



WAMBO COAL PTY LIMITED

SOUTH WAMBO
UNDERGROUND MINE MODIFICATION
RESPONSE TO SUBMISSIONS

For the Modification of DA 305-7-2003 (MOD 12)
The Realignment and Extension/Relocation of the
Approved South Wambo Underground Mine

June 2016

Peabody
ENERGY

WAMBO COAL PTY LIMITED

SOUTH WAMBO UNDERGROUND MINE MODIFICATION RESPONSE TO SUBMISSIONS

(Modification 12 to DA 305-7-2003)

PROJECT NO. WAM-09-15

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1 INTRODUCTION

Wambo Coal Pty Limited (WCPL), a subsidiary of Peabody Energy Australia Pty Limited (Peabody Energy), prepared the *South Wambo Underground Mine Modification Environmental Assessment* (the EA) (WCPL, 2016a) to support an application to modify the Wambo Coal Mine Development Consent (DA 305-7-2003 MOD 12) under section 75W of the New South Wales (NSW) *Environmental Planning and Assessment Act, 1979* (EP&A Act).

The EA was placed on public exhibition by the NSW Department of Planning and Environment (DP&E) from 22 April 2016 to 13 May 2016.

The DP&E has requested that WCPL review and respond to the range of submissions that were received on the EA.

Table 1 provides a reconciliation of the submissions received from State and Local Government agencies, while Table 2 provides a reconciliation of submissions received from non-Government organisations (NGOs). Table 3 provides a reconciliation of public submissions.

WCPL has prepared a response to the issues raised in the submissions. Responses to submissions made by Government agencies are provided in Section 2, responses to submissions made by NGOs are provided in Section 3, and responses to public submissions are provided in Section 4.

**Table 1
Reconciliation of Agency Submissions**

Agency	Date
NSW Environment Protection Authority (EPA)	13 May 2016
NSW Heritage Council (within the NSW Office of Environment and Heritage)	12 May 2016
NSW Office of Environment and Heritage (OEH)	13 May 2016
Department of Primary Industries (DPI)	26 May 2016
Division of Resources and Energy (DRE) (within the NSW Department of Industry, Skills and Regional Development)	31 May 2016

**Table 2
Reconciliation of Non-Government Organisation Submissions**

Organisation	Date	Nature of Submission
Environmental Justice Australia	13 May 2016	Comment
Correct Planning and Consultation for Mayfield Group (CPCFM)	12 May 2016	Objection
Hunter Communities Network (HCN)	13 May 2016	Objection
Hunter Environment Lobby Inc. (HEL)	6 May 2016	Objection
Lock the Gate Alliance	13 May 2016	Objection
Nature Conservation Council	13 May 2016	Objection
The Australia Institute	May 2016	Objection

**Table 3
Reconciliation of Public Submissions**

Name	Nature of Submission	Issue ID No.
Mr Anthony Lonergan	Objection	14, 25, 26
Mr Ben Ewald	Comment	11, 12, 25, 32, 33
Ms Beverley Atkinson	Objection	11, 39
Ms Beverley Smiles	Objection	11, 25, 33, 39
Mr Fee Mozeley	Objection	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Ms Isabel McIntosh	Objection	11, 25, 33
Ms Jan Davis	Objection	12, 17, 21, 25, 33, 38
Ms Janet Fenwick	Objection	2, 3, 4, 5, 6, 7, 9, 11, 13, 18, 22, 26, 28, 29, 37, 38
Mr John Van Der Kallen	Objection	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Mr Joshua McLarty	Objection	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Ms Judith Leslie	Objection	11, 12, 14, 17, 19, 21, 23, 25, 27, 33, 38, 39
Ms Margaret Edwards	Objection	12, 17, 21, 25, 27, 38, 39
Mr Michael Schien	Objection	25
Mr Nick Higginbotham	Objection	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Mr Peter Morris	Comment	9, 11, 12, 14, 17, 21, 25, 33, 38, 39
Ms Petra Liverani	Comment	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Mr Richard Fletcher	Objection	17, 21, 25, 33
Mr Ron Fenwick	Objection	1, 2, 4, 5, 8, 9, 10, 11, 12, 15, 16, 18, 19, 20, 22, 23, 24, 27, 34, 35, 36, 38, 39
Ms Sharyn Munro	Objection	11, 12, 14, 17, 19, 21, 23, 25, 27, 30, 31, 33, 35, 38, 39
Ms Su Morley	Objection	11, 12, 14, 17, 21, 25, 27, 31, 33, 38, 39
Ms Susie Russell	Comment	11, 12, 14, 25, 33, 39
Ms Tracie Hendriks	Objection	11, 12, 14, 17, 21, 25, 27, 39
Ms Wendy Wales	Objection	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Ms Wendy White	Objection	11, 12, 25, 33, 39
Name Withheld 1	Objection	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Name Withheld 2	Objection	11, 12, 14, 17, 21, 25, 27, 33, 38, 39
Name Withheld 3	Support	Statement of support

2 RESPONSES TO GOVERNMENT AGENCY SUBMISSIONS

Responses to issues raised by Government agencies are provided in the subsections below.

Of the five submissions by Government agencies that were received by DP&E, none of the submissions objected to the Modification. The DRE noted its overall support of the Modification as a responsible utilisation of the State's coal resources that would continue to bring economic benefits to the local region and the State as a whole.

2.1 GROUNDWATER AND SURFACE WATER

The DPI raised issues regarding groundwater and surface water assessment, impacts and mitigation measures. Each of the main comments/issues raised are addressed below.

NSW Aquifer Interference Policy

Issue

The DPI has requested assessment against the NSW *Aquifer Interference Policy* Level 1 minimal impact consideration, which states:

No mining activity to be below the natural ground surface within 200m laterally from the top of high bank or 100m vertically beneath (or the three dimensional extent of the alluvial water source – whichever is the lesser distance) of a highly connect surface water source that is defined as a “reliable water supply”.

Response

It is important to note that there are no longwall panels beneath Wollombi Brook.

Mining of longwall panels would be constrained by the subsidence exclusion zone limited to an angle of 26.5 degrees (°) from the vertical to a 40 metre (m) lateral buffer from the Wollombi Brook high bank, which is consistent with the underground mine layouts for the approved Wambo Coal Mine. Main development drivages beneath Wollombi Brook would be designed to be permanently stable and non-subsiding.

The Woodlands Hill Seam is located between approximately 155 m and 250 m below the surface of Wollombi Brook adjacent to Areas 2 and 3.

The Arrowfield Seam is located between approximately 220 m and 310 m below the surface of Wollombi Brook adjacent to Areas 2, 3 and 4.

Therefore, the modified South Wambo Underground Mine is within the Level 1 minimal impact consideration described above.

Groundwater Trigger Levels

Issue

The DPI recommended WCPL carry forward water level value triggers in metres Australian Height Datum (m AHD) as previously accepted.

Response

Table 9 of the most recent Groundwater Monitoring Program (Revision 11) presents shallow bore water trigger level values as both depth to groundwater and absolute level in m AHD as requested by the DPI Water.

For brevity, the Groundwater Assessment (Appendix B of the EA) only presented the trigger levels as depth to groundwater.

Augmentation of the Groundwater Monitoring Program

Issue

The DPI has requested that when the Water Management Plan is updated to include the Modification, paired observation bores should be established within the interburden aquifer at sites P114 and P116.

Response

The EA (Section 5.3.3) includes a commitment to review and revise the Groundwater Monitoring Program to include the Modification (subject to approval of the Modification). The Groundwater Monitoring Program is required to be prepared in consultation with the DPI Water under Condition 30, Schedule 4 of the Development Consent (DA 305-7-2003).

Investigation Report

Issue

The DPI requested that a copy of the investigation report into increased salinity in shallow bore P114 is provided to DPI Water and the EPA.

Response

An investigation of the increased salinity in shallow bore P114 was conducted by HydroSimulations and presented in the 2015 Annual Review (WCPL, 2016b).

The 2015 Annual Review was provided to key regulatory agencies and is available on the WCPL website:

https://mscusppegrs01.blob.core.windows.net/mmfiles/files/operations/australia/wambo/2016/wambo%202015%20annual%20review_final.pdf

The investigation by HydroSimulations concluded that the increased salinity was not likely to be a result of South Wambo Dam, but rather a brackish near-surface water source intersected in P114 when the groundwater level is above 56 m AHD causing a rise in salinity.

Construction and Lithology Logs

Issue

The DPI requested details of monitoring bore construction and lithology logs.

Response

Details of monitoring bore construction will be included in the next revision of the Groundwater Monitoring Program. As described above, the EA (Section 5.3.3) includes a commitment to review and revise the Groundwater Monitoring Program to include the Modification (subject to approval of the Modification).

Post-Mining Water Take

Issue

The DPI requested further detail on WCPL's strategy to account for any water taken beyond the life of the Wambo Coal Mine.

Response

Post-closure annual licensing requirements are expected to be less than the licensing requirements during operation. Sufficient licence allocations could be retired at the completion of the Wambo Coal Mine to account for the potential post-closure take of water.

In addition, the Surface and Groundwater Response Plan outlines a process for the relinquishment of water extraction rights to compensate for surface and groundwater losses from streams, channels or alluvials as required under Condition 35(i), Schedule 4 of the Development Consent (DA 305-7-2003).

Monitoring of Water Take

Issue

The DPI requested further information regarding how the volumetric take of water at Wambo Coal Mine would be measured and monitored.

Response

WCPL would continue to measure the active volumetric take of water from porous rock aquifers based on pumping records for the active underground workings and/or from overlying workings. Passive take from alluvial aquifers would be estimated by a suitably qualified expert.

Volumetric takes would continue to be reported in the Annual Review.

2.2 ABORIGINAL CULTURAL HERITAGE

The OEH made one comment with respect to Aboriginal cultural heritage. This comment is addressed below.

It is noted that OEH, in its submission for the Modification, stated:

OEH supports all 10 recommendations proposed. OEH has no further concerns with respect to Aboriginal cultural heritage and the proposed development modification proceeding.

Aboriginal Heritage Impact Permits

Issue

The OEH noted that the existing Aboriginal Heritage Impact Permits (AHIPs) at the Wambo Coal Mine do not cover all Aboriginal sites that may be impacted by the proposed Modification (as described in the Cultural Heritage Impact Assessment [CHIA] [Appendix F of the EA]).

The OEH noted its preference that a new AHIP application is applied for in relation to Aboriginal sites that will be impacted by the Modification that are located outside of the two existing AHIPs (i.e. rather than an application for a variation to an existing AHIP).

Response

WCPL plans to apply for a new AHIP in relation to the Modification in June 2016.

2.3 NON-ABORIGINAL HERITAGE

The NSW Heritage Council made a number of recommendations regarding non-Aboriginal heritage. Each of these recommendations is addressed below.

Wambo Homestead Complex

Issue

The NSW Heritage Council recommended:

...the CHIA and EA be revised to include advice of a suitably qualified heritage architect and structural engineer to consider the existing state of the Wambo Homestead, the recent MSEC 2016 assessment and provide written advice to DPE to clarify what the additional subsidence may mean to the fabric of this state significant heritage item. This advice should also consider the existing and known impacts from the previously approved Wambo Longwall coal mining approvals. If necessary additional mitigation measures should be identified in this advice to DPE.

Response

The potential subsidence impacts on the Wambo Homestead Complex are summarised in Section 4.7.3 of the EA:

The main homestead building and the majority of the building structures would not be impacted by subsidence from the modified mine layout (i.e. vertical subsidence of less than 20 mm and strains less than 0.5 mm/m tensile and compressive) (Appendix A).

...

The Mounting Yard and Horse Boxes are predicted to experience only low levels of additional vertical subsidence (30 mm and 60 mm, respectively) and low levels of strain (2 mm/m tensile and compressive) as a result of the modified mine layout (Appendix A).

...

The predicted additional subsidence at the Mounting Yard and Horse Boxes due to the modified mine layout are small when compared with the subsidence predicted to have already occurred due to previous mining.

MSEC (Appendix A) concluded these two timber framed structures are unlikely to experience adverse impacts on the building structure as a result of the Modification. It is therefore concluded that there is likely to be negligible impact on the heritage values of the Wambo Homestead Complex as a result of the modified mine layout.

The Wambo Development Project was approved under Part 4 of the EP&A Act in February 2004 by Development Consent (DA 305-7-2003) pursuant to section 80 of the EP&A Act.

WCPL would lodge an application under section 60 of the NSW *Heritage Act, 1977* for the longwalls of the modified mine layout within the Wambo Homestead Complex curtilage. This is a statutory requirement, as well as a requirement of Condition 57, Schedule 4 of the Development Consent (DA 305-7-2003).

This application under section 60 of the *Heritage Act, 1977* would require approval by the NSW Heritage Council prior to any further longwall extraction occurring within the Wambo Homestead Complex curtilage (i.e. this is an additional approval requirement separate to the proposed modification to the Development Consent).

The application under section 60 of the *Heritage Act, 1977* would:

- demonstrate that WCPL can comply with the subsidence impact performance measure of negligible impact on heritage value of the Wambo Homestead Complex; and
- be supported by an updated Wambo Homestead Complex Mine Management Plan that outlines the monitoring and mitigation measures required to avoid adverse heritage impacts on the Wambo Homestead Complex due to subsidence.

As with the previous application made by WCPL under section 60 of the *Heritage Act, 1977* for Longwalls 7 and 8 at the North Wambo Underground Mine, this application would be supported by advice from a suitably qualified heritage architect and structural engineer (as recommended by the NSW Heritage Council).

WCPL lodges an annual photographic record of the elevations of all structures at the Wambo Homestead Complex with the NSW Heritage Office, DP&E and Singleton Council in accordance with Condition 62, Schedule 4 of the Development Consent (DA 305-7-2003). The most recent record was lodged on 29 October 2015 and provides the contemporary record of the current state of the Wambo Homestead Complex requested by the NSW Heritage Council.

In addition, it is noted that regular structural inspections of the Wambo Homestead Complex are undertaken by Bill Jordan & Associates Pty Ltd (Chartered Structural Engineer specialising in conservation of historical structures) as required under the Development Consent (DA 305-7-2003). The most recent inspection occurred in November 2015, which followed extraction of Longwall 7 immediately adjacent to the Wambo Homestead Complex and at a closer distance than the longwalls proposed as part of the Modification. The inspection observed a lack of change between 2011 and 2015 (with the exception of repair works completed by WCPL).

Issue

The NSW Heritage Council recommended the following condition for the Development Consent:

The Applicant shall seek and obtain the endorsement of a Conservation Management Plan from the Heritage Council of NSW for 'Wambo Homestead' within a period of 12 months of the date of approval.

Response

WCPL accepts this recommendation, which is consistent with the review requirements described in the 2015 Annual Review.

Abandoned Stony Creek Cottage Site

Issue

The NSW Heritage Council recommended the following condition for the Development Consent:

The Applicant should include a statement of heritage impact for 'Abandoned Stony Creek Cottage Site' with advice on its existing structural condition and integrity and provisions to mitigate the harm of subsidence through the long wall extensions to this heritage item. This may involve stabilisation, recording and/or monitoring activities.

Response

The location of the Abandoned Stony Creek Cottage Site is shown on Figures 1a and 1b.

