

# Section 5

## Draft Statement of Commitments

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*This section has been prepared in accordance with the requirements of Part 3A of the Environmental Planning and Assessment Act 1979, and presents a compilation of the actions and initiatives the Proponent commits to implement if the proposed Longwall Project is approved. These commitments are designed to effectively manage, mitigate, guide and monitor the Longwall Project through its various phases.*

*The Environmental Assessment of the Longwall Project has identified a range of environmental, social and management outcomes and measures, all required to avoid or reduce the environmental and social impacts of the project. Those commitments made for Stage 1 of the Narrabri Coal Mine that remain relevant to the Longwall Project have been included in this draft Statement of Commitments and are provided in **italics**.*

*All parties involved in the design, establishment and operational phases of the project will be required to undertake their work in accordance with the commitments. The commitments are presented in tabular form (**Table 5.1**) and identify the desired outcome, action and timing of commitments, arranged initially by operational activity and then by environmental issues.*

*Each of the principal components of the existing and proposed Stage 2 Mine are displayed on **Figures 2.1 and 2.2**.*

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**Table 5.1**  
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Desired Outcome	Action	Timing
<b>1. Area of Activities</b>		
All approved activities are undertaken in the area(s) nominated on the approved plans and figures (unless moved slightly to avoid individual trees).	1.1	Survey and mark the boundaries of the areas of disturbance on the ground.
	1.2	(If not already surveyed), commission an ecologist and/or archaeologist (along with representatives of the Aboriginal community) to advise of any constraints posed by threatened flora or fauna, or archaeological sites.
	1.3	Relocate or redesign the area of disturbance (if mine safety is not compromised) to avoid sites of ecological or heritage significance.
	1.4	Align access to sites of surface disturbance following advice from ecologist and/or archaeologist.
	1.5	Advise relevant personnel on restrictions placed on activities by identification of sites of ecological or heritage significance and management requirements.
<b>2. Operating Hours</b>		
Management of site establishment activities in accordance with the approved operating hours.	2.1	Undertake vegetation clearing/soil removal within the hours of: 7:00am to 10:00pm / 7 days.
	2.2	Undertake construction within the Pit Top Area within the hours of: 7:00am to 10:00pm / 7days.
	2.3	Undertake construction of the Reject Emplacement Area and Brine Storage Ponds within the hours of: 7:00am to 10:00pm / 7days.
	2.4	Undertake ventilation shaft construction and gas drainage installation within the hours of: 24 hours / 7 days.
	2.5	Undertake ventilation and gas drainage operations within the hours of: 24 hours / 7 days.
	2.6	Undertake mining operations within the hours of: 24 hours / 7 days.
	2.7	Undertake coal crushing screening and processing operations within the hours of: 24 hours / 7 days.
	2.8	Undertake CPP reject disposal within the hours of: 7:00am to 10:00pm / 7days. Contingent hours of operation will be 24 hours / 7 days to account for those periods of elevated reject production.
	2.9	Undertake rail loading and transportation within the hours of: 24 hours / 7 days.
	2.10	Undertake raw materials / supply delivery within the hours: 7:00am to 10:00pm / 7 days



