APPENDIX D – RESPONSE TO SUBMISSIONS – AGENCY SUBMISSIONS AND WCPL'S RESPONSE TO DPI WATER

Office of Environment & Heritage

DOC16/300357-1
DA 305-7-2003 MOD12

Ms Jessie Evans
Team Leader, Planning Services
Department of Planning and Environment
jessie.evans@planning.nsw.gov.au

Dear Ms Evans

RE: 'Response to Submissions Report' for Wambo Coal Mine – Modification 12 (DA 305-7-2003)

I refer to your e-mail dated 10 June 2016 inviting the Office of Environment and Heritage (OEH) to comment on the 'Response to Submissions Report' prepared following public exhibition of the Environmental Impact Statement for the proposed modification of Wambo Coal Mine.

OEH provided comment and recommended conditions of consent for this project in a letter dated 13 May 2016. OEH accepted 10 of the 11 recommendations made by the proponent which were in relation to the assessment of Aboriginal Cultural Heritage. OEH has no additional comment to make in relation to Aboriginal cultural heritage matters for this project. Note that for recommendation 7, OEH Heritage Division as delegate of the NSW Heritage Council, provided separate advice on environmental heritage matters.

In relation to threatened biodiversity, OEH previously accepted the offset package put forward for this project and recommended that the consent included consideration of the provision of additional biodiversity offsets in case unexpected mine subsidence leads to additional impacts on threatened biodiversity. Such consideration already exists in the existing development consent for the mine and its inclusion in any consent issued for the modification is supported by the proponent. Therefore, OEH has no further comment to make on threatened biodiversity for this project in relation to NSW legislation and policy.

Please note that this advice has been prepared without completion of the review of the 'Matters of National Environmental Significance' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Once this assessment is completed it may result in additional offset requirements for this project.

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If you require any further information regarding this matter please contact Robert Gibson, Regional Biodiversity Conservation Officer, on 4927 3154.

Yours sincerely

20 JUN 2016

RICHARD BATH
Senior Team Leader Planning, Hunter Central Coast
Regional Operations

Heritage Council of New South Wales

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File No: EF15/19770
Ref No: DOC16/286649

Jessie Evans, Team Leader
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Department of Planning & Environment
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SYDNEY NSW 2001
By email: Jessie.evans@planning.nsw.gov.au

Dear Mr Evans

RE: Comments on Response to Submission report for Wambo Coal Mine DA 305-7-2003 (Mod 12).

I refer to your email dated 10 June 2016 advising a response to submissions (RtS) report has been prepared for the Wambo Coal Mine Modification 12 project and requesting comment from the Heritage Division for this phase of the project.

The Heritage Council of NSW previously provided comment on 12 May 2016 and recommended The Applicant prepare a statement of heritage impact for 'Abandoned Stony Creek Cottage Site' in addition to the preparation and 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.

The following document was reviewed to provide comment in this letter:

- 'South Wambo Underground Mine Modification Response to Submissions (RtS) for the Modification of DA 305-7-2003 (MOD 12) The Realignment and Extension/Relocation of the Approved South Wambo Underground Mine, prepared by Peabody Energy dated June 2016.

Abandoned Stony Creek Cottage Site:
The RtS repeats key points discussed in the supporting documents to the Environmental Impact Statement (EIS) which were prepared by EJE Town Planning dated 2003 concerning this item which attempt to justify no further works with respect to this item. However there is no discussion in the RtS that the EJE Report identified this site is of local heritage significance. Nor do the Heritage Council Assessing Significance Guidelines support assessment which identify 'low' or 'high' levels of significance, only local and state.

The EIS identified the above item was in poor condition in 2003 and may be impacted by the proposed modified activity. The proposal as suggested in the RtS is to archivally record the site prior to works commencing. It would be appropriate to lodge a copy of any such report with the relevant local Council's local studies library repository/unit.

Wambo *Homestead:*
Wambo Homestead is an item of environmental heritage which is listed on the State Heritage Register as item #00200. This item does not have a currently endorsed Conservation Management Plan, although it is noted there is an existing Heritage Management Plan which addresses the management of this item for the purposes of the Underground Coal Mine Activities surrounding it.

The Heritage Division has considered the more detailed background to the entire mining development and proposal as expressed in the RtS document prepared by Peabody dated June 2016. This report has clarified that detailed engineering and subsidence monitoring has been ongoing throughout the mine project which is also demonstrated within the supporting statements.

The acceptance of the recommendation to ensure that a Conservation Management Plan for the Wambo Homestead be prepared and endorsed by the Heritage Council as previously recommended is also noted and supported by the Division.

If you have any questions regarding the above matter please contact Felicity Barry, Acting Senior Team Leader, Archaeology at the Heritage Division, Office of Environment and Heritage on 9995 6914 or at Felicity.Barry@environment.nsw.gov.au.

Yours sincerely

26/07/2016

Katrina Stankowski
Acting Manager, Conservation
Heritage Division
Office of Environment & Heritage
As Delegate of the NSW Heritage Council

NSW GOVERNMENT | Department of Industry

PCU066094

BN16/5069

Ms Jessie Evans
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Department of Planning
Received
11 JUL 2016
Scanning Room

Dear Ms Evans

Wambo Coal Mine Mod 12 – (DA 305-7-2003) Response to Submissions Comments

I refer to your email of 10 June 2016 requesting comments from the Division of Resources & Energy (the Division) to the Response to Submissions (RTS) report from Wambo Coal Pty Ltd (the Proponent) in support of an application for a modification to consent for the Wambo Coal Mine.

The Division has reviewed the *South Wambo Mine Coal Project, Environmental Assessment Response to Submissions, June 2016*.

Based on the review of Modification 12 and responses to issues raised by the Division, it is recommended that conditions to be imposed to address the following requirements to rehabilitate to the satisfaction of the Division in accordance with a Rehabilitation Management Plan (RMP) and Mine Operations Plan (MOP) which addresses:

a) Progressive rehabilitation

b) A detailed tailings management plan that includes timing for the rehabilitation of the existing tailings facilities, in order that final land form and land use objectives can be achieved in a timely manner

c) A plan to ensure the grazing carrying capacity of the pre-mining development foot print is achieved in the post mining landscape

d) A plan which shows the land form at the completion of open cut mining, identifying proposed locations of tailings management facilities which support the continued underground operations.

A more detailed description of rehabilitation requirements is in **Attachment A**. These requirements should be addressed in the Rehabilitation Management Plan (RMP) and (MOP) and are provided for information only at this stage.

Should you have any enquires regarding this matter please contact Steve Cozens, Senior Project Officer, Royalty and Advisory Services on telephone (02) 9842 8573.

Yours sincerely

K Hargreaves

Kylie Hargreaves
Deputy Secretary
Resources & Energy

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ATTACHMENT A

ADDITIONAL INFORMATION

Rehabilitation and Mine Closure

It was noted that the rehabilitation commitments within the MOD 12 EA references the Wambo Development Project EIS (2003) prepared in support of DA-305-7-2003. The response to submissions referred to the approved Wambo Complex Mining Operations Plan Amendment B and the approved Wambo Complex Mining Operations Plan Amendment C.

Rehabilitation objectives and domains

- The response to submissions referred to the approved Wambo Complex Mining Operations Plan Amendment B. The criteria developed for Wambo Complex Mining Operations Plan (MOP) Amendment B while subject to further development, is a significant improvement on the Wambo Development Project EIS (2003).

Rehabilitation Methodology

Mine Design

- The response to submissions referred to the approved Wambo Complex Mining Operations Plan Amendment B. It must be clear that the mine design as described in the Wambo Development Project EIS (2003) has been superseded by approved mine modifications and is consistent with Wambo Complex Mining Operations Plan Amendment B.
- Wambo Coal should submit a plan showing where the final void/s are proposed to avoid confusion as to what the final approved land form is (that is make it clear that MOD 12 EA that is reliant on Wambo Development Project EIS (2003) does not override previously approved mine modifications, up to MOD 15).

Rehabilitation

- The response to submissions referred to the approved Wambo Complex Mining Operations Plan Amendment B.
- In general other risks such as geochemical constraints, spontaneous combustion hazards, tailings management etc. have not been detailed in the MOD 12 EA other than to refer to the Wambo Development Project EA (2003). The response to submissions referred to the approved Wambo Complex Mining Operations Plan Amendment B which does not demonstrate the successful rehabilitation of tailings facilities, in particular, the North East Tailings Dam is achievable.
- While the MOD 12 EA states that "there would be sufficient capacity for the additional coal rejects generated by the modification', the existing tailings facilities will have reached capacity during 2017. An application to establish a new tailings facility/ facilities that would manage fine reject has not been submitted. The approval of a new tailings management facility would depend in part on the management of fine reject to facilitate the rehabilitation of the tailings facilities, which has not been demonstrated for facilities that contain Whybrow Seam, which

is presently been mined. The interaction between the existing tailings facilities, which have not been rehabilitated and proposed tailings facilities, has not been detailed.

Conceptual Final Landform Design

- The response to submissions referred to the approved Wambo Complex Mining Operations Plan Amendment B, which does not clearly identify the location of geometry of the final voids.
- The post-mining landform cross-sections developed for the Draft Wambo Complex MOP Amendment C (to be approved) do not include the final voids. Other cross sections show a final landform that has the potential to be capable of supporting the intended final land use(s).
- The response to submissions referred to the approved Wambo Complex Mining Operations Plan Amendment B that does not show a final landform design for the current operations needs to be developed in the event that any future projects do not proceed. If approved, the Draft Wambo Complex MOP Amendment C (to be approved) would satisfy this requirement.
- The final landform is dependent on the successful capping of the existing tailings facilities. Wambo Coal has been unable to demonstrate how the North East Tailings Dam would be capped to allow the final landform to be realised, despite reject disposal to this facility ceasing more than a decade ago. The North East Tailings Dam has a fraction of clay related to the Whybrow Seam that is hydrophilic that has resisted consolidation prior to capping and further emplacement to achieve the final land form. Current underground and open cut operations mine this seam.

Options Analysis

- The response to submissions does not commit to the long term economic viability of grazing within rehabilitated areas, including those impacted by subsidence. The reduction in agricultural enterprise within Agricultural Classes 4 and 5 should be compensated by the improvement of grazing potential of rehabilitated areas identified for pasture areas.

DOC16/289046-01; EF13/3816

NSW Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Ms Jessie Evans

Response to Submissions Report
South Wambo Underground Mine Modification (DA 305-7-2003 MOD 12)

I refer to your email to the Environment Protection Authority (EPA), dated 10 June 2016, seeking the EPA's comments on the report titled 'South Wambo Underground Mine Modification – Response to Submissions' (RTS report) dated June 2016.

The EPA has reviewed the RTS report in respect to our submission of 13 May 2016 for this proposal. In that previous submission the EPA included comments in relation to the noise impact assessment undertaken for the proposal. The RTS report specifically addresses our previous comments in Section 2.5 of the RTS Report.

The EPA's review and response to the RTS report is provided below. For ease of reference the relevant subject headings in Section 2.5 of the RTS report have been used.

1. Assessment of Noise Impacts

The proponent states that the ventilation system intrusive and amenity noise assessment was not conducted at receiver 19 A & B as it was assessed that the modification would have minimal potential to alter the existing noise levels (amenity and intrusive) at that location, and as such the ventilation shaft is not predicted to be the dominant source of noise at that receiver.

The proponents response sufficiently addresses our previous comments and clarifies the matter, and as such the EPA does not have any further submission to make on this matter.

2. Noise Criteria in EPL 529

The EPA previously proposed that the applicable noise levels of 35 dBA would apply at receiver 19 A & B, as the receivers were not listed in Condition L4.1 of the licence. As noted in the proponent's response receiver 19A & B is referred to in Table 1 of Schedule 4 of the sites development consent (DA 305-7-2003), meaning that the receptors currently have acquisition rights and are excluded from the locations included in Condition L4.1 of the licence.

The EPA's previous assertion that the noise level of 35dBA would apply at receiver 19A & B was incorrect and the proponent's response sufficiently addresses this matter.

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3. Noise Mitigation Measures

Our previous comments included recommendations that the applicant is required to adopt the mitigation measures detailed in the Environmental Assessment (EA), and that the complaints management protocol specifically includes regular community notification procedures and potential respite periods, where warranted.

The proponent's response states that these recommends are consistent with Section 4.2 of the Appendix H of the EA.

While the consultation measures proposed in the EA do prescribe community notification prior to the works occurring and a contact for complaints or enquiries, there does not appear to be a requirement to implement regular community updates throughout the construction period, or the potential for respite periods for residents during construction, if warranted.

The EPA acknowledges that the establishment of community notification procedures and potential respite periods during construction is typically a matter addressed through management plans or other consent conditions, and is not usually conditioned on an Environment Protection Licence. The EPA does not propose to condition these matters into the current licence for the premises, however raises these items as factors for Department of Planning and Environment to consider.

If you require any further information regarding this matter please contact Michael Howat on 4908 6819.

Yours sincerely

24.6.16

MICHAEL HOWAT
Acting Head Regional Operations Unit - Hunter

Contact officer: MICHAEL HOWAT
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Department of Primary Industries

OUT16/25272

Ms Jessie Evans
Resource Assessments & Compliance
NSW Department of Planning and Environment
GPO Box 39
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Jessie.evans@planning.nsw.gov.au

Dear Ms Evans

Wambo Coal Mine (*DA 305-7-2003 MOD 12*)
Comment on the Response to Submissions Report

I refer to your email dated 10 June 2016 to the Department of Primary Industries in requesting comment on the above matter. Comment has been sought from relevant divisions of DPI. Any further referrals to DPI can be sent by email to landuse.enquiries@dpi.nsw.gov.au.

DPI has reviewed the exhibited Response to Submissions and advises that the following issues should be addressed prior to determination:

1. The proponent should adopt the accepted Water Management Plan (WMP) reporting procedure in all reporting noting the limitation with subsidence and frequency between surveyed data.
2. The groundwater model should be calibrated to capture and reflect impacts of increased vertical hydraulic conductivity across the broader model domain and encapsulate the observed decline in alluvial water table along North Wambo Creek and Wambo Creek as was noted in the 2015 Annual Review as part of a regular model update.
3. The proponent should provide DPI Water with a copy of the lithology and construction logs for all monitoring bores. This information is required to support further understanding of the ongoing monitoring and to clarify the zones monitored by each bore
4. Further investigation by the appropriate regulatory agency should be considered regarding increased salinity of the alluvial aquifer being potentially attributed to leakage from Wambo South Water Dam. It is recommended that as part of the assessment process for Modification 12 that the Department of Planning and Environment consult with the Environmental Protection Authority as to whether this should be investigated as a potential contamination event.

DPI Water considers that satellite imagery, hydrographic data, reported dam levels and quality suggest a possible connection between leakage from the dam and increased alluvial salinity. It is recommended that the proponent provide the Chemical Analysis by GHD (2012) which is referenced in the Annual Review as conclusively demonstrating that groundwater at P114 is not sourced from the Wambo South Dam.

Other Considerations

It is also recommended that the proponent make a commitment to construct additional paired monitoring bores within the interburden aquifer at sites P114 and P116. This recommendation relates to DA 305-7-2003 independent of Modification 12.

There is a risk of increasing the fracture interconnection between several mined coal seams up to the alluvial aquifer and surface water systems should there be a shift from mining the deeper Bowfield Seam to an intermediate depth seam such as the Woodlands seam. The risk of increased fracture connection was also highlighted by DPI Water during the assessment of Longwall Panel 10A, which commenced in June of 2015.

Bore P114 is the only alluvial monitoring bore overlying Longwall 10A. This bore has previously been noted as having a strong relationship with the long-term rainfall trend. However from August 2015 to December 2015 groundwater levels decreased by approximately 3 metres, not taking into account potential subsidence of ground level. Additionally the 2015 Annual Review indicated that an adjustment of the parameters defining the fracture zone may also be required.

DPI Water considers that fracturing from each of the mined seams has demonstrated to propagate to the next overlying mined seam and then continuing to the surface water systems. The Environmental Assessment for Longwall 10A reported that post mining the flow direction would be from the alluvium downwards to the Permian, with negligible change in the alluvial aquifers (during and post mining) water level. The recent monitoring observations identify drawdown impacts significantly greater than predicted in the alluvial aquifer.

It is noted that the Groundwater Assessment for Modification 12 does not include all the available monitoring data up to August 2015. This is limiting in conveying the significance of the interconnected fracturing beneath the alluvium, as shown in P114. Similarly the calibrated hydraulic conductivity values for Modification 12 (Table 14) do not appear to reflect an adjustment of parameters defining the fracture zone as was the recommendation in the 2015 Annual Review.

As such further information is required from the proponent to finalise the assessment of this proposed project.

Yours sincerely

Graeme White
A/Director, Planning Policy & Assessment Advice
20 July 2016

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2 August 2016

Department of Planning and Environment
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Attention: Ms Jessie Evans, Resource Assessments and Compliance

Dear Ms Evans

RE: MODIFICATION 12 TO DA 305-7-2003 – RESPONSE TO COMMENTS FROM DEPARTMENT OF PRIMARY INDUSTRIES

Please find below responses to the comments made by the Department of Primary Industries (DPI) on the Response to Submissions in relation to the application to modify the Wambo Development Project Development Consent DA 305-7-2003 (MOD 12).

1. ***The proponent should adopt the accepted Water Management Plan (WMP) reporting procedure in all reporting noting the limitation with subsidence and frequency between surveyed data.***

The intent of this comment is unclear. WCPL reported its monitoring data (including subsidence monitoring data) in the 2015 Annual Review in consideration of the *Annual Review Guideline* (released October 2015).

Any specific comments on reporting can be provided by the DPI Water during the consultation process for any future updates to the Water Management Plan.

2. ***The groundwater model should be calibrated to capture and reflect impacts of increased vertical hydraulic conductivity across the broader model domain and encapsulate the observed decline in alluvial water table along North Wambo Creek and Wambo Creek as was noted in the 2015 Annual Review as part of a regular model update.***

A detailed response to this comment has been provided by HydroSimulations and is attached (Enclosure 1).

