction, the OEH criteria is met."</p>		
<b>Noise and Vibration</b>	17	<i>While noise modelling indicates that construction and operational noise will not be a major issue for the Project, modelling predicted that there may be some exceedences of Project Specific Noise Criteria (PSNC). Additional mitigation measures are not identified to prevent these exceedences.</i>	<b>No.</b> Predicted exceedences not addressed.	<i>"As described in Section 7.8.3 of the EIS, the Project Specific Noise Criteria (PSNC) are not predicted to be exceeded at any privately owned residences during construction and operations. Mitigation measures are outlined in Section 7.8.4 of the EIS."</i>	Section 3.8.1	Mitigation measures specific to the <i>Project Specific Noise Criteria (PSNC)</i> are not addressed in the RST and therefore mitigation measures specific to these exceedences are not provided.
<b>Ecology</b>	18	<i>Although an overall adequate ecological baseline was provided, it lacks detail in regard to threatened species</i>	<b>Yes,</b> Additional flora and aquatic surveys were conducted in 2013. Although sufficiently detailed	<i>"As the majority of the quadrat data provided in the EIS was collected outside of the five year timeframe prescribed by regulatory bodies, additional flora surveys were conducted in July 2013....The July 2013</i>	Section 3.9.2, 3.9.3, 3.10	Surveys for threatened species were not conducted. The Project is assuming that threatened species occur within the Project Area as part of a conservative approach.

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>population distribution and abundance estimates. Ecological surveys should have been conducted over a broader survey area to reflect impacts associated with all project components.</i>	surveys for threatened species were not conducted for flora and fauna, the Project is assuming their respective occurrence.	<p><i>surveys provided a total of 30 additional quadrats.</i></p> <p><i>"Targeted searches for the aforementioned threatened flora species within the SIL were not considered necessary due to the limited extent of disturbance. Nevertheless, the assessment has adopted a conservative approach by assuming that these threatened flora species have the potential to occur within areas of suitable habitat within the SIL. The areas of potential habitat for threatened fauna that will be cleared, subsided and offsets have been presented in Table 6.2 of the EIA."</i></p> <p><i>"It was conservatively assumed that threatened frog species occur within the Project Boundary due to the availability of suitable habitat and historical recordings...Further surveys for threatened frog species will be conducted once survey conditions are appropriate to determine areas where threatened frogs are more likely to occur and to fulfil survey effort requirements specified by regulatory agencies."</i></p> <p><i>"Any threatened species that have been historically recorded within the Project Boundary and surrounding areas were considered as likely to occur. Impacts on potentially occurring species have been assessed as if they were recorded. Potential impacts on recorded and potentially occurring threatened species have been assessed in Section 6.8 of the EIA."</i></p>		Additional surveys for threatened species would improve the existing knowledge base of their population and distribution and may lead to discovery of additional species.
<b>Ecology</b>	19	<i>Offsets required under the EPBC Act for threatened species identified within the Project Boundary were not calculated using the new EPBC Act Policy Guidelines of 2012.</i>	<b>Partially</b> addressed. No calculations of offsets for threatened species were provided in the RST to support the response.	<i>Since the exhibition of the EIS, further fieldwork has been conducted to assess the proposed Biodiversity Offset Package (BOP) under the new EPBC Act Offsets Policy's Offsets Assessment Guide. In particular, assessments were conducted for the species listed as controlled action species: namely Charmhaven Apple (<i>Angophora inopina</i>) and Black-eyed Susan (<i>Tetradlea juncea</i>), listed as Vulnerable under the EPBC Act; and Spotted-tail Quoll (<i>Dasyurus maculatus</i>) and Giant Barred Frog (<i>Mixophyes</i></i>	Table 11 of Section 4, Section 3.9.5, 3.9.9	The response does not include the calculations conducted to determine offsets or include details of the Biodiversity Offset Package. As a result it is not possible to determine the accuracy or suitability of methods used in determining offsets.