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>3. Waste Management</b>		
Minimisation of the potential risk of environmental impact due to general waste creation, storage and/or disposal.	<p>3.1 <i>Dispose all paper and general waste in suitable waste receptacles.</i></p> <p>3.2 <i>Collect general waste bins as required to eliminate potential for environmental harm and place contents in large, lidded waste storage receptacles or dumpsters to await removal by licensed contractor.</i></p> <p>3.3 <i>Collect industrial waste fortnightly, or more frequently if required.</i></p> <p>3.4 <i>Install separate containers for the collection of recyclable items and despatch off site at appropriate intervals.</i></p> <p>3.5 <i>Employ a licensed waste collection contractor for all general waste / garbage at least on a weekly basis.</i></p> <p>3.6 <i>Collect waste oils and grease and pump to bulk storage tanks.</i></p> <p>3.7 <i>Collect all parts/packaging and transfer to the site workshop for disposal or recycling.</i></p> <p>3.8 <i>Install adequate toilet and ablution facilities within the mine facilities area for the site workforce and visitors.</i></p> <p>3.9 <i>Install a self irrigating septic sewage system approved by Narrabri Shire Council.</i></p> <p>3.10 <i>Service facilities by a licensed sewage collection / disposal contractor.</i></p>	<p>Ongoing.</p> <p>Ongoing.</p> <p>At least fortnightly.</p> <p>Ongoing.</p> <p>Ongoing.</p> <p>As required.</p> <p>As required.</p> <p>Initial activities of site establishment phase.</p> <p>Initial activities of site establishment phase.</p> <p>As required.</p>
Minimisation of the potential risk of environmental impact due to coal reject storage and/or disposal.	<p>3.11 Characterise coal rejects to establish whether any deleterious products would be produced by leachate during emplacement.</p> <p>3.12 Dispose of coal rejects within the nominated Reject Emplacement Area, constructed immediately to the west of the Pit Top Area.</p> <p>3.13 Construct the Reject Emplacement Area as a series of 20m wide, elongated (north-south oriented) cells commencing on the eastern side (with a compacted base with a permeability <math>&lt;1 \times 10^{-9}</math> m/sec if elevated salinity or other deleterious contaminant is identified as likely to be present within the leachate – see Commitment 3.11)</p> <p>3.14 Construct drainage features for each cell to divert clean water around and capture and store sediment-laden water generated by run-off from the disturbed areas.</p> <p>3.15 Strip and store topsoil from each cell for future re-spreading over the final landform or re-spread immediately following stripping.</p> <p>3.16 Paddock-dump, spread by bulldozer and then compact the coal reject to form typical lifts of about 1.5m thick. The maximum height of the reject emplacement will be restricted to 15m, ie. 10 lifts with final side slopes not exceeding 14°.</p> <p>3.17 Install up to four lysimeters on the downslope side of the Reject Emplacement Area. (If saline leachate is generated by CPP rejects)</p>	<p>Within initial month of production of CPP reject and annually thereafter, if relevant.</p> <p>Continuous.</p> <p>Continuous.</p> <p>Prior to the commencement of each cell.</p> <p>Prior to the commencement of each cell.</p> <p>Continuous.</p> <p>As the structure is constructed, if required</p>



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>3. Waste Management (Cont'd)</b>		
Minimisation of the potential risk of environmental impact due to saline waste creation, storage and/or disposal.	3.18 Line each dam or pond designed to hold either raw groundwater or processed brine with a HDPE liner with a permeability of $<1 \times 10^{-14}$ m/sec.	Prior to the commencement of water discharge into pond or dam.
	3.19 Confirm by QA inspection of the liner that the nominated permeability is achieved.	Prior to the commencement of water discharge.
	3.20 Prohibit vehicular access to the walls of the lined dam or pond.	Continuous.
	3.21 Remove impermeable liner at completion of mining and dispose of to a facility licenced to accept saline waste.	Following removal of all saline groundwater or brine from the dam/pond.
	3.22 Inspect, sample and analyse ground beneath each dam or pond to confirm no leakage has occurred over the life of the pond.	Prior to final rehabilitation.
	3.23 (should saline contamination be identified), Remove and dispose of saline contaminated material (within the backfilled box cut).	As required and prior to final rehabilitation.
<b>4. Rehabilitation</b>		
Decommission and remove the infrastructure and services no longer required for ongoing activities on the land of the Mine Site.	4.1 Confirm the proposed final land use of the Mine Site lands and identify the infrastructure and services to be retained to support this land use.	As part of the Mine Closure Plan for the mine.
	4.2 Demolish or deconstruct and remove infrastructure and services not required by the confirmed future land use.	Prior to relinquishment of Mining Lease.
The creation of a stable final landform on the Pit Top Area (and surrounding long-term disturbance areas, ie. ventilation shaft areas, reject emplacement area and brine storage ponds), available for the proposed future use(s) of agriculture, and/or nature conservation.	4.3 <i>Stabilise all earthworks, drainage lines and disturbed areas no longer required for mine-related activities in order to minimise erosion and sedimentation, and to reduce the visibility of the activities from adjacent properties and the local road network.</i>	As required.
	4.4 <i>Provide a low maintenance, stable and safe landform that blends with the surrounding topography and which is commensurate with re-established agricultural land uses.</i>	Prior to mine closure.
	4.5 <i>Ensure any areas of disturbance that require profiling meet the requirements of the final landform.</i>	As area becomes available.
	4.6 <i>Replace subsoil and topsoil over areas of disturbance in the same order and approximately same depths as it was removed.</i>	As area becomes available.
	4.7 <i>Ensure the most appropriate crop / pasture species are planted in areas returned for agricultural use..</i>	As areas become available
	4.8 <i>Conduct ongoing rehabilitation monitoring and maintenance throughout and beyond the operation.</i>	Ongoing.



