# WAMBO COAL
# SURFACE AND GROUND WATER RESPONSE PLAN

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## Document Control

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## Revisions

| Rev No | Date | Description | By | Checked | Signature |
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| 1 | October 2005 | Revision 1 | RS | JT | |
| 2 | November 2007 | Revision 2 | RS | JT | |
| 3 | March 2008 | Revision 3 | WCPL | JT | |
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| 5 | February 2012 | Revision 5 | WCPL | SB | |
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| 7 | April 2015 | Revision 7 | WCPL | TF | |
| 8 | September 2015 | New management plan format and revision | WCPL/Palaris | SP |  |
| 9 | October 2015 | Revised following receipt of comments from DP&E on Rev 8 | WCPL/Palaris | SP |  |

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# 1.0 Introduction

## 1.1 Background

The Wambo Coal Mine (the Mine) is situated approximately 15 kilometres west of Singleton, near the village of Warkworth, New South Wales (**Figure 1**). Wambo is owned and operated by Wambo Coal Pty Limited (WCPL), a subsidiary of Peabody Energy Australia Pty Limited.

A range of open cut and underground mine operations have been conducted at WCPL since mining operations commenced in 1969. Mining under the current Development Consent (DA 305-7-2003) commenced in 2004 and permits both open cut, underground operations and associated activities to be conducted.

The approved run-of-mine (ROM) coal production rate is 14.7 million tonnes per annum and all product coal is transported from WCPL by rail. A summary of the approved Wambo Coal Mine is provided in **Table 1**.

**Table 1: Summary of the Approved Wambo Coal Mine**

| Component | Approved Wambo Coal Mine[1] |
|---|---|
| Life of Mine | 21 years (from the date of the commencement of Development Consent [DA305-7-2003]). 1st March 2025 |
| Open Cut Mining | Open cut mining at a rate of up to 8 Mtpa of ROM coal from the Whybrow, Redbank Creek, Wambo and Whynot Seams |
| | An estimated total open cut ROM coal reserve of 98 Mt |
| | Open cut mining operations under current approved MOP |
| Underground Mining | Underground mining of up to 7.5 Mtpa of ROM coal from the Whybrow, Wambo, Arrowfield and Bowfield Seams.<br>Underground ROM coal reserves are estimated at 109.3 Mt. |
| Subsidence commitments and management. | The subsidence performance measures listed in Conditions 22 and 22A of the Development Consent (DA305-7-2003). |
| ROM Coal Production Rate | Up to 14.7 Mtpa of ROM coal |
| Total ROM Coal Mined | 207.3 Mt |
| Waste Rock Management | Waste rock deposited in open cut voids and in waste rock emplacements adjacent open cut operations |
| Total Waste Rock | 640 million bank cubic metres (Mbcm) |
| Coal Washing | Coal handling and preparation plant (CHPP) capable of processing approximately 1,800 tonnes per hour (tph) |
| Product Coal | Production of up to 11.3 Mtpa of thermal coal predominantly for export |
| CHPP Reject Management | Coarse rejects and tailings would be incorporated, encapsulated and/or capped within open cut voids in accordance with existing Wambo management practices |
| Total CHPP Rejects | Approximately 28.2 Mt of coarse rejects and approximately 18.6 Mt of tailings |
| Water Supply | Make-up water demand to be met from runoff recovered from tailings storage areas, operational areas, dewatering, licensed extraction from Wollombi Brook and Hunter River |
| Mining Tenements | Coal Lease (CL) 365, CL374, CL397, Consolidated Coal Lease (CCL) 743, Mining Lease (ML) 1402, ML1572, ML1594, Authorisation (A) 444, Exploration Licence (EL) 7211. |

**Note:** [1] Development Consent DA305-7-2003 (as modified April 2015)

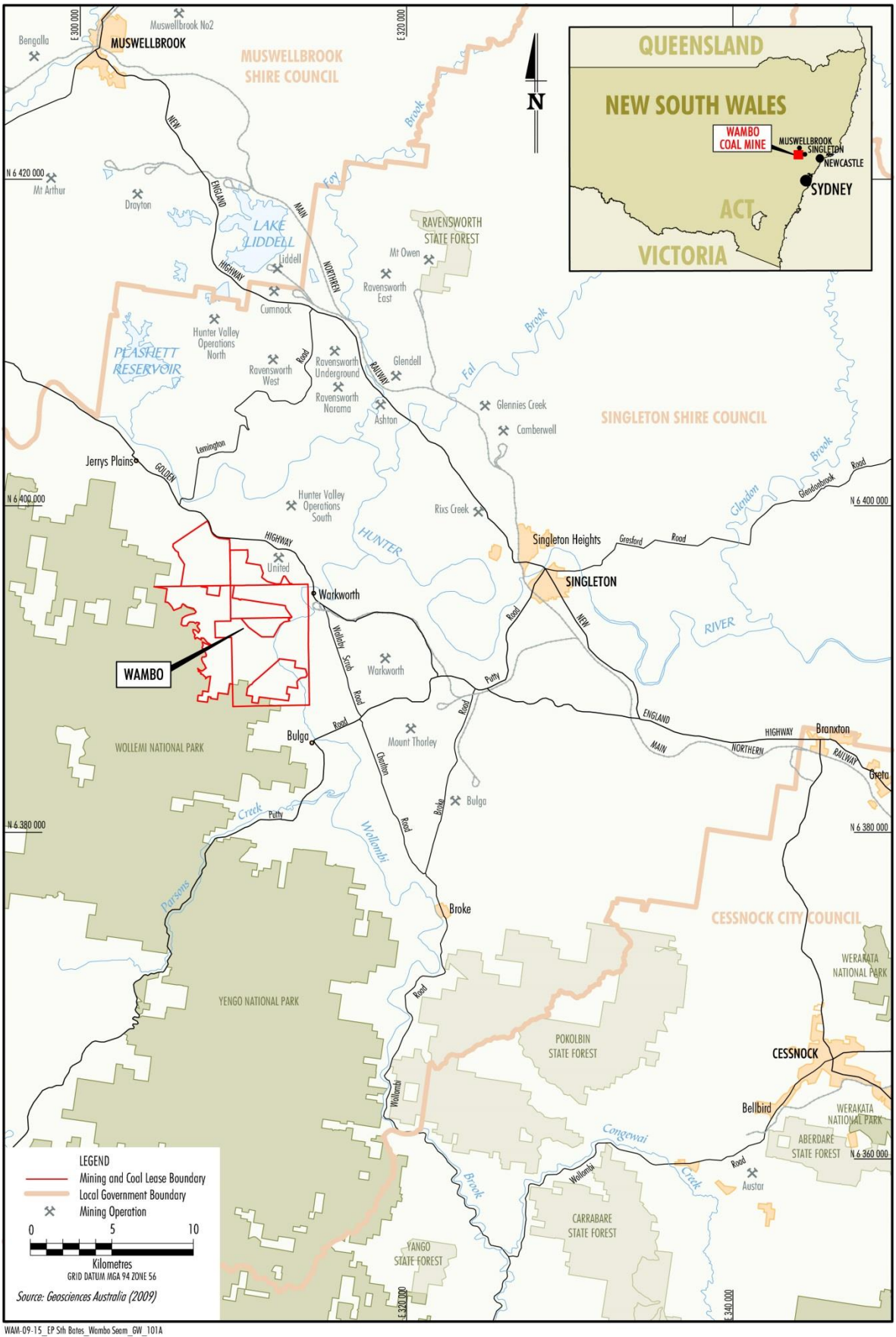



**Figure 1: Wambo Coal Regional Location**

In accordance with Schedule 4, Condition 30 of DA305-7-2003, WCPL are required to prepare a Site Water Management Plan (WMP). This Surface and Ground Water Response Plan (SGWRP) is a component of the WCPL Site Water Management Plan. **Figure 2** shows the components of the WCPL Site Water Management Plan. This SGWRP should be read in conjunction with the other components of the WCPL Site Water Management Plan.

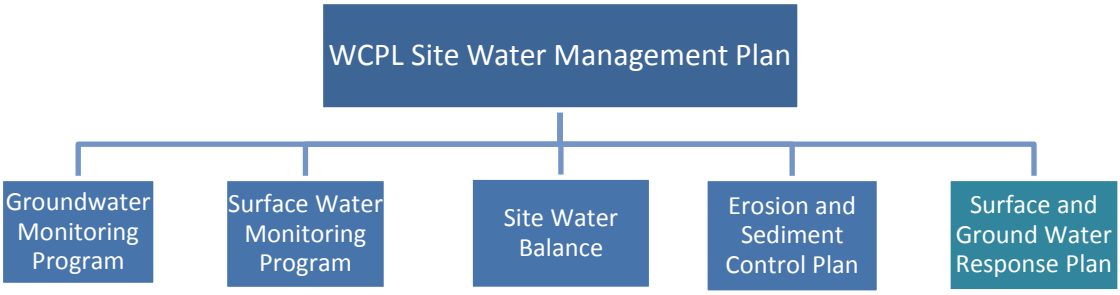



**Figure 2: WCPL Site Water Management Plan**

In accordance with WCPL's continuous improvement and review processes and Conditions 4 & 6, Schedule 6 of DA305-7-2003, a review of the SGWRP has been undertaken to ensure that surface and ground water impacts from the Mine are minimised, where possible, and that appropriate procedures are in place to respond to any unplanned impacts.