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				<p><i>iteratus</i>), listed as <i>Endangered</i> under the EPBC Act.</p> <p>The results of the assessment under the Offsets Assessment Guide were provided to SEWPaC in June 2013. SEWPaC has reviewed this assessment and is satisfied with the adequacy of the proposed BOP for offsetting impacts to Matters of National Environmental Significance (MNES)."</p> <p>"Indirect offsetting measures will be required for the Giant Barred Frog. WACJV will provide indirect offsets in the form of funds for research or education programs to meet the 100% offset requirements under the EPBC Act Offsets Policy."</p> <p>"The proposed BMP will include measures for rehabilitating degraded areas and revegetating grassland areas back to native vegetation. The offset areas will be conserved in perpetuity and the quality of the native vegetation will be improved through active management. As a result, there will no net loss of biodiversity, which is consistent with the required. Maintain and Improve 'principles of the Native Vegetation Act 2003."</p>		
<b>Traffic and Transport</b>	20	A Rail Study has been conducted as part of the 2013 EIS to address the gaps in information regarding transport impacts identified in the 2010 EIS. This is a more comprehensive assessment of the transport route of the coal.	<b>Yes.</b>	"The DGRs relating to impacts of the rail network have been reproduced in the submission from TfNSW. These issues have been addressed in Section 3.12.2 and Section 3.12.3."	Section 3.12	Additional measures are provided for managing risks related to rail transport. Furthermore, WACJV has committed to develop a Traffic and Transport Management Plan (TTMP) to manage impacts of the Project on the traffic network.
<b>Visual</b>	21	The visual assessment conducted for the	<b>Yes.</b>	"Appendix E of the EIS provides plan and elevation drawings for the relevant infrastructure items. The	Section 3.15	No further issues identified in the review of the RTS.

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
<b>Amenity</b>		<i>Project provides a good site analysis and identification of key viewpoints, assessment of potential visual impacts and recommendations for mitigation measures to minimise impacts of the Project.</i>		<i>Visual Impact Assessment considered these drawings in its assessment."</i>		
<b>Archaeology and Cultural Heritage</b>	22	<i>In general, a comprehensive survey and report of the Aboriginal cultural and historic heritage of the areas surveyed within the Project Boundary has been prepared apart from some areas with accessibility restrictions.</i>	<b>Yes.</b>	<i>"WACJV will continue to consult with the Aboriginal community during the construction and operation of the Project."</i>	Section 3.13.1	Continual and transparent consultation with Aboriginal communities is paramount in addressing any concerns or potential impacts are covered and should form part of the Stakeholder Engagement Strategy discussed above.
<b>Community Health and Safety</b>	23	<i>Uncertainties and knowledge gaps identified in Earth Systems review of the 2013 EIS including air and water quality impacts indicate that the assessment of community health and safety impacts and risks and their necessary management and mitigation measures are unlikely to be sufficiently</i>	<b>No.</b> Identified data gaps and uncertainties which have the potential to impact community health and safety have not been adequately addressed in the RTS as referenced throughout this report.	<i>"Wallarrah Creek and Buttonderry Creek are located outside of the Gosford-Wyong Water Supply Scheme catchment and are part of the Tuggerah Lakes Water Source. Therefore there are no potential impacts to the water quality of the Gosford-Wyong Water Supply Scheme due to possible overflows from the mine water management system or the proposed discharges of treated water to Wallarrah Creek."  "Section 7.1 of the AQGGA provided detailed dust emission estimates for a construction phase scenario. The estimated dust emissions during construction were found to be significantly lower (approximately 50% lower) than the estimated dust emissions during the operational phase...Due to the lower emissions during the construction phase, it can be concluded</i>	Section 3.3.6, 3.5.1, 3.5.5	Given the information gaps and recommendations provided in this Report, responses related to community health and safety with respect to water and air quality are not adequately addressed.  Comprehensive baselines are required to establish existing water quality, air, and traffic conditions in order to assess potential impacts, develop comprehensive monitoring and management plans.