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>4. Rehabilitation (Cont'd)</b>		
The progressive rehabilitation of disturbance associated with the Mining Area, ie. gas drainage and temporary ventilation activities, to create a stable final landform available for the proposed future use(s) of agriculture, forestry and/or nature conservation.	4.9 Restrict areas of disturbance to the areas identified and marked in accordance with Commitments 1.1 to 1.5.	Ongoing.
	4.10 Remove gas drainage equipment and backfill and cap each remaining bore hole in accordance with the former NSW Department of Primary Industries – Mineral Resources EDG01 guideline “ <i>Borehole Sealing Requirements on Land: Coal Exploration</i> ”.	At completion of gas drainage activities.
	4.11 Allow water retained within the sump(s) to evaporate, excavate any consolidated drill cuttings and fines, remove the plastic liner and backfill each sump.	At completion of gas drainage activities.
	4.12 Respread previously stripped and stockpiled topsoil and vegetation over the backfilled sumps and other cleared areas.	At completion of gas drainage activities.
	4.13 Complete periodic inspections of the rehabilitated sites to confirm a return to the vegetation of the surrounding landform.	Annually.
	4.14 (Unless required for future access to monitor or manage subsidence related impacts), close, cross-rip and respread previously cleared vegetation over access tracks.	Once no longer required for site inspection purposes.
Cracking or surface deformation is identified promptly and remediated such that general rehabilitation objectives are not compromised.	See Commitments 5.1 to 5.5.	
Prevent any noxious weed infestations.	4.15 Obtain certification from plant supplier / contractor that equipment imported to the Mine Site has been cleaned and is free of soil and vegetation.	Prior to movement of equipment from hardstand of the Pit Top Area.
	4.16 Undertake campaign weed spraying over the Pit Top Area and areas of surface disturbance of the Mining Area in consultation with DII-Agriculture and/or the local Noxious Weeds Inspector.	Prior to the stripping of topsoil.
<b>5. Subsidence Management</b>		
Identify and remediate surface cracks to minimise impacts on local hydrology, ecology and soils are minimised.	5.1 Inspect the identified ‘cracking zones’ above each longwall panel to identify occurrence of cracks.	During and for a period of at least 2 years following mining of each longwall panel.
	5.2 Rip the surface over cracks not filled in by natural processes.	Continuous and as required.
	5.3 (For larger cracks for which surface ripping will not completely fill) fill with subsoil material sourced from stockpiles maintained at nearby gas drainage or ventilation sites, or within the footprint of the Reject Emplacement Area.	Continuous and as required.



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>5. Subsidence Management (Cont'd)</b>		
Identify and remediate surface cracks to minimise impacts on local hydrology, ecology and soils are minimised.	<p>5.4 Inspect local drainage lines above the active and completed longwall panels.</p> <p>5.5 Note the effects of any ponding and commission a hydrologist or ecologist to recommend remedial actions should the area of ponding encroach upon sites of conservation or heritage significance.</p>	<p>As required.</p> <p>During and for a period of at least 2 years following mining of each longwall panel.</p>
Minimise the impacts of sub-surface cracking on water use and availability.	See Commitments 6.10 to 6.11.	
Identify and minimise the impacts of subsidence-induced erosion on the local environment.	<p>5.6 Inspect areas of the Mine Site susceptible to landslip or accelerated erosion, eg. drainage lines and steeply sloped areas of exposed Purlawaugh Formation derived subsoils.</p> <p>5.7 (In the event of large-scale slope instability), undertake appropriate stabilisation works, eg. installation of deep sub-surface drainage trenches or construction of strategic catch drains along slope crests.</p> <p>5.8 (In the event of erosion within Mine Site watercourses), stabilise the damaged or eroded banks (in accordance with an Erosion and Sediment Control Plan for the Longwall Project).</p>	<p>Quarterly following mining activities which may produce subsidence</p> <p>Continuous and as required.</p> <p>Continuous and as required.</p>
Identify and minimise the impacts of valley closure and uplift ('upsidence') induced erosion on the local environment.	<p>5.9 Establish survey lines along ephemeral drainage gullies and along gully crests and monitor during and after mining of each longwall panel to identify any signs of cracking or 'upsidence'.</p> <p>5.10 Review predictions of 'upsidence' and valley crest movements after each longwall is completed.</p> <p>5.11 (In the event that 'upsidence' results in surface cracking or erosion), undertake remedial works identified by Commitments 6.1 to 6.8.</p>	<p>Prior to the commencement of mining each longwall panel.</p> <p>Following completion of each longwall.</p> <p>Continuous and as required.</p>
Identify and minimise the impacts of ponding on the local environment.	<p>5.12 Sample ponded water to determine if there is any increase in salinity.</p> <p>5.13 Inspect the watercourses over the subsidence zone to identify the location and extent of ponding.</p> <p>5.14 For ponding where there is little or no vegetation of conservation significance) monitor the location and extent of ponding.</p> <p>(If ponded area continues to increase in area, encroaches on vegetation of conservation significance or there is an increase in water salinity), excavate a channel to reduce the gradient change over the retained chain pillars. The excavation will be undertaken in accordance with an Aboriginal Cultural Heritage Management Plan and vegetation clearing procedures.</p>	<p>Quarterly upon identification of subsidence induced ponding.</p> <p>Quarterly for a period of 2 years following mining that would induce subsidence.</p> <p>Quarterly for a period of 2 years following mining that would induce subsidence</p> <p>Continuous and as required.</p>