## 1.2 Purpose

This SGWRP has been developed to address the relevant requirements of relevant consent conditions and regulatory requirements. The SGWRP also addresses the relevant conditions of WCPL mining leases and Environmental Protection Licence (EPL). In accordance with Condition 35, Schedule 4 of DA305-7-2003, WCPL have prepared this SGWRP to provide:

- Measures to mitigate any adverse impacts on existing water supply bores or wells, including trigger levels for the provision of suitable compensatory water supplies (**Section 2.3**);
- Measures to mitigate the loss of surface water flows in the surface water streams or channel on the site (**Section 2.4**);
- Measures to mitigate the long term direct hydraulic connection between the backfilled open cut and the North Wambo Creek alluvium if the potential for any downstream adverse impact is detected (**Section 2.6**);
- Measures to address the decrease in through-flow rates caused by the development within the Wollombi Brook alluvium downstream of the open cut (**Section 2.4**);
- Measures to address any reduction in the stability or ecological quality of the North Wambo Creek Diversion below the established performance criteria (**Section 2.7**);
- Measures to minimise and/or offset potential groundwater leakage from Wollombi Brook and associated alluvial aquifers (**Section 2.8**);
- Measures to mitigate adverse impacts on groundwater dependent ecosystems or riparian vegetation and offset any impacts above the predicted impacts (**Section 2.9**);

- Trigger levels for the relinquishment of water extraction rights to compensate for surface and groundwater losses from streams, channels or alluvial to open cut and underground mining workings (**Section 2.11**);
- Procedures that would be followed if an unforseen impacts are detected during the development (**Section 2.12**); and
- Response times for undertaking the above measures.

## 1.3 Scope

This SGWRP applies to all surface and ground water monitoring/management activities undertaken within WCPL's mining authorisations and approved mining areas (**Figure 3**). This SGWRP outlines the response procedure that will be initiated if surface or ground water monitoring results exceed designated trigger levels. This SGWRP forms part of WCPL's Environmental Management System (EMS).

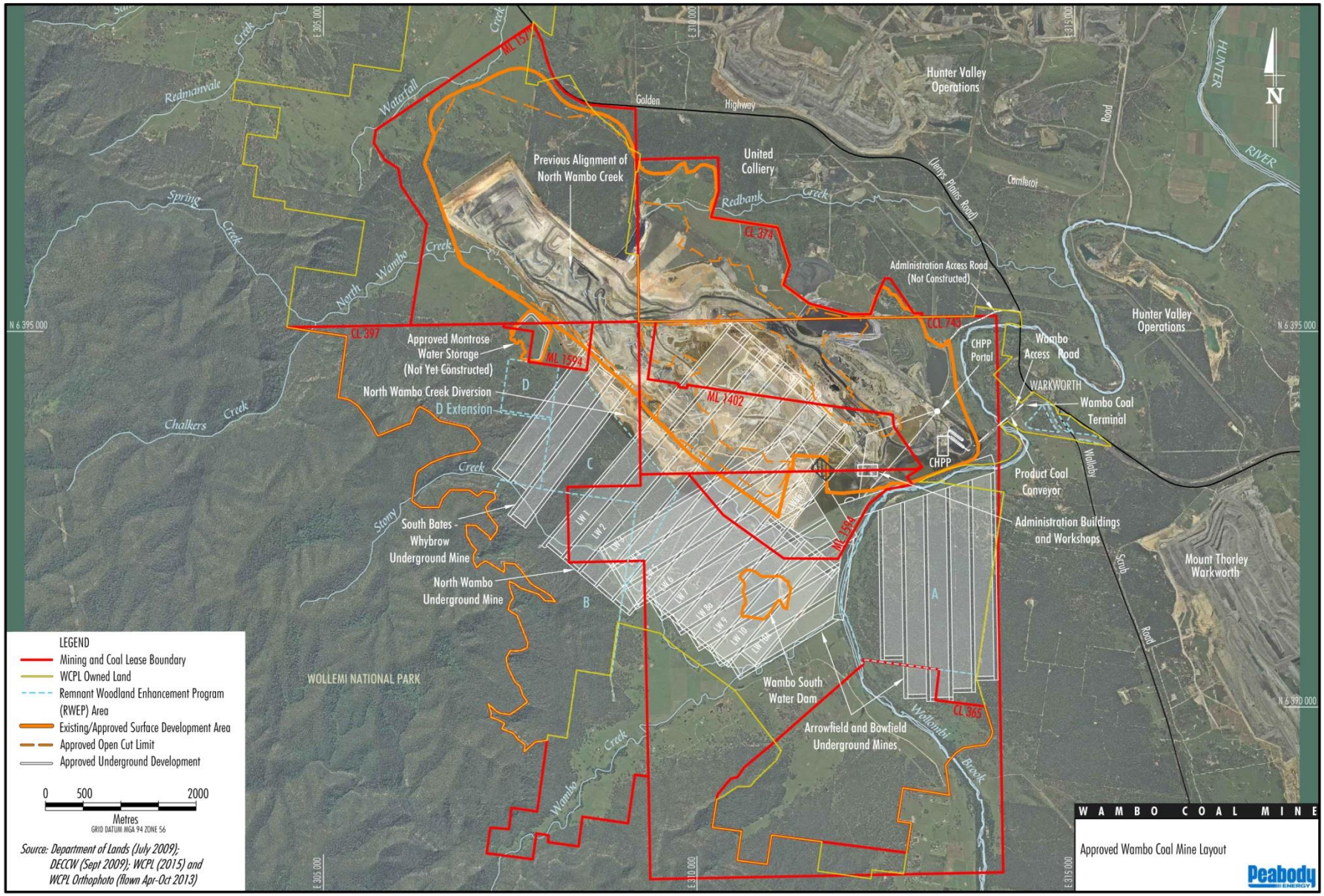



**Figure 3: Approved Wambo Coal Mine Layout**

## 1.4 Statutory Requirements

This SGWRP has been prepared to address the relevant Development Approval (DA) consent conditions within DA305-7-2003 (**Table 2**).

### 1.4.1 Environmental Planning & Assessment Act 1979

WCPL received Development Consent (DA305-7-2003) in accordance with the *Environmental Planning & Assessment Act 1979* (EP&A Act) from the NSW Department of Planning and Environment (DP&E), formerly NSW Department of Planning, on 4 February 2004. Conditions within DA305-7-2003 relevant to the SGWRP are summarised in **Table 2**.

**Table 2: DA305-7-2003 Requirements for the Surface and Ground Water Response Plan**

| Schedule | Condition | Requirements | SGWRP Section |
|---|---|---|---|
| 4 | 30 | Before carrying out any development, the Applicant shall prepare a Site Water Management Plan for the development in consultation with DRE and NOW, and to the satisfaction of the Secretary. This plan must include:<br>…<br>(g) a Surface and Ground Water Response Plan;<br>*By the end of October 2009, the Applicant shall revise the Site Water Management Plan in consultation with DII, DECCW, and NOW, and to the satisfaction of the Director-General.** | **This SGWRP** |
| 4 | 35 | The Surface and Ground Water Response Plan shall include: | |
| | | (a) measures to mitigate any adverse impacts on existing water supply bores or wells, including trigger levels for the provision of suitable compensatory water supplies; | **Section 2.3** |
| | | (b) measures to mitigate the loss of surface water flows in the surface water streams or channel on the site; | **Section 2.4** |
| | | (d) measures to mitigate the long term direct hydraulic connection between the backfilled open cut and the North Wambo Creek alluvium if the potential for any downstream adverse impact is detected; | **Section 2.6** |
| | | (e) measures to address the decrease in through-flow rates caused by the development within the Wollombi Brook alluvium downstream of the open cut; | **Section 2.4** |
| | | (f) measures to address any reduction in the stability or ecological quality of the North Wambo Creek Diversion below the established performance criteria; | **Section 2.7** |
| | | (g) measures to minimise and/or offset potential groundwater leakage from Wollombi Brook and associated alluvial aquifers; | **Section 2.8** |
| | | (h) measures to mitigate adverse impacts on groundwater dependent ecosystems or riparian vegetation and offset any impacts above the predicted impacts; | **Section 2.9** |
| | | (i) trigger levels for the relinquishment of water extraction rights to compensate for surface and groundwater losses from streams, channels or alluvial to open cut and underground mining | **Section 2.11** |

| Schedule | Condition | Requirements | SGWRP Section |
|---|---|---|---|
| | | workings;<br>(j) the procedures that would be followed if an unforseen impacts are detected during the development; and<br>(k) Response times for undertaking the above measures | **Section 2.12**<br>**Included in relevant sections** |
| 6 | 3 | **Adaptive Management**<br>The Applicant must assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 4.<br><br>Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.<br><br>Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:<br>(a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;<br>(b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and<br>(c) implement remediation measures as directed by the Secretary,<br>to the satisfaction of the Secretary. | **Section 2.1** |
| 6 | 4 | **Management Plan Requirements**<br>The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:<br>(a) detailed baseline data;<br>(b) a description of:<br>- the relevant statutory requirements (including any relevant consent, licence or lease conditions);<br>- any relevant limits or performance measures/criteria;<br>- the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;<br>(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/ criteria;<br>(d) a program to monitor and report on the:<br>- impacts and environmental performance of the Wambo Mining Complex;<br>- effectiveness of any management measures (see c above);<br>(e) a contingency plan to manage any unpredicted impacts and their consequences; | **N/A to SGWRP**<br>**Section 1.4**<br>**Refer SWMP & GWMP**<br>**Refer SWMP & GWMP**<br>**Section 2.0**<br>**Section 4.0**<br>**Section 2.12** |

| Schedule | Condition | Requirements | SGWRP Section |
|---|---|---|---|
| | | (f) a program to investigate and implement ways to improve the environmental performance of the Wambo Mining Complex over time; | **Section 4.2** |
| | | (g) a protocol for managing and reporting any: | |
| | | - incidents; | **Section 4.4** |
| | | - complaints; | **Section 3.0** |
| | | - non-compliances with statutory requirements; and | **Section 2.1** |
| | | - exceedances of the impact assessment criteria and/or performance criteria; and | **Section 2.1** |
| | | (h) a protocol for periodic review of the plan. | **Section 4.1** |

* In September 2009, DP&E granted WCPL an extension to the submission date to 30/4/2010 to allow for DII and EPA review and comment.