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		comprehensive.		<p>that the construction phase of the Project would also comply with the air quality criteria under all modelled climatic conditions."</p> <p>"WACJV has committed to the implementation of all best practice dust management measures outlined in the AQGGA. Full details of dust management measures will be provided in an Air Quality Management Plan (AQMP), which the proponent will prepare in accordance with the conditions of the development consent for the Project. The AQMP will describe all best practice dust control and monitoring measures to be implemented, including the measures required by the EPA."</p>		
<b>Impacts beyond DGRs</b>	24	Contingency plans for potential disasters, whether naturally occurring or human induced, have not been included in the EIS. This is an oversight.	<b>No.</b> A Disaster Risk Management Plan was not developed.	"Insufficient detail is provided to ascertain the exact nature of this submission; however it has been assumed here that it refers largely to environmental incidents. Should WACJV be granted Development Consent, that instrument (along with various other post approvals' documentation) will include further risk assessment and subsequent procedural notification requirements for any environmental incidents occurring on site."	Section 3.27.12	A Disaster Risk Management Plan ensures natural and human-induced emergencies associated with the Project are addressed. This Plan should be inclusive of specific Contingency Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion. Disaster risk management should have been included in the revised risk assessment of the 2013 EIS. The lack of this contingency plan is consistent with the general lack of contingency plans in the RTS.
<b>Impacts beyond DGRs</b>	25	The Buttonderry Waste Management Facility is mentioned in the EIS in respect to visual amenity, however, the potential environmental risks (gas and leachate leakage) associated with the proximity of this facility to the project are not discussed.	<b>No.</b> Inadequate justification provided for disregarding potential environmental risks associated with the proximity of the facility to the Project.	"The longwall panels in the Extraction Area are located over 1 km from the Buttonderry Waste Management Facility. Each of the Waste Management Facility and the Buttonderry Surface Facilities area are located outside the SIL and as such interactions between the waste site and coal extraction are considered highly unlikely."	Section 3.27.8	Although the longwall panels are located over 1 km from the waste management facility there may be potential impacts to the facility due to subsidence, loss of geotechnical integrity, etc. Given the socio-economic and environmental significance of the facility to the area, impacts should be assessed and included in the risk assessment.

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
<b>Management and Monitoring</b>	26	<i>The EIS is not accompanied by management and monitoring plans. It is understood that these have not yet been prepared. Good industry international practice and / or best practice require an Environmental Management and Monitoring Plan (ESMMP) to be prepared as part of the EIS process.</i>	<b>No.</b> No ESMMP has been developed and a specific timeframe or description of proposed plans part of the EMS not provided.	An Environmental Management Strategy (EMS) and an Environmental Monitoring Plan are included as part of the Environmental Management System to be developed and implemented in the future.	Table 11 of Section 4	<p>An ESMMP type plan was not adopted in the 2013 EIS. The proponent has indicated a plan will be developed in the future.</p> <p>Without a plan to review simultaneously with the EIS it is not possible to ascertain the efficacy of the management strategies to avoid and minimise impacts.</p>