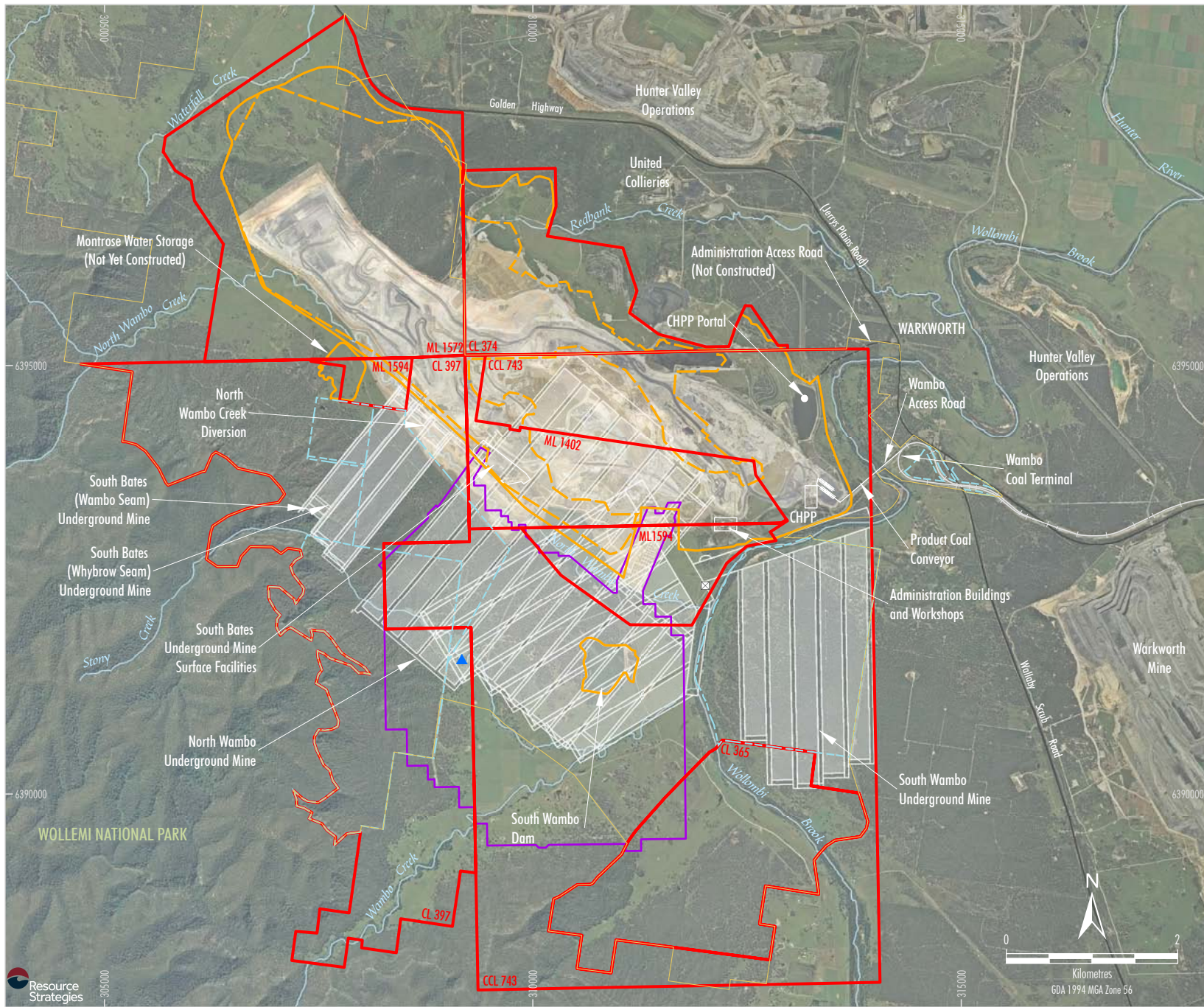
As shown on Figure 1a, the Abandoned Stony Creek Cottage Site has been previously subject to subsidence effects from the North Wambo Underground Mine and previous mining in the Whybrow Seam. As shown on Figures 1a and 1b, the Abandoned Stony Creek Cottage Site would be subject to subsidence effects from the approved mine layout and modified mine layout of the South Wambo Underground Mine.

An extract of EJE Town Planning (2003) that included a Statement of Heritage Significance and mitigation and management measures for the Abandoned Stony Creek Cottage Site is provided in Attachment 1.

In summary, EJE Town Planning (2003) concluded:

- In 2003, the remains were in ruins, and therefore in very poor condition given their relatively recent age.
- The site was of no importance in terms of a community or cultural group for spiritual, social or cultural reasons.
- The site has the potential to yield cultural information concerning the buildings located upon it. The value of this information is limited in heritage terms but has a certain degree of interest in archaeological terms, and therefore may be considered to have limited local significance.
- The site exhibits no rare or endangered aspects of cultural or natural history.
- The site is too dilapidated to have any representative value, with better examples of Federation period small homestead sites readily found within the locality and within NSW generally.
- The site is located within an existing subsidence area. Any further subsidence which resulted from the Wambo Development Project was unlikely to exacerbate the already severely dilapidated condition of the building.
- As a precaution against any further impacts a written description and photographic record of the site should be established.

The Modification does not change the above conclusions as the predicted subsidence effects would be similar between the approved and modified mine layouts.



- LEGEND**
- Mining and Coal Lease Boundary
 - WCPL Owned Land
 - Existing/Approved Surface Development Area
 - - - Approved Open Cut Limit
 - Approved Underground Development
 - Previous Underground Workings in Whybrow Seam
 - ⊠ Approved Ventilation Shaft
 - - - Remnant Woodland Enhancement Program (RWEPP) Area
 - ▲ Abandoned Stony Creek Cottage Site

Source: Department of Lands (July 2009); WCPL (2015); WCPL Orthophoto (Apr-Oct 2013); EJE Town Planning (2003)



WAMBO COAL MINE
Abandoned Stony Creek Cottage Site
in Relation to Approved Wambo Coal Mine
General Arrangement

Figure 1a

WCPL will compile the photographic record of the Abandoned Stony Creek Cottage Site from 2003 and recent photos from 2015 and submit these to the Heritage Council and a local historic society for their records.

2.4 FLORA AND FAUNA

The OEH made two recommendations regarding biodiversity. Each of these recommendations is addressed below. The DP&E requested clarification of disturbance for proposed surface infrastructure, which is also addressed below.

It is noted that the OEH, in its submission for the Modification, stated:

Therefore, OEH is satisfied that the proposed offset meets the ‘like-for-like or better’ requirement of Offset principle 6.

Biodiversity Offset Package

Issue

The OEH recommended the following condition for the Development Consent:

That the proponent provides a biodiversity offset package as described in Appendix D (FloraSearch Pty Ltd) of the Environmental Assessment (Peabody Energy, 2016); and

Response

WCPL accepts this recommendation.

Unexpected Mine Subsidence

Issue

The OEH recommended the following condition for the Development Consent:

That if any unexpected harm to threatened species, populations, or communities occurs due to unexpected mine subsidence that it is offset in accordance with OEH biodiversity offsetting policy.

Response

WCPL accepts this recommendation, noting that it is already incorporated into the Development Consent (Condition 22, Schedule 4).

Proposed Surface Infrastructure

Issue

The DP&E requested further detail on the locations of gas management infrastructure, in particular a conceptual layout showing indicative locations.

Response

Given the variable gas quantities and the wide range of topography, vegetation cover and access constraints across the South Wambo Underground Mine area, the specific locations of gas management infrastructure requires definition as a component of future detailed mine planning and engineering studies over the life of the South Wambo Underground Mine (Section 3.2 of the EA).

Notwithstanding this uncertainty, the Flora Assessment undertook an assessment of the potential impacts associated with a conservative disturbance area for gas management infrastructure (Tables 23 and 24 of Appendix D of the EA). A biodiversity offset package was presented on this basis and accepted by the OEH. WCPL would be bound to act generally in accordance with the disturbance assumptions used in the Flora Assessment.

It is noted that on other projects, the DP&E has considered that these minor surface works are amenable to effective and appropriate management under management plans (NSW Department of Planning and Infrastructure, 2011).

Figure 2 provides conceptual locations of gas drainage boreholes. As described in Section 3 of the EA, there would also be general access tracks to facilitate maintenance and monitoring, water and gas pipelines, power infrastructure and up to two centralised gas plants. WCPL requests flexibility in the locations of gas management infrastructure, allowing for the final location of gas management infrastructure to be outlined in the relevant Extraction Plan and associated Mining Operations Plan (MOP).

Surface disturbance associated with gas management infrastructure would be temporary and isolated in nature. The surface disturbance would occur progressively over the life of the South Wambo Underground Mine and would be rehabilitated progressively as the gas management infrastructure is no longer required.

2.5 NOISE

The EPA made comment on the noise assessment, noise criteria and mitigation measures. Each of the main comments/issues raised are addressed below. The DP&E requested clarification of the approach to noise assessment, which is also addressed below.

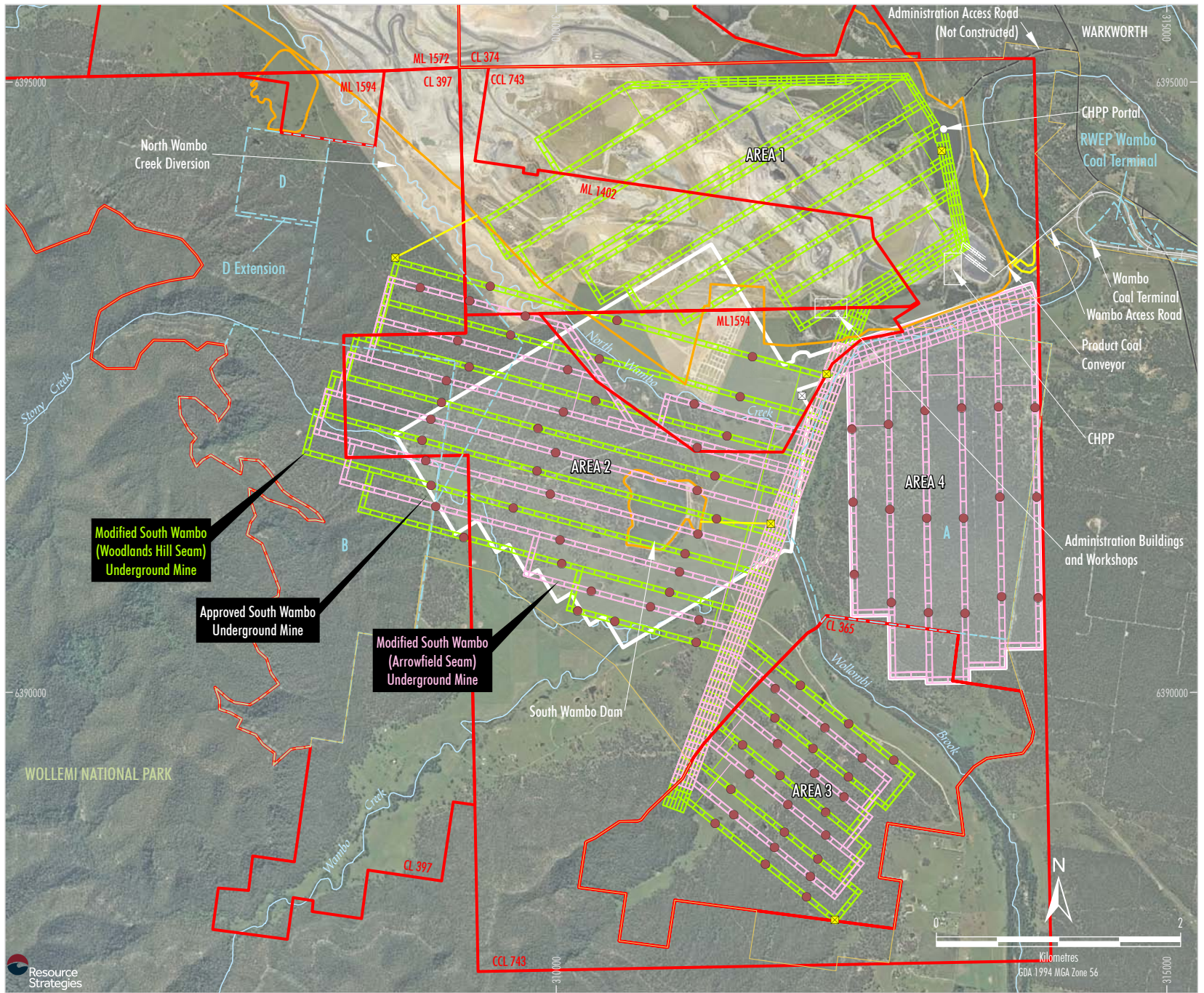
Assessment of Noise Impacts

Issue

The EPA requested further details on the intrusive and amenity noise level impacts at Receiver 19A & B in Warkworth.

Response

Receiver 19A & B is located approximately 700 m to the east of the Wambo Coal Mine, in direct proximity to coal handling and rail infrastructure and haulage of open cut and underground run-of-mine (ROM) coal (Figure 3).

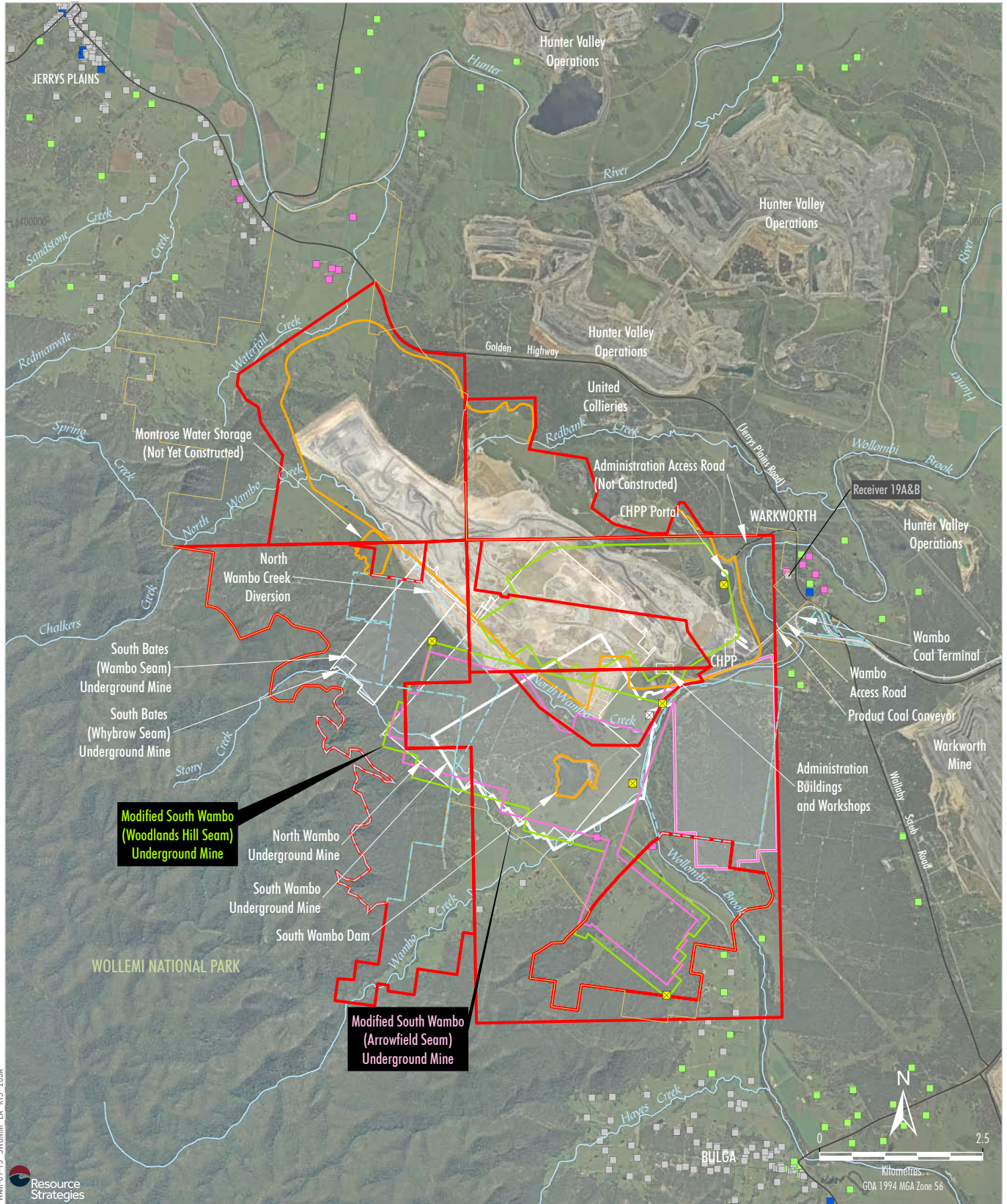


- LEGEND**
- Mining and Coal Lease Boundary
 - WCPL Owned Land
 - Existing/Approved Surface Development Area
 - Modified Surface Development Area
 - Approved South Wambo Underground Mine Development
 - - - Modified South Wambo (Woodlands Hill Seam) Underground Mine
 - - - Modified South Wambo (Arrowfield Seam) Underground Mine
 - x Approved Ventilation Shaft
 - x Modified Ventilation Shaft
 - - - Remnant Woodland Enhancement Program (RWEPP) Area
 - Indicative Gas Drainage Boreholes

Note: Refer to Figure 1a for location of North Wambo Underground Mine and South Bates Underground Mine.