## 1.5 Stakeholder Consultation

In accordance with Condition 30, Schedule 4 of DA 305-7-2003, this revision of the SGWRP (Revision 9) has been undertaken in consultation with NSW Department of Resources and Energy (DRE) and the NSW Department of Primary Industries Water (DPI Water, formerly the NSW Office of Water (NOW)), prior to submitting to the Secretary of the DP&E for approval.

This review of the SGWRP (Revision 9) includes:

- Updating the format and layout of the SSGRP, consistent with WCPL's current document management procedures and templates;
- Including additional information to ensure the SGWRP addresses Condition 4, Schedule 6 of DA305-7-2003; and
- Addressing comments received from DPI Water and DP&E on the SGWRP (Revisions 7 and 8).

Correspondence in relation to the SGWRP is attached as **Appendix B**.

# 2.0 Surface and Ground Water Response Plan

## 2.1 Adaptive Management

Potential surface and groundwater impacts are detailed in the Wambo Development Project Environmental Impact Statement (EIS) (Wambo Coal, 2003) and in the North Wambo Underground Mine Modification Environmental Assessment (Resource Strategies, 2012).

WCPL's Site Water Management Plan has been developed to manage and monitor water-related risks associated with the Wambo Coal Mine, to ensure there are no exceedances of the criteria and/or performance measures detailed in the relevant development consents and licences. If an exceedance of these criteria and/or performance measures occurs, WCPL will, at the earliest opportunity:

- Take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- Consider all reasonable and feasible options for remediation (where relevant) and submit a report to DP&E describing those options and any preferred remediation measures or other course of action; and
- Implement remediation measures as directed by the Secretary,

to the satisfaction of the Secretary.

## 2.2 Incident Management

An incident is defined as "a set of circumstances that:

- Causes or threatens to cause material harm to the environment; and/or
- Breaches or exceeds the limits or performance measures/criteria in the development consent"

Incident reporting will be undertaken in accordance with **Section 4.4**.

## 2.3 Impacts on Groundwater

A network of bores and piezometers is monitored to quantify any effect of the open cut and underground workings on the local groundwater system (refer to GWMP).

Groundwater depth and quality (pH and EC) trigger levels are specified in the GWMP. Following the receipt of groundwater monitoring results a data review will be undertaken. In the event that a trigger level is exceeded, or a complaint is received in relation to loss of groundwater supply, an investigation will be undertaken as soon as possible. The investigation will include a detailed review of monitoring data trends and climatic information along with operational activities and surrounding land uses, to determine if the impact on groundwater is a result of Wambo's activities.

If the investigation identifies actual groundwater impacts and attributes those impacts to Wambo's activities, WCPL will implement the adaptive management process in **Section 2.1**. Appropriate remediation measures will be developed and implemented in consultation with relevant government agencies and affected landowners, as required.

Measures may include:

- Modification to the groundwater monitoring program;
- Review of the water balance modelling for relevant underground / open cut mining activities;
- Review of mine plan and/or methodology; or
- Implementation of mitigation measures, especially where use of groundwater resources are interrupted.

The outcomes of this process will be reported in the Annual Review (**Section 4.2**). If an incident is deemed to have occurred (**Section 2.2**) WCPL will notify and report to DP&E and any other relevant government departments in accordance with **Section 4.4**.

### 2.3.1 TARP for Impacts on Private Bores

WCPL has developed a Trigger Action Response Plan (TARP) that must be implemented in the event that:

- A complaint is received from a private bore holder in relation to decreasing levels in a private bore; or
- Groundwater monitoring of private bores (including GW02 or GW11) identifies a decreasing trend approaching 2 metres below the modelled statistical trends.

This TARP is summarised in **Table 3**.

**Table 3: TARP for Impacts on Private Bores**

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| Trigger | •Groundwater monitoring of Private Bores including GW02 and GW11 (where access granted) for standing water levels, identifies a decreasing trend approaching 2m below the modelled statistical trends. | •Groundwater monitoring of Private Bores (where access granted) for standing water levels, identifies a decreasing trend greater than 2m below modelled statistical trends for three consecutive sampling events.<br>•Wambo receives a community complaint in relation decreasing water levels in a Private Bore. |
| Action | •Maintain monitoring of Private Bores to identify if decreasing trends has stabilised and displays signs of increasing trends.<br>•Review recent rainfall data to identify potential correlation between decreasing water level trends and extended dry periods.<br>•If decreasing trends are maintained and eventually exceed 2m below modelled statistical trends then go to Level 2 Response. | •Initiate consultation with the affected Landowner /s of the Private Bore to commence preliminary investigations on receipt of complaint.<br>•Maintain monitoring of Private Bores to identify if decreasing trends has stabilised and displays signs of increasing trends.<br>•Review recent rainfall data to identify potential correlation between decreasing water level trends and extended dry periods.<br>•If decreasing trends are maintained and remain 2m below statistical trends for three consecutive monitoring events, initiate consultation with affected owner of Private Bore.<br>•Undertake preliminary investigation and engage groundwater specialist with a review of relevant groundwater monitoring results in conjunction with site activities being undertaken at the time, baseline |

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| | | groundwater monitoring results, groundwater results at nearby locations, the prevailing and preceding meteorological conditions and changes to the landuse/ activities being undertaken in the contributing hydrogeological regime. |
| Plan | | •If investigations determine that compensatory water supplies are to be initiated, as a direct result from Wambo's operations, then Wambo will commence consultation with the affected Landowners to establish an agreed suitable compensatory supply of water, until further monitoring can determine signs of increasing water levels<br>•Review and update the WMP and resubmit to DP&E. |

## 2.4 Impacts on Surface Water

Surface water is monitored at over twenty locations across Wambo, including flow monitoring and water quality. Monitoring of mine water storage dams is also undertaken on a monthly basis. WCPL has developed a number of triggers for water quality and flow (refer Section 3.0 of the SWMP). Licensed discharges from site must also meet the Discharge Criteria specified in EPL 529.

As detailed in Wambo's 2003 EIS, the potential surface water impacts include:

- Connective cracking between North Wambo Creek and the underground workings;
- Reduction in water quality due to increased sedimentation; and
- Reduction of contributing catchments to North Wambo Creek, Waterfall Creek and Redbank Creek due to open cut mining.

Connective cracking was identified in the EIS as the highest risk to surface water flows. However, there has been no evidence of connecting cracking following the subsiding of North Wambo Creek by Longwall panels 1 and 2. In 2008, prior to Longwall 1, a specific North Wambo Creek Subsidence Response Strategy (NWCDSRS) was prepared in consultation with DRE, EPA and DP&E. Wambo will continue to monitor in accordance with the NWCSRS (**Appendix C**).

If routine monitoring (in accordance with SWMP) identifies evidence of potential surface water impacts, an investigation will be undertaken as soon as possible. The investigation will include a detailed review of relevant monitoring data trends and climatic information along with operational activities, to determine if the impact on surface water is a result of Wambo's activities.

If the investigation identifies actual surface water impacts and attributes those impacts to Wambo's activities, WCPL will implement the adaptive management process in **Section 2.1**. Appropriate remediation measures will be developed and implemented in consultation with relevant government agencies and affected landowners, as required.

The outcomes of this process will be reported in the Annual Review (**Section 4.2**). If an incident is deemed to have occurred (**Section 2.2**) WCPL will notify and report to DP&E and any other relevant government departments in accordance with **Section 4.4.**

The loss of catchment area due to open cut mining will have a temporary impact until rehabilitation has been completed and the catchment area is progressively reinstated. This impact has been predicted and assessed in the 2003 EIS and no additional responses are proposed.

### 2.4.1 TARP for Impacts on Surface Water Flows

WCPL has developed a TARP that must be implemented in the event that:

- After rainfall exceeding 20mm in 24hr, visual observations during flow events within either North Wambo Creek, South Wambo Creek or Stony Creek, identifies a potential variance in flow rates between upstream and downstream flow monitoring stations; or
- The initial calculated theoretical flow rates identifies a potential loss of flow between upstream and downstream flow monitoring stations within either North Wambo Creek, South Wambo Creek or Stony Creek.