There has been no observed decline in the alluvial water table along North Wambo Creek and Wambo Creek that is inconsistent with the groundwater model predictions.

Approximately 3 m of drawdown was observed in a bore located within adjacent weathered Permian regolith (bore P114) between August 2015 and December 2015 and was reported in the 2015 Annual Review.

HydroSimulations does not consider that the monitoring results at P114 reflect "increased vertical hydraulic conductivity across the broader model domain" and considers there is no requirement to remodel the potential groundwater impacts associated with MOD 12.

3. ***The proponent should provide DPI Water with a copy of the lithology and construction logs for all monitoring bores. This information is required to support further understanding of the ongoing monitoring and to clarify the zones monitored by each bore***

Bore construction details are provided in Enclosure 2.

An installation report is provided for the recently installed vibrating wire piezometers at N2, N3 and N4. Summary of completed bore/excavation forms are provided for the other bores (with the exception of private landholder bores, production bores and two United Collieries bores).

4. ***Further investigation by the appropriate regulatory agency should be considered regarding increased salinity of the alluvial aquifer being potentially attributed to leakage from Wambo South Water Dam. It is recommended that as part of the assessment process for Modification 12 that the Department of Planning and Environment consult with the Environmental Protection Authority as to whether this should be investigated as a potential contamination event.***

This comment is unrelated to MOD 12.

The outcomes of an investigation into the increased salinity at some bores were provided in the 2015 Annual Review. This investigation concluded that the increase in salinity was not attributable to leakage from South Wambo Dam.

If the Department of Planning and Environment (DP&E) or DPI Water has any concerns or comments related to this investigation, these can be raised through the review process for the 2015 Annual Review with the DP&E Compliance Branch.

Please do not hesitate to contact the undersigned should you have any queries.

Yours faithfully

Micheal Alexander
Director Projects and Portfolio Management (NSW)
PEABODY ENERGY AUSTRALIA PTY LIMITED

Enclosures (2)

cc: Mr Howard Reed, Director, Resource Assessments, Department of Planning & Environment.

ENCLOSURE 1

CORRESPONDENCE FROM HYDROSIMULATIONS

HYDROSIMULATIONS

HERITAGE COMPUTING PTY LTD
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Date: 28 July 2016

To: Wambo Coal Pty Ltd
c/- Resource Strategies Pty Ltd
Suite 2, Level 3
24 McDougall Street
MILTON QLD 4064

From: Dr Noel Merrick

Re: **South Wambo Underground Mine Modification – Response to DPI Comments**

Our Ref: HS2016/38

Introduction

The DPI Water in its correspondence dated 20 July 2016 has stated the following:

> "The groundwater model should be calibrated to capture and reflect impacts of increased vertical hydraulic conductivity across the broader model domain and encapsulate the observed decline in alluvial water table along North Wambo Creek and Wambo Creek as was noted in the 2015 Annual Review as part of a regular model update.
>
> ....
>
> "It is noted that the Groundwater Assessment for Modification 12 does not inc ıde all the available monitoring data up to August 2015. This is limiting in conveying the significance of the interconnected fracturing beneath the alluvium, as shown in P114. Similarly the calibrated hydraulic conductivity values for Modification 12 (Table 14) do not appear to reflect an adjustment of parameters defining the fracture zone as was the recommendation in the 2015 Annual Review."

Summary Reply

In summary, the numerical modelling and groundwater assessment in support of MOD 12 is considered adequate and fit for purpose on the basis of the following:

- The numerical model was calibrated based on an extensive baseline dataset (1 056 target points). The calibration performance statistic (scaled root mean square) was well within the target suggested in the modelling guidelines, and the calibration was considered adequate by the peer reviewer (Dr Frans Kalf). Extension of the dataset to current day, to accommodate the latest readings at P114, would cause only a very minor change in calibration performance statistics.
- Based on detailed transient electromagnetic [TEM] mapping, it is considered that P114 is not located within the Wambo Creek alluvium, but within adjacent weathered Permian regolith.
- The observed drawdowns in alluvial bores along Wambo Creek and North Wambo Creek presented in the 2015 Annual Review are consistent with model predictions.

- HydroSimulations does not consider that the monitoring results at P114 reflect "increased vertical hydraulic conductivity across the broader domain", and therefore there is no requirement to remodel the potential groundwater impacts associated with MOD 12.

Each of the above points is discussed in further detail below.

Although the numerical groundwater model does not require update or re-calibration for MOD 12, future regular model updates will be reviewed against contemporary monitoring data and re-calibrated where required.

Dataset for Numerical Model Calibration

The numerical model was calibrated based on an extensive baseline dataset. This included data as recent as August 2015, where available.

In the peer review of the numerical modelling, Dr Frans Kalf concluded:

> "Manual (trial and error) calibration was conducted using 13,056 target points at 86 groundwater monitoring sites. Calibration fit statistic was 3.9% SRMS (scaled root mean square) which is well within the target of 10% as suggested in the modelling guidelines document (MDBC 2001). Comparison made between measured and modelled hydrographs are considered to be quite acceptable given the extensive mining activity and available knowledge about mining sequences and timing."

As noted in Dr Kalf's review, there has been extensive mining activity at the Wambo Coal Mine, and the calibration was acceptable given this complexity.

Given the long timeframes for modelling, it is not reasonable to expect the dataset basis for model calibration to be continuously extended for the assessment of a Modification with the collection of new data.

As described further in the sections below, HydroSimulations considers that recent monitoring data from P114 does not warrant a re-calibration of the numerical model for the purposes of assessing MOD 12.

Extension of the dataset to current day, to accommodate the latest readings at P114, would cause only a very minor increase in the calibration performance statistics. It would result in the inclusion of 6 additional data points to the 13,056 target points already used in the model calibration. The model calibration would remain well within the modelling guidelines acceptance level.

Future regular model updates will continue to be reviewed against contemporary monitoring data and re-calibrated where required.

Observed Impacts at P114

P114 is a shallow bore constructed in 1999 and is located above Longwall 10A at the North Wambo Underground Mine. Construction details for this bore are not available. However, the depth of the bore is believed to be about 11 m.

A transient electromagnetic [TEM] survey was conducted in the vicinity of Wollombi Brook, Wambo Creek and North Wambo Creek by Dr David Allen (Groundwater Imaging) in 2012. The TEM image shows clearly that P114 is located outside of the alluvial boundary inferred by Dr Allen, in an area of low resistivity (**Figure 1**). On this basis, it is considered that P114 is located in weathered Permian material. Responses at P114 cannot be regarded as indicative of broader responses in alluvium.

As described in the 2015 Annual Review, the groundwater level at P114 decreased by approximately 3 m from August 2015 to December 2015. The numerical groundwater model predicted drawdown at this location, however the observed magnitude of the drawdown is greater than the predicted drawdown (approximately 1 m).

Given the recent nature of this observed impact, the reason for the difference in modelled and observed drawdown has not been conclusively determined. The differences could be due to a number of reasons, for example the depth of the bore assumed in the model (as detailed construction details are not available), or the presence of local discontinuities generated by land subsidence. In either case, responses at P114 cannot be regarded as indicative of broader responses in alluvium.

Importantly, current evidence does not support a conclusion of highly connective fracturing between the surface at P114 and the underground workings, as:

- although groundwater levels in P114 have decreased, the shallow groundwater system at this location is not fully drained; and
- there was no observation of increased water make in the North Wambo Underground Mine workings, or the overlying Whybrow Seam workings during the extraction of Longwall 10A.

Observations at Other Bores in the Vicinity of Wambo Creek and North Wambo Creek

The 2015 Annual Review included a review of groundwater monitoring data at a number of bores in the vicinity of Wambo Creek and North Wambo Creek. The locations of these bores are shown on **Figure 2**. The hydrographs for the weathered Permian regolith at P114 and P116, updated to June 2016, are displayed in **Figure 3**.

The following key conclusions are noted:

- P116, the closest bore to P114, shows fairly good correlation between modelled and observed heads and trends, with no drawdown observed to date that is attributable to mining. This bore, believed to be about 9 m deep, is also in weathered Permian regolith at a similar distance from the TEM alluvial boundary as P114 (**Figure 1**).
- Observed trends in Permian sensors in MG09 located in the vicinity of P114 showed a good correlation with modelled heads prior to failure of the sensors as a result of subsidence.
- P202 and P206, located near the confluence of Wambo Creek with Wollombi Brook, show good correlation with the interpolated stage height in Wollombi Brook and moderate correlation with the long-term rainfall trend.
- P106 and P109, located near Wambo Creek, show good correlation with the long-term rainfall trend and show fluctuations in groundwater levels likely indicative of ephemeral flow in Wambo Creek or lower specific yield in the associated alluvium.
- The alluvial sensor in MG08 located in North Wambo Creek alluvium above the pillar between Longwall 7 and Longwall 8b shows minor drawdown that is well predicted by the modelled heads.
- Modelled drawdowns in GW08 and GW09 in the North Wambo Creek now have a good match with the observed trends. Recovery in these bores is predicted following the completion of dewatering activities in the old Wambo workings, and this has been observed in recent data.

The above observations indicate that the numerical model provides a reasonable and fit for purpose model across the model domain.

Alluvial Extent

Although the alluvial extent has been refined by means of the TEM survey, as shown in **Figure 1**, the model still maintains a broader extent (based on regional geological mapping) so that licensing requirements for alluvial groundwater take are conservative.

The conservatively modelled alluvial extent is shown in **Figure 4** as yellow zone 32.

Fracture Zone Simulation in the Numerical Model

As described above:

- although drawdowns have been observed in P114 that are greater than modelled, all surrounding bores show trends consistent with the numerical model predictions;
- P114 is considered to be located outside the Wambo Creek alluvium, and therefore this does not represent an increase in impacts on alluvial aquifers; and
- current evidence does not support a conclusion of highly connective fracturing between the surface at P114 and the underground workings.

As shown in **Figure 5**, the fracture zone (diagonal red lines) has been modelled as extending to the surface at the location of P114. Host and fracture hydraulic conductivities are included on the figure. The adopted values account well for regional groundwater responses and observed mine inflow. On **Figure 5**, the historical range in groundwater levels is indicated, as well as the current groundwater level, at both P114 and P116. Both bores hold water and the water levels remain well above the mine workings.

Zones 22, 23, 24 and 108 on **Figure 5** represent fracturing that occurred from mining at the Homestead Mine in the Whybrow Seam prior to the model calibration period. P114 is located above the main headings of the Homestead Mine.

Figure 6 shows more detail in the upper two layers of the model.

Monitoring results at other bores in WCPL's groundwater monitoring network:

- show that the model performs well across the Wambo Coal Mine site; and
- therefore, the fracture zone model parameters are appropriate at the broad scale of the numerical model.

Although recent monitoring results suggest that alteration of the permeabilities in this location may improve the model's performance at bore P114, there is no case for a global change in the fracture zone properties. This does not materially affect the outcomes and conclusions of the Groundwater Assessment for MOD 12.

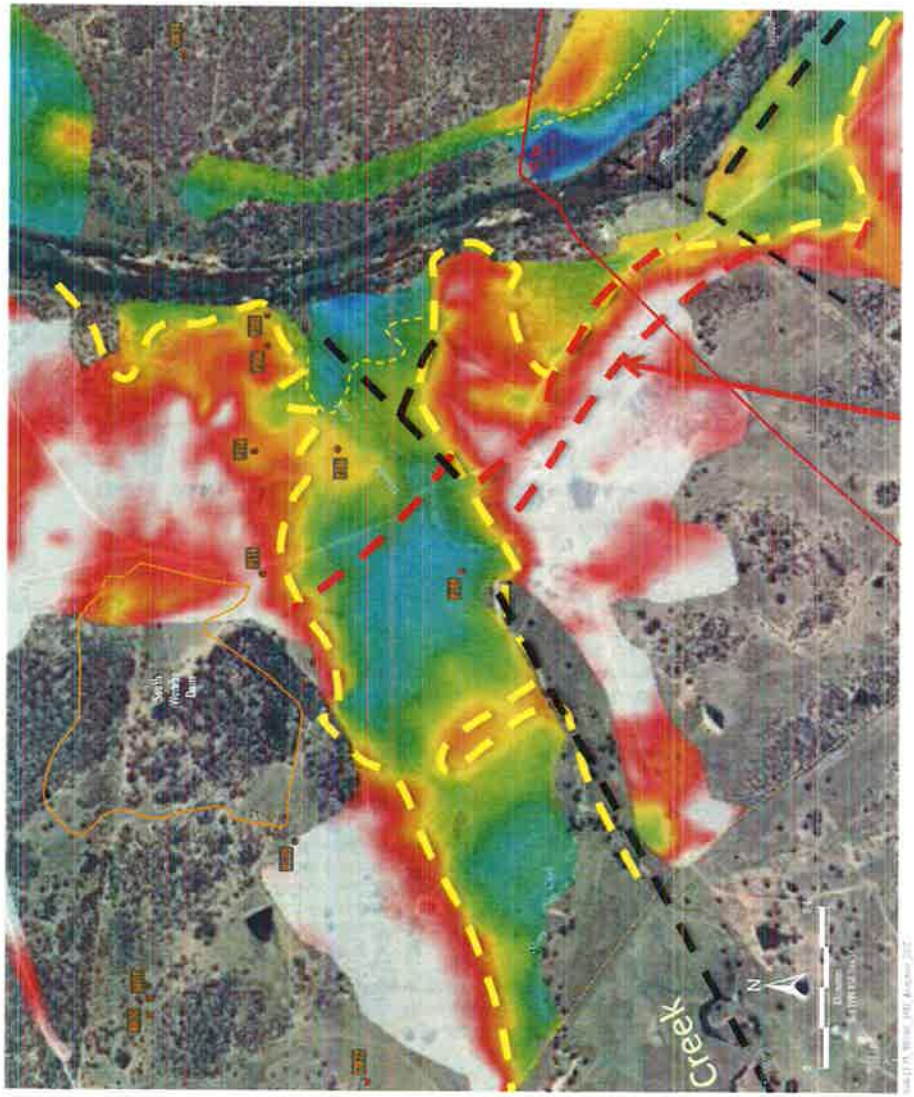
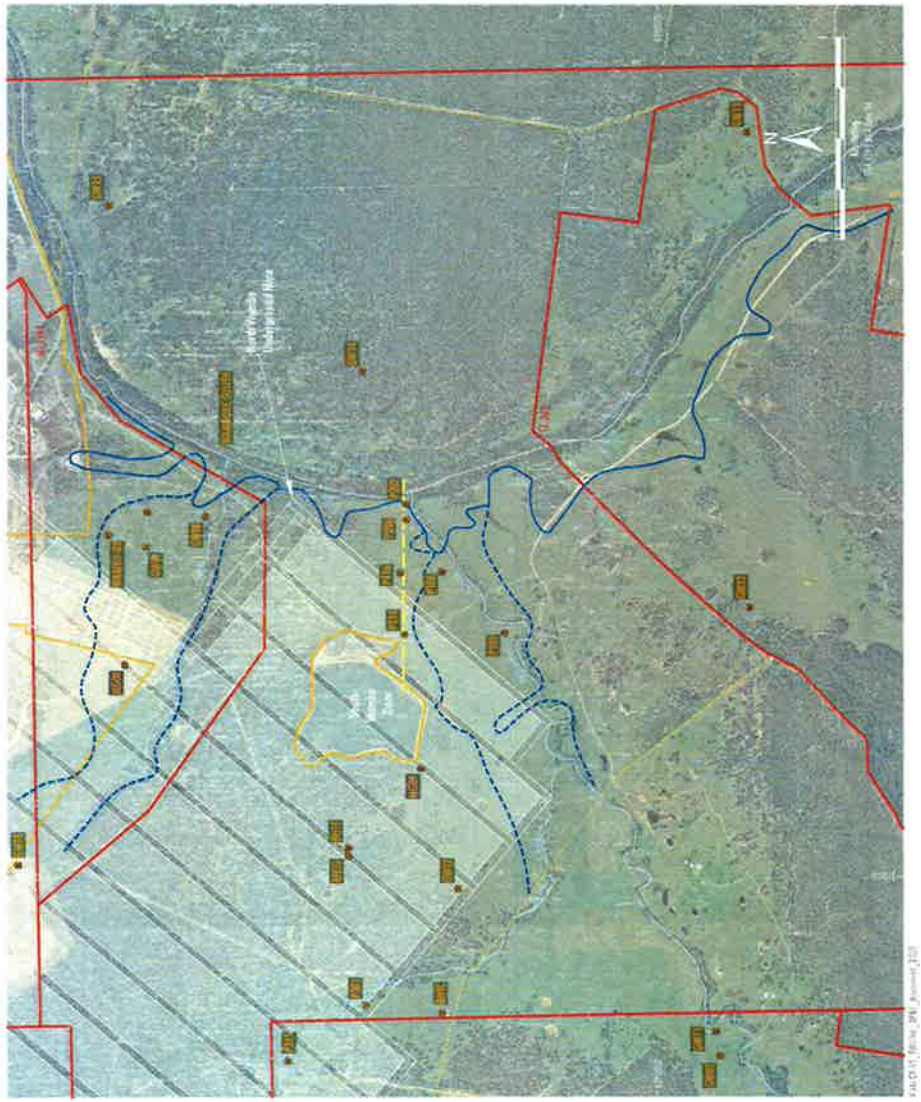