Source: Department of Lands (July 2009); WCPL (2015); WCPL Orthophoto (Apr-Oct 2013)

Figure 2



WAM-09-15 SHUMAM EA RIS 203A



LEGEND

- | | |
|--|---|
| — Mining and Coal Lease Boundary | ⊗ Approved Ventilation Shaft |
| — WCPL Owned Land | ⊗ Modified Ventilation Shaft |
| — Existing/Approved Surface Development Area | Residences |
| — Approved Underground Development | Wambo Owned |
| — Modified South Wambo (Woodlands Hill Seam) Underground Mine | Other Resource Company Owned |
| — Modified South Wambo (Arrowfield Seam) Underground Mine | Government Owned |
| — Remnant Woodland Enhancement Program (RWEF) Area | Private |



W A M B O C O A L M I N E

Locations of Ventilation Shafts and Residences

Source: Department of Lands (July 2009); WCPL (2015); WCPL Orthophoto (Apr-Oct 2013)

Figure 3

The *Wambo Development Project – Construction, Operation and Transportation – Noise and Blasting Impact Assessment* (Richard Heggie Associates, 2003) predicted intrusive noise levels in Year 9 of the Wambo Development Project of 53 A-weighted decibels (dBA) $L_{Aeq(15\text{ minute})}$ during the daytime and 57 dBA $L_{Aeq(15\text{ minute})}$ during the evening and night-time at Receiver 19A & B. The Warkworth Continuation Noise and Vibration Study (EMGA Mitchell McLennan, 2014) predicted cumulative night-time amenity noise levels at Receiver 19A & B of up to 57 dBA $L_{Aeq(\text{period})}$.

The Noise Review (SLR Consulting Australia Pty Ltd [SLR Consulting], 2016) undertook a review of the overall sound power level (SWL) of the Wambo Coal Mine operations and concluded:

In view of the foregoing marginal SWL variations arising from the Modification, together with the extent of the existing off-site environmental noise compliance (refer Section 2.5.2), it is reasonable to conclude that the Modification would have minimal potential to alter the existing intrusive ($L_{Aeq(15\text{ minute})}$) and amenity ($L_{Aeq(\text{period})}$) noise levels at the nearest privately owned receivers in the vicinity of Wambo.

A specific ventilation system intrusive and amenity noise assessment was then conducted for privately-owned receivers to the south of the Wambo Coal Mine as the modified ventilation system would include components that would be located toward the southern extent of the WCPL-owned lands remote from the majority of other Wambo Coal Mine operations (see Section 4.1.4 of Appendix H of the EA).

Receiver 19A & B was not included in this specific ventilation system intrusive and amenity noise assessment as noise from ventilation fans would not be the dominant Wambo Coal Mine noise source at Receiver 19A & B. In other words, in regard to Receiver 19A & B, SLR Consulting (2016) concluded that there would be no material change to the existing intrusive ($L_{Aeq(15\text{ minute})}$) and amenity ($L_{Aeq(\text{period})}$) noise levels (as outlined above).

Issue

The DP&E requested clarification on the noise modelling approach.

Response

As outlined above, the approach to the Noise Review (Appendix H of the EA) was as follows:

- The SWL for the modified Wambo Coal Mine operations (including the open cut, South Wambo Underground Mine, Coal Handling and Preparation Plant [CHPP] and rail loading operations) was estimated for three indicative years during the modified mine life (i.e. 2019, 2023 and 2028).
- For all indicative years, it was concluded that the estimated total SWL would be lower than the SWL for the existing Wambo Coal Mine operations.
- The location of additional infrastructure proposed as part of the Modification was then reviewed in relation to its proximity to privately-owned receivers.
- On the basis of this review, specific modelling and assessment was undertaken of the southern-most ventilation fans that would be located toward the southern extent of the WCPL-owned lands remote from the majority of other Wambo Coal Mine operations. This modelling showed that contribution to intrusive noise levels and night-time amenity levels from the ventilation fans would be relatively low and the noise levels at the receivers in Bulga are likely to remain acceptable.
- Based on the above and the extent of existing off-site environmental noise compliance, the Modification would have minimal potential to alter the existing intrusive ($L_{Aeq(15\text{ minute})}$) and amenity ($L_{Aeq(\text{period})}$) noise levels at privately-owned receivers in the vicinity of Wambo Coal Mine.

Noise Criteria in EPL 529

Issue

The EPA stated that Receiver 19A & B was not listed in the noise limits at condition L4.1 of Environment Protection Licence (EPL) 529, and therefore the EPA's position was that an adopted level of 35 dBA applied at this location.

Response

WCPL notes that the table in condition L4.1 of EPL 529 outlines generic noise limits for "other residential or sensitive receptors" not listed elsewhere in the table. For these receptors, a noise limit of 35 dBA is adopted. However, the table within condition L4.1 specifically states (emphasis added):

All other residential or sensitive receptors excluding the receptors listed above and also excluding those listed in Table 1 of Schedule 4 of the Wambo Coal Mine Development Consent (DA 305-7-2003).

WCPL notes that Receiver 19A & B is listed in Table 1 of Schedule 4 of the Wambo Coal Mine Development Consent (DA 305-7-2003). Therefore, WCPL considers that the generic noise limits (i.e. 35 dBA) in EPL 529 do not apply to this property. WCPL notes that this property is subject to acquisition upon request.

Notwithstanding, if the EPA is concerned regarding any ambiguity in the interpretation of condition L4.1 of EPL 529, WCPL will apply for an EPL variation to resolve any perceived inconsistency with the Development Consent (DA 305-7-2003).

Noise Mitigation Measures

Issue

The EPA recommended WCPL implements a complaints management protocol that includes strategies such as regular community notifications and provision of respite periods for residents during construction if complaints are received.

Response

The above is consistent with Section 4.2 of Appendix H of the EA, which describes that WCPL would consult with the landowners at relevant receiver locations prior to works commencing. This consultation would include notification of the works expected to occur, their duration and the noise management measures that would be implemented, as well as the provision of WCPL contact details.

2.6 AIR QUALITY

Issue

The DP&E requested clarification that the closest receivers to the proposed surface infrastructure would experience similar (or lower) air quality impacts than those previously approved.

Response

WCPL has a strong history of compliance with the air quality criteria for total suspended particulates (TSP) and particulate matter 10 micrometers or less in diameter (PM₁₀) in the Development Consent (DA 305-7-2003) (Section 4.11.1 of the EA).

The majority of new dust-generating surface infrastructure components associated with the Modification are located either within or directly adjacent to existing open cut and ROM coal handling operations.

In consideration of air quality monitoring conducted at the Wambo Coal Mine to date, the changes in dust generating activities and the location of sensitive receivers, Todoroski Air Sciences (2016) (Appendix I of the EA) concludes:

Therefore it is reasonable to conclude that overall, the Modification is unlikely to cause any discernible negative impact at any surrounding sensitive receptor locations relative to the approved operations.

2.7 REHABILITATION

The DRE raised a number of issues regarding rehabilitation. Each of the main comments/issues raised are addressed below. The DP&E requested further detail on post-mining agricultural land use, which is also addressed below.

Rehabilitation Plan

Issue

The DRE recommended a condition of approval requiring a Rehabilitation Plan.

Response

WCPL accepts this recommendation, noting that it is similar to Condition 94C, Schedule 4 of the Development Consent (DA 305-7-2003). WCPL has an approved *Mining Operations Plan 2015-2020* (MOP) (WCPL, 2016c) that satisfies the requirement of Condition 94C, Schedule 4.

Rehabilitation Objectives

Issue

The DRE requested more detailed completion criteria and information on the target vegetation community type to be achieved in rehabilitation.

Response

Detailed completion criteria have been developed for the Wambo Coal Mine in accordance with *ESG3: Mining Operations Plan (MOP) Guidelines September 2013* (DRE, 2013). These completion criteria are outlined in Section 6 of the MOP (WCPL, 2016c) and have been approved by the DRE.

The revegetation strategy for the Wambo Coal Mine is described in detail in Section 3.3.7 of the approved MOP, including provisional species lists for woodland and pasture areas (WCPL, 2016c).

WCPL considers that the detailed completion criteria and revegetation strategy in the approved MOP would not require material changes to incorporate the Modification. Notwithstanding, the DRE would have the opportunity to review and provide any specific comments on these aspects as part of any future MOP amendment.

Proposed Mine Layout and Scheduling

Issue

The DRE requested further detail on the proposed mine layout and scheduling (including open cut operations). The DRE also requested more information on the functional domains of Wambo Coal Mine with regard to open cut activities.

Response

As outlined in Section 3.4 of the EA, the proposed extension of the open cut life would be consistent with mine progression in the approved MOP.

Primary (functional) and secondary domains for Wambo Coal Mine (including the open cut operations) in 2016, 2017, 2018, 2019 and 2020 are provided in Plans 3b to 3f of the MOP (WCPL, 2016c) approved by the DRE. The Modification seeks a formal amendment to the open cut life approved under the Development Consent (DA 305-7-2003) that is consistent with the mine layout and progression in the approved MOP.

Section 3.2 of the EA outlines the progression of longwall mining for the modified mine layout. This level of detail is considered sufficient for an assessment under section 75W of the EP&A Act, with further detail on mine progression to be provided as part of the Extraction Plan and MOP processes.

Tailings Disposal

Issue

The DRE requested further detail on the management of tailings and the rehabilitation schedule for tailings disposal facilities.

Response

WCPL conducted a review of the available coal reject storage at the Wambo Coal Mine and concluded there would be sufficient storage capacity for the additional coal rejects generated by the Modification (Section 3.6 of the EA).

The Modification would not alter the rehabilitation schedule for tailings disposal facilities outlined in the approved MOP (WCPL, 2016c).

The EA (Section 5.3.3) includes a commitment to review and revise the Life of Mine Rejects Emplacement Strategy to include the Modification (subject to approval of the Modification). The Life of Mine Rejects Emplacement Strategy is required to be prepared to the satisfaction of the DRE under Condition 22G, Schedule 4 of the Development Consent (DA 305-7-2003).

North East Tailings Dam

Issue

The DRE raised concerns regarding the EA not including discussion of the rehabilitation of the North East Tailings Dam.

Response

The North East Tailings Dam is no longer being used for tailings disposal and this would not change as a result of the Modification.

The rehabilitation of the North East Tailings Dam is managed under the MOP, including capping studies on the North East Tailings Dam to identify a safe and viable method of capping the tailings dam surface.

Conceptual Final Landform Design

Issue

The DRE requested further detail on the post-mining landform, including cross-sections and consideration of geotechnical and stability issues.

Response

The post-mining final landform design for the Wambo Coal Mine is presented in the MOP (WCPL, 2016c) approved by the DRE, which is based on completion of open cut operations during 2020 (i.e. as proposed as part of the Modification). Cross-sections of the post-mining landform at the Wambo Coal Mine are provided in Plan 5 of the approved MOP. Geotechnical and slope stability issues are also dealt with in the approved MOP.

Options Analysis

Issue

The DRE stated that no options analysis beyond economic considerations was provided. The DRE also requested consideration of alternative final void configurations/layouts and shapes and the number of final voids.

Response

The DP&E (2016) has previously noted that with modification applications, the assessment should build on the work that has been carried out before. In other words, it would be an inefficient and ineffective use of resources to redo the whole assessment every time an approval is modified.

A detailed consideration of alternatives was conducted as part of the original assessment of the Wambo Development Project, and subsequent modifications. In addition, Section 6.2.1 of the EA includes a consideration of alternatives relevant specifically to the Modification.

The DRE has approved a final void configuration and layout as part of the MOP (WCPL, 2016c). The Modification seeks a formal amendment to the open cut life approved under the Development Consent (DA 305-7-2003) that is consistent with the mine layout and progression in the approved MOP.

No further justification of the final landform design is considered necessary as part of the assessment of the Modification.

Post-Mining Agricultural Land Use

Issue

The DRE requested analysis of the potential to improve grazing potential of rehabilitated areas to offset the reduction in area of Agricultural Class 4 and 5 land available for grazing as a result of the additional Remnant Woodland Enhancement Program (RWEPP) area.

Response

Approximately 15 hectares of existing grazing land would be sterilised in perpetuity as a result of the extension to the RWEPP areas for the Modification.

WCPL understands there is no NSW Government policy requiring the offset of loss of moderate-low capability grazing land as a result of biodiversity offsets. Notwithstanding, as outlined in the approved MOP (WCPL, 2016c), some rehabilitation areas will be returned to agricultural land uses.

Issue

The DP&E requested details on the predicted Land and Soil Capability of the proposed surface development area post-mining.

Response

The majority of the proposed surface development area would be rehabilitated to mixed pasture/woodland.

The MOP (WCPL, 2016c) includes the following rehabilitation objective for mixed pasture/woodland rehabilitation:

Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V)

2.8 OTHER

The DPI made comments regarding the identification and management of Crown land. Each of the main comments/issues raised are addressed below.

Identifying Crown Land

Issue

The DPI requested further detail on affected Crown lands.

Response

Property descriptions of the current DA 305-7-2003 Development Application Area and the proposed extension to the Development Application Area are provided in Attachment 3 of the EA.

As suggested by the DPI, WCPL will undertake a Crown Lands Status Search for these areas.

Impacts on Crown Land

Issue

The DPI requested identification of Crown land significantly affected by the Modification.

Response

The Modification primarily relates to a realignment and extension of the South Wambo Underground Mine. Underground mining activities would not significantly affect overlying Crown land.

3 RESPONSES TO NON-GOVERNMENT ORGANISATIONS

Responses to issues raised by NGOs are provided in the subsections below.

Of the seven submissions by NGOs that were received by DP&E, six submissions objected to the Modification, and one commented on the Modification.

3.1 GROUNDWATER AND SURFACE WATER

Potential Impacts on Wollombi Brook

Issue

The Nature Conservation Council raised concern regarding potential impacts on Wollombi Brook, particularly cracking of the bedrock. Concern was also raised regarding the main headings being located beneath Wollombi Brook.