**Table 3-2. Review of WACJV's response to recommendations identified by Earth Systems in the 2013 EIS.**

Recommendations of 2013 EIS Review	Earth Systems Recommendation	Recommendation Addressed	WACJV Response	WACJV Reference (Repose to Submissions, 2013)	Assessment of Response
<b>Air quality</b>	<i>Air quality impacts are assessed utilising relevant methodologies to ensure that detailed impact assessments of project phases are conducted effectively.</i>	<b>No.</b> The assertion that the impact assessment is conducted according to approved methods (DECC, 2005) is inaccurate.	"The AQGGA was completed in accordance with the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) (the Approved Methods). The submission from EPA confirmed that the air quality assessment was conducted in accordance with the Approved Methods."	Section 3.5.1	<p>The impact assessment did not sum the combined effects of Project emissions and ambient conditions (total impact); therefore estimates of exceedences are not valid.</p> <p>The cumulative impacts was not calculated with maximum background concentrations as is required for Level 1 Assessment (DECC, 2005).</p> <p>The cumulative impact assessment does not consider future development in modelling.</p>
<b>Greenhouse gas</b>	<i>A more realistic assessment of greenhouse gas (GHG) impacts is provided by including Scope 2 and 3 emissions sources in the analysis of the GHG impacts and updating impacts of the Project on anthropogenic global warming</i>	<b>Partially</b> addressed.	"The AQGGA included estimates of Scope 1, 2 and 3 emissions and provided an overview of the potential impacts on the environment. It is impossible to isolate the Project's impacts on climate change at a local level, and the contribution of the Project to global changes in sea levels, acidification, etc. However, as an example, the average annual Scope 1 emissions generated by the Project would represent approximately 0.04% of Australia's annual average commitment under the Kyoto Protocol. The Scope 1 emissions would account for a very small portion of Global Greenhouse Gas (GHG) emissions, given that Australia in total contributes approximately 1.5% of global GHG emissions (ABS, 2010)."	Section 3.6.1	Although the potential Project impacts on climate change at the global level were not provided, an estimation of emissions generated by the Project on the national level was established.
<b>Water quality</b>	<i>Surface water quality is investigated further to ensure that all sources of contaminants are identified and that water sources are effectively monitored for changes associated with the Project.</i>	<b>No.</b> Surface water quality was not investigated further and AMD assessments were not conducted.	<i>There are no recorded events of AMD issues associated with contamination of water which has emanated from mines operating in the Newcastle Coal Measures.</i>	Section 3.23.3	The RTS does not provide further consideration to AMD potential as stated above despite occurrence of ASS and PASS soils in the vicinity of potential project disturbance areas.

	<i>A geochemical assessment for potential AMD / salinity is conducted, including development of contingency plans for the management and treatment of the Mine Operations Dam</i>				
<b>EPBC 'Water Trigger' Amendment (2013)</b>	<i>The EPBC Act Water Trigger Amendment (2013) is considered by the Proponent.</i>	<b>Yes.</b> The RTS indicates a pending decision regarding application of the water trigger to the Project.	<i>"The EPBC Act Water Trigger Amendment 2013 was passed by parliament on 19 June 2013. The Minister has 60 days from the commencement of the Bill to decide whether the Project requires approval in relation to the new water trigger. In its submission, SEWPaC indicated that a decision on whether the water trigger applies to the Project was still pending."</i>	Section 3.28.6	60 days from June 19 is August 17. It would be expected that a decision would have been made prior to submission of the RTS; however this is not discussed in the RTS.
<b>Ecology</b>	<i>Further detailed surveys for biodiversity are conducted, including extended flora survey to establish a robust flora baseline for the Subsidence Impact Limit.</i>	<b>Yes.</b> Additional flora surveys were conducted in 2013.	<i>As the majority of the quadrat data provided in the EIS was collected outside of the five year timeframe prescribed by regulatory bodies, additional flora surveys were conducted in July 2013. These surveys were conducted within the infrastructure boundary at the Tooheys Road and Buttonderry Sites, as well as in the proposed Hue Hue and Tooheys Road offset areas. The July 2013 surveys provided a total of 30 additional quadrats."</i>	Section 3.9.2, 3.9.9	Additional surveys were conducted to better characterize flora, however they were predominantly focused around the proposed locations of surficial disturbance. A survey covering distribution across the Project area would assist in identify potential management measures in response to potential impacts such as subsidence which are independent of predicted surficial disturbance due to surface project infrastructure.
<b>Ecology</b>	<i>The Biodiversity Offset Strategy for threatened species is revised to ensure it addresses the current Policy and that currently proposed offsets for fauna habitats are reviewed for suitability.</i>	<b>Yes.</b> The Biodiversity offset Package (BOP) was re-assessed.	<p><i>"Mitigation measures such as active fauna management and monitoring will be detailed in the BMP. Compensatory measures include the provision of a comprehensive Biodiversity Offset Package (BOP), which will conserve habitat for EECs and threatened species in perpetuity."</i></p> <p><i>"Since the exhibition of the EIS, further fieldwork has been conducted to assess the proposed Biodiversity Offset Package (BOP) under the new EPBC Act Offsets Policy's Offsets Assessment Guide."</i></p> <p><i>"Biodiversity Offset Package (BOP) under the new EPBC Act Offsets Policy's Offsets Assessment Guide. In particular, assessments were conducted for the species listed as controlled action species: namely Charmhaven Apple (Angophora inopina) and Black-eyed Susan (Tetralthea juncea), listed as Vulnerable</i></p>	Section 3.9.2, 3.9.9	Additional surveys were conducted to better characterize flora and fauna distribution as part of the assessment of the proposed Biodiversity Offset Package.