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>5. Subsidence Management (Cont'd)</b>		
Identify and minimise the impacts of far field displacements on local infrastructure.	<p>5.15 Monitor surface features (such as culverts) within 800m of the eastern edge and 1.5km of the western edge of the Mining Area.</p> <p>5.16 (In the event of damage to surface structures such as pipes, culverts, water tanks, dams or other soil or water conservation structures), repair the damaged infrastructure or provide appropriate compensation.</p>	<p>Prior to mining that may result in subsidence at the relevant structure.</p> <p>Continuous and as required.</p>
Identify and manage the impacts of subsidence on local property infrastructure (including residences).	<p>5.17 Commission a dilapidation survey and inspection of all structures on non-project related land within the Mine Site by a qualified building consultant.</p> <p>5.18 Use the dilapidation survey and subsequent report in an individual property subsidence management plans (IPSMP) prepared for each property to be impacted (to provide fair and reasonable outcomes between the affected property owner and the Proponent).</p> <p>5.19 Each IPSMP will address the following issues.</p> <ul style="list-style-type: none"> <li>• Timing and scale of predicted impacts.</li> <li>• Monitoring on the affected property during mining.</li> <li>• Timing for any remaining disconnection of services.</li> <li>• Post-mining inspection and reporting.</li> </ul>	<p>Prior to mining that may result in subsidence at the relevant structure.</p> <p>Prior to mining that may result in subsidence at the relevant structure.</p> <p>Prior to mining that may result in subsidence at the relevant structure.</p>
Prepare and implement a Subsidence Monitoring Program	<p>5.20 Prepare a Subsidence Monitoring Program which includes the following elements.</p> <ul style="list-style-type: none"> <li>• A transverse subsidence line across the northern and southern panels. The lines will be installed to at least the middle of the next adjacent longwall before undermining occurs.</li> <li>• A longitudinal line extending in-bye and out-bye from the starting and finishing point of each panel, for a minimum distance equal to the cover depth.</li> <li>• A survey line along the riparian management zone of Kurrajong and Pine Creeks and their tributaries over the Mine Site.</li> <li>• A minimum of three monitoring pegs spaced 10m apart in a line or triangle at any feature of interest, eg. dam walls, archaeological sites, to measure subsidence, tilt and strain.</li> <li>• Visual inspections and mapping of damage before, during and after mining.</li> </ul> <p>5.21 Place monitoring survey pegs between 10m and 20m apart with a minimum of two baseline surveys of subsidence and strain completed before mine subsidence effects occur.</p>	<p>Prior to the commencement of mining in each longwall panel.</p> <p>Prior to the commencement of mining in each longwall panel.</p>