Response

Longwalls at the Wambo Coal Mine have been and would continue to be constrained by a ‘subsidence exclusion zone’. The subsidence exclusion zone limits the extent of longwalls to an angle of 26.5° from the vertical to a 40 m lateral buffer from the Wollombi Brook high bank. As a result of this buffer, any subsidence impact on Wollombi Brook due to the Modification would be negligible. The Subsidence Assessment (Appendix A of the EA) concludes:

The banks of Wollombi Brook are located at a distance of 180 metres east of WHLW9, at its closest point to the proposed longwalls. At this distance, Wollombi Brook is predicted to experience less than 20 mm of vertical subsidence. While it is possible that Wollombi Brook could experience very low levels of vertical subsidence, it would not be expected to experience any measurable tilts, curvatures or ground strains.

As there would be no measureable tilts, curvatures or ground strains, there is not expected to be any cracking of the bedrock of Wollombi Brook.

Condition 22, Schedule 4 of the Development Consent (DA 305-7-2003) requires WCPL to achieve a subsidence impact performance measure of “negligible impact” for Wollombi Brook.

Main headings beneath Wollombi Brook would be designed to be stable and non-subsiding (i.e. cause negligible movement at the surface). Under Condition 22E, Schedule 4 of the Development Consent (DA 305-7-2003), WCPL must seek the approval of the DRE that these main headings are designed to remain stable and non-subsiding in the long term prior to commencement. The intent of this condition is for the DRE to be satisfied that first workings are built to geotechnical and engineering standards sufficient to ensure long term stability, with negligible resulting direct subsidence impacts.

Therefore, the Nature Conservation Council and the DP&E can be satisfied there would be negligible subsidence impact on Wollombi Brook.

Issue

HEL raised concern regarding potential impacts on Wollombi Brook as a result of the Wambo Coal Mine. HEL also raised concerns about the management of discharge into Wollombi Brook under the Hunter River Salinity Trading Scheme (HRSTS).

Response

The site water management strategy for the Wambo Coal Mine is based on the containment and re-use of mine water within the water storage dams at the Wambo Coal Mine. This limits the potential for off-site release of salt and heavy metals.

WCPL currently holds 48 credits to discharge water from site under the HRSTS in accordance with the requirements of the scheme and the conditions of EPL 529. These arrangements require flow in Wollombi Brook to exceed 500 megalitres per day (measured at the Bulga gauging station) for water releases to occur.

As noted by HEL, the HRSTS undergoes regular reviews. WCPL will comply with the regulated outcomes of any of these reviews.

WCPL reviews and updates its site water balance annually in accordance with the conditions of the Development Consent (DA 305-7-2003). The annual review of the site water balance under Condition 25, Schedule 4 of the Development Consent (DA 305-7-2003) would continue to review and confirm that these inflows can be managed by the approved water management system, or initiate corrective action if required.

There is additional contingent capacity for water storage at Wambo Coal Mine (i.e. the approved Montrose Water Storage Dam with a nominal capacity of 1,500 megalitres).

Independent Assessment of Water Impacts

Issue

HEL requested an independent assessment of the water impacts of Wambo Coal Mine be conducted.

Response

Dr Frans Kalf was commissioned by WCPL to conduct a peer review of the Groundwater Assessment, and found it adequate, professional and detailed (Attachment 6 of the EA).

In addition to the above, the potential impacts on water resources will be independently assessed by the DP&E, the DPI Water and the Planning Assessment Commission (PAC).

Previous Impacts to Wambo Creek

Issue

CPCFM, the Lock the Gate Alliance, Nature Conservation Council and HCN raised concern regarding the previous subsidence impacts on Wambo Creek, and WCPL's obligation to repair the creek under the conditions of Singleton Shire Council Development Consent DA 108/91.

Response

Remediation of previous impacts on Wambo Creek is subject to the conditions of a separate consent (DA 108/91), which is not the subject of this Modification.

The Modification would not involve additional subsidence impacts on the portion of Wambo Creek on privately-owned property that is subject to ongoing remediation. The Modification would cause negligible subsidence on any privately-owned land.

Any remediation required on Wambo-owned land as a result of the Modification would be undertaken in accordance with the Extraction Plan to be developed for the Modification.

The Surface Water Assessment (Advisian, 2016) included an assessment of potential impacts on Wambo Creek, in consideration of previous subsidence impacts to the creek. It is noted that longwall mining proposed as part of the Modification would occur at much greater depths compared to previous mining.

The existing Surface Water Monitoring Program, Erosion and Sediment Control Plan and Surface and Groundwater Response Plan would continue to be implemented for the Modification (Section 4.5.3 of the EA). These plans would include the following measures to manage potential subsidence impacts on watercourses:

- Longitudinal geomorphological surveys would be conducted along the creek reaches affected by subsidence. Surveys would be conducted prior to commencement of secondary extraction, immediately following subsidence, and following the completion of any restoration or remediation works.
- Trigger Action Response Plans would be developed with a process to determine triggers and remedial actions for:
 - changes in grade and associated erosion;
 - pool development, including contingency remedial actions should subsidence create a pool that is significantly larger than expected; and
 - surface cracking.

North Wambo Creek Diversion

Issue

HCN raised concern regarding the impact of the North Wambo Creek Diversion on the environmental health of the creek system.

Response

The North Wambo Creek Diversion was assessed in the *Wambo Development Project Environmental Impact Statement* (WCPL, 2003) and approved under the Development Consent (DA 305-7-2003). Construction of the North Wambo Creek Diversion was completed in 2013.

The Modification would involve no changes to the approved structure of the North Wambo Creek Diversion.

Performance of the Mine Water Management System

Issue

CPCFM, the Nature Conservation Council, Environmental Justice Australia and HCN raised concern regarding previous performance of the mine water management system, including the failure of a sediment dam at the Wambo Coal Mine in January 2016 and a release from South Wambo Dam.

Response

In January 2016, following a period of significant rainfall, there was an uncontrolled release of water from a temporary sediment dam at the Wambo Coal Mine. WCPL reported the incident to the EPA and has complied with all directions in relation to the incident.

Following the incident, WCPL has undertaken a review of its on-site systems and submitted a revised Erosion and Sediment Control Plan to DP&E. The revised Erosion and Sediment Control Plan includes measures to monitor, manage and mitigate the risk of similar incidents in future.

Previous incidents associated with South Wambo Dam have also been reported to the relevant regulatory authorities, and systems have been reviewed and updated to avoid further occurrences.

3.2 FLORA AND FAUNA

Potential Impacts on Warkworth Sands Woodland

Issue

CPCFM, the Lock the Gate Alliance, the Nature Conservation Council and HCN raised concerns regarding potential impacts on the perched aquifers supporting the *Warkworth Sands Woodland in the Sydney Basin Bioregion* endangered ecological community (Warkworth Sands Woodland).

Response

Detailed vegetation mapping has been undertaken at Wambo Coal Mine for this Modification and previous modifications. Warkworth Sands Woodland is only present above Area 4 of the South Wambo Underground Mine (Community 12 on Figure 13 of the EA).

Mining of the Arrowfield and Bowfield Seams at the South Wambo Underground Mine in Area 4 was assessed as part of the *Wambo Development Project Environmental Impact Statement* (WCPL, 2003) and approved under the Development Consent (DA 305-7-2003).

The Modification does not propose any changes to the approved Arrowfield Seam mine layout to the east of Wollombi Brook. The approved Bowfield Seam mine layout is no longer proposed to be mined in Area 4.

The predicted subsidence effects for the modified mine layout in Area 4 are predicted to reduce in all areas as only the Arrowfield Seam is proposed to be mined (i.e. mining of the Bowfield Seam is no longer proposed) (MSEC, 2016). The potential subsidence impacts and environmental consequences in Area 4 are therefore also expected to reduce as a result of the Modification.

Consequently, potential subsidence impacts on the Warkworth Sands Woodland would be reduced as a result of the Modification.

The Groundwater Assessment also shows there would be no cumulative drawdown in the shallow groundwater system in the areas of mapped Warkworth Sands Woodland (Figure 52 of Appendix B of the EA).

3.3 NOISE

Health Impacts

Issue

CPCFM and the Lock the Gate Alliance raised concerns that potential health impacts from noise emissions have not been adequately considered.

Response

SLR Consulting (2016) undertook an assessment of potential noise impacts as a result of the Modification. Compared to existing approved operations at Wambo Coal Mine, it is predicted that the overall sound power level (SWL) of the Wambo Coal Mine for the Modification would either remain the same, or reduce following the cessation of open cut mining operations during 2020 (without further assessment and approvals).

The Modification is expected to comply with the current noise criteria in the Development Consent (DA 305-7-2003) at all sensitive receivers (SLR Consulting, 2016).

Noise management and monitoring at Wambo Coal Mine would continue to be implemented in accordance with the Noise Management Plan (Section 4.10.1 of the EA).

The Noise Management Plan describes procedures to be implemented in the event of an exceedance. The procedures include active measures to modify operations or stand down equipment to ensure compliance with noise criteria continues to be maintained.

Noise Predictions

Issue

CPCFM, the Lock the Gate Alliance and HEL raised concerns that predicted noise levels do not take into account the open cut operations and the CHPP.

Response

The Noise Review (SLR Consulting, 2016) considered three indicative scenarios for total SWL at Wambo Coal Mine, in years 2019, 2023 and 2028. As open cut operations would cease from 2020 (without further assessment and approvals), noise from the open cut operations was considered in the year 2019, but not in the years 2023 and 2028.

Consideration of noise produced by the CHPP was considered for all three scenarios (refer to Section 4.1.3 of the Noise Review [Appendix H of the EA]).

3.4 AIR QUALITY

Health Impacts

Issue

CPCFM, the Lock the Gate Alliance, HCN and HEL raised concerns that potential health impacts from dust emissions have not been adequately considered.

Response

Todoroski Air Sciences (2016) undertook an assessment of potential air quality impacts as a result of the Modification (Appendix I of the EA). Compared to existing approved operations at Wambo Coal Mine, it is predicted that dust emissions for the Modification would be reduced by up to 56 percent (%) prior to the cessation of open cut mining operations in 2020 (without further assessment and approvals), and up to 87% following the cessation of open cut mining operations compared to the dust emissions assessed in the *Wambo Development Project Environmental Impact Statement* (WCPL, 2003).

It is noted that the criteria used for assessment in the EA are generally developed for the protection of human health. The Modification is expected to comply with air quality criteria at all sensitive receivers (Todoroski Air Sciences, 2016).

Air quality management and monitoring at Wambo Coal Mine would continue to be implemented in accordance with the Air Quality and Greenhouse Gas Management Plan (Section 4.11.1 of the EA).

The Air Quality and Greenhouse Gas Management Plan describes procedures to be implemented in the event of an exceedance. The procedures include notification of the exceedance to the Secretary and any other relevant agencies and modifying mining operations as required. In the event of a non-compliance, all affected landowners/tenants are to be notified.

Dust Predictions

Issue

CPCFM, the Lock the Gate Alliance and HEL raised concerns that predicted dust emissions do not take into account the open cut operations and the CHPP.

Response

The Air Quality and Greenhouse Gas Review (Todoroski Air Sciences, 2016) considered three indicative scenarios for dust emissions at Wambo Coal Mine, in years 2019, 2023 and 2028. As open cut operations would cease from 2020 (without further assessment and approvals), dust emissions from the open cut operations were considered in the year 2019, but not in the years 2023 and 2028.

Consideration of dust emissions from the CHPP were considered in all three scenarios (refer to Table 6 of the Air Quality and Greenhouse Gas Assessment [Appendix I of the EA]).

Greenhouse Gas Emissions

Issue

CPCFM, HEL, the Lock the Gate Alliance, Environmental Justice Australia and HCN raised concerns that the increased coal production of the Modification would increase greenhouse gas emissions and would therefore contribute significantly to global warming/climate change.

Response

Greenhouse gas emissions associated with the Modification have been estimated by Todoroski Air Sciences (2016) and are presented in the South Wambo Underground Mine Modification Air Quality and Greenhouse Gas Review (Appendix I of the EA).

Annual average Scope 1 and Scope 2 emissions for the Modification are estimated to be approximately 1.84 tonnes of carbon dioxide equivalent, which is approximately 0.34% of Australia's estimated annual greenhouse gas emissions for the 2014 to 2015 period. These emissions are inclusive of the approved Wambo Coal Mine, and therefore the incremental increase in potential greenhouse gas emissions associated with the Modification would be materially less. It is therefore considered that the production of thermal coal at Wambo Coal Mine would contribute only a very small portion of Australia's greenhouse gas emissions.

Existing greenhouse gas abatement measures at the Wambo Coal Mine (such as maintaining equipment, real-time gas monitoring at ventilation shafts and sealing completed longwall panels to reduce fugitive emissions) would continue for the Modification.

Scope 1 and 2 greenhouse gas emissions from the Wambo Coal Mine would continue to be reported annually in accordance with the National Greenhouse and Energy Reporting System.

It should be noted that Scope 3 emissions are optional for reporting, as the emissions would be reported by another organisation as Scope 1 emissions. As Scope 3 emissions are not controlled by or attributable to WCPL, there is inherent uncertainty associated with quantifying the emissions. For example, the Scope 3 emission estimates assume the Modification's product coal would be combusted in an average Australian coal-fired power station, however if the coal was combusted in a more efficient power station, the potential greenhouse gas emissions would be reduced.

Fugitive Emissions

Issue

HCN raised concern that the method of calculation for fugitive greenhouse gas emissions has changed and does not comply with the National Greenhouse Accounts Factors.

Response

The National Greenhouse Accounts Factors publication (Department of the Environment, 2015) states that, for the purposes of National Greenhouse and Energy Reporting, fugitive emissions from underground mines must use direct measurements. Other methods are no longer available and are not reflected in the National Greenhouse Accounts Factors publication.

Therefore, a similar approach was undertaken for estimating the fugitive emissions for the Modification (i.e. site specific measurement). The fugitive emissions were estimated based on gas quantity and quality testing conducted for the modified South Wambo Underground Mine, and reflect the actual gas content in the seams to be mined (Todoroski Air Sciences, 2016). Todoroski Air Sciences (2016) considers this approach to provide a reasonable worst case approximation of the potential fugitive emissions for the Modification.

The Modification proposes to change a target seam from the Bowfield Seam to the Woodlands Hill Seam. The Woodlands Hill Seam has lower measured gas contents than the Bowfield Seam, and therefore it is reasonable that the annual fugitive emissions are lower for the modified mine layout.

3.5 REHABILITATION

Issue

CPCFM and the Lock the Gate Alliance raised concern that the proposed 3 year extension to the open cut mine life will defer current rehabilitation commitments.

Response

Rehabilitation is conducted progressively at Wambo Coal Mine in accordance with the approved MOP (WCPL, 2016c).

The approved MOP includes open cut mining up to and including 2020 and outlines the plan for progressive rehabilitation over this period. The Modification seeks to align the Development Consent (DA 305-7-2003) with the approved MOP.

3.6 SOCIO-ECONOMIC

Peabody Energy's Financial Status

Issue

The Australia Institute raised concerns about why Peabody Energy's financial position was not considered in the Socio-Economic Assessment.

HCN, HEL, Lock the Gate Alliance, the Nature Conservation Council, Environmental Justice Australia and CPCFM raised concerns that Peabody Energy's financial position may impact on its ability to develop the Modification, or that the current status is the reason for the Modification.

Response

Peabody Energy voluntarily filed petitions under Chapter 11 for the majority of its United States (US) entities in the United States Bankruptcy Court for the Eastern District of Missouri on 13 April 2016. No Australian entities are included in the Chapter 11 filings, and Peabody Energy plans for its Australian operations to continue as usual. The Australian operations have access to separate funding arrangements enabling it to continue operations at the Wambo Coal Mine.