			<i>under the EPBC Act; and Spotted-tail Quoll (Dasyurus maculatus) and Giant Barred Frog (Mixophyes iteratus), listed as Endangered under the EPBC Act."</i>		
<b>Mine Design and Layout</b>	<i>Internal haulage routes are confirmed to allow assessment of potential impacts of heavy vehicle movement.</i>	<b>No.</b> No indication provided for the future assessment of heavy vehicle traffic on internal haulage roads.	<i>"As the Project is proposed to comprise an underground mine, very limited heavy vehicle movements within the mine will occur, primarily in relation to deliveries to site from external roads. Internal roads are shown on Figure 19 and Figure 21 of the EIS for each of the Tooheys Road and Buttonderry sites, respectively."</i>	Section 3.27.1	Although little heavy vehicle movement is expected on internal roads, it is still necessary to determine potential disturbances or impacts caused by heavy vehicles on local environment (e.g. dust, noise, vibration).
<b>Stakeholder Engagement</b>	<i>A robust Stakeholder Engagement Plan is developed that is inclusive of commitments to ongoing consultation and a structured grievance procedure</i>	<b>No.</b> The RTS does not indicate a Stakeholder Engagement Plan and grievance procedure are not specified.	<i>"WACJV has conducted and will continue to conduct a comprehensive stakeholder engagement program throughout the EIS process aimed at maximising the opportunity for community interaction. WACJV will continue to undertake consultation with stakeholders, particularly the consultation commitments made in this RTS."</i>	Section 3.24	Although the RTS states that WACJV will continue to undertake consultation with stakeholders, it does not specify a strategy, plan of how consultation will be undertaken and does not provide an indication of a grievance mechanism, a best practice approach typical of impact assessments.
<b>Rehabilitation and Closure</b>	<i>A comprehensive Rehabilitation and Closure Plan is prepared.</i>	<b>No.</b> A Rehabilitation and Closure Plan has not been prepared.	<i>"Further detail on rehabilitation objectives to ensure a safe, stable and non-polluting final landform will be included in a Rehabilitation and Closure Plan for the Project to be developed in consultation with relevant regulators. It shall include information on relevant domains and discuss final landuse, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring. The timing of the preparation of the plan will be consistent with any conditions of Development Consent."</i>	Section 3.22	Without developing a Rehabilitation and Closure Plan as part of the EIS, it is difficult to determine how closure and post closure impacts will be mitigated and the nature of residual impacts.
<b>Risk Assessment and Cost Benefit Analysis</b>	<i>The Risk Assessment and Cost Benefit Analysis are reviewed and revised based on detailed findings of further recommended work.</i>	<b>No.</b> The risk assessment and cost benefit analysis has not been re-rated.	<i>"This analysis indicated that the results of the BCA were not sensitive to reasonable changes in the assumptions for any of these variables. In particular, significant increases in the values used for impacts of greenhouse gas emissions, agricultural impacts and forestry impacts had little impact on the overall economic desirability of the Project."</i>  <i>"Chapter 6 of the EIS provides a summary of Appendix F of the EIS which provides a detailed Revised Risk Assessment of the potential known Project risks in accordance with the WACJV Risk Assessment Matrix."</i>	Section 3.17.2, 3.27.18	Since submission of the 2013 EIS additional investigations have been undertaken and additional mitigation measures derived (refer to Table 11, Response to Submissions, 2013) which are not captured in the revised risk assessment.