Figure 1



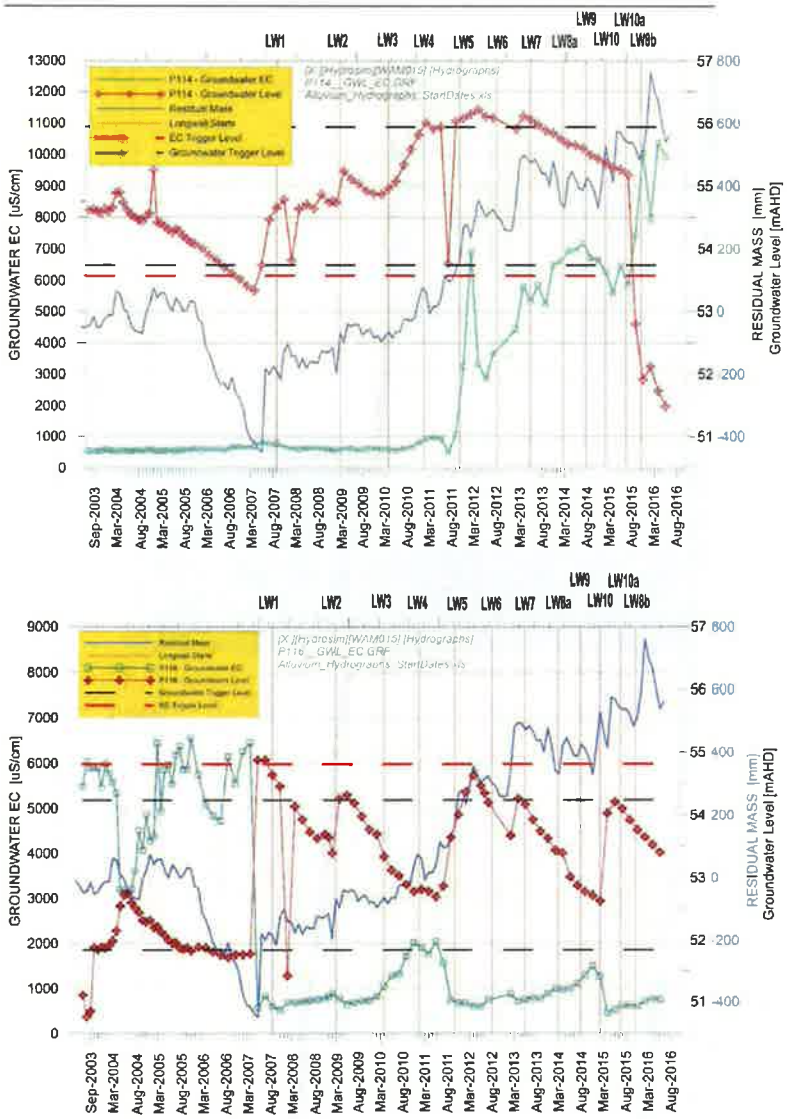


Figure 3. Groundwater hydrographs at P114 and P116

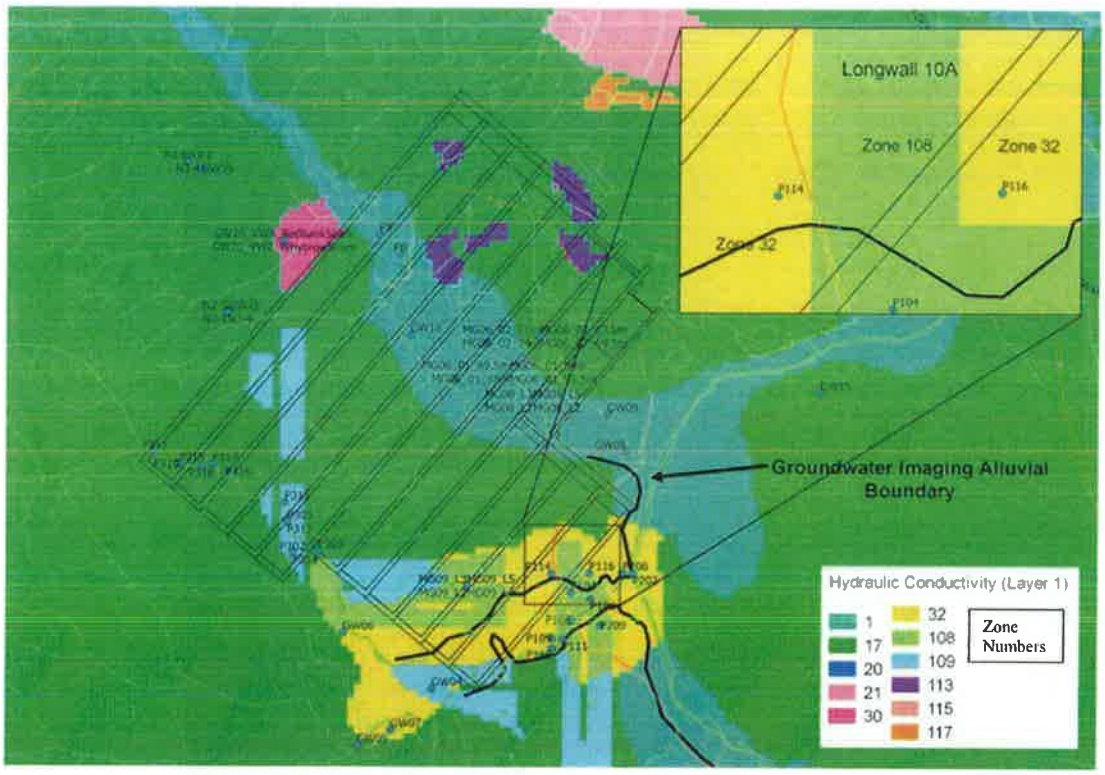


Figure 4. Surficial Hydraulic Conductivity Zonation in the Groundwater Model

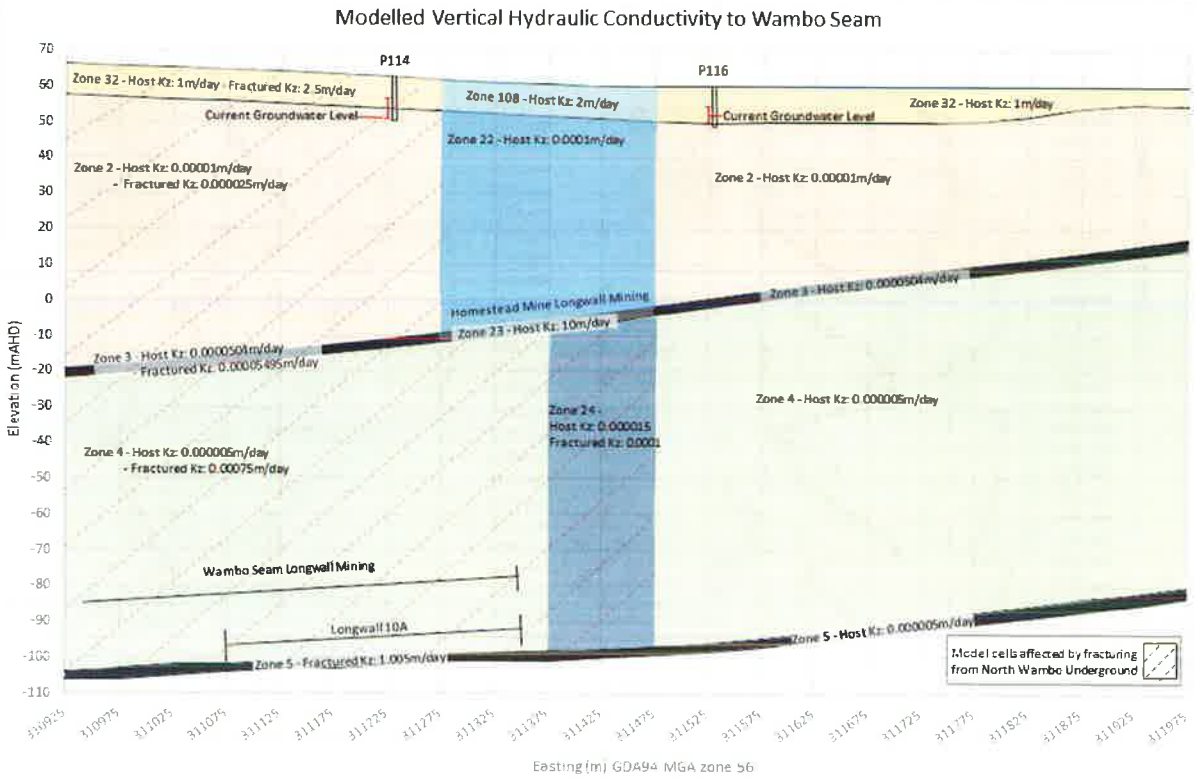


Figure 5. Host and Fracture Zone Hydraulic Conductivity in the Vicinity of Bore P114 down to the Wambo Seam

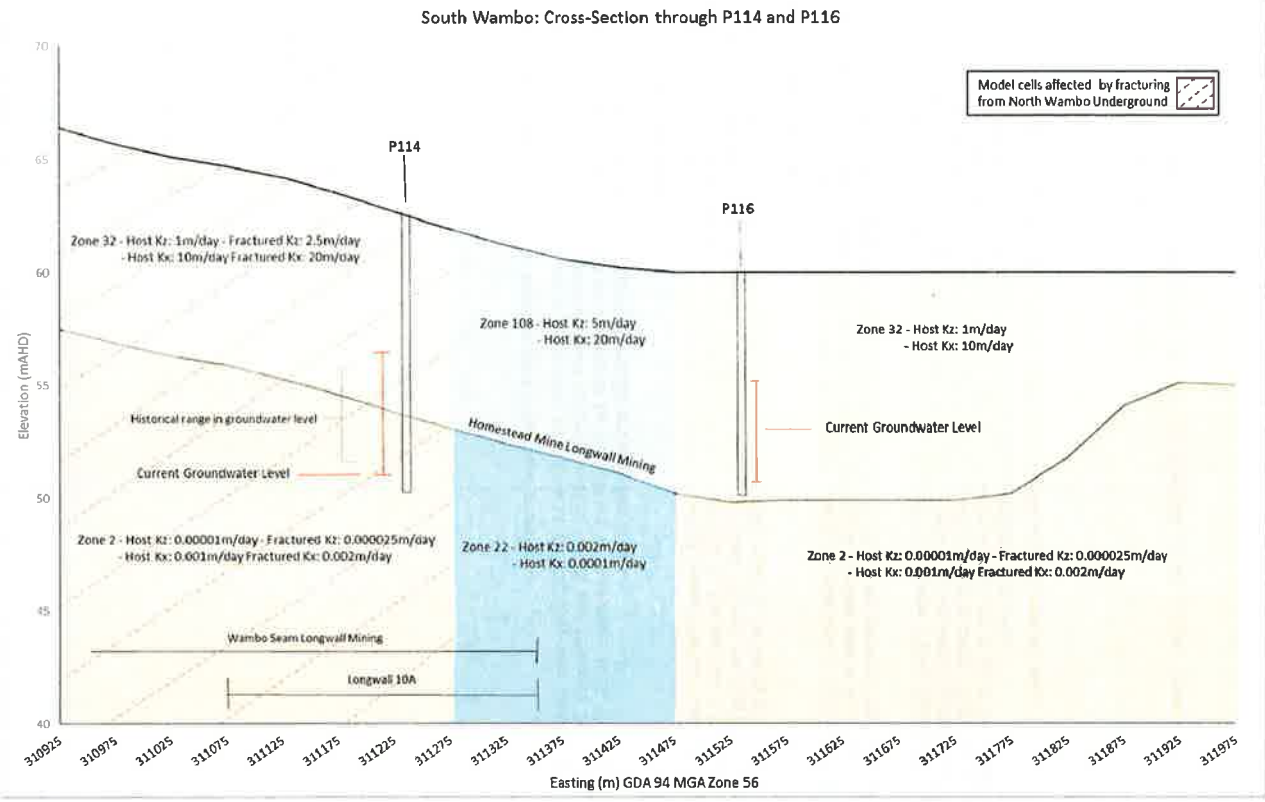


Figure 6. Shallow Host and Fracture Zone Hydraulic Conductivity in the Vicinity of Bore P114

ENCLOSURE 2

BORE CONSTRUCTION DETAILS

RPS

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Our Ref: S297b/600/017a
Date: 21 October 2015

Paul Tomkins
Peabody Energy
Wambo Coal Pty Ltd
Jerry Plains Road
Warkworth NSW 2330

Dear Paul,

RE: South Bates Underground Vibrating Wire Piezometer Installation

The objective of this letter report is to provide an outline of the vibrating wire piezometer (VWP) installations and commissioning process which occurred between 13 July and 18 August 2015 along with interim review of the first download undertaken by AECOM on 17 September 2015. This report also includes a recommendation for ongoing monitoring and collection of data.

1. INTRODUCTION

RPS Water was engaged by Wambo Coal Pty Ltd (WCPL) to install nested VWPs in three groundwater monitoring points within the South Bates underground area (Appendix A). The purpose of the installations is to provide additional baseline data for the assessment of groundwater impacts resulting from Longwalls (LW) 11–13 (Whybrow seam) and the proposed LW 14–16 (Wambo seam) in the vicinity of South Bates.

2. BACKGROUND

The VWPs (N2, N3 and N5) installed in the South Bates area is an extension of the current Wambo groundwater monitoring network. This extension network will record baseline data for the assessment of groundwater impacts resulting from the current mining of LW 11–13 and the proposed mining of LW 14–16.

WCPL is a combined open-cut underground coal mine situated in the Hunter Valley, New South Wales, approximately 26km to the west of the township of Singleton. WCPL Development Consent (DA 305-7-2003) requires the operation to maintain a network of groundwater monitoring bores. These bores are to be utilised to monitor potential mining impacts upon groundwater regimes and to aid in the prediction of impacts ahead of mining into new areas through modelling groundwater scenarios.

The activities near South Bates are currently monitored at the following groundwater sites:

- Alluvium: GW19
- Interburden: GW2
- Multi-formation: GW20
  - VWP depths (mbgl): 9, 62, 93, 130.

The proposed VWPs described below will form an extension of the current Wambo groundwater monitoring network.

Data obtained from the VWPs will be used to examine the nature and magnitude of various types of groundwater pressure responses above the LW, and used to examine the extent of connective vertical cracking from the mined seam to the surface, following subsidence.

3. FIELD PROGRAMME

The VWP installation program comprised the following tasks:

- Installation of six nested (multi-level) VWPs in N2.
- Installation of six nested (multi-level) VWPs in N3.
- Installation of four nested (multi-level) VWPs in N5.
- Installation of posts, cabinets and loggers at each of the above sites.

A map indicating the locations of the piezometers is presented in Appendix A.

VWP locations, targeted formations, and notional installation depths were as described by HydroSimulations (HydroSimulations, 2015). Final installation depths were confirmed onsite in conjunction with the results of geophysical logging and interpretation of the holes prior to installation as conducted by McElroy Bryan Geological services Pty Limited.

3.1 VWP Installation

Three drill holes were equipped with VWP sensors during July and August 2015. A summary of the installation details are presented in Table 1 and the VWP sensor read-out frequency details are outlined in Table 2.

Key installation points include:

- Installation dates
  - N2 – 15/07/2015.
  - N3 – 24/07/2015.
  - N5 – 31/07/2015.
- Data logger enclosures installed, all sensors connected to the respective data loggers, and software enabled on 18 August 2015.
- Number of installed VWP sensors
  - N2 – Six sensors.
  - N3 – Six sensors.
  - N5 – Four sensors.
- Targeted seams – Whybrow and Wambo.
- Targeted overburden – Permian overburden and interburden measures.
- All VWPs were grouted to surface, completed with concrete monument and installed with post and data logger enclosure.
- VWP ground level elevations were surveyed by the mine surveyor at the end of the project.

Table 1: Summary of VWP Installation Details.

Drill Hole ID	Total Depth (mbgl)	Easting	Northing	Elevation (mAHD)	Date VWP Started	Date Commissioned	VWP ID	VWP Serial Number	VWP Pressure Rating (KPa)	VWP Sensor Depths (mbgl)	Target horizons
N2	230.00	308633.208	6393372.085	122.528	15/07/2015	18/08/2015	N2-6	#21385	350	40	Permian overburden
							N2-5	#21525	700	70	Permian overburden
							N2-4	#21453	2000	100	Permian overburden
							N2-3	#21536	2000	140	Wyhybrow seam
							N2-2	#21455	2000	172.5	Wyhybrow-Wambo interburden
							N2-1	#21538	2000	204	Wambo Seam
N3	200.00	308313.366	6394573.657	104.966	24/07/2012	18/08/2015	N3-6	#21386	350	30	Permian overburden
							N3-5	#21526	700	55	Permian overburden
							N3-4	#21590	1000	75	Permian overburden
							N3-3	#21589	1000	108.5	Wyhybrow seam
							N3-2	#21452	2000	142	Wyhybrow-Wambo interburden
							N3-1	#21539	2000	190	Wambo Seam
N5	145.90	306752.980	6396959.570	110.760	31/07/2012	18/08/2015	N5-4	#21387	350	30	Permian overburden
							N5-3	#21591	1000	73	Wyhybrow seam
							N5-2	#21454	2000	89.5	Wyhybrow-Wambo interburden
							N5-1	#21537	2000	133	Wambo seam

Table 2: VWP Sensor Calibration Details

Drill Hole ID	Total Depth (mbgl)	VWP Sensor Depths (mbgl)	VWP ID	VWP Sensor Test Medium	VWP Sensor Read-out Frequency ($Hz^2 \times 10^{-3}$)	VWP Sensor Read-out Conductivity (mS/cm)	VWP Sensor Read-out Temperature (°C)
N2	230.00	40	N2-6	Air	8913	0.3350	12
				Water	8886	0.3354	12
		70	N2-5	Air	8751	0.3380	18
				Water	8734	0.3384	14
		100	N2-4	Air	8944	0.3343	19
				Water	8921	0.3347	15
		140	N2-3	Air	8953	0.3342	17
				Water	8934	0.3346	15
		172.5	N2-2	Air	8781	0.3374	19
				Water	8757	0.3379	15
		204	N2-1	Air	9026	0.3328	13
				Water	9021	0.3330	12
N3	200.00	30	N3-6	Air	8794	0.3372	18
				Water	8780	0.3374	17
		55	N3-5	Air	8851	0.3361	19
				Water	8838	0.3363	18
		75	N3-4	Air	8803	0.3370	19
				Water	8785	0.3373	18
		108.5	N3-3	Air	8832	0.3364	18
				Water	8823	0.3367	17
		142	N3-2	Air	8761	0.3378	20
				Water	8750	0.3380	18
		190	N3-1	Air	8793	0.3372	19
				Water	8783	0.3374	18
N5	145.90	30	N5-4	Air	8752	0.3380	18
				Water	8707	0.3388	16
		73	N5-3	Air	8882	0.3355	18
				Water	8856	0.3360	14
		89.5	N5-2	Air	8781	0.3374	24
				Water	8766	0.3377	14
		133	N5-1	Air	8765	0.3378	20
				Water	8749	0.3381	14

3.2 VWP Installation Methodology

The VWP installation program was conducted utilising Kerembla's drill rig and associated grout pumping equipment. The VWP installation methodology comprised the following steps:

1. All VWP sensors were checked for communication at each site prior to lowering into the bore.
2. VWP readings were taken at surface in a bucket of water as per the HMA installation guidelines. Sensors were inverted and left immersed in the water until the readings were stable. The sensors were inverted to allow escape of trapped air from behind the porous membrane to ensure correct pressure readings.