This TARP is summarised in **Table 4.**

**Table 4: TARP for Impacts on Surface Water Flows**

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| Trigger | •After rainfall exceeding 20mm in 24hr, visual observations during flow events within either North Wambo Creek, South Wambo Creek or Stony Creek, identifies a potential variance in flow rates between upstream and downstream flow monitoring stations. | •The initial calculated theoretical flow rates identifies a potential loss of flow between upstream and downstream flow monitoring stations within either North Wambo Creek, South Wambo Creek or Stony Creek. |
| Action | •Confirm actual flow event by observing creek flows at upstream and downstream locations.<br>•Download flow monitoring data from flow monitoring stations at the completion of the flow event.<br>•Check flow monitoring equipment for functionality;<br>•Review recent climatic conditions and rainfall data recorded from meteorological station.<br>•Calculate theoretical flow rates from flow monitoring stations to compare upstream and downstream flow rates.<br>•If the initial calculation of the theoretical flow rates identifies a potential loss of flow when comparing the upstream and downstream flow rates, then go to Level 2 Response. | •Maintain surface flow monitoring to identify if creek flow rates have returned to statistical trends.<br>•Undertake preliminary investigation, including:<br>-Engaging a suitable qualified hydrologist to confirm if a loss of the calculated theoretical flow rates between upstream and downstream flow monitoring stations has occurred;<br>-Review location of rainfall event/s that may have contributed to creek flow variability within the creek catchment;<br>-Check flow monitoring equipment for functionality;<br>-Review pumping volumes from the North Wambo Underground/South Bates Underground to examine pumping trends; and<br>-Review pumping volumes from the old Homestead workings to examine pumping trends.<br>-Provide pumping volumes from underground workings to groundwater specialists for review. |
| Plan | | •If confirmation of a flow loss which is greater than modelled has occurred Wambo will notify the |

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| | | relevant government agencies and in consultation develop appropriate measures to mitigate the loss of surface water flows in the surface water streams.<br>•Review and update the WMP and resubmit to DP&E |

### 2.4.2 TARP for Impacts on Surface Water Quality

WCPL has developed a TARP that must be implemented in the event that:

- Surface water monitoring of Wollombi Brook, North Wambo Creek, South Wambo Creek, Stoney Creek or Waterfall Creek for pH, EC and TSS, identifies water quality results exceeding the 80th Percentile Trigger Value, as identified in the SWMP, after two consecutive sampling events.

This TARP is summarised in **Table 5.**

**Table 5: TARP for Impacts on Surface Water Quality**

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| Trigger | •Surface water monitoring of Wollombi Brook, North Wambo Creek, South Wambo Creek, Stoney Creek or Waterfall Creek for pH, EC and TSS, identifies water quality results exceeding the 80th Percentile Trigger Value, as identified in the SWMP, after two consecutive sampling events. | •Surface water monitoring of Wollombi Brook, North Wambo Creek, South Wambo Creek, Stoney Creek or Waterfall Creek for pH, EC and TSS, identifies water quality results exceeding the 80th Percentile Trigger Value, as identified in the SWMP, after three consecutive sampling events. |
| Action | •Maintain monitoring of surface water sites to identify if water quality results are trending back to long term averages as identified in the SWMP.<br>•If any water quality exceeds the 80th Percentile Trigger Value (three consecutive samples), then go to Level 2 Response. | •Maintain monitoring of surface water sites to identify if water quality results are trending back to long term averages as identified in the SWMP.<br>•Undertake preliminary investigation, including:<br>-Determine contributing factors including meteorological conditions, if an incident has potentially occurred, review location of operational activities etc.<br>-Where appropriate, engage a suitable qualified aquatic ecologist or similar to investigate the aquatic environment;<br>-Increase monitoring frequency where relevant; and<br>-Develop corrective/preventative actions based on the outcomes of the investigation and/or additional monitoring. |
| Plan | | •If confirmation of a results above confirms impacts to water quality have occurred as a direct result from Wambo's operations, Wambo will notify the relevant government agencies and in consultation develop appropriate remedial measures.<br>•Review and update the WMP and resubmit to DP&E. |

### 2.4.3 TARP for Breach of EPL 529 Limits

WCPL has developed a TARP that must be implemented in the event that:

- Monitoring at the Licenced Discharge Point (LDP) confirms pH, EC, TSS or discharge volumes are approaching or have exceeded discharge limits as identified in the SWMP and EPL 529; and/or
- There is potential evidence of an unauthorised discharge or an uunauthorised discharge event has occurred; or
- Wambo has failed to monitor at the LDP as identified in the SWMP and EPL 529.

This TARP is summarised in **Table 6.**

**Table 6: TARP for Breach of EPL 529 Limits**

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| Trigger | •Monitoring at Licence Discharge Point (LDP) confirms pH, EC, TSS or discharge volumes are approaching discharge limits as identified in the SWMP and EPL 529; and/or<br>•Potential evidence of an unauthorised discharge | •A Level 2 Response has been triggered if:<br>-Exceedance of EPL 529 pollution concentration limits;<br>-Unauthorised discharge event has occurred;<br>-Exceedance of EPL 529 discharge volume limit; or<br>-Failure to monitor at LDP as identified in the SWMP and EPL 529. |
| Action | •Maintain monitoring at LDP to confirm pH, EC, TSS remain within discharge limits.<br>•Prepare to cease discharging:<br>-If water quality values for pH, EC and TSS continue to trend towards an exceedence of their respective discharge water quality criteria; and<br>-If daily discharge volumes continue to trend towards an exceedence of the daily discharge water volume criteria.<br>•If there is an exceedence of the pH, EC, TSS criteria and/or discharge volume limit then go to Level 2 Response.<br>•If there is evidence of an unauthorised discharge go to Level 2 Response. | •If monitoring at Licence Discharge Point (LDP) confirms any of the Level 2 Responses have been triggered, Wambo will:<br>-Cease discharge;<br>-Initiate Pollution Incident Response Management Plan (PIRMP);<br>-Initiate an investigation to determine contributing factors including meteorological conditions, if an incident has potentially occurred, review location of operational activities , equipment failure etc;<br>-Provide report within seven days to the EPA and DP&E and other relevant government agencies;<br>-Increase monitoring frequency where relevant;<br>-Develop corrective/preventative actions based on the outcomes of the investigation and/or additional monitoring; and<br>-Undertake additional monitoring (stream health monitoring, etc.) if necessary. |
| Plan | | •Implement appropriate contingency and remedial measures, including follow-up monitoring, auditing and advice from relevant government agencies.<br>•Communicate results of investigation and subsequent contingency and remedial measures to relevant government agencies.<br>•Review and update the WMP and resubmit to DP&E. |

## 2.5 Direct Hydraulic Connection between Open Cut and Alluvium

If scheduled monitoring detects a long-term direct hydraulic connection between the backfilled open cut and the North Wambo Creek alluvium, with the potential to cause an associated downstream adverse impact, then an investigation will be undertaken to determine the nature and extent of the impact.

If the investigation identifies downstream adverse impacts and attributes those impacts to Wambo's activities, WCPL will implement the adaptive management process in **Section 2.1**. Appropriate management measures will be developed and implemented in consultation with relevant government agencies and may include the relinquishment of an equivalent portion of water access licences as a direct offset for potential groundwater inflows into the Mine (HydroSimulations, 2014)

The outcomes of this process will be reported in the Annual Review (**Section 4.2**). If an incident is deemed to have occurred (**Section 2.2**) WCPL will notify and report to DP&E and any other relevant government departments in accordance with **Section 4.4.**

## 2.6 Impacts on North Wambo Creek Alluvium

WCPL has developed a TARP that must be implemented in the event that:

- Groundwater monitoring of standing water levels in bores GW08 and GW09 and GW016 and GW017 within the North Wambo Creek alluvium, identifies a decreasing trend or exceeds the standing water trigger levels, beyond natural fluctuations and predicted modelled impacts; and/or
- Monitoring of aquatic ecosystems in accordance with the Flora and Fauna Management Plan (FFMP) identifies a potential or actual decline in aquatic health, beyond natural fluctuations; and/or
- Monitoring of Land Function Analysis (LFA) of riparian areas in accordance with the FFMP identifies a potential or actual decline in creek stability, beyond natural fluctuations; and/or
- Visual observations and/or pumping rates from Montrose Pit confirm alluvium inflows into the open cut have increased above normal seepage rates.

This TARP is summarised in **Table 7.**

**Table 7: TARP for Impacts on North Wambo Creek Alluvium**

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| Trigger | •Groundwater monitoring of standing water levels in bores GW08 and GW09 and GW016 and GW017 within the North Wambo Creek alluvium, identifies a decreasing trend, beyond natural fluctuations and predicted modelled impacts; and/or<br>•Monitoring of aquatic ecosystems in accordance with the Flora and Fauna Management Plan (FFMP) identifies a | •Groundwater monitoring of standing water levels in bores GW08 and GW09 and GW016 and GW017 within the North Wambo Creek alluvium, exceed the standing water trigger values as provided in the GWMP, beyond natural fluctuations, for more than three consecutive monitoring events and/or<br>•Monitoring of aquatic ecosystems in accordance with the Flora and Fauna Management Plan (FFMP) identifies a decline in aquatic health in consecutive |