			<i>The risk assessment was undertaken in accordance with the DGRs which required they identified the key issues for further assessment."</i>		
<b>Disaster Risk Management</b>	<i>A Disaster Risk Management Plan is developed to cover natural and human-induced emergencies associated with the Project. This Plan should be inclusive of specific Contingency Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion.</i>	<b>No.</b> A Disaster Risk Management Plan was not developed.	<i>"Insufficient detail is provided to ascertain the exact nature of this submission; however it has been assumed here that it refers largely to environmental incidents. Should WACJV be granted Development Consent, that instrument (along with various other post approvals documentation) will include further risk assessment and subsequent procedural notification requirements for any environmental incidents occurring on site.</i>	Section 3.27.12	<p>The response states that insufficient detail was provided to determine the nature of the recommendation and appears to indicate that an assumption needed to be made that the submission refers to environmental incidents. However, in Section 3.7 of the Earth Systems Review of the 2013 EIS, it states:</p> <p><i>"Disaster risk management for naturally occurring or human- induced events have been overlooked in the EIS. These include <u>environmental emergencies such as uncontrolled discharge during high rainfall events, water storage dam wall failure, and bushfires.</u> Other disasters could include those associated with spontaneous combustion or blasting accidents.</i></p> <p><i>It is recommended that a comprehensive disaster risk management plan is developed, inclusive of detailed contingency plans to manage specific events, such as the development of contingency plan for management / treatment of the Mine Operations Dam (MOD) water that would be required should MOD water levels approach potential uncontrolled discharge stages to prevent untreated water from reaching Wallarah Creek."</i></p>
<b>Community Health and Safety</b>	<i>The Community Health and Safety assessment is reviewed and revised based on the findings of the further work recommended.</i>	<b>No.</b> Identified data gaps and uncertainties which have the potential to impact community health	<i>"Wallarrah Creek and Buttonderry Creek are located outside of the Gosford-Wyong Water Supply Scheme catchment and are part of the Tuggerah Lakes Water Source. Therefore there are no potential impacts to the water quality of the Gosford-Wyong Water Supply Scheme due to possible overflows from the mine water</i>	Section 3.3.6, 3.5.1, 3.5.5	Given the information gaps and recommendations provided in this Report, responses related to community health and safety with respect to water and air quality are not adequately addressed.

		and safety have not been adequately addressed in the RTS as referenced throughout this report.	<p><i>management system or the proposed discharges of treated water to Wallarah Creek."</i></p> <p><i>"Section 7.1 of the AQGGA provided detailed dust emission estimates for a construction phase scenario. The estimated dust emissions during construction were found to be significantly lower (approximately 50% lower) than the estimated dust emissions during the operational phase...Due to the lower emissions during the construction phase, it can be concluded that the construction phase of the Project would also comply with the air quality criteria under all modelled climatic conditions."</i></p> <p><i>"WACJV has committed to the implementation of all best practice dust management measures outlined in the AQGGA. Full details of dust management measures will be provided in an Air Quality Management Plan (AQMP), which the proponent will prepare in accordance with the conditions of the development consent for the Project. The AQMP will describe all best practice dust control and monitoring measures to be implemented, including the measures required by the EPA."</i></p>		Comprehensive baselines are required to establish existing water quality, air, and traffic conditions in order to assess potential impacts, develop comprehensive monitoring and management plans.
<b>Community Health and Safety</b>	<i>Potential impacts upon the Buttonderry Waste Management Facility associated with the development of the Project are fully considered.</i>	<b>No.</b> Inadequate justification provided for disregarding potential environmental risks associated with the proximity of the facility to the Project.	<i>"The longwall panels in the Extraction Area are located over 1 km from the Buttonderry Waste Management Facility. Each of the Waste Management Facility and the Buttonderry Surface Facilities area are located outside the SIL and as such interactions between the waste site and coal extraction are considered highly unlikely."</i>	Section 3.27.8	Although the longwall panels are located over 1 km from the waste management facility there may be potential impacts to the facility due to subsidence, loss of geotechnical integrity, etc. Given the socio-economic and environmental significance of the facility to the area, impacts should be assessed and included in the risk assessment. This is a potential oversight.
<b>Management, Monitoring and Reporting</b>	<i>Management and Monitoring Plans are prepared for each aspect of assessment prior to commencement of the Construction phase to clearly outline how impacts will be mitigated and managed.</i>	<b>Partially</b> addressed. <i>Management and Monitoring Plans are intended to be developed, no timeline is provided.</i>	<p>"WACJV will develop and implement an Environmental Management System in consultation with the relevant regulators (and the Aboriginal community where relevant) consistent with Section 7 of the EIS to the approval of DP&amp;I which shall comprise:</p> <ul style="list-style-type: none"> <li>• Environmental Management Strategy</li> </ul>	Section 3.25, Table 11 of Section 4.	It is best practice to include an Environmental Monitoring and Management Plan with the EIS to demonstrate commitment to managing risks and accountability to stakeholders. It should describe environmental parameter monitoring, implementation, processes and