3. The 32mm diameter poly pipe and all VWP sensor cables were rolled out on the ground adjacent to each respective site. The locations of the installed sensor depths were measured along the poly pipe and marked using coloured duct tape. The VWP sensors and cables were attached to the poly pipe using duct tape. All sensors were attached to the poly pipe with the open porous end facing up-hole to ensure no air was trapped at the face of the porous membrane. A 2.3m galvanised pipe section was attached to the bottom end of the poly pipe to be used as a weight, to ensure the VWP ensemble remained taut during installation, and to counter any buoyancy forces during the grouting process. The 2.3m galvanised pipe section had been perforated to allow efficient passing of grout from the poly pipe/tremmie into the annulus of the drill hole.
4. The poly pipe and VWP ensemble was inserted into the borehole to the nominated depth with the VWP sensors attached.
5. Grout was then pumped through the poly pipe from the surface exiting the galvanised pipe at the bottom of the hole into the annulus filling the drill hole from the bottom up. Grout was pumped until the drill hole was filled to the surface.

Post grouting of the VWP ensemble in the drill hole, the following steps were completed:

6. The respective VWP sensor cables were clearly labelled and communication with each sensor was manually confirmed using a Geotechnical Systems Vibrating Wire Readout device.
7. A concrete base was poured and data logger enclosure post installed.
8. The data logger enclosures were attached to the posts and VWP sensor cables connected to the data loggers then programmed to record every four hours from 12.00pm.
9. Data logger enclosure keys, manuals and download cabled were provided to Wambo.

3.3 VWP Hydrographs (September 2015)

AECOM undertook downloads of N2, N3 and N5 VWPs on 17 September 2015. The resultant hydrographs are presented in Appendix B. All VWPs have recorded data, with the following observations:

- Water levels in all VWPs are above the installation level aside from N3-55m which has water levels around the installation depth (49mAHD).
- Generally pressure gradients increase with VWP installation depth.
- N2 VWPs all show flat trends aside from N2-205m (the deepest VWP) which has been unstable during the monitoring period dropping to under 0mAHD by the end of the reporting period, this instability is likely due to equilibration of pore pressures after installation, subsequent monitoring should confirm equilibration and stabilised water level in N2-205m.
- N3 VWPs water levels have all stabilised during the first monitoring period.
- N3-75m has stabilised at a SWL similar to that for N3-30m and above that for N3-55m against the general downward pressure gradient. This indicates there may be confining layer between 55mbgl and 75mbgl.
- N5 VWPs have generally stabilised. Note that there is similarity between the three deeper VWPs (N5-73m, N5-89.5m and N5-133m). VWPs N5-73m and N5-89.5m have shown minor pressure variability which may be due to equilibration and should settle with time.

3.4 Groundwater Monitoring/Data Download Recommendation

To ensure data logging integrity, it is recommended the units be checked and downloaded as a minimum, quarterly and preferably monthly.

3.5 VWP Calibration Reports

A copy of the calibration reports for each respective sensor is provided in Appendix C.

3.6 Geophysical Profiles

A copy of the respective bore hole geophysical profiles (density and gamma), as performed by Groundsearch Australia, are located in Appendix D.

We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact our office.

Yours sincerely
RPS Water

Brad

Brad Woods
General Manager NSW / Principal Engineer

Greg

Greg Sheppard
Principal Hydrogeologist

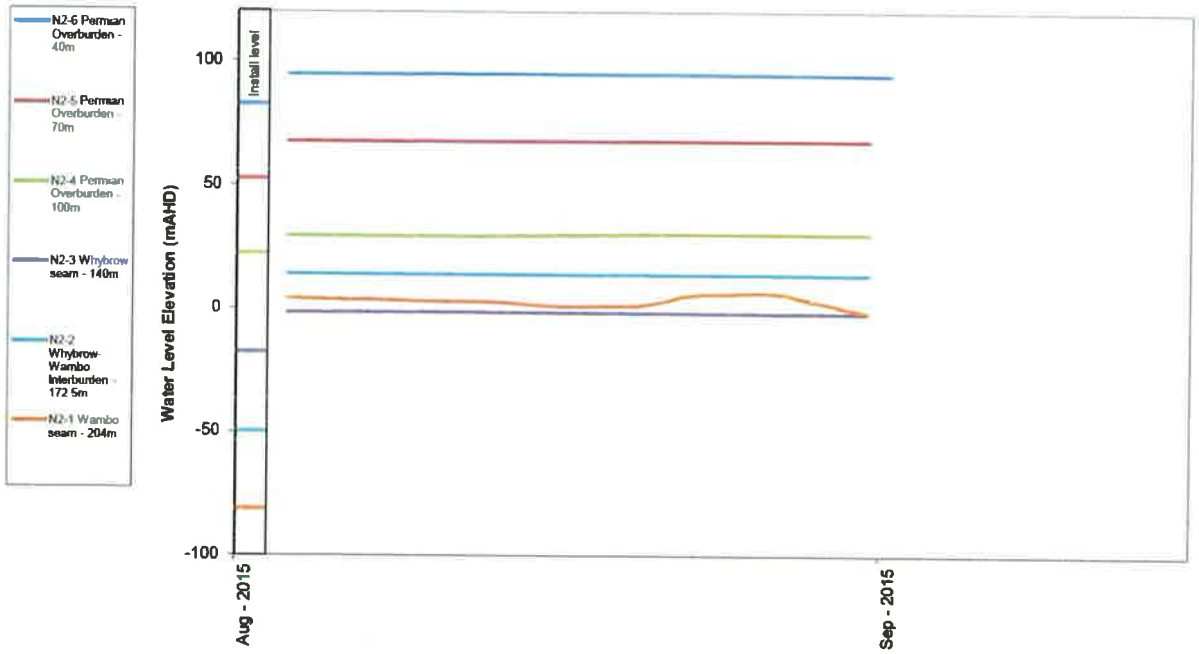
cc: Tim Britten

REFERENCES

HydroSimulations, 2015. North Wambo and South Bates Extraction Plans – Extra Groundwater Monitoring. Report HC2015/9.

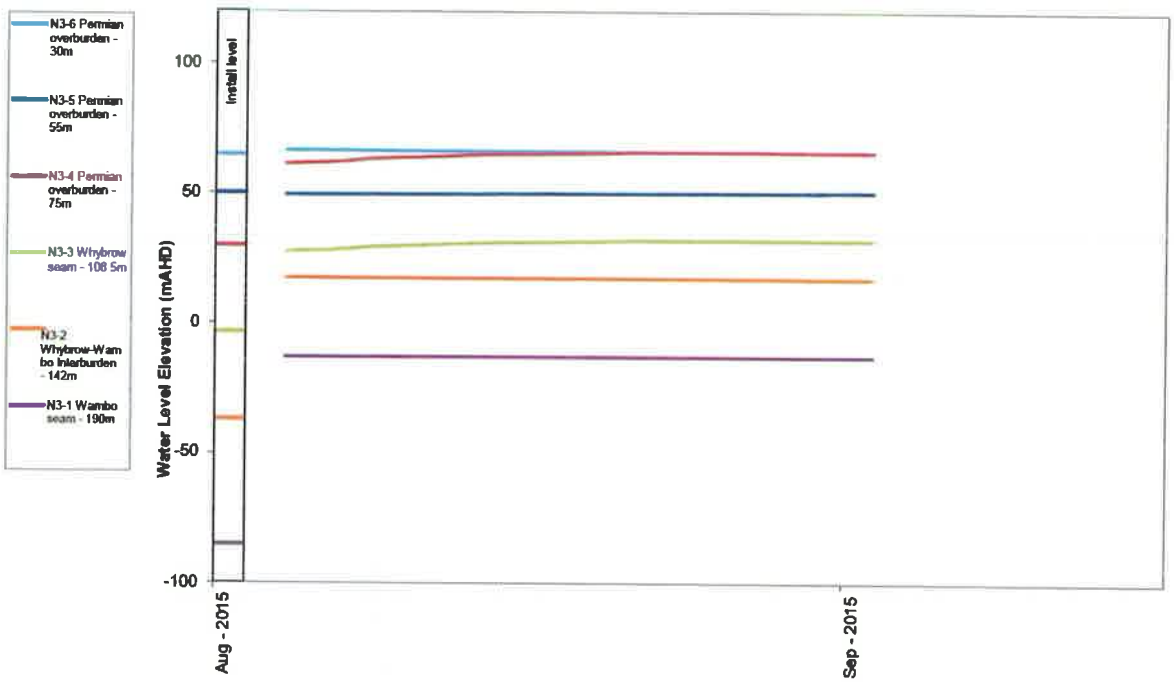
APPENDIX A: VWP Installation Location Map

APPENDIX B: Hydrographs



RPS

Wambo N2 Vibrating Wire Piezometer Hydrograph



RPS

Wambo N3 Vibrating Wire Piezometer Hydrograph

APPENDIX C: VWP Sensor Calibration Reports

Wambo N5 Vibrating Wire Piezometer Hydrograph

N2

HMA Geotechnical Systems Australia

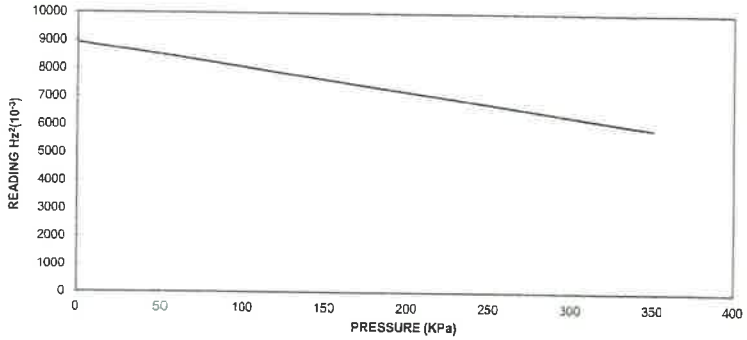
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21385

RATING : 350 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8911 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.11500 $KPa/Hz^2(10^{-3})$ --------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : -0.00384 KPa/°C --------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 525 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N2

HMA Geotechnical Systems Australia

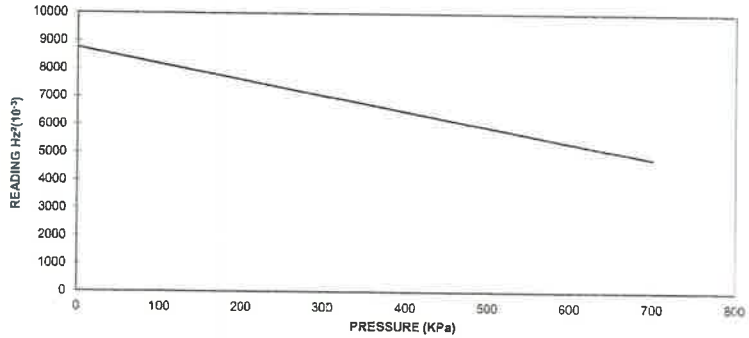
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21525

RATING : 1000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8744 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.17710 $KPa/Hz^2(10^{-3})$ --------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : -0.00316 KPa/°C --------- (C-)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N2

HMA Geotechnical Systems Australia

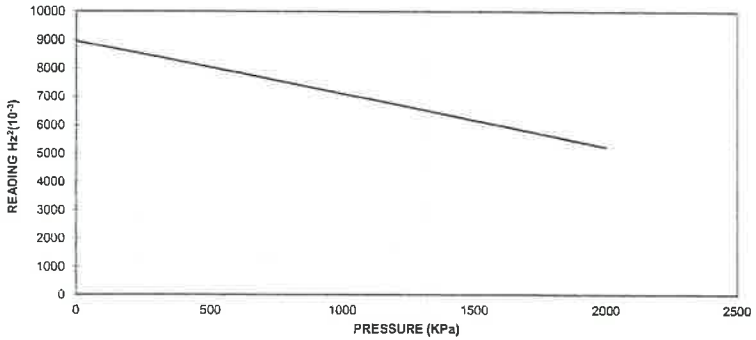
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21453**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8935 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.53690 $KPa/Hz^2(10^{-3})$ -------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.42310 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

N2

HMA Geotechnical Systems Australia

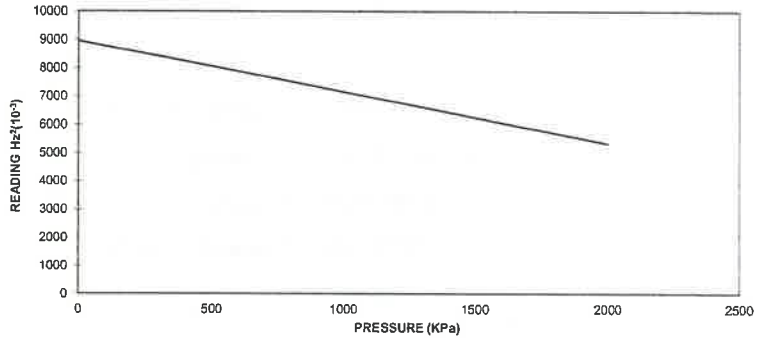
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21536**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8945 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.55200 $KPa/Hz^2(10^{-3})$ -------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.30950 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

N2

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HMA Geotechnical Systems Australia

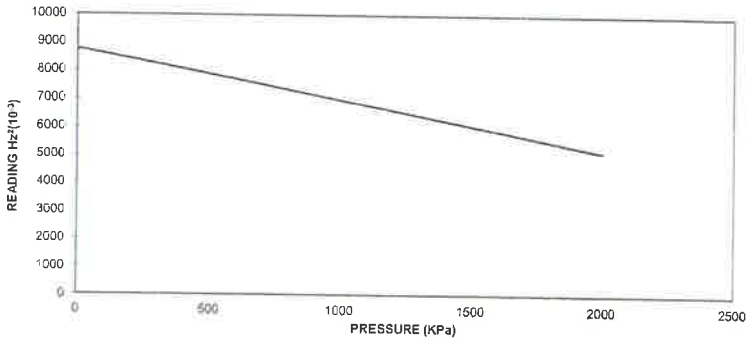
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21455

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8772 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.54860 $KPa/Hz^2(10^{-3})$ --------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.59720 KPa/°C --------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

N2

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HMA Geotechnical Systems Australia

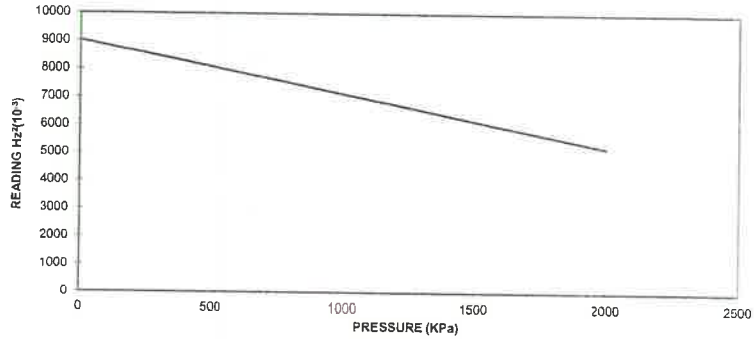
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21538

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 9022 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.52470 $KPa/Hz^2(10^{-3})$ --------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.32030 KPa/°C --------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

N3

2/07/2015 2

HMA Geotechnical Systems Australia

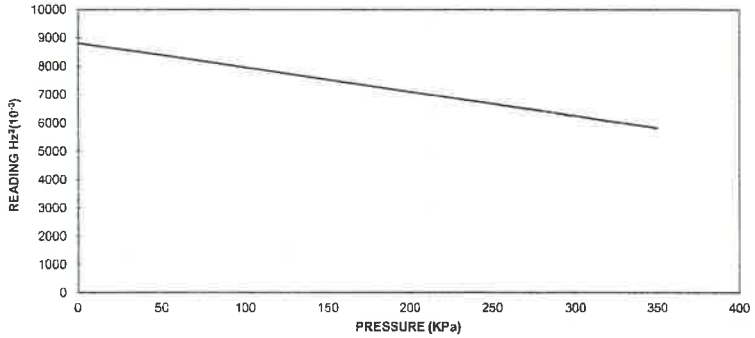
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21386**

RATING : **350** KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8785 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.11710 $KPa/Hz^2(10^{-3})$ -------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : -0.00278 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 525 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

N3

2/07/2015 5

HMA Geotechnical Systems Australia

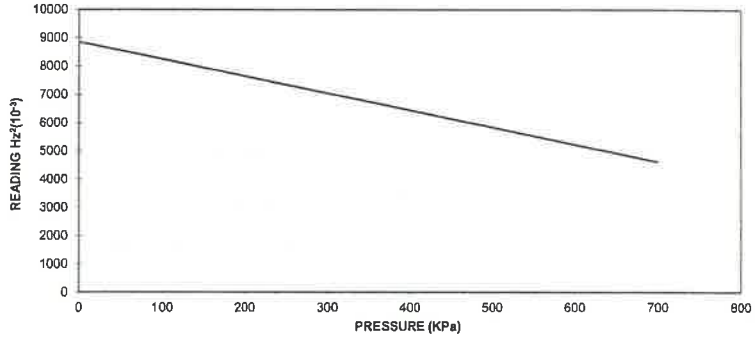
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21526**