Peabody Energy has made available to its Australian platform a committed US\$250 million (M) revolving Intercompany Loan Facility. The Intercompany Loan Facility is designed to provide additional liquidity to support the ongoing operations of the Australian business during Peabody Energy's Chapter 11 reorganisation, with draw amounts being tied to operating budgets and subject to certain availability restrictions.

As such, the circumstances surrounding the Chapter 11 bankruptcy protection sought by Peabody Energy Corporation and related US entities will not impact WCPL's ability to meet its financial obligations.

Notwithstanding the above, it is noted that the Socio-Economic Assessment was finalised prior to Peabody Energy voluntarily filing petitions under Chapter 11 for the majority of its US entities in the United States Bankruptcy Court for the Eastern District of Missouri.

In addition, it is noted that the South Wambo Underground Mine is an approved component of the Wambo Coal Mine. The Modification would enable the continued use of existing Wambo Coal Mine infrastructure and workforce and would promote the more efficient and economic recovery of coal resources.

The Woodlands Hill Seam proposed to be mined as part of the Modification is more favourable than the approved (but no longer proposed) Bowfield Seam due its ability to be economically mined beneath the existing/approved surface development area and the shorter time period between the commencement of construction and the commencement of longwall production. As concluded by the Socio-Economic Assessment, the proposed Modification to the South Wambo Underground Mine is more efficient from an economic perspective than the current approved arrangement.

Producer Surplus

Issue

The Australia Institute raised concerns about the producer surplus calculations in the cost benefit analysis component of the Socio-Economic Assessment (AnalytEcon, 2016).

Response

The *Guidelines for the economic assessment of mining and coal seam gas proposals* (NSW Government, 2015) (the Economic Guideline) state (emphasis added):

Consistent with the approach to evaluations in other areas of State Government decision making, the public interest in these guidelines is focused on the collective public interest of households in NSW.

Two components are used to provide the supporting information for the two considerations above. Firstly, cost benefit analysis (CBA) is used to assess the public interest by estimating the net present value of the project to the NSW community. ...

Consistent with Task 5 of Section 3 of the Economic Guideline, an estimate of the net producer surplus attributable to NSW (i.e. \$0) is provided in Section 3.2.1.1 of the Socio-Economic Assessment (Appendix K of the EA). The net producer surplus attributable to NSW is zero as WCPL is owned by Peabody Energy (75%) and Sumiseki Materials Co. Ltd (25%), which are foreign-owned.

Tasks 3 and 4 of Section 3 of the Economic Guideline are lead-up steps to the calculation of the net producer surplus attributable to NSW. These steps were not explicitly included in the Socio-Economic Assessment as they are redundant, given the ownership structure of WCPL.

Notwithstanding the above, the Socio-Economic Assessment includes the key benefits and costs used to calculate the net producer surplus for the Modification:

- revenues (\$4,724M in net present value [NPV] terms) (Section 3.2.1.1);
- capital costs (\$678M in NPV terms) (Section 2.2.1);
- operating costs (\$2,010M in NPV terms) (Section 2.2.1); and
- royalties (\$330M in NPV terms) (Section 3.2.1.1).

In addition, the estimated incremental company income taxes, payroll taxes and council rates that would be paid by WCPL as a result of the Modification are provided in Section 3.2.1 of the Socio-Economic Assessment.

Unrealistic Cost Estimates

Issue

The Australia Institute stated that Peabody Energy provided unrealistic cost estimates for the Wilpinjong Coal Project Economic Assessment (Deloitte Access Economics, 2016) and therefore the cost estimates included in the Socio-Economic Assessment should be considered unrealistic.

Response

The capital and operating costs for the Modification are provided in Table 2-1 of the Socio-Economic Assessment (Appendix K of the EA).

The Australia Institute's statement that the cost estimates included in the Wilpinjong Coal Project Economic Assessment is considered to be invalid. The Wilpinjong Extension Project Response to Submissions outlines the reasons that The Australia Institute's claim is invalid:

<https://majorprojects.affinitylive.com/public/621962c9470ea425f8c199633afeb379/Wilpinjong%20Extension%20Project%20-%20Responses%20to%20Submissions.pdf>

Project Value

Issue

The Australia Institute raised concerns about the accuracy of the value of the Modification based on a comparison with Peabody Energy's market value.

Response

The Socio-Economic Assessment does not provide a valuation of Peabody Energy.

Peabody Energy's market value reflects market perceptions of the combined value of its global operations (inclusive of financial arrangements). Peabody Energy has majority interests in 26 coal mines internationally, which operate under a range of economic and financial conditions (including nine mines in Australia). In particular, Peabody Energy's market value does not just reflect the value of the Wambo Coal Mine. Further, Peabody Energy's current market value may not fully factor in the value of the Modification, as the Modification has not received relevant environmental approvals. That is, AnalytEcon's assessment of the Modification necessarily assumes that the Modification is approved while market participants may differ in their assessments.

Coal Prices

Issue

The Australia Institute raised concerns that the export thermal coal prices adopted in the cost benefit analysis component of the Socio-Economic Assessment are “very high” compared to current prices and the long-term forecast of one broker.

Response

For the purpose of an economic evaluation of a mining project with an operating horizon greater than 15 years, it is appropriate to apply coal price and exchange rate expectations over the term of the investment, that is, long-term forecasts (rather than the current price).

The Australia Institute stated that “most analysts have revised down coal prices heavily”, referencing a single long-term forecast published by Goldman Sachs of US\$42 per tonne (US\$42/t). This long-term thermal coal spot forecast is lower than the current thermal coal spot price and appears to be at odds with the International Energy Agency’s (2015) most recent medium-term outlook for coal, which projects thermal coal demand to grow by 0.8% per annum through to 2020 while thermal coal production is expected to grow more slowly at 0.6% per annum through to 2020.

Notwithstanding the above, forecasting coal prices over the long-term is difficult and therefore a sensitivity analysis was undertaken for export coal prices and the Modification NPV remained positive (refer to Section 3.5.2 of the Socio-Economic Assessment).

AnalytEcon’s (2016) sensitivity ranges for the export coal prices (US\$60/t and \$US85/t) cover a variation of (-) 20% to (+) 13% around the central consensus forecast, and are consistent with past observations as to the variability of coal price outcomes around a central trend.

AnalytEcon’s (2016) sensitivity analyses for export coal prices and exchange rates equates to benchmark thermal coal prices between AUD\$75/t and AUD\$142/t, which are comparable to the range of AUD\$80/t and AUD\$100/t quoted by the DRE in its submission.

AnalytEcon conducted an assessment of past variability about trend as outlined below.

Historically, Australian coal was predominantly sold under contract, and spot market trading remained thin until about the middle of the last decade. As a consequence, it is difficult to conduct a reliable long-term analysis of coal prices in order to ascertain the range of coal price outcomes. In the absence of a reliable long-term coal price series, AnalytEcon focused its analysis on a monthly energy price index published by the International Monetary Fund (IMF) that is made up of oil, natural gas and coal prices (which tend to move together) and that is available from 1996. The index is shown along with long term trend prices in Plate 1.

The trend underlying the index was computed by AnalytEcon using an optimal Loess smooth, a piecewise polynomial regression technique. It is clear that the index itself cycles around the trend, with periods where the index is either above or below the trend, and that current coal prices are well below trend. While the index is trending downwards, nothing can reliably be inferred by extrapolating the trend in the medium to longer term.

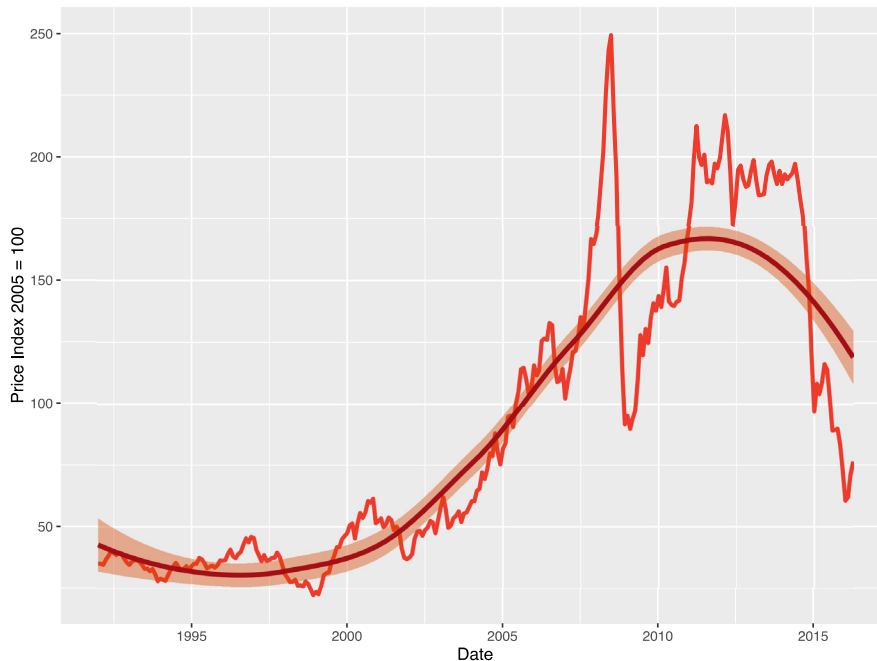


Plate 1 – International Monetary Fund Energy Price Index and Trend Analysis

Source: AnalytEcon; IMF (2016).

In Plate 1, the trend line is an estimate based on the data and the statistical model. The shaded area about the trend line is the standard error of the trend itself, which ranges between plus and minus 4% to 6%. AnalytEcon determined that the 95% confidence bound for the historical trend is roughly between 8% and 12%. On this basis, there is a 95% probability that the actual long run trend will lie within the shaded area about the trend line. However, the confidence bounds for a forecast trend will be much larger as the forecast is subject to different forms of error, including bias and overfitting of the historical data (resulting understatement of the actual standard error of the trend). One way to construct a more realistic picture of the uncertainty about a forecast trend is to place an envelope of uncertainty around the historical trend using the differences between the actual index values and the trend. Eighty percent of deviations from trend fall between the 10th and the 90th percentiles, which are plus or minus 16%. Ninety percent of deviations from trend fall between the 5th and the 95th percentiles which are -24% to +26%.

On this basis, AnalytEcon determined that a sensitivity analysis using a 20% range about an unbiased forecast price to assess the downward risk of the project would provide a reasonable assessment of the longer-term price risk for an energy commodity with foreseeable trends in demand and supply (noting that short-term price risks may be considerably higher).

Given the above, WCPL considers that the export coal prices adopted in the Socio-Economic Assessment are realistic and the value of the Modification is not overstated.

Employee Benefits

Issue

The Australia Institute raised concerns that the employee (or wage) benefits adopted in the Socio-Economic Assessment are inconsistent with the Economic Guideline (NSW Government, 2015).

Response

While the Economic Guideline states that “an appropriate starting assumption should be that workers do not receive a wage premium...”, the Economic Guideline goes on to state that “Although the zero wage premium is a useful starting assumption, the appropriateness of this assumption must be assessed on a case by case basis.” The ‘wage premium’ referenced in the Economic Guideline refers to the difference between what workers would earn if a given project is approved, and what workers would earn from working elsewhere in the mining sector.

As described in Section 3.2.1.2 of the Socio-Economic Assessment, it was assumed that the additional workforce required for Modification could earn the average level of income in NSW in the event that the Modification is not approved (i.e. the counterfactual). This approach results in the additional workforce required for Modification receiving a wage premium (or employee benefits) equal to the difference between the Wambo Coal Mine wage and the average level of income in NSW.

This approach to valuing the employment benefits from the Modification is considered appropriate for the following reasons:

- the coal mining industry has recently contracted significantly resulting in 52,000 fewer positions between May 2012 and February 2016 (ABS, 2016) and therefore the likelihood of the entire Modification workforce obtaining alternative employment in the mining industry is low; and
- some of the workforce may not leave the Wambo Coal Mine region (which has been particularly affected by the contraction in the coal industry) and may be unemployed for some period due to the relatively high unemployment rate in the region (i.e. 6% to 14% depending on local government area) compared to the NSW unemployment rate (refer to Figure 5-6 of the Socio-Economic Assessment).

It is also noted that Section 4 of the Economic Guideline (NSW Government, 2015), which covers local effects analysis, recommends the same approach adopted in the Socio-Economic Assessment for estimating employment benefits: “The recommended indicator of the net increase in income is the difference between incomes in the mining industry in the local area compared to the average level of income in the area”.

In addition, the Economic Guideline states that workers are more likely to realise employment benefits if they develop new skills as a result of working on a project as they become more employable in the long-term. As WCPL provides training programmes (e.g. apprenticeships) for its workforce, the workforce associated with the Modification would therefore be more likely to receive employment benefits. Therefore assuming zero employee benefits for the Modification is not appropriate.

Given the above, WCPL considers that the employment benefits reported in the Socio-Economic Assessment are reasonable.

Local Effects Analysis – Flow-on Impacts

Issue

The Australia Institute raised concerns that input-output (IO) modelling was used to estimate potential local flow-on economic impacts.

Response

It is considered that the Local Effects Analysis component of the Socio-Economic Assessment has been undertaken in accordance with the Economic Guideline. Section 4 of the Economic Guideline provides guidance on the approach to estimating potential local flow-on economic impacts (emphasis added):

... A range of techniques are available for estimating second round or flow-on effects. These include CGE (computable general equilibrium)-modelling, Input-Output (I-O) or multiplier analysis. Most such techniques have limitations. ...

The LEA should include analysis of second round effects. However, the type and form of this analysis should be identified based on a case by case assessment of the most appropriate approach for each project. This may mean that, in some cases, a purely qualitative discussion is the best option. In other cases, CGE analysis may be most appropriate, particularly for larger projects. Regardless of the approach taken, any limitations should be noted. Careful consideration should be given to how quantitative results are presented to minimise the risk of them being misinterpreted.

The overall results of this calculation are not intended to provide a precise measure of employment effects but, rather, an indication of the likely range of local effects.

The methodology adopted in the Socio-Economic Assessment to estimate potential local flow-on economic impacts (i.e. IO modelling) is described in the Economic Guideline. In addition, IO modelling is considered to be the most appropriate approach to estimate potential local flow-on economic impacts of the Modification. As outlined in Section 4.2.1 of the Socio-Economic Assessment, IO modelling methodology was selected due to simplicity and clarity with which the underlying assumptions can be set out and appropriate caveats made. Further, when compared to more complex methods such as computable general equilibrium (CGE) analysis:

- The gross value of the Modification is small in relation to the Australian and NSW economies. Unlike an IO analysis, a CGE analysis takes into account the price impacts of a project on inputs and outputs. However, given the relatively small size of the Modification, material price impacts would not be expected and the difference between the results of a CGE and an IO analysis would also be small.
- Given that detailed information about industry structure and trade at a regional and state level is not available, there is no reason to think that one method would be materially more accurate than another. Both CGE and IO analysis depend critically on accurately modelling flows of production and expenditure.

Notwithstanding the above, IO modelling has some limitations (e.g. supply constraints, fixed capital stocks) and these have been outlined in Section 4.2.3 of the Socio-Economic Assessment as required by the Economic Guideline.

The Socio-Economic Assessment includes an overview of the local economy in Section 5.1, consideration of local planning documents in Section 5.2 and a summary of consultation undertaken for the Modification in Section 5.3. It is also noted that Section 4 of the Economic Guideline does not require consultation to be undertaken as part of the Local Effects Analysis.

Consideration of Long-term Water Impacts

Issue

HCN raised concern regarding the long-term costs of damage to water sources in the Wollombi Brook and Hunter River catchments.

HEL raised concern that impacts on water resources have not been considered in the cost benefit analysis for the Modification.