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| | potential decline in aquatic health, beyond natural fluctuations; and/or<br>•Monitoring of Land Function Analysis (LFA) of riparian areas in accordance with the FFMP identifies a potential decline in creek stability, beyond natural fluctuations; and/or<br>•Visual observations and/or pumping rates from Montrose Pit confirm alluvium inflows into the open cut have not increased above normal seepage rates. | monitoring events, beyond natural fluctuations; and/or<br>•Monitoring of Land Function Analysis (LFA) of riparian areas in accordance with the FFMP identifies a decline in creek stability in consecutive monitoring events, beyond natural fluctuations.<br>•Visual observations confirm alluvium inflows into the open cut have increased significantly above normal seepage rates. |
| Action | •Maintain monitoring of bores within the North Wambo Creek alluvium, for standing water levels, to identify if decreasing trends has stabilised and displays signs of increasing trends.<br>•Maintain visual monitoring to confirm alluvium inflows into the open cut have ceased or have returned to normal seepage rates.<br>•Review recent rainfall data to identify potential correlation between decreasing water level trends and extended dry periods.<br>•Continue annual LFA and aquatic ecosystems monitoring to determine if decline trends have stabilised and displaying signs of improving trends in consecutive monitoring periods.<br>•If standing water levels exceed standing water trigger values (consecutively) as provided in the GWMP, then go to Level 2 Response.<br>•If consecutive LFA and aquatic ecosystems monitoring events determine continue decline trends and displaying no signs of improving trends, then go to Level 2 Response.<br>•If visual observations and/or pumping rates from Montrose Pit confirm alluvium inflows into the open cut increased above normal seepage rates, then go to Level 2 Response. | •Maintain monitoring of GW08, GW09, GW16 and GW17 within the North Wambo Creek alluvium, for standing water levels to identify if decreasing trends has stabilised and displays signs of increasing trends.<br>•Continue annual LFA and aquatic ecosystems monitoring to determine if decline trends have stabilised and displaying signs of improving trends in consecutive monitoring periods.<br>•Continue visual monitoring and/or pumping rates in the Montrose Pit to confirm alluvium inflows into the open cut have ceased or have returned to normal seepage rates.<br>•If decreasing standing water level trends are maintained and/or LFA and aquatic ecosystems are in decline and/or a significant increase of alluvium flows into the open cut has been identified, Wambo will undertake preliminary investigation, including:<br>-An investigation and engage groundwater specialist to review relevant groundwater monitoring results in conjunction with site activities being undertaken at the time, baseline groundwater monitoring results, groundwater results at nearby locations, the prevailing and preceding meteorological conditions and changes to the landuse/ activities being undertaken in the contributing hydrogeological regime;<br>-Review the site water balance and groundwater model;<br>-An investigation and engage ecologist to review LFA and aquatic monitoring results in conjunction with site activities being undertaken at the time, the prevailing and preceding meteorological conditions and changes to the landuse/ activities being undertaken.<br>-Develop corrective/preventative actions based on the outcomes of the investigation. |
| Plan | | •If confirmation of a results above and investigations confirms impacts to alluvium are greater than modelled, Wambo will notify the relevant government agencies and in consultation develop appropriate remedial measures.<br>•Develop corrective/preventative actions based on the |

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| | | outcomes of the investigation for example:<br>-Backfilling to seal the affected highwall areas with suitable material selected from the open cut;<br>-Secure additional water licences to account for the estimated future inflows (if applicable).<br>•Review and update the WMP and resubmit to DP&E. |

## 2.7 North Wambo Creek Diversion Performance Criteria

WCPL manages the North Wambo Creek Diversion in accordance with the North Wambo Creek Diversion Rehabilitation Plan. Management controls have been designed and implemented to minimise erosion and the potential for sediment generation and loss from the system however there is still a risk that erosion and sediment generation may impact on North Wambo Creek water quality. Management controls are discussed in detail in WCPL's Erosion and Sediment Control Plan and the North Wambo Creek Diversion Rehabilitation Plan.

WCPL has developed a TARP that must be implemented in the event that:

- Surface water monitoring of North Wambo Creek, for pH, EC and TSS, identifies water quality results exceeding the 80th Percentile Trigger Value, as identified in the SWMP after two consecutive sampling events; and/or
- Monitoring of Land Function Analysis (LFA) of riparian areas in accordance with the FFMP identifies a potential decline in creek stability, beyond natural fluctuations.

This TARP is summarised in **Table 8.**

**Table 8: TARP for North Wambo Creek Diversion Performance**

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| Trigger | •Surface water monitoring of North Wambo Creek, for pH, EC and TSS, identifies water quality results exceeding the 80th Percentile Trigger Value, as identified in the SWMP after two consecutive sampling events; and/or<br>•Monitoring of Land Function Analysis (LFA) of riparian areas in accordance with the FFMP identifies a potential decline in creek stability, beyond natural fluctuations. | •Surface water monitoring of North Wambo Creek for pH, EC and TSS, identifies water quality result exceeding the 80th Percentile Trigger Value, after three consecutive sampling events.<br>•Monitoring of Land Function Analysis (LFA) of riparian areas in accordance with the FFMP identifies a decline in creek stability in consecutive monitoring events, beyond natural fluctuations. |
| Action | •Review recent rainfall data to identify potential correlation between decreasing water level trends and extended dry periods. | •Continue annual LFA and aquatic ecosystems monitoring to determine if decline trends have stabilised and displaying signs of improving trends in consecutive monitoring periods. |

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| | •Continue annual LFA and aquatic ecosystems monitoring to determine if decline trends have stabilised and displaying signs of improving trends in consecutive monitoring periods.<br>•Maintain monitoring of surface water sites to identify if water quality results are trending back to long term averages as identified in the SWMP.<br>•If consecutive LFA and aquatic ecosystems monitoring events determine continue decline trends and displaying no signs of improving trends, then go to Level 2 Response.<br>•If any water quality exceeds the 80th Percentile Trigger Value (three consecutive periods), then go to Level 2 Response. | •Wambo will undertake preliminary investigation, including:<br>-As above for Surface Water Quality<br>-An investigation and engage ecologist specialist to review LFA monitoring results in conjunction with site activities being undertaken at the time, the prevailing and preceding meteorological conditions and changes to the landuse/ activities being undertaken. |
| Plan | | •If confirmation of a results and investigations from above confirms impacts, Wambo will notify the relevant government agencies and in consultation develop appropriate remedial measures if required.<br>•Review and update the WMP and resubmit to DP&E. |

## 2.8 Groundwater Leakage from Wollombi Brook

WCPL has developed a TARP that must be implemented in the event that:

- Groundwater monitoring of standing water levels in bores P106, P109, P114, P116 within the Wambo Creek alluvium and GW13 and GW15 within the Wollombi Creek alluvium, identifies a decreasing trend, beyond natural fluctuations and predicted modelled impacts; and/or
- Groundwater monitoring of standing water levels in bores GW08 and GW09 and GW016 and GW017 within the North Wambo Creek alluvium, exceed the standing water trigger values as provided in the GWMP, beyond natural fluctuations, for more than three consecutive monitoring events.

This TARP is summarised in **Table 9.**

**Table 9: TARP for Wollombi Brook and Wambo Creek Alluvium**

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| Trigger | •Groundwater monitoring of standing water levels in bores P106, P109, P114, P116 within the Wambo Creek alluvium and GW13 | •Groundwater monitoring of standing water levels in bores GW08 and GW09 and GW016 and GW017 within the North Wambo Creek alluvium, exceed the standing water trigger values as provided in the GWMP, beyond natural fluctuations, for more than three consecutive monitoring |

| TARP Code | Level 1 Response Management Measures | Level 2 Response Contingency Phase |
|---|---|---|
| | and GW15 within the Wollombi Creek alluvium, identifies a decreasing trend, beyond natural fluctuations and predicted modelled impacts | events. |
| Action | •Maintain monitoring of bores within the Wollombi and Wambo Creek alluvium, for standing water levels, to identify if decreasing trends has stabilised and displays signs of increasing trends.<br>•If standing water levels exceed standing water trigger values as provided in the GWMP, then go to Level 2 Response. | •Maintain monitoring of P106, P109, P114, P116 within the Wambo Creek alluvium and GW13 and GW15 within the Wollombi Creek alluvium, for standing water levels to identify if decreasing trends have stabilised and displays signs of increasing trends.<br>•If decreasing standing water level trends are maintained and/or a significant increase of alluvium flows into the open cut, Wambo will undertake preliminary investigation, including:<br>-An investigation and engage groundwater specialist to review relevant groundwater monitoring results in conjunction with site activities being undertaken at the time, baseline groundwater monitoring results, groundwater results at nearby locations, the prevailing and preceding meteorological conditions and changes to the landuse/ activities being undertaken in the contributing hydrogeological regime.<br>-Review the site water balance and groundwater model;<br>-Develop corrective/preventative actions based on the outcomes of the investigation. |
| Plan | | •If confirmation of a results and investigations from above confirms impacts to alluvium are greater than modelled, Wambo will notify the relevant government agencies and in consultation develop appropriate remedial measures.<br>•Develop corrective/preventative actions based on the outcomes of the investigation for example:<br>-Secure additional water licences to account for the estimated future inflows (if applicable).<br>-Measures to offset the potential groundwater leakages.<br>•Review and update the WMP and resubmit to DP&E. |

## 2.9 Impacts on Groundwater Dependent Ecosystems or Riparian Vegetation

An aquatic ecosystems monitoring program has been developed to detect any potential changes in aquatic biology in accordance with the FFMP within North Wambo Creek, Wambo Creek and Stoney Creek and the North Wambo Creek Diversion.

Annual channel stability surveys are also undertaken to monitor the quantity and quality of riparian vegetation along North Wambo Creek and North Wambo Creek Diversion to determine the need for any maintenance and/or contingency measures. This program and the development of stream health triggers (for water quality, stability and alluvium) are discussed above and within the FFMP and SWMP.

In the event that deterioration is identified in groundwater dependent ecosystems during stream health monitoring or annual channel stability surveys, the processes outlined above will be implemented.

## 2.10 Exceedance of Licensed Extraction Limit

As part of annual reporting and data review WCPL is required to compare annual extractions from alluvium water sources to WCPL's licenced extraction volume under the Water Management Act 2000 (WM Act). If extraction from alluvial water sources exceeds the licenced volume, consultation will be entered into with the relevant government authorities to develop ameliorative measures.

Additional information regarding the WM Act is available in the GWMP. WCPL will ensure there are sufficient licenced volumes under the WM Act to account for the predicted extraction of water from alluvial water sources for the upcoming water year.