RATING : **700** KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8842 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.16540 $KPa/Hz^2(10^{-3})$ -------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : -0.00195 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

N3

HMA Geotechnical Systems Australia

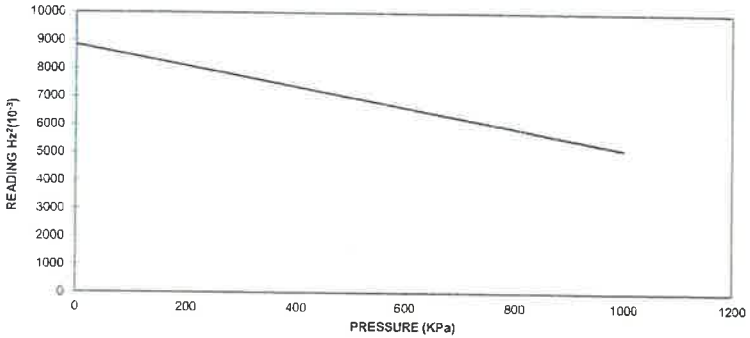
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21589

RATING : 1000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8821 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.27030 $KPa/Hz^2(10^{-3})$ --------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.20150 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1500 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N3

HMA Geotechnical Systems Australia

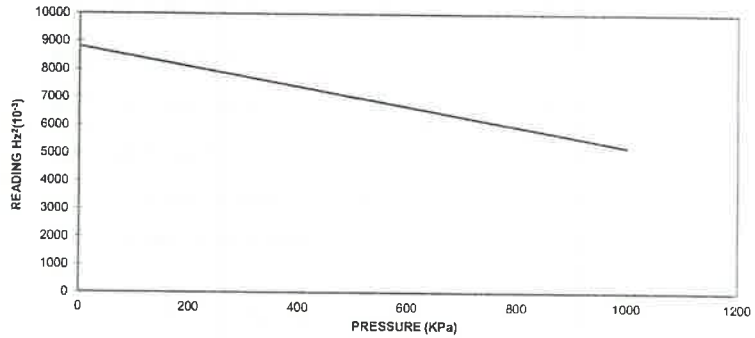
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21590

RATING : 1000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8794 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.27990 $KPa/Hz^2(10^{-3})$ -------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.23240 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1500 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N3

HMA Geotechnical

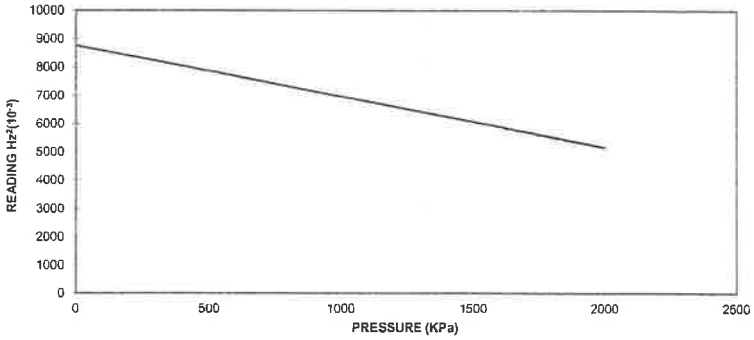
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21452**

RATING : **2000** KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8749 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.55780 $KPa/Hz^2(10^{-3})$ -------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.41830 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N3

HMA Geotechnical

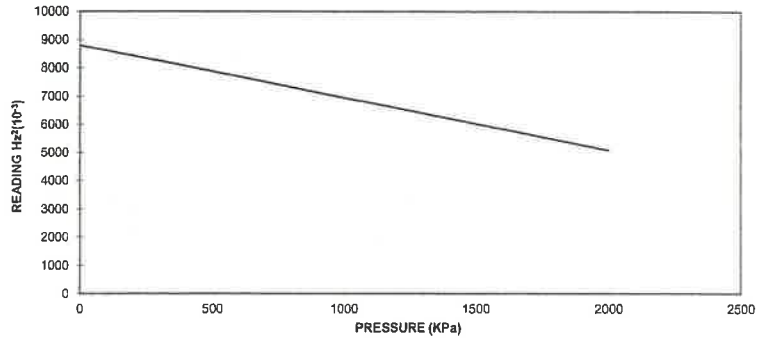
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21539**

RATING : **2000** KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8785 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.53980 $KPa/Hz^2(10^{-3})$ -------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.45920 KPa/°C -------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N5

HMA Geotechnical Systems Australia

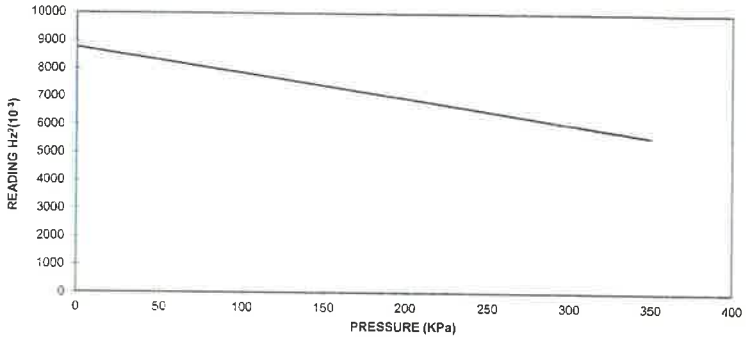
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21387

RATING : 350 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8750 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.10950 $KPa/Hz^2(10^{-3})$ ---------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.02541 KPa/°C ---------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 525 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N5

HMA Geotechnical Systems Australia

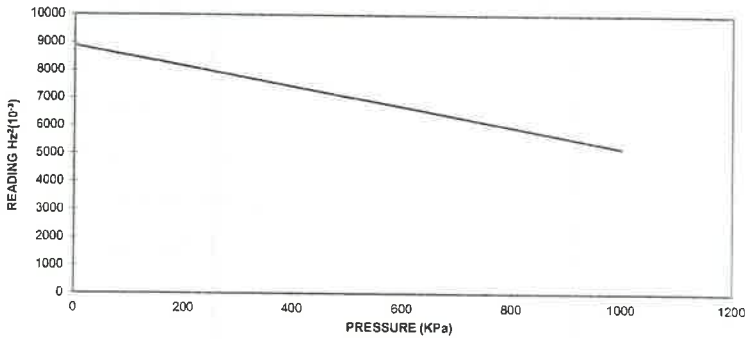
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No GSA-34705

SERIAL No. : 21591

RATING : 1000 KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8869 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.27350 $KPa/Hz^2(10^{-3})$ ---------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.11060 KPa/°C ---------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1500 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0-F_1)C_P + (T_1-T_0)C_T$$

N5

2/07/2015 11

HMA Geotechnical Systems Australia

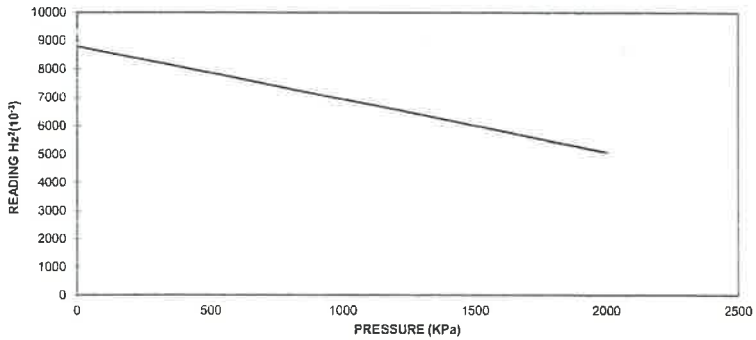
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21454**

RATING : **2000** KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8778 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.53770 $KPa/Hz^2(10^{-3})$ --------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.34960 KPa/°C --------- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

N5

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HMA Geotechnical Systems Australia

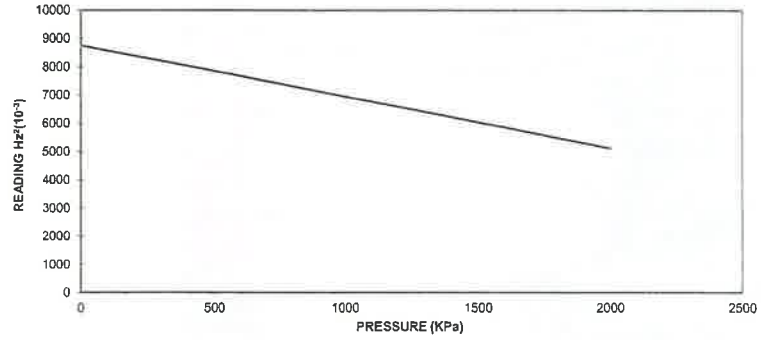
VIBRATING WIRE PIEZOMETER CALIBRATION

CLIENT : **RPS AQUATERRA P/L** JOB No **GSA-34705**

SERIAL No. : **21537**

RATING : **2000** KPa

PIEZOMETER CALIBRATION GRAPH



TRANSDUCER WIRING : RED / BLACK

THERMISTOR WIRING : GREEN / WHITE

FACTORY ZERO READING : 8750 $Hz^2(10^{-3})$

PRESSURE COEFFICIENT : 0.55030 $KPa/Hz^2(10^{-3})$ ------- (C_P)

AMBIENT TEMPERATURE : 13 °C

THERMAL COEFFICIENT : 0.20300 KPa/°C ------ (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 kPa

BAROMETRIC PRESSURE : 1020.7 hPa

OPERATING TEMPERATURE RANGE : -30°C to +65°C

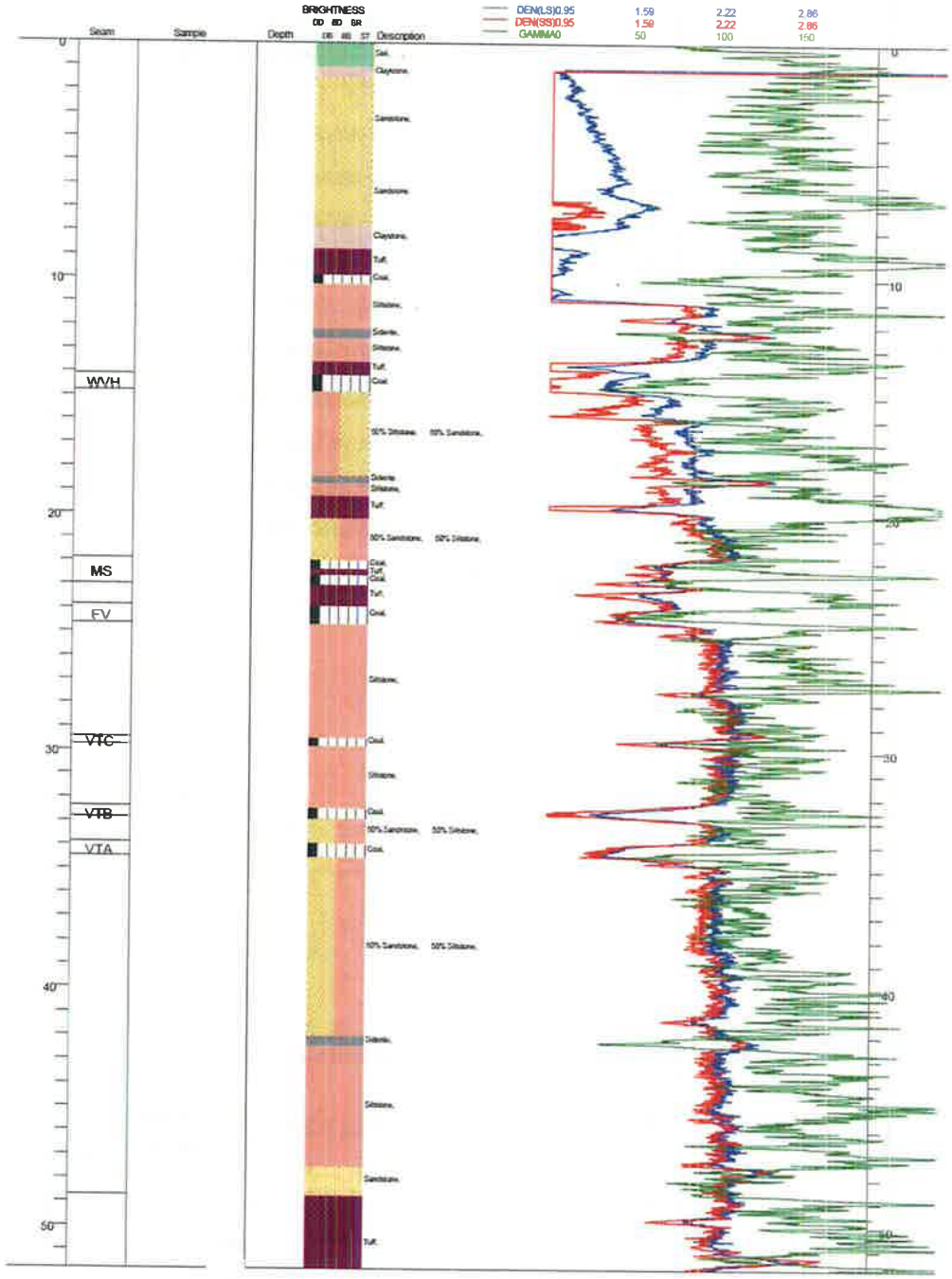
ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

PORE PRESSURE = $(F_0-F_1)C_P + (T_1-T_0)C_T$

APPENDIX D: Geophysical Profiles

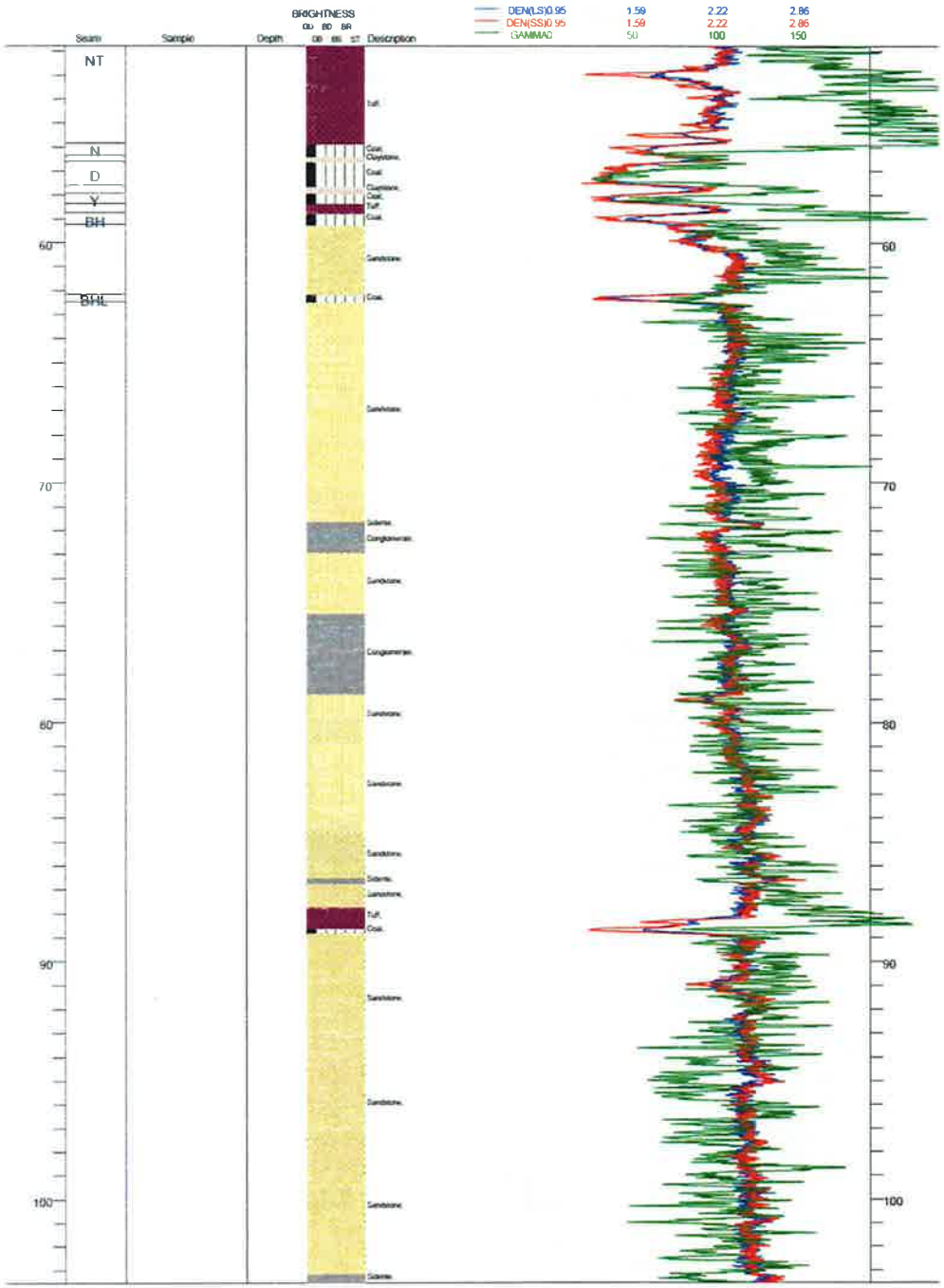
Peabody Energy
Wambo Mine Area
HOLE GW23