Response

The Surface Water Assessment (Advisian, 2016) and Groundwater Assessment (HydroSimulations, 2016) both concluded that with the implementation of suitable mitigation measures, there would be low or negligible impacts on water resources as a result of the Modification.

The cost benefit component of the Socio-Economic Assessment (AnalytEcon, 2016) incorporated costs associated with the implementation of suitable mitigation measures for potential impacts on water resources associated with the Modification. As Advisian (2016) and HydroSimulations (2016) conclude these measures would mitigate any material impacts on water resources, no incremental external effects need to be included in the cost benefit analysis for impacts on water resources.

Social Impacts due to Acquisitions

Issue

HCN raised concern regarding the loss of private property caused by mining company acquisitions in the Warkworth district, and subsequent social impacts.

Response

Detailed cumulative social impacts of this nature have been considered by appropriate regulatory authorities in previous environmental assessments for mines in the region. These impacts have been approved under the relevant consents for these mines.

The Modification would not require the acquisition of any additional privately-owned properties.

3.7 OTHER

Extent of Community Consultation

Issue

CPCFM and HCN raised concern that there was inadequate community consultation undertaken for the Modification.

Response

Consultation for the Modification was undertaken in accordance with the Secretary's Environmental Assessment Requirements (SEARs).

WCPL provided an initial briefing regarding the Modification at the Community Consultative Committee (CCC) meeting in August 2012. An update to the Modification was provided at the CCC meeting on 29 September 2015.

Environmental Assessment Requirements for the Modification were issued under section 75W(3) of the EP&A Act on 25 October 2012, and have been publically available on DP&E's website since this time. Modification information is also publicly accessible on the Peabody Energy Website.

WCPL also conducted community information sessions at the Jerrys Plains community hall in August 2012, February 2013, August 2013 and November 2014 to provide the community with an opportunity to obtain information about WCPL's current and future mining plans.

An electronic copy of the EA was distributed to all CCC members and was placed on public exhibition.

A full description of consultation undertaken for the Modification is provided in Section 1.3 of the EA.

Managing Impacts

Issue

CPCFM and the Lock the Gate Alliance raised concerns about the standards of environmental management at Wambo Coal Mine over time.

Response

WCPL has owned Wambo Coal Mine since 2006. WCPL has a strong record of compliance with its environmental obligations for its underground mining operations under Development Consent DA 305-7-2003. WCPL has established and is committed to continuing open and constructive dialogue with the local community and stakeholders regarding environmental management as part of their operations.

The Annual Reviews are available on the Wambo Coal Mine website:

<http://www.peabodyenergy.com/content/422/australia-mining/new-south-wales/wambo-mine/approvals-plans-and-reports-wambo-mine>

The environmental monitoring program results over recent years have shown WCPL's management of underground operations at the Wambo Coal Mine provides effective management of potential impacts from the mine's operations and achieves compliance with the subsidence impact performance measures in the Development Consent (DA 305-7-2003). This includes proactive management to mitigate potential subsidence impacts as a result of underground mining (e.g. grouting of old workings beneath the Wambo Homestead Complex to increase stability).

Under the conditions of DA 305-7-2003, an Independent Environmental Audit is conducted at Wambo Coal Mine every three years to assess the environmental compliance of the mine. The most recent Independent Environmental Audit conducted by Hansen Bailey (2015) states that:

A review of the Wambo Environmental Management Strategy (EMS) has confirmed that it meets the requirements of the DA 305-7-2003...

Public Safety

Issue

CPCFM stated there was no assessment of threats to public safety.

Response

Public safety is considered in Section 4.2.5 of the EA and in the Subsidence Assessment (MSEC, 2016) (Appendix A of the EA). The Extraction Plan that would be developed for the Modification would include a Public Safety Management Plan as required under Condition 22C(g), Schedule 4 of the Development Consent (DA 305-7-2003).

Condition 22A, Schedule 4 of the Development Consent (DA 305-7-2003) requires WCPL to achieve a subsidence impact performance measure of “no additional risk” for public safety.

In addition, the DRE concluded in its submission:

Overall there will be an increase in the extent of subsidence due to the proposed modification however; the risk profile of the site will remain largely the same as that of the approved mine.

The aforementioned risks should be manageable during the Extraction Plan stage.

It is noted that negligible subsidence would occur on any privately-owned land.

United and Wambo Open Cut Coal Mine Project

Issue

The HCN and the Lock the Gate Alliance raised concern that the Modification would facilitate the joint venture between Glencore and WCPL known as the United and Wambo Open Cut Coal Mine Project.

Response

The extension of the open cut mine life is a result of slower than expected resource recovery from the northern section of the pit.

This Modification is independent of, and not reliant on, the proposed United and Wambo Open Cut Coal Mine Project. However, it is noted that the extension to the life of the open cut operations seeks to maintain operational continuity of the open cut operations to allow for assessment and determination of the United and Wambo Open Cut Coal Mine Project (Section 3.11 of the EA). Should the United and Wambo Open Cut Coal Mine Project not be approved or not proceed, the open cut operations would cease in 2020 or further approvals would be sought.

Cumulative assessment of the Modification and the United and Wambo Open Cut Coal Mine Project will be conducted as a component of the Environmental Impact Statement for the United and Wambo Open Cut Coal Mine Project.

Cumulative Impacts

Issue

CPCFM, HCN and the Lock the Gate Alliance raised concerns that cumulative impacts of the Modification have not been adequately assessed.

Response

Consideration was given to potential cumulative impacts with existing, approved and proposed mining operations in the vicinity of Wambo Coal Mine. In particular, cumulative impacts associated with subsidence, groundwater, surface water, biodiversity, cultural heritage, noise, air quality and road transport were considered.

Where appropriate, assessments for the Modification have built on previous assessments that have been carried out at Wambo Coal Mine and in the region. The regional impacts of mining in the vicinity of Wambo Coal Mine have been considered in detail over the last decade, including consideration of potential cumulative impacts.

The Subsidence Assessment (MSEC, 2016) considered the cumulative effects of previous underground mining in the Whybrow and Wambo Seams for both the approved and modified mine layouts (Section 4.2 of the Subsidence Assessment).

The Groundwater Assessment (HydroSimulations, 2016) considered cumulative effects of the neighbouring open cut and underground mines including in the numerical modelling (Section 4.2.2 of the Groundwater Assessment).

The Surface Water Assessment (Advisian, 2016) concluded that, following successful implementation of the relevant management and mitigation measures, there would be no material impacts on Wollombi Brook, water quality, licensed water users or flooding as a result of the Modification (Section 3 of the Surface Water Assessment). As there would be no material surface water impacts as a result of the Modification, consideration of cumulative impacts is not considered to be required.

The Flora Assessment (FloraSearch, 2016) considered that, compared with open cut mining methods which have significant impacts on flora due to vegetation clearing, the Modification would be relatively benign. Therefore, cumulative impacts on flora would be very minor considering the existing vegetation losses resulting from extensive open cut coal mining in the south-western parts of the Hunter Valley (Section 6.4 of the Flora Assessment).

Similarly, the Fauna Assessment (Eco Logical, 2016) stated that surface disturbance activities associated with the Modification are relatively minor in comparison to remaining vegetation above the underground disturbance areas, the remnant vegetation associated with Wollemi National Park and the RWEPP areas (Section 4.4 of the Fauna Assessment). Eco Logical (2016) concluded that implementing the recommended impact mitigation and management techniques would further reduce the overall cumulative impacts of the Modification.

The CHIA (RPS Australia, 2016) considered the impacts of the Modification and assessed that cumulative impacts to grinding groove sites, artefacts, earth mounds and confirmed and possible scarred trees would be low (Section 8.6 of Appendix F of the EA).

The Agricultural Impact Statement (WCPL, 2016d) considered that even accounting for cumulative impacts in the region, the Modification would have a very minor impact on local and regional agriculture (Section 3.4 of the Agricultural Impact Statement).

The Noise Review (SLR Consulting Australia, 2016) concluded that, as sound levels would go down as a result of the Modification, existing approved cumulative impacts would not change (Section 4.1.5 of the Noise Review).

Similarly, the Air Quality and Greenhouse Gas Review (Todoroski Air Sciences, 2016) concludes that due to the significant reduction of dust emissions for the Modification, no significant cumulative air quality impacts are expected as a result of the Modification (Table 7 of the Air Quality and Greenhouse Gas Review).

The Road Transport Assessment (GTA Consultants, 2016) considers cumulative changes to the road network, including background growth, the Bulga Coal Complex, the Mount Thorley Operations and Warkworth Mine, and the Rix's Creek Extension Project. Despite considering cumulative impacts, the assessment concluded no specific measures to mitigate the impacts of the development on the road network would be required as a result of the Modification (Table 5.2 and Section 6 of the Road Transport Assessment).

4 RESPONSES TO PUBLIC SUBMISSIONS

The comments and issues raised in submissions received from members of the public are addressed in Table 4. A reconciliation of which issues were raised in each submission is provided in Table 3.

Of the 27 submissions by members of the public that were received by DP&E, 22 submissions objected to the Modification, four commented on the Modification, and one supported the Modification.