## 2.11 Trigger Levels for the Relinquishment of Water Extraction Limits

Trigger values for the relinquishment of water extraction rights to compensate for post mining closure (end of the approved mine life) for surface and groundwater losses from streams, channels or alluvials to the open cut and underground mine workings will be refined and further developed as an outcome of future groundwater models and as the mine progresses towards closure.

The outcomes of future groundwater modelling to determine post mining trigger values for the relinquishment of water extraction rights will be provided in subsequent reviews of this SGWRP and resubmitted to DP&E.

## 2.12 Unforeseen Impacts

In the event that any unforseen surface or ground water impacts are detected, the following general response procedure will be initiated:

- Check and validate the data/information which indicates an unforeseen impact;
- Notify DP&E, EPA and other relevant agencies immediately after becoming aware of the impact;
- In the event of an apparently anomalous monitoring result, conduct a resample/retest where possible;
- Review the unforeseen impact, including consideration of:
    - Any relevant monitoring data; and
    - Current mine activities and land management practices in the relevant catchment, including other mining activities;
- Commission an investigation by an appropriate specialist into the unforeseen impact;
- Provide a preliminary investigation report to DP&E, EPA and relevant agencies within 7 days of identifying the unforeseen impact;
- Implement appropriate contingency/remedial measures;
- Implement additional monitoring to measure the effectiveness of the mitigation measures, where necessary;
- Communicate results of investigation and subsequent contingency and remedial measures to government agencies as required; and
- Review and update the WMP and resubmit to DP&E.

## 3.0 Community Complaint Response

All water related community complaints received by WCPL will be recorded within the Community Complaints Register. The E&C Manager will investigate the complaint, which will include, where possible, contacting the complainant within 24 hours to discuss the complaint. A review of the effectiveness of the corrective or preventative actions will be conducted within a month of the complaint and the relevant work procedures updated if required.

Preliminary investigations will commence as soon as practicable upon receipt of a complaint to establish if WCPL is responsible. All efforts will be made to determine the likely causes contributing to the complainants concerns.

WCPL will attempt to address the complainants concerns such that a mutually acceptable outcome is achieved. However, if required, the Independent Dispute Resolution Process would be referred to (**Appendix A**).

Details of all community complaints will be included in the Monthly Environment Monitoring Report. WCPL will retain a copy of the Community Complaints Register for at least four years. The E&C Manager will ensure the latest Community Complaints Register is posted on the WCPL website.

# 4.0 Review and Reporting

## 4.1 Review

The SGWRP is to be reviewed annually by the E&C Manager. A complete review of the SGWRP will occur:

- Every two years;
- When there are changes to consent or licence conditions relating to the SGWRP;
- Prior to new underground mining areas being developed;
- Following significant water related incidents at WCPL;
- Following continual exceedance of the impact assessment criteria;
- Following an independent environmental audit which requires SGWRP review; or
- If there is a relevant change in technology, practice or legislation.

The revised SGWRP will be re-submitted to the Secretary for approval as required by Condition 30, Schedule 4 of DA305-7-2003.

## 4.2 Annual Review

Prior to the end of March each year, WCPL will review the environmental performance of the Mine and submit an Annual Review report to the DP&E. This report will:

- Describe the development (including any rehabilitation) that was carried out in the past year, and the development that is proposed to be carried out over the next year;
- Include a comprehensive review of the monitoring results and complaints records of the Project over the past year, which includes a comparison of these results against the:
    - Relevant statutory requirements, limits or performance measures/criteria
    - Monitoring results of previous years; and
    - Relevant predictions in the EA;
- Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- Identify any trends in the monitoring data over the life of the Project;
- Identify any discrepancies between the predicted and actual impacts of the Project, and analyse the potential cause of any significant discrepancies; and
- Describe what measures will be implemented over the next year to improve the environmental performance of the Project.

## 4.3 Website Updates

A comprehensive summary of surface and ground water monitoring results will be made publicly available at WCPL website:

http://www.peabodyenergy.com/content/404/australia-mining/new-south-wales/wambo-mine) Information on the website will be updated regularly as required by DA305-7-2003.

WCPL will also ensure that any information relevant to the SGWRP is uploaded to the website (and kept up to date). This includes:

- Current statutory approvals;
- Approved strategies, plans or programs required under the DA305-7-2003;
- A community complaints register;
- Minutes of Community Consultative Committee (CCC) meetings;
- Annual Reviews;
- A copy of any Independent Audits and WCPL's response to any recommendations in any audit; and
- Any other matter required by the Secretary.

## 4.4 Reportable Environmental Incidents

All reportable incidents will be reported via the EPA's Environmental Line on **131 555** by the E&C Manager in accordance with WCPL's Pollution Incident Response Management Plan (PIRMP).

In accordance with the PIRMP, WCPL must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of *Part 5.7* of the *POEO Act.*

For all other incidents that do not cause threatening material harm to the environment associated with the Project, WCPL will notify the Secretary and any other relevant agencies as soon as practicable after WCPL becomes aware of the incident.

Within 7 days of the date of the incident, WCPL will provide the Secretary and any relevant agencies with a detailed report on the incident to include:

- The cause, time and duration of the event;
- Where possible the type, volume and concentration of every pollutant discharged as a result of the event;
- The name, address and business hours telephone number of employees or agents of the licensee who witnessed the event;
- The name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- Action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- Implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary;
- Details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event

# 5.0 RESPONSIBILITIES

**Table 10** below summarises responsibilities documented in the SGWRP. Responsibilities may be delegated as required.

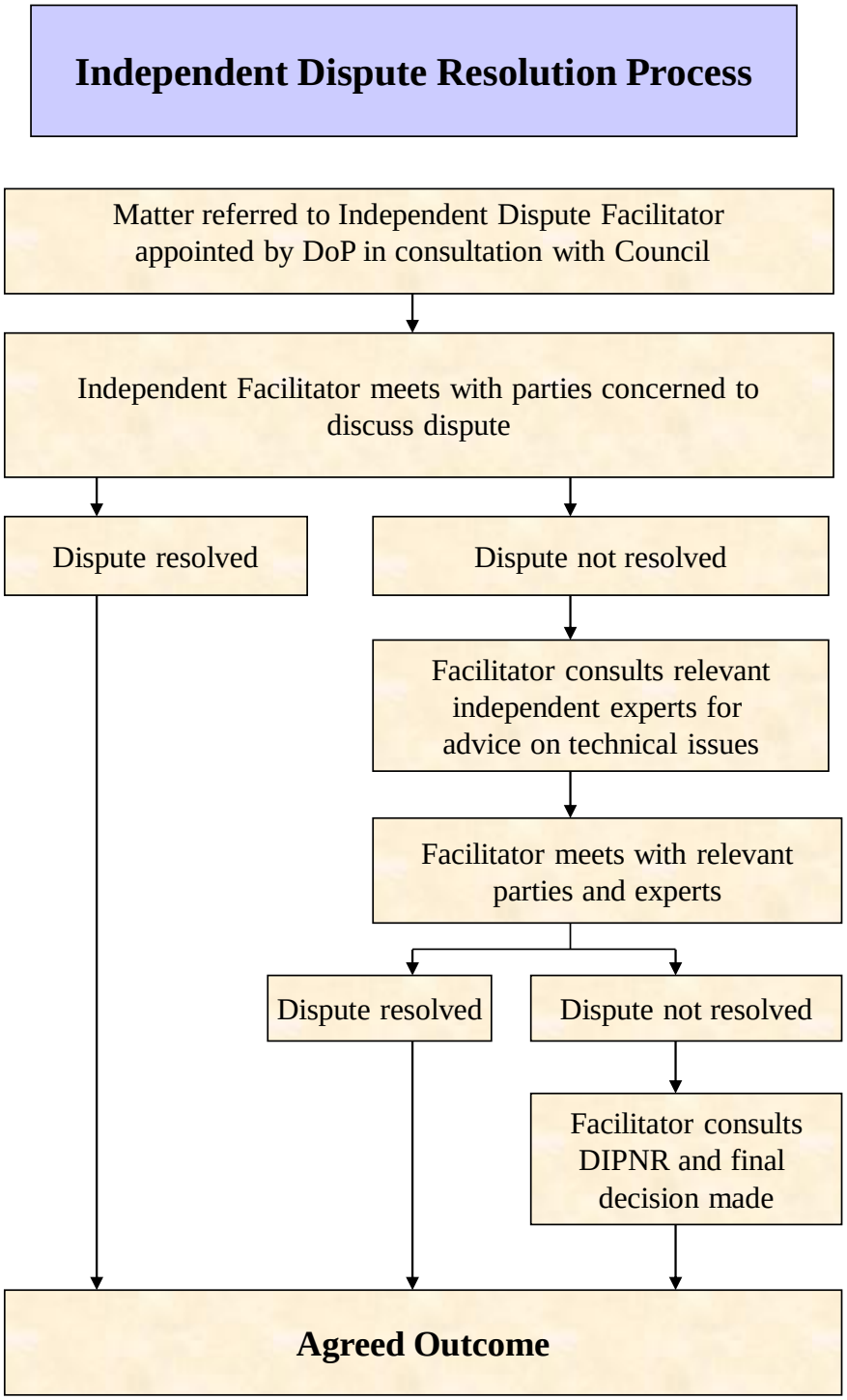
**Table 10: Surface and Ground Water Response Plan Responsibilities**

| No | Task | Responsibility | Timing |
|---|---|---|---|
| 1 | Identify triggers and initiate appropriate response in accordance with the SGWRP | E&C Manager | As required |
| 2 | Implementation of mitigation measures in accordance with the relevant response process. | E&C Manager | As required |
| 3 | Review SGWRP in accordance with **Section 4.0**. | E&C Manager | As specified in **Section 4.0**. |
| 4 | Notify government departments if an incident occurs in accordance with **Section 4.4** | E&C Manager | As required |
| 5 | Submit updated SGWRP to DP&E. | E&C Manager | As required |
| 6 | Water related complaints to be responded to in accordance with **Section 3.0** | E&C Manager | As required |
| 7 | Annual Review to include water monitoring results, complaints, mitigation measures undertaken and a review of the monitoring undertaken | E&C Manager | Annually |
| 8 | Regulator review to be undertaken of the SGWRP | E&C Manager | As required |
| 9 | Prepare investigation reports and implementation of corrective actions in accordance with **Section 4.4** | E&C Manager | As required |