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 1 of 5



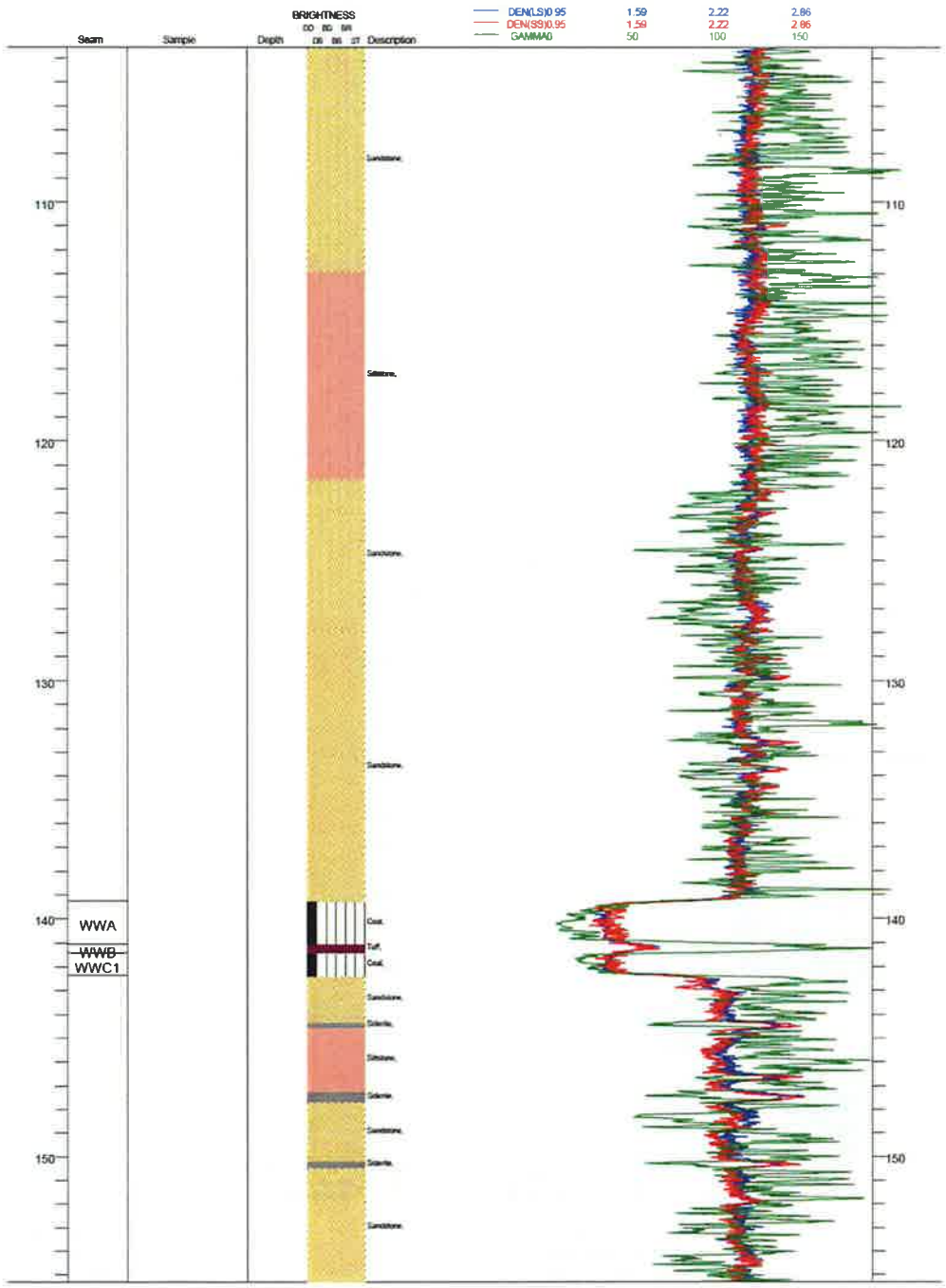
Peabody Energy
Wambo Mine Area
HOLE GW23

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 2 of 5



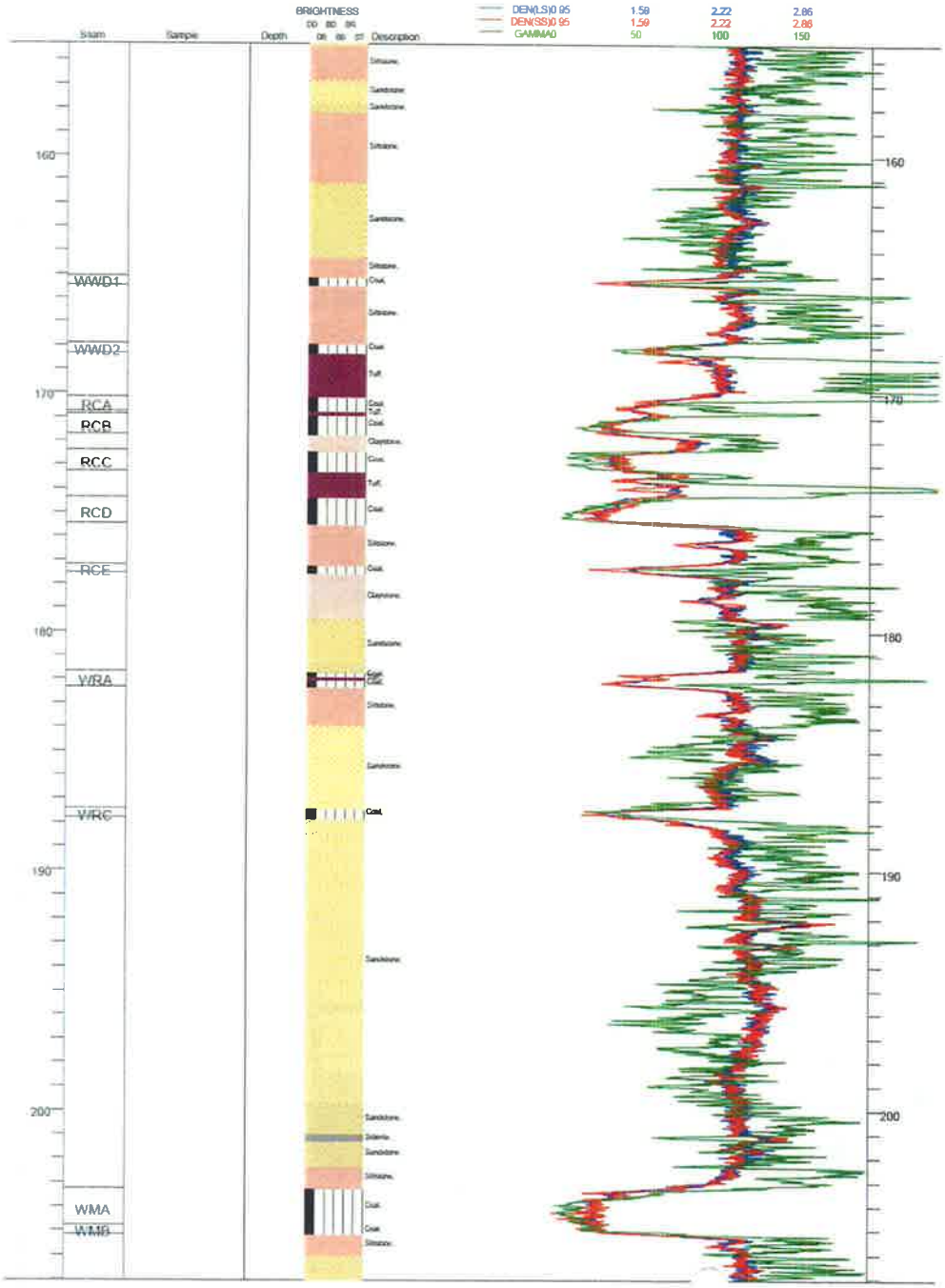
Peabody Energy
Wambo Mine Area
HOLE GW23

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 3 of 5



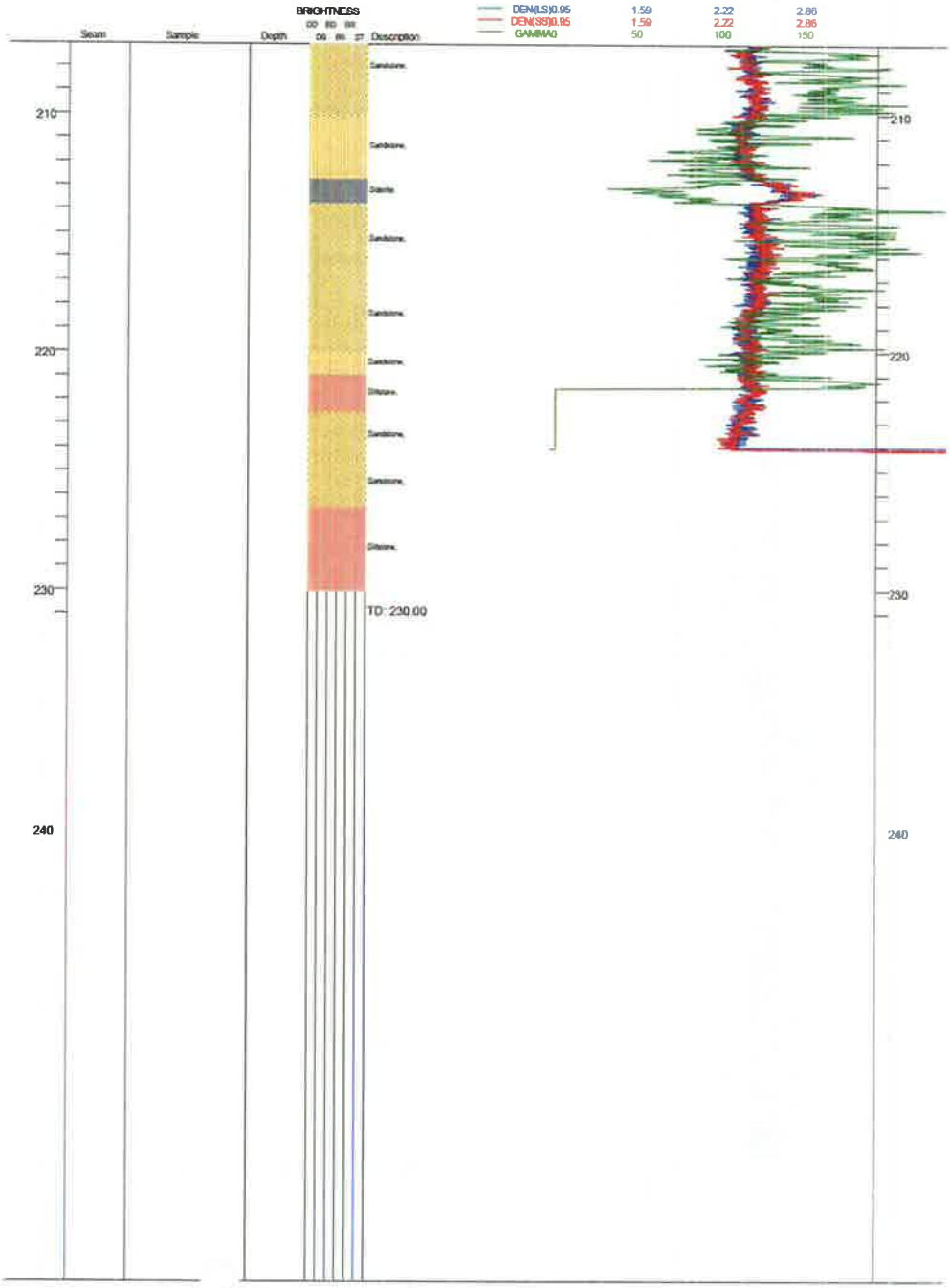
Peabody Energy
Wambo Mine Area
HOLE GW23

SCALE 1 200
GEOPHYSICAL PROFILE
PAGE 4 of 5



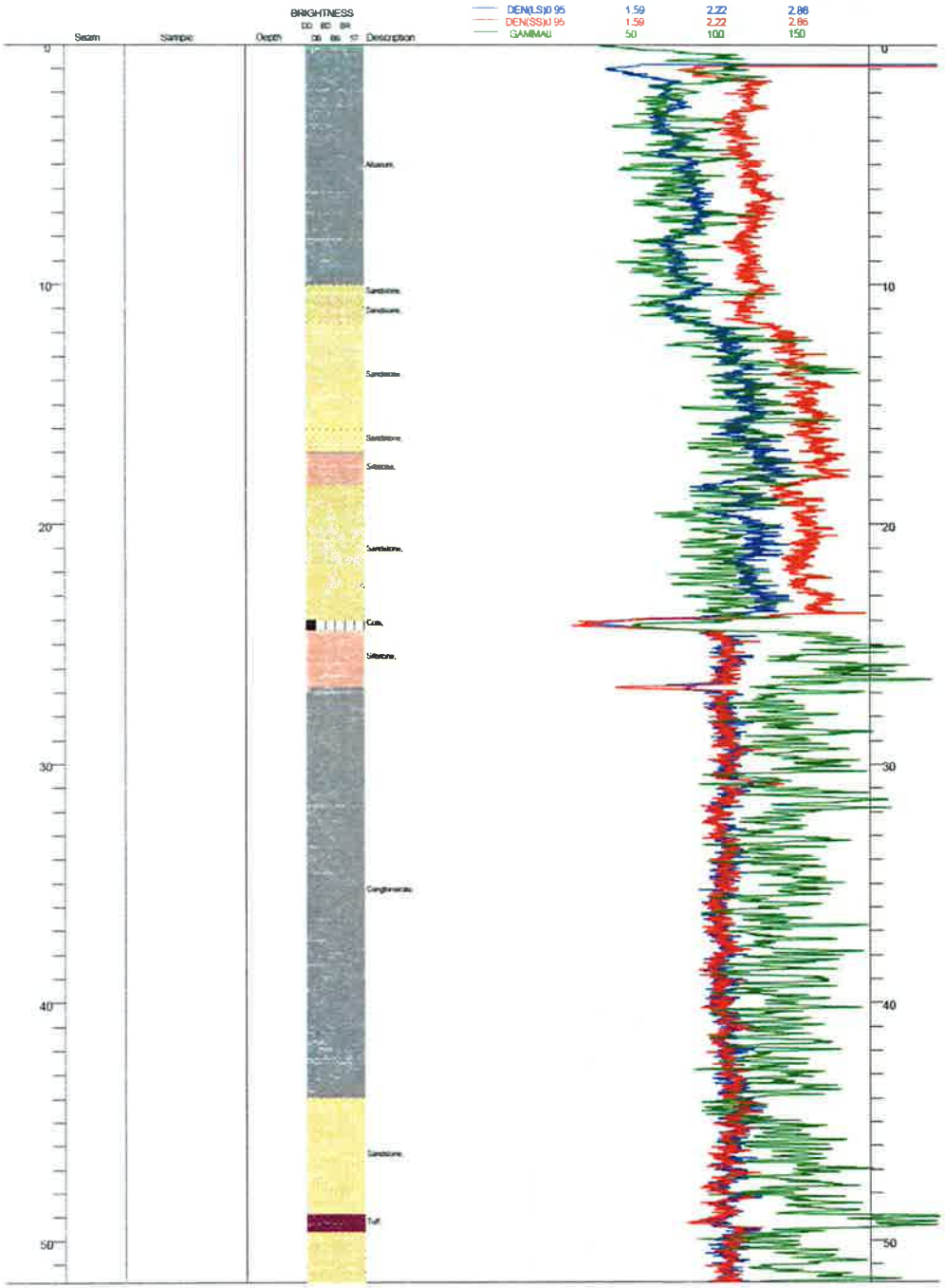
Peabody Energy
Wambo Mine Area
HOLE GW23

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 5 of 5



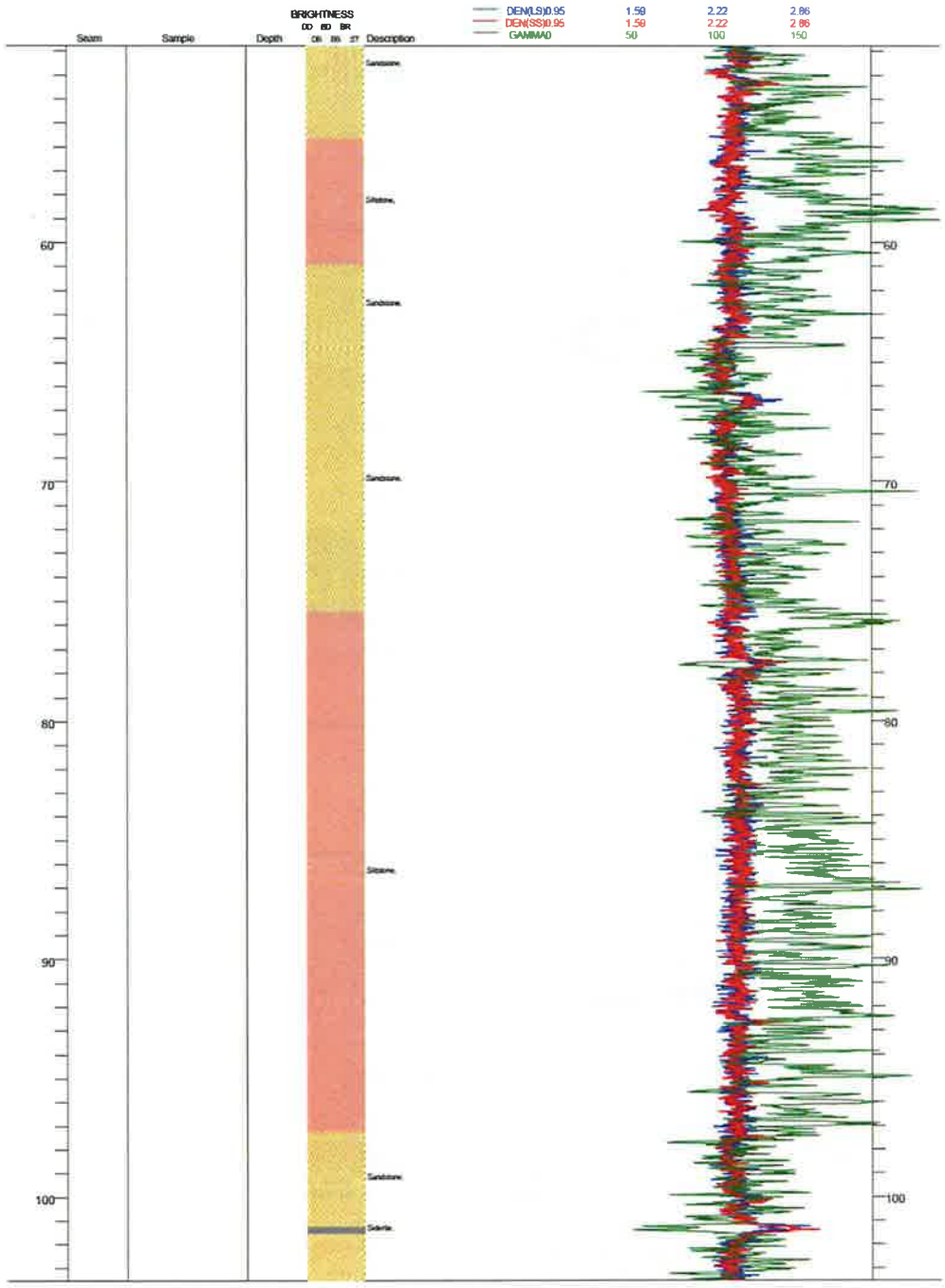
Peabody Energy
Wambo Mine Area
HOLE GW24