<b>Management, Monitoring and Reporting</b>	<i>An independent expert is commissioned by the Proponent to conduct Environmental Audits of the project on a regular basis throughout the project life cycle.</i>	<i>An indication to conduct Environmental Audit is also provided.</i>	(EMS);		scheduling. Findings from regular monitoring of air and water quality etc. should be provided to interested stakeholders on a regular basis to ensure that transparency.
<b>Management, Monitoring and Reporting</b>	<i>An Environmental Management System based on ISO14001:2004 'Environmental management systems - Requirements with guidance for use' is developed and implemented for the Project.</i>	<b>No.</b> No reference to ISO14001:2004 given.	<ul style="list-style-type: none"> <li>• Environmental Monitoring Plan (incorporating subsidence, groundwater, surface water, air quality and noise)</li> <li>• Extraction Plan;</li> <li>• Water Management Plan;</li> <li>• Air Quality Management Plan;</li> <li>• Energy and Greenhouse Strategy;</li> <li>• Noise Management Plan;</li> <li>• Biodiversity Offset Strategy;</li> <li>• Land Clearance Protocol;</li> <li>• Traffic and Transport Management Plan;</li> <li>• Aboriginal Cultural Heritage Management Plan;</li> <li>• Historic Heritage Management Plan;</li> <li>• Soil and Land Capability Procedure (including an Acid Sulphate Soils Management Procedure);</li> <li>• Land Management Plan;</li> <li>• Bushfire Management Plan;</li> <li>• Waste Management System; and</li> </ul> Landscape Management Plan"		



## 4 Conclusions

In general, the *Response to Submission* does not adequately address many of the findings highlighted by Earth Systems in its Review of the 2013 EIS. Furthermore, the recommended measures provided in the review were only partially considered in the RTS. As a result, significant data gaps and uncertainties still remain.

As the EIS was not developed according to the standard EIA approach (i.e. baseline determination, impact assessment, management and mitigation measures, residual impacts), it is not possible to determine residual impacts in many instances. Significant data gaps exist in the baseline assessments and impact analyses for various parameters as well as for the majority of impacts commonly associated with construction. This fundamental flaw in the approach to the EIA allows for significant uncertainty regarding the residual impacts.

Deficiencies in baseline assessment are perhaps most pronounced for groundwater quality and components of surface water quality and include the following significant aspects:

- Water quality monitoring for groundwater was limited to pH, electrical conductivity and TDS. This limitation provides very little basis for comparison.
- There has been no baseline assessment of the water quality in the Wallarah Creek tributary controlled discharge point for the Project. Impacts related to discharge will be difficult to interpret without an understanding of baseline conditions.
- Geochemical analysis for AMD were not conducted, though there is some evidence of material that could generate AMD south of the Project Boundary along the lower reaches of the Jilliby Creek and Little Jilliby Creek, and along the unnamed waterway adjacent to western boundary of the Buttonderry Site

The impact assessment remains flawed in a number of areas, including:

- Assessment of construction phase impacts (and their management, mitigation and monitoring) were largely omitted from the process.
- The air quality impact assessment was not conducted according to the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005). The approach employed in the EIS, and defended in the *Response to Submission*, underrepresents the likelihood for exceedences in various air quality criteria.
- Lack of closure and rehabilitation planning in project design.

## 5 References

References provided below include guidelines, regulations and best practices relevant to the Wallarah 2 Coal Project and this review.

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