# 6.0 REFERENCES


- Development Consent (DA305-7-2003)
- Development Consent (DA177-8-2004)
- Wambo Development Project Environmental Impact Statement (EIS), July 2003
- Resource Strategies Pty Ltd (2003) Wambo Coal Mine Project Environmental Impact Statement. Report prepared for Wambo Coal Pty Ltd
- Wambo Environment Protection Licence (529)
- Environmental Planning and Assessment Act 1979
- Australasian Groundwater and Environmental Consultants (AGE) (2003) Wambo Development Project Groundwater Impact Assessment.
- Gilbert & Associates (2006) Wambo Coal Mine Hydrological Assessment of Staged Diversion and Temporary Pipeline – North Wambo Creek.
- HydroSimulations (2014) North Wambo Underground Mine Longwall 10A Modification Groundwater Assessment
- Resource Strategies (2012) North Wambo Underground Mine Modification Environmental Assessment.
- SP Solutions (2006) Review of North Wambo Underground SMP Proposed Controls – North Wambo Creek.
- Wambo Coal (2003) Wambo Development Project Environmental Impact Statement.
- Wambo Coal (2006) Wambo Coal Mine Modification Statement of Environmental Effects.
- Wambo Coal (2007) Wambo Coal North Wambo Creek Diversion Plan.

# APPENDIX A
# INDEPENDENT DISPUTE RESOLUTION PROCESS


Independent Dispute Resolution Process
Matter referred to Independent Dispute Facilitator appointed by DoP in consultation with Council
Independent Facilitator meets with parties concerned to discuss dispute
Dispute resolved
Dispute not resolved
Facilitator consults relevant independent experts for advice on technical issues
Facilitator meets with relevant parties and experts
Dispute resolved
Dispute not resolved
Facilitator consults DIPNR and final decision made
Agreed Outcome

# APPENDIX B
# CORRESPONDENCE WITH REGULATORY AGENCIES

Peabody ENERGY

NSW GOVERNMENT | Planning & Environment

Contact: Scott Brooks
Phone: 6575 3401
Fax: 6575 3415
Email: scott.brooks@planning.nsw.gov.au
Our ref: 305-7-2003

The General Manager
Wambo Mine
PMB 1
SINGLETON NSW 2330

Attention: Steve Peart

Dear Steve

**Wambo Coal – Approval of Water Management Plan**

Thank you for forwarding the Wambo Water Management Plan and all its parts as required under project approval DA 305-7-2003 for the Department's consideration.

The Water Management Plan is required by Condition 30 Schedule 4 and the following 5 components of the Plan were reviewed:

- Site Water Balance (30)
- Erosion and Sediment Control Plan (32)
- Surface Water Monitoring Program (33)
- Ground Water Monitoring Program (34)
- Surface and Ground Water Response Plan (35).

The Department has reviewed these plans, and is satisfied that they generally address the requirements set out in the relevant conditions of the project approval. Consequently, I would like to advise you that the Secretary has approved the plans.

These plans come into force on the 30th November 2015 and remains in force until replaced by any future updated approved Plans.

I am aware that DPI Water are expected to comment on the Extraction Plan for the South Bates U/G (Wybrow seam) LW 11-13. Should this comment require significant changes to any component of the Water Management Plan, I ask if these changes could be made and the plans resubmitted for review and approval.

Could you please forward finalised copies of the above plan (preferably in PDF format with a copy of this approval letter appended) for the Department's records by the end of November 2015.

If you require further information or clarification in this matter please contact Scott Brooks on 6575 3401 or by email to scott.brooks@planning.nsw.gov.au.

Yours sincerely

Scott Brooks
**Investigations (Lead), Compliance**
27 - 11 - 2015
As Nominee for the Secretary, Planning & Environment

**From:** Scott.Brooks@planning.nsw.gov.au [mailto:Scott.Brooks@planning.nsw.gov.au]
**Sent:** Wednesday, 21 October 2015 1:22 PM
**To:** Peart, Steven D
**Subject:** RE: 3 of 3

Steve,
I had no comment on the EE&SC Plan

Scott

Scott Brooks
Investigations (lead), Compliance
Planning Services, Resources Assessments
Planning & Environment
Suite 14, Level 1, 1 Civic Av
PO Box 3145
Singleton NSW 2330
http://www.planning.nsw.gov.au
E: scott.brooks@planning.nsw.gov.au
**P:** 02 6575 3401 | | **Office:** 6575 3405
**M:** 0419 970924 **F:** 02 6575 3415



**From:** Peart, Steven D [mailto:SPeart@peabodyenergy.com]
**Sent:** Wednesday, 21 October 2015 12:50 PM
**To:** Scott Brooks
**Subject:** RE: 3 of 3

Cheers Scott

The only other one was the Erosion and Sediment Control Plan if you had any comments on it.

Thanks again

**Steven Peart**
**Manager: Environment & Community**

**Wambo Coal Pty Ltd**
**Peabody Energy Australia**
PMB 1, Singleton NSW 2330
Phone: +61 (0)2 6570 2209
Fax: +61 (0)2 6570 2290
Mob: +61 (0)448 082 987
Email: speart@peabodyenergy.com
www.peabodyenergy.com.au

**From:** Scott.Brooks@planning.nsw.gov.au [mailto:Scott.Brooks@planning.nsw.gov.au]
**Sent:** Wednesday, 21 October 2015 11:46 AM
**To:** Peart, Steven D
**Subject:** RE: Wambo Coal_WMP's 1 of 3

Steve,
Comments on the 3 water management plans.

Please note we will need some type of water balance, and the info for the evaporation sprays if you want to use them.

Scott

Scott Brooks
Investigations (lead), Compliance
Planning Services, Resources Assessments
Planning & Environment
Suite 14, Level 1, 1 Civic Av
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http://www.planning.nsw.gov.au
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**P:** 02 6575 3401 | | **Office:** 6575 3405
**M:** 0419 970924 **F:** 02 6575 3415

| Plan | Section | DP&E Comment |
|---|---|---|
| Surface and Ground Water Response Plan (WA-ENV-MNP-509.4) Version 8 | 2.7 North Wambo Creek Diversion Performance Criteria | Given the problems with the NWCD this section should refer to other management plans of have a section referring to erosion and the potential for sediment generation and loss from the system. |
| Surface Water Monitoring Program (WA-ENV-MNP-509.2) Version 8 | 1.4.1 Environmental Planning & Assessment Act 1979 (Table 3) | (NOW) Currently called DPI Water |
| | 2.2.3.2 Stream Flow (Table 7) | (No flow data available) Is this because the SWC never runs? |
| | 4.1 Monitoring Network, Parameters and Frequency | (Mine water monitoring is undertaken for operational management purposes only. This data is not reported publicly). This would appear to conflict with Schedule 6 Condition 12 requiring the publishing of monitoring results. |
| | 4.1.5 Riparian Vegetation and Creek Bed Stability | The NWCD has its own rehab management plan. This management plan should refer to it and it may need to be updated. |
| | 4.1.6 Monitoring of Discharge Flows in the North Wambo Creek Diversion | What did NOW ask for. This should be included. |

| Plan | Section | DP&E Comment |
|---|---|---|
| | 6.1 Review | (Review every two years) Usually 3 years |
| Groundwater Monitoring Program (WA-ENV-MNP-509.1) Version 9 | 2.2.3.1 Alluvial Water Sources | (Investigation into increase in EC) This will need to be reported in the AEMR |
| | 3.1.3 Permian Monitoring Locations | Need to discuss why we monitor if the results cannot result in action. |
| | 3.2 Trigger Values for Groundwater Quality | (Bi-monthly monitoring) This will need to be defined. Twice a month or every 2 months |
| | 4.1.6 Chitter Dam and Wambo South Water Dam Monitoring Program | Need some comment here if the dam will be recommissioned if it is found to be leaking. |
| | 6.1 Review | (Review every two years) Review is normally every 3 years. |

**From:** Joanna Webster [mailto:jwebster@ResourceStrategies.com.au]
**Sent:** Wednesday, 17 June 2015 1:05 PM
**To:** Jessie Evans; Brendan Liew
**Cc:** Joshua Hunt; Howard Reed; Alexander, Micheal G; Peart, Steven D
**Subject:** RE: Wambo 10A Extraction Plan - NOW comments
**Importance:** High

Hi Jessie/Brendan,

On behalf of Wambo Coal, please find attached a response to the recommendations made by NSW Office of Water.

Also attached is a revised Groundwater Monitoring Program that has been updated to address the recommendations made by the Office of Water.

Please consider Attachment 3 of the Water Management Plan for North Wambo Underground Mine Longwalls 8 to 10A Extraction Plan to be replaced by the attached revised Groundwater Monitoring Program.

Please don't hesitate to call if you would like to discuss.