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 1 of 4



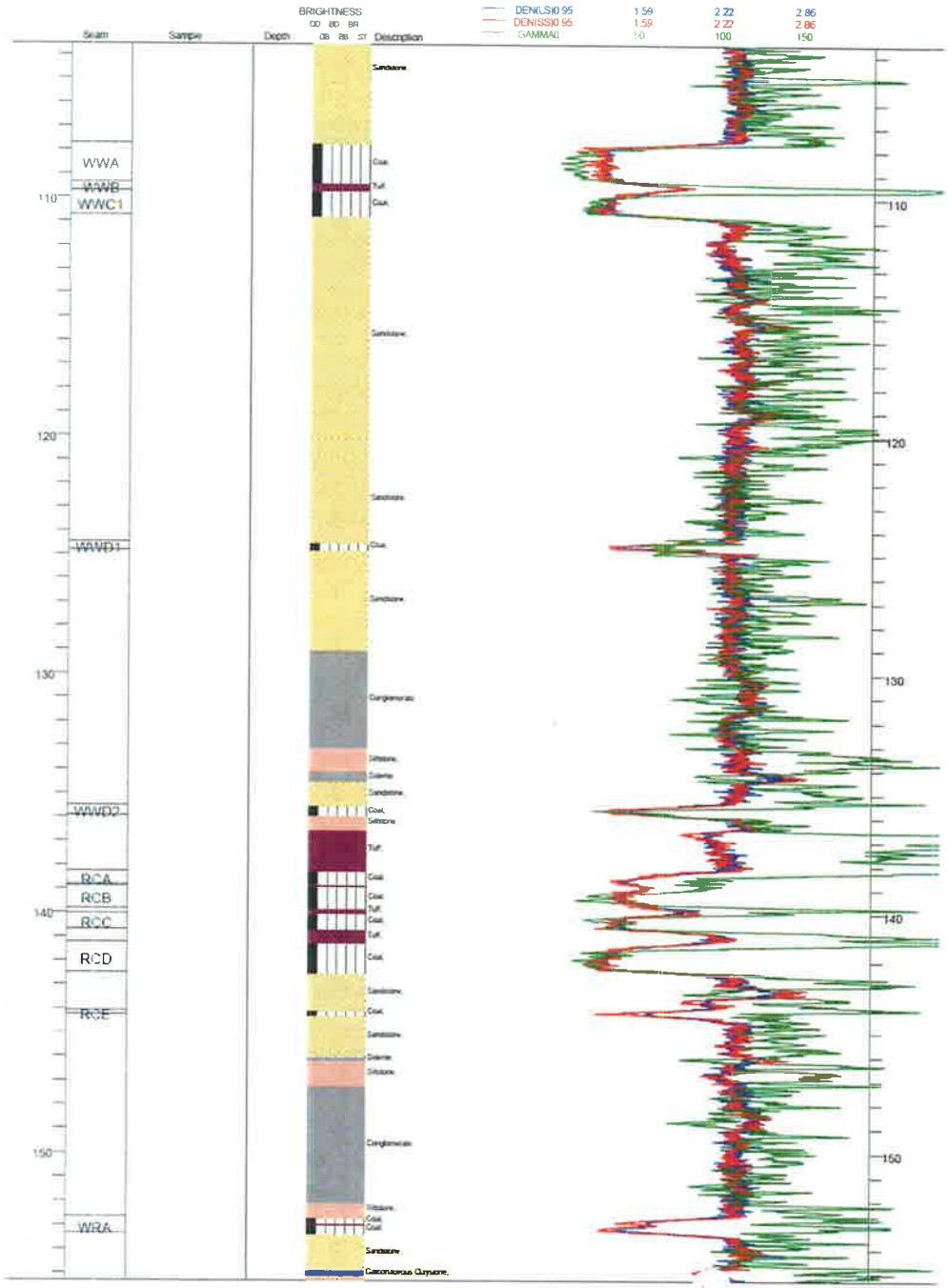
Peabody Energy
Wambo Mine Area
HOLE GW24

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 2 of 4



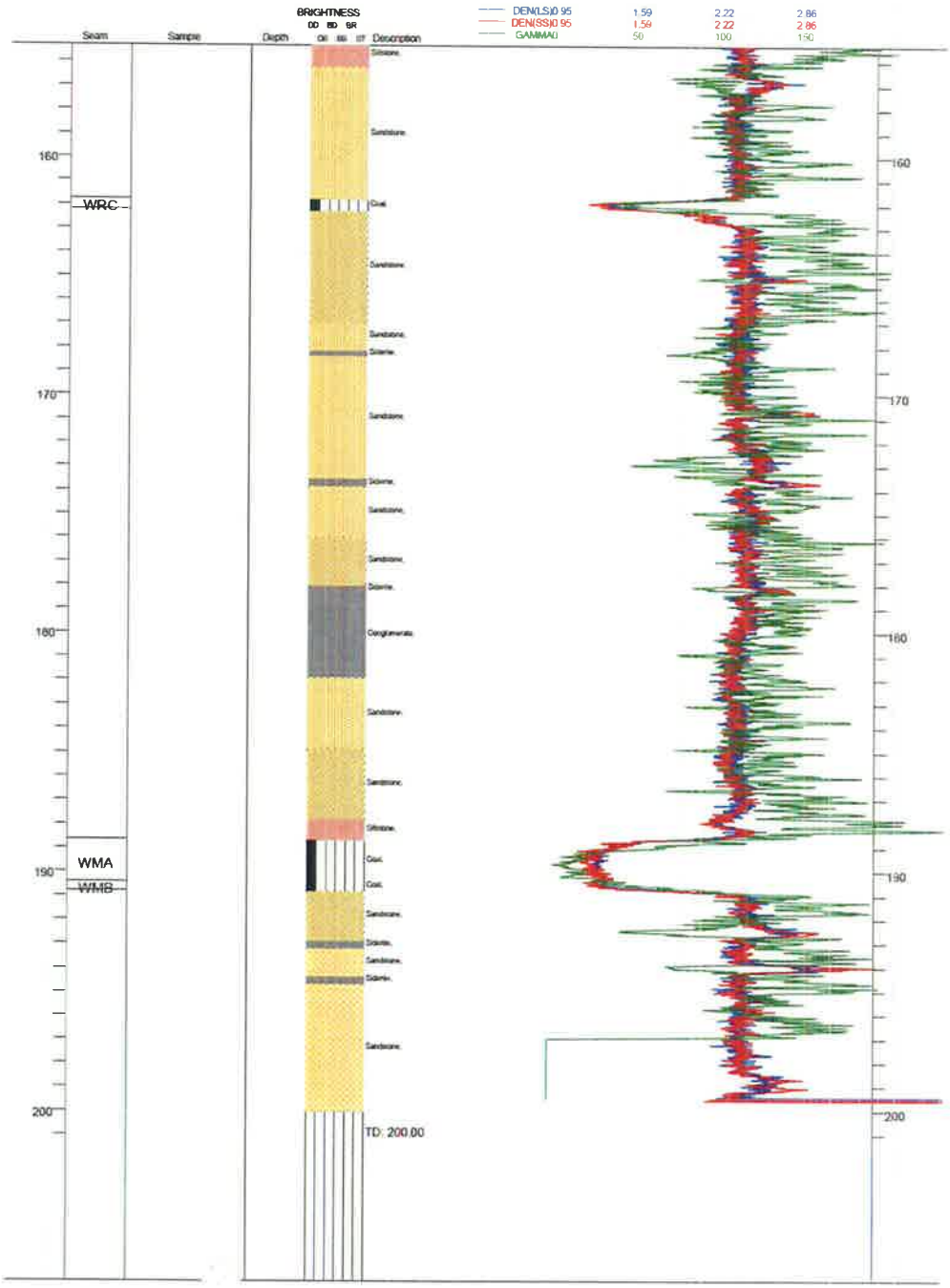
Peabody Energy
Wambo Mine Area
HOLE GW24

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 3 of 4



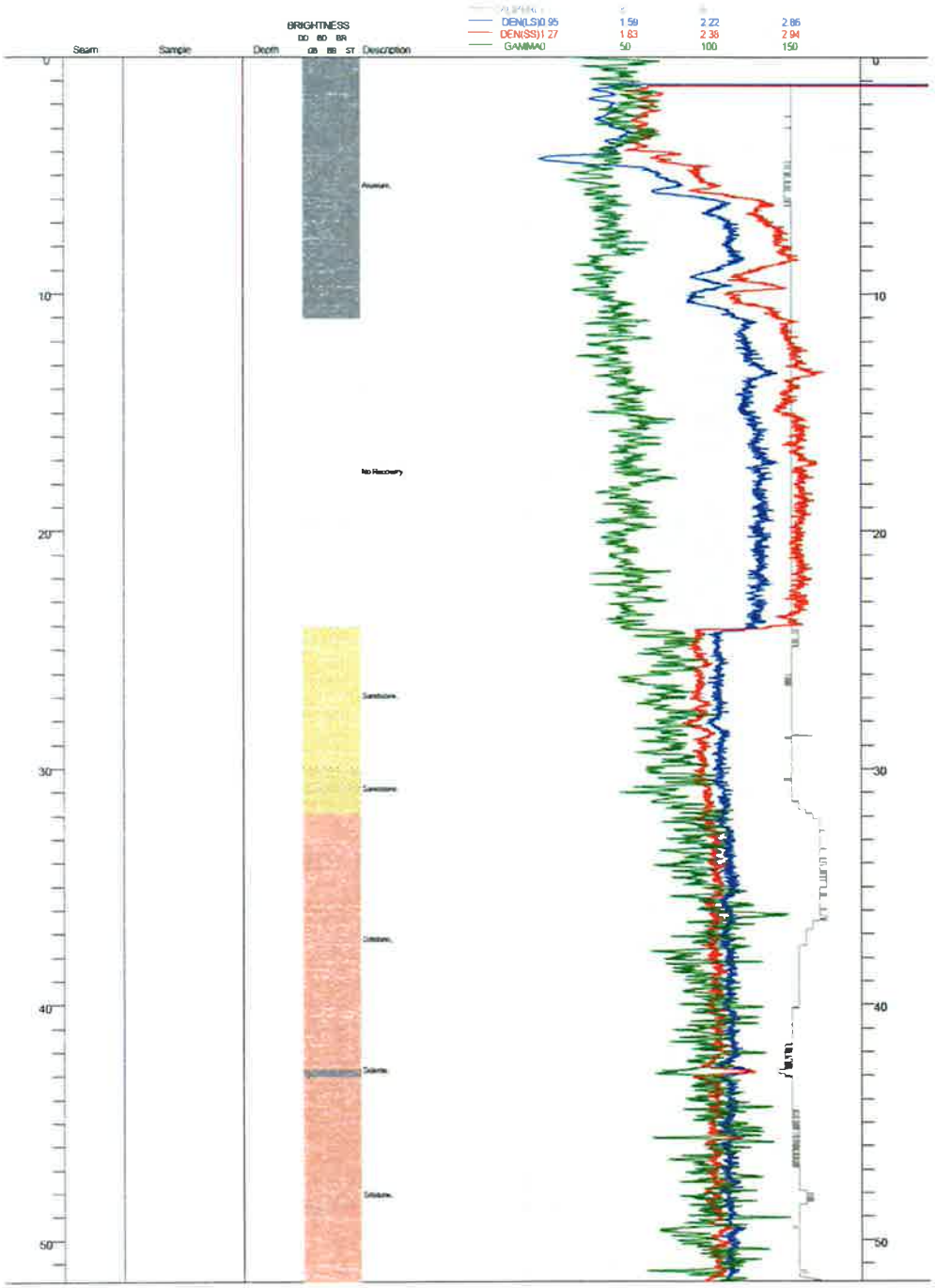
Peabody Energy
Wambo Mine Area
HOLE GW24

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 4 of 4



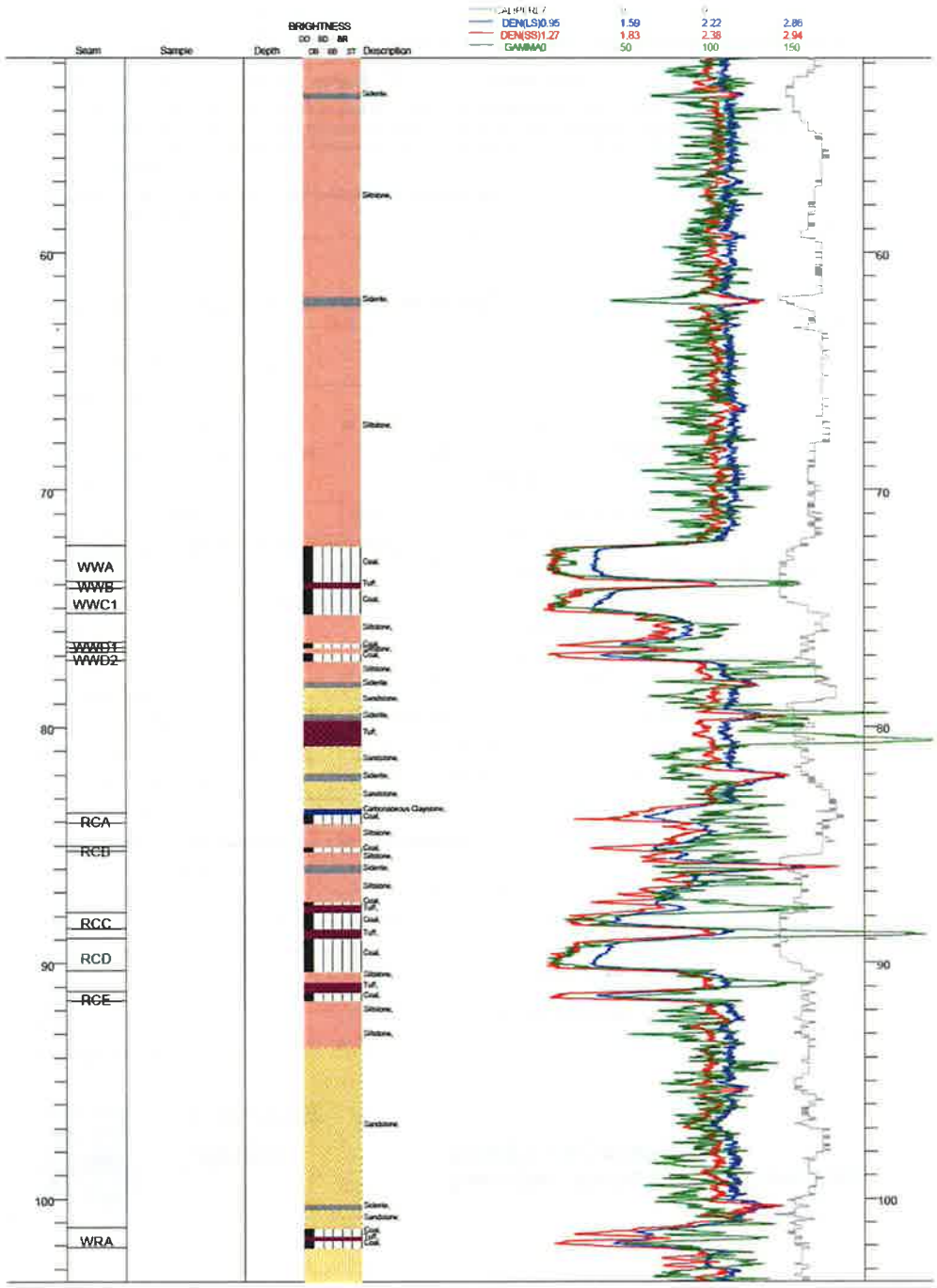
Peabody Energy
Wambo Mine Area
HOLE GW25