**Table 4
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
1	Modification Components	Concerns were raised regarding the description of the Modification as a realignment and extension of the approved South Wambo Underground Mine.	<p>Mining of the South Wambo (Arrowfield and Bowfield Seams) Underground Mine was assessed as part of the <i>Wambo Development Project Environmental Impact Statement</i> (WCPL, 2003) and approved under the Development Consent (DA 305-7-2003).</p> <p>The Modification would comprise four mining areas described below (Figure 9 of the EA):</p> <ul style="list-style-type: none"> • Area 1 (Woodlands Hill Seam) – The modified mine layout includes additional longwall panels in the Woodlands Hill Seam beneath the existing/approved surface development area. • Area 2 (Arrowfield Seam and Woodlands Hill Seam) – The modified mine layout includes a reorientation and minor extension of the approved Arrowfield Seam mine layout in Area 2. The Woodlands Hill Seam is proposed to replace the Bowfield Seam in this location with a reorientation and minor extension to the approved mine layout. • Area 3 (Arrowfield Seam and Woodlands Hill Seam) – The modified mine layout includes an extension of mining in the Arrowfield Seam and Woodlands Hill Seam into Area 3, comprising three longwall panels in the Arrowfield Seam and four longwall panels in the Woodlands Hill Seam. • Area 4 (Approved Arrowfield Seam) – The Modification does not propose any changes to the approved Arrowfield Seam mine layout to the east of Wollombi Brook. The approved Bowfield Seam mine layout is no longer proposed to be mined in Area 4 and therefore there would be a reduction in subsidence impacts in Area 4. <p>South Wambo Underground Mine would be extended into Area 1 and Area 3, and the approved longwall layout would be altered/realigned in Area 2 and Area 4.</p> <p>The full description of all aspects of the Modification is provided in Section 3 of the EA.</p>
2	Subsidence	Concerns were raised regarding the portion of privately-owned land in Area 3.	<p>A portion of privately-owned land in Area 3 lies above the main headings for Area 3. There would be negligible subsidence impacts on this or any other privately-owned land as a result of the Modification as shown on Figure 11 of the EA.</p> <p>Main headings are designed to be stable and non-subsiding (i.e. they cause no movement at the surface).</p> <p>Under Condition 22E, Schedule 4 of the Development Consent (DA 305-7-2003), WCPL must seek the approval of the DRE that main headings have been designed to remain stable and non-subsiding in the long term prior to commencement. The intent of this condition is for the DRE to be satisfied that first workings are built to geotechnical and engineering standards sufficient to ensure long term stability, with negligible resulting direct subsidence impacts.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
3	Subsidence	Concerns were raised regarding potential subsidence impacts to fencing on private property.	There would be negligible subsidence impacts on any privately-owned land as a result of the Modification as shown on Figure 11 of the EA. Notwithstanding, WCPL and/or the Mine Subsidence Board would repair any unexpected damage to fencing as a result of subsidence from the South Wambo Underground Mine.
4	Subsidence	Concerns were raised regarding potential subsidence impacts to powerlines and telecommunication cables.	An assessment of the potential subsidence impacts on powerlines and telecommunication cables was conducted by MSEC (2016) (Appendix A of the EA). Powerlines are shown on Drawing MSEC799-15. One 11 kilovolt (kV) powerline is owned by Ausgrid. MSEC (2016) concluded that the powerlines and telecommunication cables could be maintained in safe and serviceable condition using techniques used previously at the Wambo Coal Mine and other underground mines. Monitoring, management and mitigation measures would be developed as part of the Built Features Management Plans developed for the Extraction Plans for the Modification. These plans are required to meet the subsidence impact performance measures for built features.
5	Subsidence	Concerns were raised regarding subsidence impacts on unsealed roads (Wambo Road and the right-of-way in favour of two private properties).	MSEC (2016) concluded that unsealed roads could be maintained in safe and serviceable condition using normal road maintenance techniques (based on the predicted subsidence impacts). It is acknowledged that the portion of Wambo Road that is located adjacent to, but not directly above, the longwalls in Area 3 is a public road. MSEC has confirmed that the assessment conclusion for unsealed roads applies to Wambo Road. It is a requirement of the Development Consent that subsidence in the South Wambo Underground Mine must not cause any additional risk to public safety (Condition 22A, Schedule 4 of the Development Consent DA 305-7-2003). The Built Features Management Plan for Wambo Road would be developed in consultation with Singleton Council.
6	Public Safety	Concerns were raised regarding public safety.	Public safety is considered in Section 4.2.5 of the EA and in the Subsidence Assessment (MSEC, 2016) (Appendix A of the EA). The Extraction Plan that would be developed for the Modification would include a Public Safety Management Plan as required under Condition 22C(g), Schedule 4 of the Development Consent (DA 305-7-2003). Condition 22A, Schedule 4 of the Development Consent (DA 305-7-2003) requires WCPL to achieve a subsidence impact performance measure of “no additional risk” for public safety. In addition, the DRE concluded in its submission: <i>Overall there will be an increase in the extent of subsidence due to the proposed modification however; the risk profile of the site will remain largely the same as that of the approved mine.</i> <i>The aforementioned risks should be manageable during the Extraction Plan stage.</i>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
7	Land Resources	Concerns were raised regarding feral animals in the RWEF areas.	The approved Flora and Fauna Management Plan for Wambo Coal Mine includes a feral animal control program. Feral animal control is reported in the Annual Reviews. RWEF Areas A, B, C and D are fenced to exclude livestock.
8	Land Resources	Concerns were raised regarding bushfire management.	The approved Bushfire Management Plan for Wambo Coal Mine was last updated in August 2013. The Bushfire Management Plan has been developed to facilitate WCPL being suitably equipped to respond to any fires on-site and to assist the Rural Fire Service and Emergency Services if there is a fire on-site. The Bushfire Management Plan identifies the Wollemi Fire Trail and its relationship to WCPL-owned land and privately-owned land. This is to assist the Rural Fire Service and Emergency Services in the event of a bushfire. The Bushfire Management Plan does not state that access has been granted to WCPL for access to privately-owned land.
9	Groundwater	Concerns were raised regarding impacts on alluvial aquifers and associated groundwater drawdown on privately-owned bores.	An assessment of potential impacts on privately-owned bores was completed as part of the Groundwater Assessment by HydroSimulations (2016). Of the bores listed for private use, four have modelled drawdowns greater than 2 m due to the cumulative effects of all mining in the Wambo district. The Modification causes no additional bores to be affected. Consistent with the currently approved Surface and Groundwater Response Plan, in the event that a groundwater quality or trigger level specified in the Groundwater Monitoring Program is exceeded, an investigation would be conducted in accordance with the Surface and Groundwater Response Plan. The Surface and Groundwater Response Plan includes a Trigger Action Response Plan that must be implemented in the event that a complaint is received from a private bore holder in relation to decreasing levels in a private bore, or groundwater monitoring of private bores identifies a decreasing trend approaching 2 m below the modelled statistical trends.
10	Groundwater	Concern was raised regarding the conclusion of the groundwater peer review letter.	The peer review for the Groundwater Assessment was conducted by Dr Frans Kalf (Attachment 6 of the EA). The peer review was undertaken in consideration of the available modelling guidelines (i.e. the <i>Australian Groundwater Modelling Guidelines</i> [National Water Commission, 2012] and the <i>Groundwater Flow Modelling Guideline</i> [Murray-Darling Basin Commission, 2001]). The DPI Water stated in its submission on the Modification that: <i>There are no objections to Dr Kalf's conclusion that the model having adhered to the available modelling guideline documents (NWC, 2012, MDBC 2001) would be categorised as being 'fit for purpose'.</i>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
11	Surface Water	Concerns were raised regarding previous subsidence impacts on Wambo Creek and Stony Creek, and WCPL's obligation to repair Wambo Creek under the conditions of Singleton Shire Council Development Consent DA 108/91.	<p>It is noted that remediation of previous impacts on Wambo Creek is subject to the conditions of a separate consent (DA 108/91), which is not the subject of this Modification.</p> <p>The Modification would not involve additional subsidence impacts on the portion of Wambo Creek on privately-owned property that is subject to ongoing remediation. The Modification would cause negligible subsidence on any privately-owned land.</p> <p>Any remediation required on Wambo-owned land as a result of the Modification would be undertaken in accordance with the Extraction Plan to be developed for the Modification. The Extraction Plan requires the approval of DP&E and is prepared in consultation with the DPI Water.</p> <p>The Surface Water Assessment (Advisian, 2016) included an assessment of potential impacts on Wambo Creek and Stony Creek, in consideration of previous subsidence impacts to the creek. It is noted that longwall mining proposed as part of the Modification would occur at much greater depths compared to previous mining.</p> <p>The existing Surface Water Monitoring Program, Erosion and Sediment Control Plan and Surface and Groundwater Response Plan would continue to be implemented for the Modification (Section 4.5.3 of the EA).</p>
12	Surface Water	Concerns were raised regarding previous performance of the mine water management system, in particular the failure of a sediment dam at the Wambo Coal Mine in January 2016.	<p>In January 2016, following a period of significant rainfall, there was an uncontrolled release of water from a temporary sediment dam at the Wambo Coal Mine. WCPL reported the incident to the EPA and has complied with all directions in relation to the incident.</p> <p>Following the incident, WCPL has undertaken a review of its on-site systems and submitted a revised Erosion and Sediment Control Plan to DP&E on 26 May 2016. The revised Erosion and Sediment Control Plan includes measures to monitor, manage and mitigate the risk of similar incidents in future.</p>
13	Surface Water	Concerns were raised regarding historical and present monitoring of flow in Wambo Creek and Stony Creek.	<p>WCPL progressively installed nine continuous recording flow gauging stations along North Wambo Creek, Stony Creek and Wambo Creek between 2008 and 2009. These include three locations along Wambo Creek (FM5, FM6 and FM9) and two locations along Stony Creek (FM7 and FM8) (Figure 7 of the EA).</p> <p>Damage has occurred to some of these gauging stations. WCPL undertook a review of its flow gauging stations in 2015. As a result, new gauging stations have been installed on Stony Creek (and one of its tributaries).</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
14	Flora and Fauna	Concerns were raised regarding potential impacts to the Warkworth Sands Woodland Endangered Ecological Community.	<p>Detailed vegetation mapping has been undertaken at Wambo Coal Mine for this Modification and previous modifications. Warkworth Sands Woodland is only present above Area 4 of the South Wambo Underground Mine (Community 12 on Figure 13 of the EA).</p> <p>Mining of the Arrowfield and Bowfield Seams at the South Wambo Underground Mine in Area 4 was assessed as part of the <i>Wambo Development Project Environmental Impact Statement</i> (WCPL, 2003) and approved under the Development Consent (DA 305-7-2003).</p> <p>The Modification does not propose any changes to the approved Arrowfield Seam mine layout to the east of Wollombi Brook. The approved Bowfield Seam mine layout is no longer proposed to be mined in Area 4.</p> <p>The predicted subsidence effects for the modified mine layout in Area 4 are predicted to reduce in all areas as only the Arrowfield Seam is proposed to be mined (i.e. mining of the Bowfield Seam is no longer proposed) (MSEC, 2016). The potential subsidence impacts and environmental consequences in Area 4 are therefore also expected to reduce as a result of the Modification.</p> <p>Consequently, potential subsidence impacts on the Warkworth Sands Woodland would be reduced as a result of the Modification.</p> <p>The Groundwater Assessment also shows there would be no cumulative drawdown in the shallow groundwater system in the areas of mapped Warkworth Sands Woodland (Figure 52 of Appendix B of the EA).</p>
15	Aboriginal Cultural Heritage	Concerns were raised regarding consultation with Aboriginal stakeholders with a genuine connection to the area.	<p>Registered Aboriginal Parties were identified in accordance with Section 4.1.2 of the <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> (Department of the Environment, Climate Change and Water, 2010) and Condition 56A, Schedule 4 of DA 305-7-2003.</p> <p>This included an advertisement inviting the registration of Aboriginal persons or groups who hold cultural knowledge relevant to, or who have a right or interest in, determining the cultural heritage significance of Aboriginal object(s) and/or place(s) in the Modification area.</p>
16	Aboriginal Cultural Heritage	Concerns were raised regarding the level of discussion on the Bora Ground.	<p>As outlined in the CHIA (RPS Australia, 2016), the Bora Ground which has been previously recorded in the wider locality at Wambo is not located above the South Wambo Underground Mine. MSEC (2016) concludes it is unlikely that the Bora Ground would experience any adverse impacts as a result of the Modification, and therefore, RPS Australia concluded that it did not require further consideration.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
17	Noise	Concerns were raised regarding health impacts due to noise.	<p>SLR Consulting (2016) undertook an assessment of potential noise impacts as a result of the Modification. Compared to existing approved operations at Wambo Coal Mine, it is predicted that the overall sound power level (SWL) of the Wambo Coal Mine for the Modification would either remain the same, or reduce following the cessation of open cut mining operations during 2020 (without further assessment and approvals).</p> <p>The Modification is expected to comply with the current noise criteria in the Development Consent (DA 305-7-2003) at all sensitive receivers (SLR Consulting, 2016).</p> <p>Noise management and monitoring at Wambo Coal Mine would continue to be implemented in accordance with the Noise Management Plan (Section 4.10.1 of the EA).</p> <p>The Noise Management Plan describes procedures to be implemented in the event of an exceedance. The procedures include active measures to modify operations or stand down equipment to ensure compliance with noise criteria continues to be maintained.</p>
18	Noise	Concerns were raised regarding cumulative impacts of noise.	<p>The Noise Review (SLR Consulting, 2016) considered three indicative scenarios for total SWL at Wambo Coal Mine, in years 2019, 2023 and 2028. As open cut operations would cease from 2020 (without further assessment and approvals), noise from the open cut operations was considered in the year 2019, but not in the years 2023 and 2028.</p> <p>Consideration of noise produced by the CHPP was considered for all three scenarios (refer to Section 4.1.3 of the Noise Review [Appendix H of the EA]).</p> <p>The Noise Review also considered noise from a cumulative perspective in consideration of surrounding operations (Section 4.1.5 of Appendix H of the EA).</p>
19	Noise	Concerns were raised regarding noise levels exceeding the predicted levels in the environmental assessment for the existing Wambo Coal Mine.	<p>WCPL conducts attended noise monitoring in accordance with the Noise Management Plan and the limits set out in the Development Consent (DA 305-7-2003) and EPL 529.</p> <p>The Noise Review (SLR Consulting, 2016) summarises Wambo Coal Mine's performance with regards to these limits since 2011 and concludes there have been no exceedances of the relevant noise limits.</p> <p>WCPL publishes monitoring results in monthly environmental reports and in Annual Reviews, which are publically available on the WCPL website.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
20	Noise	Concerns were raised regarding the nearest residential receivers in the vicinity of the Modification.	<p>The Noise Review (SLR Consulting, 2016) states that:</p> <p><i>The nearest residential receiver areas in the vicinity of Wambo are shown on the Noise Monitoring Location Plan (refer Appendix B). The nearest privately-owned receivers, relative to the Modification, are located to the south near the village of Bulga, to the east in the village of Warkworth, and to the northwest near the village of Jerrys Plains.</i></p> <p>All privately-owned receivers in the vicinity of Wambo Coal Mine are shown on Appendix B of the Noise Review and Figure 3 of this document. The “nearest privately-owned receivers” in the context of the Noise Review for the Modification are those receivers which may be subject to potential noise impacts as a result of the Modification.</p> <p>Given the nature and location of Modification operational and construction noise (Sections 4.1 and 4.2 of the Noise Review), the nearest privately-owned receivers for the Noise Review are located to the south near the village of Bulga (including receivers 25, 35a and 35b which are located in the vicinity of Bulga), to the east in the village of Warkworth, and to the north-west near the village of Jerrys Plains.</p> <p>The Noise Review concluded that the privately-owned receivers 25, 35a and 35b are not expected to experience any noticeable increase in noise as a result of the Modification (Table 7 and Appendix B of Appendix H of the EA).</p>
21	Air Quality	Concerns were raised regarding health impacts due to dust.	<p>Todoroski Air Sciences (2016) undertook an assessment of potential air quality impacts as a result of the Modification (Appendix I of the EA). Compared to existing approved operations at Wambo Coal Mine, it is predicted that dust emissions for the Modification would be reduced by up to 56% prior to the cessation of open cut mining operations in 2020 (without further assessment and approvals), and up to 87% following the cessation of open cut mining operations compared to the dust emissions assessed in the <i>Wambo Development Project Environmental Impact Statement</i> (WCPL, 2003).</p> <p>It is noted that the criteria used for assessment in the EA are generally developed for the protection of human health. The Modification is expected to comply with air quality criteria at all sensitive receivers (Todoroski Air Sciences, 2016).</p> <p>Air quality management and monitoring at Wambo Coal Mine would continue to be implemented in accordance with the Air Quality and Greenhouse Gas Management Plan (Section 4.11.1 of the EA).</p> <p>The Air Quality and Greenhouse Gas Management Plan describes procedures to be implemented in the event of an exceedance. The procedures include notification of the exceedance to the Secretary and any other relevant agencies and modifying mining operations as required. In the event of a non-compliance, all affected landowners/tenants are to be notified.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
22	Air Quality	Concerns were raised regarding cumulative impacts of dust emissions.	The Air Quality and Greenhouse Gas Review (Todoroski Air Sciences, 2016) considered existing and approved mining operations in the vicinity of Wambo Coal Mine. Todoroski Air Sciences (2016) concluded that overall the Modification is unlikely to cause any discernible negative impact at any surrounding sensitive receptor locations relative to the approved operations.
23	Air Quality	Concerns were raised regarding dust levels exceeding the predicted levels in the environmental assessment for the existing Wambo Coal Mine.	<p>Wambo Coal Mine monitors air quality in accordance with the Air Quality and Greenhouse Gas Management Plan and the limits set out in the Development Consent (DA 305-7-2003) and EPL 529.</p> <p>The Air Quality and Greenhouse Gas Review (Todoroski Air Sciences, 2016) summarises Wambo Coal Mine's performance with regards to these limits since 2011 and concludes there has been only one exceedance (in January 2011) attributable to the mine on privately-owned land.</p> <p>WCPL publishes monitoring results in monthly environmental reports and in Annual Reviews, which are publically available on the WCPL website.</p>
24	Air Quality	Concerns were raised regarding dust emissions from the United and Wambo Open Cut Coal Project joint venture.	<p>This Modification is independent of, and not reliant on, the proposed United and Wambo Open Cut Coal Mine Project.</p> <p>Cumulative assessment of the Modification and the United and Wambo Open Cut Coal Mine Project will be conducted as a component of the Environmental Impact Statement for the United and Wambo Open Cut Coal Mine Project.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
25	Greenhouse Gas Emissions	Concerns were raised that the increased coal production of the Modification would increase greenhouse gas emissions and would therefore contribute significantly to global warming/climate change	<p>Greenhouse gas emissions associated with the Modification have been estimated by Todoroski Air Sciences (2016) and are presented in the South Wambo Underground Mine Modification Air Quality and Greenhouse Gas Review (Appendix I of the EA).</p> <p>Annual average Scope 1 and Scope 2 emissions for the Modification are estimated to be approximately 1.84 tonnes of carbon dioxide equivalent, which is approximately 0.34% of Australia’s estimated annual greenhouse gas emissions for the 2014 to 2015 period. These emissions are inclusive of the approved Wambo Coal Mine, and therefore the incremental increase in potential greenhouse gas emissions associated with the Modification would be materially less. It is therefore considered that the production of thermal coal at Wambo Coal Mine would contribute only a very small portion of Australia’s greenhouse gas emissions.</p> <p>Existing greenhouse gas abatement measures at the Wambo Coal Mine (such as maintaining equipment, real-time gas monitoring at ventilation shafts and sealing completed longwall panels to reduce fugitive emissions) would continue for the Modification.</p> <p>Scope 1 and 2 greenhouse gas emissions from the Wambo Coal Mine would continue to be reported annually in accordance with the National Greenhouse and Energy Reporting System.</p> <p>It should be noted that Scope 3 emissions are optional for reporting, as the emissions would be reported by another organisation as Scope 1 emissions. As Scope 3 emissions are not controlled by or attributable to WCPL, there is inherent uncertainty associated with quantifying the emissions. For example, the Scope 3 emission estimates assume the Modification’s product coal would be combusted in an average Australian coal-fired power station, however if the coal was combusted in a more efficient power station, the potential greenhouse gas emissions would be reduced.</p>
26	Greenhouse Gas Emissions	Concerns were raised regarding the quantum of fugitive methane emissions.	<p>Fugitive methane emissions are included in the annual average Scope 1 and Scope 2 emissions discussed above.</p> <p>Annual average Scope 1 and Scope 2 emissions for the Modification are estimated to be approximately 1.84 tonnes of carbon dioxide equivalent, which is approximately 0.34% of Australia’s estimated annual greenhouse gas emissions for the 2014 to 2015 period.</p> <p>The Modification proposes to change a target seam from the Bowfield Seam to the Woodlands Hill Seam. The Woodlands Hill Seam has lower measured gas contents than the Bowfield Seam, and therefore annual fugitive emissions would be lower for the modified mine layout.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
27	Rehabilitation	Concerns were raised that the proposed 3 year extension to the open cut mine life will defer current rehabilitation commitments.	Rehabilitation is conducted progressively at Wambo Coal Mine in accordance with the approved MOP (WCPL, 2016c). The approved MOP includes open cut mining up to and including 2020 and outlines the plan for progressive rehabilitation over this period. The Modification seeks to align the Development Consent (DA 305-7-2003) with the approved MOP.
28	Rehabilitation	Concerns were raised regarding the rehabilitation of land following subsidence effects.	The remediation of subsidence impacts caused by underground mining under the Development Consent DA 305-7-2003 is regulated through: <ul style="list-style-type: none"> • Extraction Plans approved by the DP&E for each set of longwall panels; and • the MOP approved by the DRE. Table 21 of the MOP (WCPL, 2016c) outlines the rehabilitation objectives for subsidence areas, which includes: <p style="text-align: center;"><i>Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options.</i></p> WCPL reports on progress against the rehabilitation objectives in the MOP and the DRE regulates WCPL's compliance with these objectives.
29	Socio-Economic	Concerns were raised regarding the loss of private property caused by mining company acquisitions in the townships of Warkworth and Bulga.	Detailed cumulative social impacts of this nature have been considered by appropriate regulatory authorities in previous environmental assessments for mines in the region. These impacts have been approved under the relevant consents for these mines. The Modification would not require the acquisition of any additional privately-owned properties.
30	Socio-Economic	Concerns were raised regarding compliance of the Socio-Economic Assessment with the <i>Guidelines for the economic assessment of mining and coal seam gas proposals</i> .	The Socio-Economic Assessment was prepared to address the economic and social components of the SEARs, and with reference to various guidelines published by the NSW Government, including <i>the Guidelines for the economic assessment of mining and coal seam gas proposals</i> (NSW Government, 2015).