Regards

Joanna Webster
Senior Environmental Manager
e jwebster@resourcestrategies.com.au
m 0414 664 532

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Suite 2 Level 3, 24 McDougall Street
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Milton Qld 4064
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www.resourcestrategies.com.au

**From:** Jessie Evans [mailto:Jessie.Giblett@planning.nsw.gov.au]
**Sent:** Thursday, 4 June 2015 8:42 AM
**To:** Joanna Webster
**Cc:** Joshua Hunt; Howard Reed; Brendan Liew
**Subject:** RE: Wambo 10A Extraction Plan - NOW comments

Hi Joanna,

The Department has received comments from NOW in regards to the Wambo LW 8-10A Extraction Plan. I have attached these for your careful consideration and response. NOW has raised a number of issues, and in particular has concerns regarding the Groundwater Management Plan.

Could you please provide a response to NOWs concerns at your earliest possible convenience.

Thanks
Jessie

**North Wambo Underground Mine Extraction Plan Longwalls 8 to 10A**
**Response to NSW Office of Water Comments (Dated 3 June 2015)**

| NOW Recommendation | Response |
|---|---|
| **Groundwater Management**<br><br>It is recommended with respect to the exceedance of groundwater level triggers:<br><br>• WCPL must investigate the drivers for declining water levels (rather than omitting bores from the monitoring program when bores go dry). Notification to the Office of Water is required as part of the response procedure within 3 months of such an event. | Five bores are proposed to be removed from the groundwater monitoring program (GW14, GW18, GW19, P5 and P6).<br><br>Only two samples (August 2011 and December 2011) have been obtained from GW14 since its installation in 2011 (these samples may have been associated with groundwater levels stabilising following drilling). This bore is located to the east of Wollombi Brook and is far removed from mining activities associated with the Wambo Coal Mine.<br><br>Only one sample (August 2010) has been obtained from GW18. GW19 has been consistently dry since installation and no valid samples have been obtained from this bore.<br><br>GW18 and GW19 are located immediately downstream and upstream of the North Wambo Creek Diversion, respectively. The alluvial flow in North Wambo Creek has been altered by the historical and existing mining operations including the removal of alluvium across the full width of the channel with consequent desaturation of the adjacent upstream and downstream alluvium associated with the approved and constructed North Wambo Creek Diversion.<br><br>Bores P5 and P6 have been covered by the approved Wambo Coal Mine waste rock emplacement.<br><br>WCPL considers removal of these five bores from the groundwater monitoring program is justified as outlined above.<br><br>Trigger levels are not proposed for a further four bores along North Wambo Creek (GW08, GW09, GW16 and GW17).<br><br>WCPL has initiated an investigation for bores GW08 and GW09 as outlined further below. Trigger levels will not be developed for these bores until this investigation is complete.<br><br>GW16 and GW17 are located upstream of the North Wambo Creek Diversion and in close proximity to the approved open cut. There are no groundwater users located in the vicinity of North Wambo Creek upstream of the North Wambo Creek Diversion. Therefore, a trigger level for these two bores is not considered warranted. |

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| • Where the driver for declining shallow bore water levels exceeding trigger levels can not be linked to the prevailing climatic influence or miscellaneous sampling error, additional groundwater modelling is required to re-assess if there is a change in the predicted take of water from the Lower Wollombi Brook Water Source from mining related activities. As part of WCPL's response procedure, a report summarising the assessment is to be submitted to the Office of Water. | WCPL has initiated an investigation into the monitored declining water levels in GW08 and GW09.<br><br>As described in Section 6.1.3 of the revised GWMP, a preliminary investigation report will be provided to the DP&E and NOW by 30 September 2015.<br><br>This report will include preliminary conclusions regarding the potential licensing implications and a process and timetable for any further investigation work (including potential additional numerical hydrogeological modelling work). |
| • Where the updated modelled aquifer interference take of water from the Lower Wollombi Brook Water Source (encapsulating Wambo and North Wambo Creek) exceeds the estimates as predicted in WPCL's Groundwater Impact Assessment by 100% or more, WCPL must re-evaluate the associated ecological impacts and any influence on a low flow cease to pump criteria specified in the relevant WSP. The reference value triggering this response procedure must be clearly documented in the GWMP. | As described in Section 6.1.3 of the revised GWMP, Where the investigation for GW08 and GW09 indicates a revised predicted take from alluvial water sources that exceeds the previous estimates by more than 100%, WCPL would consider other potential associated impacts (e.g. on ecology) and any influence on a low flow cease to pump criteria specified in the HUA WSP. |
| • The trigger levels in Table 11 of the GWMP outlines a minimum and maximum depth to water level. These values, plus any new bores added to the list, and the bores proposed to be dropped, must be presented in Australian Height Datum. | Table 11 of the GWMP has been revised to include trigger levels presented in Australian Height Datum. |
| <u>It is recommended with respect to the exceedance of groundwater quality triggers</u><br><br>• Appropriate water quality baseline data has not been captured and presented in way that can be used for before and after impact. Salinity data for a number of bores has fluctuated considerably which is not consistent with a more stable groundwater environment. The use of major ion analysis and QA/QC procedures should be reviewed to inform if the salinity measurements reported are accurate and if so the drivers to cause such variability in the results. | The GWMP has been revised to include annual comprehensive analysis of major ions standpipe bores.<br><br>A description of data management procedures has been included in Section 5.3.2. |
| • Due to the concerns with the potential for cross aquifer interconnection, water quality performance measures are essential to the impact assessment. Water quality performance measures should be defined and added to the GWMP. | The GWMP has been revised to include groundwater quality trigger levels in Section 5.4. |
| <u>It is recommended with respect to the exceedance of predicted mine inflows</u><br><br>• There is a discrepancy between the GWMP which outlines a monthly measurement and annual assessment of mine inflows, whilst the 'Subsidence Response Strategy' indicates metering of weekly dewatered volumes. It should be consistently reported weekly, in the GWMP as this will improve the understanding of inflow and assist with groundwater management and the triggers for exceedance. | Section 5.2.5 of the GWMP has been updated to clarify that dewatering values are recorded internally on a daily basis (during active pumping).<br><br>As outlined in the North Wambo Creek Subsidence Response Strategy, these values are reviewed weekly for any indication that pumping rates are higher than normal (which would trigger an investigation).<br><br>Dewatering values are also reviewed annually (as outlined in the GWMP) to determine the inflows from groundwater sources and to verify whether WCPL holds sufficient groundwater licence entitlements. |

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| • Where the annual assessment for mine inflows exceeds the peak estimate as predicted in WCPL's Groundwater Impact Assessment by 50% or more, WCPL shall:<br>– investigate if there is a change in the predicted take of water from the Lower Wollombi Brook Water Source from mining related activities;<br>– where there is an increased take from the Lower Wollombi Brook Water Source, investigate any influence on a low flow cease to pump criteria specified in the relevant WSP.<br>– define the mine inflow volume value triggering this response procedure within the GWMP.<br>– As part of WCPL's response procedure, a report summarising the assessment is to be submitted to the Office of Water. | Section 5.2.5 of the GWMP has been updated to include the recommended response procedure.<br>The mine inflow volume that would response procedure has been defined in the GWMP (563 ML/annum, which is 50% more than the peak estimate predicted by HydroSimulations (2014) [375 ML/annum] for the North Wambo Underground Mine). |
| • WCPL must notify the Office of Water as soon as practicable on become aware of any take of water in excess of its licensed entitlement | Section 5.2.5 of the GWMP has been updated to include this statement. |
| It is recommended with respect to monitoring leakage from dams<br>• The closest bore to South Dam is Piezometer 114 representative of Wambo Creek alluvium. South Dam contains produced water from the mine and P114 shows a sharp rise in salinity to a level on par with water in the dam. This indicates probable leakage occurring from the dam that warrants further investigation. However, as the proponent proposes not to utilise water quality as a performance measures, no direct response is proposed. Significant leakage to the nearby alluvial aquifer could risk a change in the beneficial use of the aquifer. Trigger levels with regard to salinity must be set to investigate and determine if remediation is required. | WCPL has initiated an investigation into the monitored increasing salinity levels in P114.<br>Wambo South Water Dam is currently not in use for the period of secondary extraction for Longwall 9, Longwall 10 and Longwall 10A at the North Wambo Underground Mine. Wambo South Water Dam has been drained as far as practical since January 2015. Therefore, any possible leakage mechanism that may have impacted bore P114 may no longer be present. |
| A report summarising any special assessment for the above recommendations should be provided within 6 months. | As described in Section 6.1.4 of the revised GWMP, a preliminary investigation report will be provided to the DP&E and NOW by 30 November 2015. |
| **Surface Water Management**<br>• The Office of Water recommends the proponent and the Department of Planning and Environment develop a consultation process with affected landholders to address existing and potential degradation which occurs as a result of mining subsidence. This should focus on incorporating natural processes for channel recovery particularly using large timber controls to maintain bed level (bed sills), bank toe protection (timber bank revetment) and creation of scour pools by using 'forced' controls such as engineered log jams as an adjunct to revegetation of both banks of both watercourses. | All land above the North Wambo Underground Mine is owned by WCPL. Therefore there are no other affected landholders associated with the North Wambo Underground Mine Extraction Plan for Longwalls 8 to 10A.<br>Advisian (2015) concluded it is unlikely Wambo Creek and Stony Creek would experience adverse impacts from the North Wambo Underground Mine, and mitigation measures are unlikely to be required. In the unlikely event that any mitigation measures are required, these would be developed in consultation with the Department of Planning and Environment and the NSW Office of Water, and would aim to incorporate natural processes for channel recovery. |

# APPENDIX C
# NORTH WAMBO CREEK SUBSIDENCE RESPONSE STRATEGY