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 1 of 3



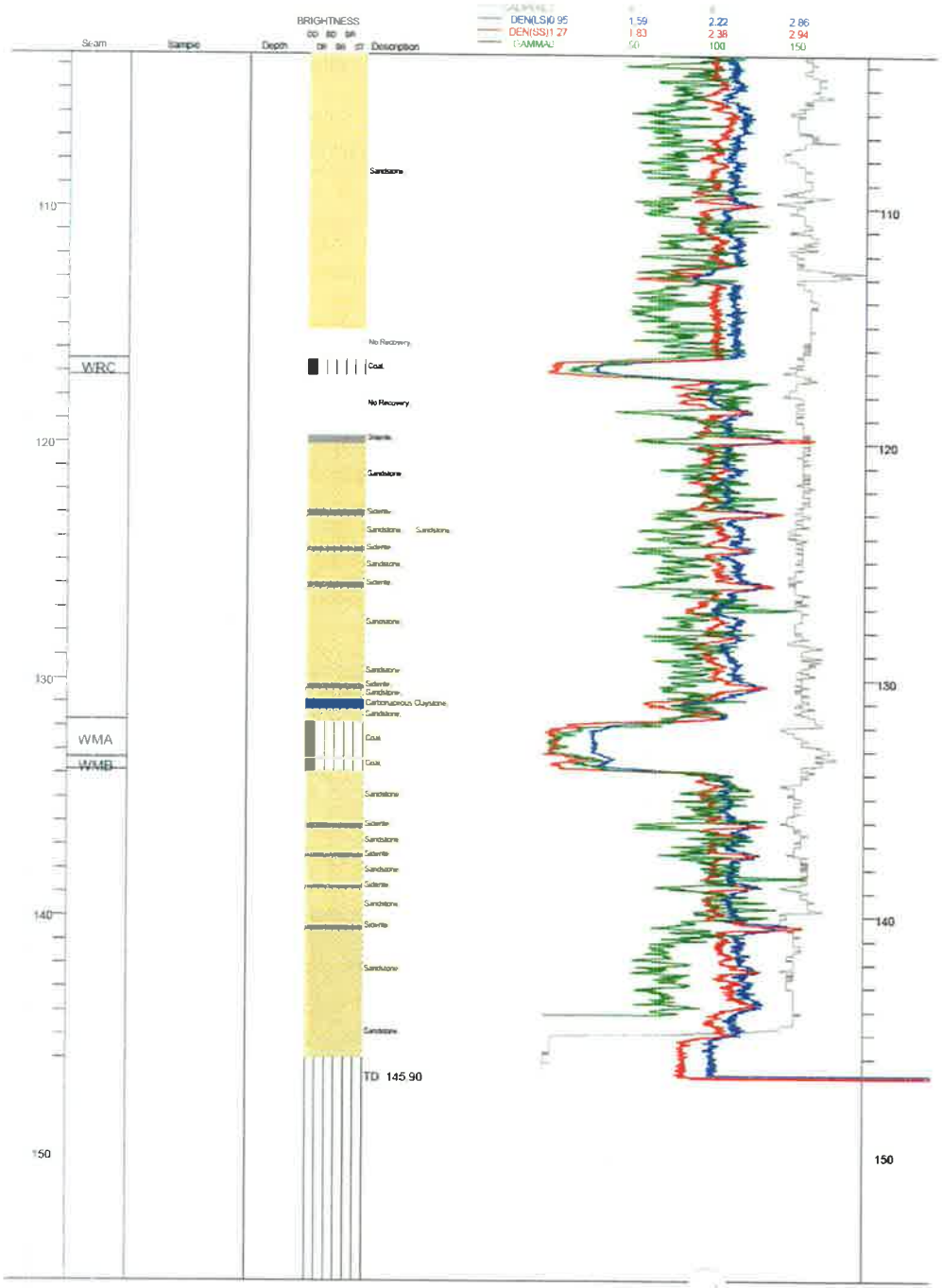
Peabody Energy
Wambo Mine Area
HOLE GW25

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 2 of 3



Peabody Energy
Wambo Mine Area
HOLE GW25

SCALE 1:200
GEOPHYSICAL PROFILE
PAGE 3 of 3



NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL172238*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

☐ Bore ☒ Well *(BH1F)* ☐ Other ☐ Replacement

Date Completed: *24 Jan 2014* Final Depth: *134* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *Variable* (m) Final Depth: *134* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *Variable* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material:
Outside Diameter: (mm) From _____ (m) to _____ (m)
Screen/Slots: (m) From (m) to (m)

Well/Other Works:
Construction Method: *N/A*
Liner Type: **Steel**
Diameter (m) *0.125* Length: (m) *134*

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

☐ Excavation ☐ Other ☐ Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: ☐ Yes ☐ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *2* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

Scientific and Technical Operating Procedures
Form: AG Issue: 1 28-Oct-2009

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL172238***

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore ***(BH1G)*** [ ] Well [ ] Other [ ] Replacement

Date Completed: ***21 Jan 2014*** Final Depth: ***136*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***Variable*** (m) Final Depth: ***136*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***Variable*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material: ***PVC***	Construction Method:
Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)	Liner Type:
Screen/Slots: ***6*** (m) From ***129*** (m) to ***135*** (m)	Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***2*** **DP:** ***110084*** **COUNTY:** ***Whybrow*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL172238***

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[ ] Bore [X] Well ***(BH4C)*** [ ] Other [ ] Replacement

Date Completed: ***31 Aug 2011*** Final Depth: ***155*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***Variable*** (m) Final Depth: ***155*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***Variable*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material:	Construction Method: ***N/A***
Outside Diameter: (mm) From _____ (m) to _____ (m)	Liner Type: **Steel**
Screen/Slots: (m) From (m) to (m)	Diameter (m) ***0.45*** Length: (m) ***155***

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***2*** **DP:** ***110084*** **COUNTY:** ***Whybrow*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL172238*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[ ] Bore [X] Well *(Bore 1)* [ ] Other [ ] Replacement

Date Completed: *N/A* Final Depth: *150* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *Variable* (m) Final Depth: *150* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *Variable* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material:

Outside Diameter: (mm) From _____ (m) to _____ (m)

Screen/Slots: (m) From (m) to (m)

Well/Other Works:

Construction Method:

Liner Type: *Steel*

Diameter (m) *0.305* Length: (m) *150*

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *2* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL172238*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(Bore 4D)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *8 Aug 2014* Final Depth: *141* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *Variable* (m) Final Depth: *141* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *Variable* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material:

Outside Diameter: (mm) From _____ (m) to _____ (m)

Screen/Slots: (m) From (m) to (m)

Well/Other Works:

Construction Method:

Liner Type: *Steel/PVC*

Diameter (m) *0.1/0.05* Length: (m) *65 (141-76)/76 (76-0)*

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *2* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL173291, 20BL172237***

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[ ] Bore [X] Well ***(DW4B)*** [ ] Other [ ] Replacement

Date Completed: ***21 Jan 2013*** Final Depth: ***230*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***Variable*** (m) Final Depth: ***230*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***Variable*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material:	Construction Method: ***N/A***
Outside Diameter: (mm) From _____ (m) to _____ (m)	Liner Type: **PVC**
Screen/Slots: (m) From (m) to (m)	Diameter (m) ***0.1*** Length: (m) ***230***

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***83*** **DP:** ***548749*** **COUNTY:** ***Lemington/Warkworth/Whybrow*** **PARISH:** ***Hunter/Northumberland***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL173292***

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[ ] Bore [X] Well ***(GW08)*** [ ] Other [ ] Replacement

Date Completed: ***N/A*** Final Depth: ***7.44*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***5.82*** (m) Final Depth: ***7.44*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***1,095*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material:	Construction Method: ***N/A***
Outside Diameter: (mm) From _____ (m) to _____ (m)	Liner Type: ***Concrete***
Screen/Slots: (m) From (m) to (m)	Diameter (m) ***1.5*** Length: (m) ***N/A***

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***82*** **DP:** ***548749*** **COUNTY:** ***Lemington*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL173292*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[ ] Bore [X] Well *(GW09)* [ ] Other [ ] Replacement

Date Completed: *N/A* Final Depth: *7.07* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *6.84* (m) Final Depth: *7.07* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *835* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material:
Outside Diameter: (mm) From _____ (m) to _____ (m)
Screen/Slots: (m) From (m) to (m)

Well/Other Works:
Construction Method: *N/A*
Liner Type: *Concrete*
Diameter (m) *1.04* Length: (m) *N/A*

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *82* **DP:** *548749* **COUNTY:** *Lemington* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL172238*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW12)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *N/A* Final Depth: *12.89* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *Dry* (m) Final Depth: *12.89* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *N/A (Dry)* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material: *PVC*
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)
Screen/Slots: *6* (m) From *5.89* (m) to *11.89* (m)

Well/Other Works:
Construction Method:
Liner Type:
Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *2* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL172257*

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW13)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *N/A* Final Depth: *N/A* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *N/A* (m) Final Depth: *N/A* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *N/A* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material: *N/A*
Outside Diameter: *N/A* (mm) From _____ (m) to _____ (m)
Screen/Slots: *N/A* (m) From (m) to (m)

Well/Other Works:
Construction Method:
Liner Type:
Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *1* **DP:** *1089682* **COUNTY:** *Warkworth* **PARISH:** *Northumberland*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL173291, 20BL172237*

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW14)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *N/A* Final Depth: *9.48* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *Dry* (m) Final Depth: *9.48* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *N/A (Dry)* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material: *PVC*
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)
Screen/Slots: *6* (m) From *2.48* (m) to *8.48* (m)

Well/Other Works:
Construction Method:
Liner Type:
Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *83* **DP:** *548749* **COUNTY:** *Warkworth* **PARISH:** *Northumberland*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL172240***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW15)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***N/A*** Final Depth: ***17.3*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***9.92*** (m) Final Depth: ***17.3*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***420*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: ***PVC***

Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)

Screen/Slots: ***6*** (m) From ***10.3*** (m) to ***16.3*** (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: ☐ Yes ☐ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***23*** **DP:** ***3030*** **COUNTY:** ***Warkworth*** **PARISH:** ***Northumberland***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL166438, 20BL172242***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW16)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***N/A*** Final Depth: ***12.91*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***7.5*** (m) Final Depth: ***12.91*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***366*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: ***PVC***

Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)

Screen/Slots: ***6*** (m) From ***5.91*** (m) to ***11.91*** (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: ☐ Yes ☐ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***A*** **DP:** ***33149*** **COUNTY:** ***Wambo*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL166438, 20BL172242***

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW17)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *N/A* Final Depth: *14.81* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *10.84* (m) Final Depth: *14.81* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *3,145* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material: *PVC*	Construction Method:
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)	Liner Type:
Screen/Slots: *6* (m) From *7.81* (m) to *13.81* (m)	Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *A* **DP:** *33149* **COUNTY:** *Wambo* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL173291, 20BL172237***

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW18)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *N/A* Final Depth: *11.93* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *Dry* (m) Final Depth: *11.93* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *N/A (Dry)* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material: *PVC*	Construction Method:
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)	Liner Type:
Screen/Slots: *6* (m) From *4.93* (m) to *10.93* (m)	Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *83* **DP:** *548749* **COUNTY:** *Lemington* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL172256***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW19)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***N/A*** Final Depth: ***11.02*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***Dry*** (m) Final Depth: ***11.02*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***N/A (Dry)*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material: ***PVC***
Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)
Screen/Slots: ***6*** (m) From ***4.02*** (m) to ***10.02*** (m)

Well/Other Works:
Construction Method:
Liner Type:
Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***C*** **DP:** ***33149*** **COUNTY:** ***Lemington*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL173291, 20BL172237***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW21)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***N/A*** Final Depth: ***36.71*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***36.56*** (m) Final Depth: ***36.71*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***N/A*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material: ***PVC***
Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)
Screen/Slots: ***6*** (m) From ***29.71*** (m) to ***35.71*** (m)

Well/Other Works:
Construction Method:
Liner Type:
Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***83*** **DP:** ***548749*** **COUNTY:** ***Lemington/Wambo*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL172255*

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(GW22)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *6 Jul 2015* Final Depth: *54.91* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *35.81* (m) Final Depth: *54.91* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *4,184* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material: *PVC*	Construction Method:
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)	Liner Type:
Screen/Slots: *6* (m) From *47.91* (m) to *53.91* (m)	Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *6* **DP:** *732501* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL168880*

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P3)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *2 Feb 1998* Final Depth: *141* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *N/A* (m) Final Depth: *141* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *N/A* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material: *PVC*	Construction Method:
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)	Liner Type:
Screen/Slots: *6* (m) From *134* (m) to *140* (m)	Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *2* **DP:** *616303* **COUNTY:** *Lemington* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL168882***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P16)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***25 Jun 2003*** Final Depth: ***11.05*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***7.32*** (m) Final Depth: ***11.05*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***5,091*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: ***PVC***

Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)

Screen/Slots: ***6*** (m) From ***4.05*** (m) to ***10.05*** (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***45*** **DP:** ***753792*** **COUNTY:** ***Lemington*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***N/A***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P20)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***25 Jun 2003*** Final Depth: ***10.6*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***N/A*** (m) Final Depth: ***10.6*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***N/A*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: ***N/A***

Outside Diameter: ***N/A*** (mm) From _____ (m) to _____ (m)

Screen/Slots: ***N/A*** (m) From (m) to (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***5*** **DP:** ***542226*** **COUNTY:** ***Lemington*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL168997, 20BL168998, 20BL168999, 20BL173293*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P106)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *4 Sept 1998* Final Depth: *9.94* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *8.61* (m) Final Depth: *9.94* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *424* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: *PVC*

Outside Diameter: *50* (mm) From _____ (m) to _____ (m)

Screen/Slots: *6* (m) From *2.94* (m) to *8.94* (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *1* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL168998, 20BL169000, 20BL173290*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P109)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *7 Sept 1998* Final Depth: *12.05* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *5.73* (m) Final Depth: *12.05* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *458* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: *PVC*

Outside Diameter: *50* (mm) From _____ (m) to _____ (m)

Screen/Slots: *6* (m) From *5.05* (m) to *11.05* (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (If known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (If insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *2* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL168997, 20BL168998, 20BL168999, 20BL173293*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P114)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *9 Sept 1998* Final Depth: *11.18* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *9.35* (m) Final Depth: *11.18* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *6,605* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: *PVC*

Outside Diameter: *50* (mm) From _____ (m) to _____ (m)

Screen/Slots: *6* (m) From *4.8* (m) to *10.8* (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *1* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL168997, 20BL168998, 20BL168999, 20BL173293*

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P116)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *10 Sept 1998* Final Depth: *9.21* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *5.19* (m) Final Depth: *9.21* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *399* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: *PVC*

Outside Diameter: *50* (mm) From _____ (m) to _____ (m)

Screen/Slots: *6* (m) From *2.21* (m) to *8.21* (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *1* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL168997, 20BL168998, 20BL168999, 20BL173293*

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P202)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *23 Sept 1998* Final Depth: *21.02* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *7.97* (m) Final Depth: *21.02* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *2,863* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material: *PVC*
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)
Screen/Slots: *6* (m) From *14.02* (m) to *20.02* (m)

Well/Other Works:
Construction Method:
Liner Type:
Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: ☐ Yes ☐ No
If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *1* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: *20BL168997, 20BL168998, 20BL168999, 20BL173293*

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P203)* [ ] Well [ ] Other [ ] Replacement

Date Completed: *16 Sep 1998* Final Depth: *16.02* (m) Present Use: *Monitoring*

Standing Water Level (SWL): *7.3* (m) Final Depth: *16.02* (m) Drawdown Level (DDL): *N/A* (m)

Final Salinity: *3,567* (mg/L) Or Taste: *N/A* Yield: *N/A* Litres/second (L/s)

OTHER DETAILS (if known)

Bore:
Casing Material: *PVC*
Outside Diameter: *50* (mm) From _____ (m) to _____ (m)
Screen/Slots: *6* (m) From *9.02* (m) to *15.02* (m)

Well/Other Works:
Construction Method:
Liner Type:
Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: ☐ Yes ☐ No
If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: *1* **DP:** *110084* **COUNTY:** *Whybrow* **PARISH:** *Hunter*

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL168997, 20BL168998, 20BL168999, 20BL173293***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P206)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***16 Sep 1998*** Final Depth: ***50.72*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***16.11*** (m) Final Depth: ***50.72*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***1,233*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: ***PVC***

Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)

Screen/Slots: ***6*** (m) From ***43.72*** (m) to ***49.72*** (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: ☐ Yes ☐ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***1*** **DP:** ***110084*** **COUNTY:** ***Whybrow*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL143779, 20BL168998, 20BL169000, 20BL173290***

2. DRILLER

Licence No:

Name:

Contractor:

Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore *(P301)* [ ] Well [ ] Other [ ] Replacement

Date Completed: ***15 Sept 1998*** Final Depth: ***20.44*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***14.71*** (m) Final Depth: ***20.44*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***3,195*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:

Casing Material: ***PVC***

Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)

Screen/Slots: ***6*** (m) From ***13.44*** (m) to ***19.44*** (m)

Well/Other Works:

Construction Method:

Liner Type:

Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: ☐ Yes ☐ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***2*** **DP:** ***110084*** **COUNTY:** ***Whybrow*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....

NSW GOVERNMENT | Office of Water

Summary Particulars of Completed BORE / EXCAVATION

1. NAME OF LICENSEE

Wambo Coal Pty Ltd	Licence No: ***20BL168998, 20BL169000, 20BL173290***

2. DRILLER

Licence No:
Name:
Contractor:
Drilling / Construction Method

3. MAIN SUMMARY – Complete Section 3 if for BORE, WELL, SPEAR, etc

[X] Bore ***(P315)*** [ ] Well [ ] Other [ ] Replacement

Date Completed: ***14 Dec 1999*** Final Depth: ***9.48*** (m) Present Use: ***Monitoring***

Standing Water Level (SWL): ***7.3*** (m) Final Depth: ***9.48*** (m) Drawdown Level (DDL): ***N/A*** (m)

Final Salinity: ***231*** (mg/L) Or Taste: ***N/A*** Yield: ***N/A*** Litres/second (L/s)

OTHER DETAILS (if known)

Bore:	**Well/Other Works:**
Casing Material: ***PVC***	Construction Method:
Outside Diameter: ***50*** (mm) From _____ (m) to _____ (m)	Liner Type:
Screen/Slots: ***6*** (m) From ***2.48*** (m) to ***8.48*** (m)	Diameter (m) Length: (m)

4. MAIN SUMMARY – Complete Section 4 if for EXCAVATION

[ ] Excavation [ ] Other [ ] Existing Works, eg Spring

Date Completed: Present Use:

Dimensions: (Depth x Length x Width in m) (D) x (L) x (W) Drawdown Level (DDL): (m)

Final Salinity: (mg/L) Or Taste: Yield: Litres/second (L/s)

OTHER DETAILS (if known)

Casing Material Used: □ Yes □ No

If yes, what type, size etc:

5. OTHER COMMENTS (if insufficient space, please attach a separate page)

6. FURTHER INFORMATION

Please attach copies of any water analyses, pumping tests, or driller's logs

7. LOCATION DETAILS

Bore – Please provide a **Plan to Scale** showing location of bore site with respect to lot boundaries, or sketch with distance in metres from lot boundaries. Even if sketch has already been supplied with licence application, please **confirm** actual bore site on this sketch.
Excavation - Please attach a map showing the location of the excavation with respect to lot boundaries.

8. LOT: ***2*** **DP:** ***110084*** **COUNTY:** ***Whybrow*** **PARISH:** ***Hunter***

SIGNATURE OF LICENSEE: ..... **DATE:** .....