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
31	Socio-Economic	Concerns were raised regarding the forecast coal price used in the Socio-Economic Assessment.	<p>For the purpose of an economic evaluation of a mining project with an operating horizon greater than 15 years, it is appropriate to apply coal price and exchange rate expectations over the term of the investment, that is, long-term forecasts (rather than the current price).</p> <p>The International Energy Agency's (2015) most recent medium-term outlook for coal projects thermal coal demand to grow by 0.8% per annum through to 2020 while thermal coal production is expected to grow more slowly at 0.6% per annum through to 2020.</p> <p>Forecasting coal prices over the long-term is difficult and therefore a sensitivity analysis was undertaken for export coal prices and the Modification NPV remained positive (refer to Section 3.5.2 of the Socio-Economic Assessment).</p> <p>AnalytEcon's (2016) sensitivity ranges for the export coal prices (US\$60/t and \$US85/t) cover a variation of (-) 20% to (+) 13% around the central consensus forecast, and are consistent with past observations as to the variability of coal price outcomes around a central trend.</p> <p>AnalytEcon's (2016) sensitivity analyses for export coal prices and exchange rates equates to benchmark thermal coal prices between AUD\$75/t and AUD\$142/t, which are comparable to the range of AUD\$80/t and AUD\$100/t quoted by the DRE in its submission.</p> <p>A detailed assessment by AnalytEcon on the past variability of coal prices about trend is provided in response to the comments raised by NGOs (Section 3.6).</p> <p>On this basis, AnalytEcon determined that a sensitivity analysis using a 20% range about an unbiased forecast price to assess the downward risk of the project would provide a reasonable assessment of the longer-term price risk.</p>
32	Socio-Economic	Concerns were raised regarding the sustainability of jobs in the mining industry.	<p>Approval of the Modification would facilitate ongoing employment of the Wambo Coal Mine workforce.</p> <p>Without approval of the Modification, existing employment would be discontinued for approximately 290 existing open cut personnel at the end of the approved open cut life (in 2017) and for approximately 230 existing underground mine personnel and other support personnel in late 2018 (for a period of approximately 2 years).</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
33	Socio-Economic	Concerns were raised regarding WCPL's parent company Peabody filing for Chapter 11 bankruptcy, and the effect this would have on its financial capacity to comply with obligations under the NSW <i>Mining Act, 1992</i> (e.g. rehabilitation).	<p>Peabody Energy voluntarily filed petitions under Chapter 11 for the majority of its US entities in the United States Bankruptcy Court for the Eastern District of Missouri on 13 April 2016. No Australian entities are included in the Chapter 11 filings, and Peabody Energy plans for its Australian operations to continue as usual. The Australian operations have access to separate funding arrangements enabling it to commit to the Project.</p> <p>Peabody Energy has made available to its Australian platform a committed US\$250M revolving Intercompany Loan Facility. The Intercompany Loan Facility is designed to provide additional liquidity to support the ongoing operations of the Australian business during Peabody Energy's Chapter 11 reorganisation, with draw amounts being tied to operating budgets and subject to certain availability restrictions.</p> <p>As such, the circumstances surrounding the Chapter 11 bankruptcy protection sought by Peabody Energy Corporation and related US entities will not impact WCPL's ability to meet its financial obligations.</p> <p>Notwithstanding the above, it is noted that the Socio-Economic Assessment was finalised prior to Peabody Energy voluntarily filing petitions under Chapter 11 for the majority of its US entities in the United States Bankruptcy Court for the Eastern District of Missouri.</p> <p>WCPL has lodged a rehabilitation security deposit for the Wambo Coal Mine with the NSW Government in accordance with the requirements of the NSW <i>Mining Act, 1992</i>. The rehabilitation security deposit is in the form of a bank guarantee that would remain in place regardless of the financial status of Peabody Energy.</p> <p>WCPL would continue to maintain a rehabilitation security deposit for the Wambo Coal Mine with the NSW Government.</p>
34	Visual Amenity	Concerns were raised regarding visual impacts and night-lighting.	<p>The Modification would not alter the approved extent or height of the open cut operations. Operations at the Wambo Coal Mine would continue to use excavators, not draglines.</p> <p>The Modification would require additional lighting for the surface infrastructure, including the ventilation shafts. Existing mitigation and management measures would be implemented to minimise the impacts of night-lighting.</p>
35	Community Consultation	Concerns were raised regarding community consultation.	<p>WCPL provided an initial briefing regarding the Modification at the CCC meeting in August 2012. An update to the Modification was provided at the CCC meeting on 29 September 2015 as documented in the minutes.</p> <p>Environmental Assessment Requirements for the Modification were issued under section 75W(3) of the EP&A Act on 25 October 2012, and have been publically available on DP&E's website since. Modification information is also publicly accessible on the WCPL website.</p> <p>WCPL conducted community information sessions at the Jerrys Plains community hall in August 2012, February 2013, August 2013 and November 2014 to provide the community with an opportunity to obtain information about WCPL's current and future mining plans.</p> <p>An electronic copy of the EA was distributed to all CCC members and placed on public exhibition.</p> <p>A full description of consultation undertaken for the Modification is provided in Section 1.3 of the EA.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
36	Community Consultation	Concerns were raised regarding the duration of exhibition.	<p>The EA was placed on public exhibition for a period of 3 weeks. In addition, WCPL understands that a public meeting will be held by the PAC prior to determination.</p> <p>The public exhibition period of the EA is a matter for the DP&E and the Minister for Planning.</p>
37	Other	Concerns were raised regarding land use zoning under the Singleton LEP.	<p>Under the Singleton LEP, “open cut mining” is permissible on lands in the RU1 Zone with development consent. Underground mining is not listed as a permissible use in the RU1 Zone under the Singleton LEP.</p> <p>However, clause 5(3) of the <i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007</i> (Mining SEPP) gives the Mining SEPP primacy where there is any inconsistency between the provisions in the Mining SEPP and the provisions in any other environmental planning instrument such as the Singleton LEP (subject to limited exceptions).</p> <p>The practical effect of clause 5(3) for the Wambo Coal Mine is that if there is any inconsistency between the provisions of the Mining SEPP and those contained in the Singleton LEP, the provisions of the Mining SEPP will prevail.</p> <p>Clauses 6 and 7 of the Mining SEPP set out that underground mining is permissible with development consent. Therefore, notwithstanding any prohibition contained in the Land Use Table of the Singleton LEP, Wambo Coal Mine and the Modification are permissible with development consent.</p> <p>A full examination of the relevant environmental planning instruments and government policies for the Modification is provided in Attachment 4 of the EA.</p>

**Table 4 (Continued)
Responses to Public Submissions**

Issue ID No.	Subject	Issues Raised	Response
38	Other	Concerns were raised about the standards of environmental management at Wambo Coal Mine over time.	<p>WCPL has owned Wambo Coal Mine since 2006. WCPL considers it has a strong record of compliance with its environmental obligations for its underground mining operations under Development Consent DA 305-7-2003. WCPL has established and is committed to continuing open and constructive dialogue with the local community and stakeholders regarding environmental management as part of their operations.</p> <p>The Annual Reviews are available on the Wambo Coal Mine website: http://www.peabodyenergy.com/content/422/australia-mining/new-south-wales/wambo-mine/approvals-plans-and-reports-wambo-mine</p> <p>The environmental monitoring program results over recent years have shown WCPL's management of underground operations at the Wambo Coal Mine provides effective management of potential impacts from the mine's operations and achieves compliance with the subsidence impact performance measures in the Development Consent (DA 305-7-2003). This includes proactive management to mitigate potential subsidence impacts as a result of underground mining (e.g. grouting of old workings beneath the Wambo Homestead Complex to increase stability).</p> <p>Under the conditions of DA 305-7-2003, an Independent Environmental Audit is conducted at Wambo Coal Mine every three years to assess the environmental compliance of the mine. The most recent Independent Environmental Audit conducted by Hansen Bailey (2015) states that:</p> <p><i>A review of the Wambo Environmental Management Strategy (EMS) has confirmed that it meets the requirements of the DA 305-7-2003...</i></p>
39	Other	Concerns were raised regarding the assessment of cumulative impacts.	<p>Consideration was given to potential cumulative impacts with existing, approved and proposed mining operations in the vicinity of Wambo Coal Mine. In particular, cumulative impacts associated with subsidence, groundwater, surface water, biodiversity, cultural heritage, noise, air quality and road transport were considered.</p> <p>Where appropriate, assessments for the Modification have built on previous assessments that have been carried out at Wambo Coal Mine and in the region. The regional impacts of mining in the vicinity of Wambo Coal Mine have been considered in detail over the last decade, including consideration of potential cumulative impacts.</p> <p>A detailed description on how cumulative impacts have been assessed is provided in response to the comments raised by NGOs (Section 3.7).</p>

5 REFERENCES

- Advisian (2016) *South Wambo Underground Mine Modification Surface Water Assessment*. Appendix C of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.
- AnalytEcon (2016) *South Wambo Underground Mine Modification Socio-Economic Assessment*. Appendix K of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.
- Australian Bureau of Statistics (2016) 6291.0.55.003 – *Labour Force, Australia, Detailed, Quarterly, Feb 2016 Quality Declaration*.
- Department of Planning and Environment (2016) *Assessment Report Moolarben Coal Mine UG1 Optimisation Modification - Stage 1 (05_0117 MOD 12) & Stage 2 (08_0135 MOD 2)*.
- Department of Planning and Infrastructure (2011) *Major Project Assessment Bulli Seam Operations Project – Director-General’s Environmental Assessment Report Section 75I of the Environmental Planning and Assessment Act 1979*.
- Department of Environment, Climate Change and Water (2010) *Aboriginal cultural heritage consultation requirements for proponents 2010*.
- Department of the Environment (2015) *National Greenhouse Accounts Factors*, August 2015, Department of the Environment.
- Division of Resources and Energy (2013) *ESG3: Mining Operations Plan (MOP) Guidelines September 2013*.
- Eco Logical Australia Pty Ltd (2016) *Wambo Coal Mine – South Wambo Underground Mine Modification Fauna Assessment*. Appendix E of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.
- EMGA Mitchell McLennan (2014) *Warkworth Continuation Noise and Vibration Study*.
- FloraSearch (2016) *South Wambo Underground Mine Modification – Flora Assessment*. Appendix D of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.
- GTA Consultants (2016) *South Wambo Underground Mine Modification Road Transport Assessment*. Appendix J of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.
- Hansen Bailey (2015) *Wambo Coal Mine & Rail Loop – Independent Environmental Audit Report*.
- HydroSimulations (2016) *South Wambo Underground Mine Modification Groundwater Assessment*. Appendix B of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.
- International Energy Agency (2015) *Coal Medium-Term Market Report Market Analysis and Forecasts to 2020*.
- International Monetary Fund (2016) *IMF Primary Commodity Prices*.
Website: <http://www.imf.org/external/np/res/commod/index.aspx>.

Mine Subsidence Engineering Consultants (2016) *South Wambo Underground Mine Modification Subsidence Assessment*. Appendix A of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.

Murray Darling Basin Commission (2001) *Groundwater Flow Modelling Guideline*.

National Water Commission (2012) *Australian Groundwater Modelling Guidelines*.

NSW Government (2015) *Guidelines for economic assessment of mining and coal seam gas proposals*.

RPS Australia East Pty Ltd (2016) *South Wambo Underground Mine Modification Cultural Heritage Impact Assessment*. Appendix F of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.

SLR Consulting Australia Pty Ltd (2016) *South Wambo Underground Mine Modification Noise Review*. Appendix H of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.

Todoroski Air Sciences (2016) *Air Quality and Greenhouse Gas Review – South Wambo Underground Mine Modification*. Appendix I of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.

Wambo Coal Pty Limited (2003) *Wambo Development Project Environmental Impact Statement*.

Wambo Coal Pty Limited (2016a) *South Wambo Underground Mine Modification Environmental Assessment*.

Wambo Coal Pty Limited (2016b) *2015 Annual Review*.

Wambo Coal Pty Limited (2016c) *Mining Operations Plan 2015 – 2020. Amendment B (April 2016)*.

Wambo Coal Pty Limited (2016d) *South Wambo Underground Mine Modification Agricultural Impact Statement*. Appendix G of Wambo Coal Pty Limited (2016) *South Wambo Underground Mine Modification Environmental Assessment*.

ATTACHMENT 1

EXTRACT FROM EJE TOWN PLANNING (2003)

C-C1.1.3 Site Three – Abandoned Homestead A

Site Three is spread over several acres and includes the remains of a cottage, 4 outbuildings, and what appears to be a pit mine (Figure C-7). A number of moveable relics are located at Site Three, including a winch, which presumably was located above the mine opening that now lies to one side



Figure 3 – Remains of cottage



Figure 4 – Remains of mine head



Figure 5 - Remains of outbuilding



Figure 6 – Remains of vehicle shed

C-C1.1.3.1 Location

The location lies on Stony Creek just within the proposed underground mining area.

C-C1.1.3.2 Physical Condition

The remains are in ruins, and therefore in very poor condition given their relatively recent age.

C-C1.1.3.3 Heritage Assessment Criteria

Importance in the Course or Pattern of Cultural/Natural History

The Land upon which Site Three is located was part of the subdivision of the Wambo Estate in 1900 and was therefore settled some time after 1900. The buildings all appear to date from that period, or later and include such items as a tractor/vehicle shed (Figure C-9).

Importance in Relation to a Person, or Group of Significance

The association with the Wambo estate is limited to the fact that the parcel was divided from that estate. There is no significance derived from that linkage.

Importance in Terms of Aesthetic/Technical/Creative Characteristics

Site Three is considered to have no particular importance in terms of aesthetic, technical or creative characteristics.

Importance to a Community/Cultural Group for Social/Spiritual/Cultural Reasons

Site Three is considered to be of no importance in terms of a community or cultural group for spiritual, social or cultural reasons.

Potential to Yield Information that will Contribute to Cultural/Natural History

The site has the potential to yield cultural information concerning the buildings located upon it. The value of this information is limited in heritage terms but has a certain degree of interest in archaeological terms. The site may be considered to have limited local significance.

Exhibits Rare or Endangered Aspects Cultural/Natural History

The site exhibits no rare or endangered aspects of cultural or natural history.

Representative of Principle Characteristics of a Cultural/Natural Class of Items

The site is too dilapidated to have any representative value. Better examples of Federation period small Homestead sites are readily found within the locality and within NSW generally.

C-C1.1.3.4 Statement of Heritage Significance

Site Three is considered to have minor local significance based upon the potential to reveal archaeological information concerning federation period farm sites.

C-C1.1.3.5 Mitigation and Management

Site 3 is located within an existing subsidence area. Any further subsidence which results from the Project is unlikely to exacerbate the already severely dilapidated condition of the building. As a precaution against any further impacts a written description and photographic record of Site 3 should be established