**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>6. Groundwater</b>		
Minimise the volume of mine in-flow to the underground workings.	6.1 Seal the mine drifts and ventilation shaft using in-strata grouting or hydrophobic sealant.	At time of Mine Closure
Manage mine in-flows to minimise the potential for contamination of surface catchments.	6.2 Divert groundwater accumulating in the underground workings to designated sumps for pumping to surface.	Ongoing.
	6.3 Discharge groundwater pumped from the underground sumps into Dam A1 only.	Ongoing.
Implement a comprehensive and ongoing groundwater monitoring program.	6.4 Record extraction volumes including weekly totals from all pumping bores, and weekly totals from the underground mine and open cut sump.	Weekly.
	6.5 Record Volumes of water introduced to the mine for longwall operation and other requirements.	Weekly.
	6.6 Record the groundwater quality (EC and pH) discharged from the underground workings and water supply bores.	Monthly.
	6.7 Sample and analyse water from all pumping bores and underground pumping stations.	Quarterly
	6.8 Record (by manual monitoring, or continuous automated monitoring) the standing water levels of piezometers P1 to P27 and WB1 to WB8 (and others as constructed).	Monthly initially and hence quarterly when stable flow established
	6.9 Monitor the flow rate and water quality of the spring discharge from "Mayfield Spring".	Monthly initially and hence quarterly when stable flow established.
	6.10 Install additional multi-level vibrating wire piezometers over LW1 to LW3 to obtain detailed data as to the impact of mine subsidence on the groundwater of the various strata above the underground workings.	Prior to commencement of longwall mining.
	6.11 Collect data from the vibrating wire piezometers and compare against initial groundwater and subsidence modelling predictions.	Data collected continuously and downloaded and analysed quarterly.
	6.12 Commission an experienced hydrogeologist to collate and review the monitoring data collected annually in order to assess the impacts of the project on the groundwater environment, and to compare any observed impacts with those predicted from groundwater modelling. (see also Commitment 16.11)	Annually.



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>6. Groundwater (Cont'd)</b>		
Implement a comprehensive and ongoing groundwater monitoring program.	6.13 Develop the groundwater monitoring program in consultation with the Proponent's consultant hydrogeologist, the Department of Environment, Climate Change and Water – Office of Water and those groundwater users potentially affected by the Longwall Project. (see also Commitment 16.12)	Prior to commencement of longwall mining.
	6.14 Complete an initial audit of the groundwater model predictions against monitoring data.	6 months after the commencement of longwall mining.
	6.15 Recalibrate the groundwater model based on groundwater model audit and generate confirmatory forward impact predictions made.	6 months after the commencement of longwall mining.
	6.16 Carry out regular audits of the groundwater model predictions against monitoring data.	Every 5 years (or more frequently if in-flows deviate significantly from predictions).
Preparation of a contingency plan in the event that the availability or quality of groundwater is reduced for local groundwater users.	6.17 Undertake remedial action if the available drawdown attributable to the mine for the existing groundwater users is reduced by over 15%. In the event that an existing water supply is deemed (by the hydrogeologist) to be adversely affected by the Longwall Project, the Proponent will mitigate, or compensate for this impact through the provision of a replacement water supply.	As required.
	6.18 Undertake remedial action if the water quality of the dewatering discharge indicates an inflow salinity of more than 20% above that predicted by Aquaterra (2009),	As required.
<b>7. Surface Water</b>		
Minimisation of changes to existing drainage patterns of the Mine Site.	7.1 Retain selected surface water structures such as the farm dams and diversion swales to allow for continued water management across the Pit Top Area.	During construction period.
Prevention of discharge of sediment-laden water from the Pit Top Area.	7.2 Direct runoff collected within potentially contaminated catchments of the coal processing area and Reject Emplacement Area to storage basins (SB1, SB2 and SB3).	Ongoing.
	7.3 Dewater storage basins SB1, SB2 and SB3 and discharge the water to Dam A1 (or Dams C or D) to ensure no discharge or overflow.	Ongoing.
	7.4 Design and construct the storage basins to provide the capacity nominated by WRM (2009).	Prior to commencement of longwall mining.
	7.5 Design and construct the sediment dams to provide sufficient water settlement and sediment storage zones to contain the 5 day 90%ile storm event.	Prior to commencement of longwall mining.
	7.6 Dewater sediment dams within 5 days of significant rainfall event.	With 5 days.



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>7. Surface Water (Cont'd)</b>		
Prevention of discharge of contaminated water from the Pit Top Area.	7.7 Direct all water from wash-down areas and workshops to oil/water separators and containment systems. The oily fraction will enter a containment system for removal as necessary.	Ongoing.
	7.8 Ensure all storage tanks are either self-bunded tanks or bunded with an impermeable surface and have a capacity to contain a minimum 110% of the largest storage tank capacity.	Ongoing.
	7.9 Restrict refuelling, oiling and greasing to designated areas, away from drainage and where spill kits are readily available.	Ongoing.
Prevention of discharge of saline water from the Pit Top Area.	7.10 Discharge all groundwater into Dam A1, and either use without processing in selected areas on site or process through the Water Conditioning Plant to produce fresh water raffinate and concentrated brine.	Ongoing.
	7.11 Construct storages for saline groundwater (Dam A1) and brine (Dams A2, A3, B2 and BR1 to BR5 [as required]) using in-situ material which have an average depth of 5m and batter slopes of ~1:3 (V:H).	Dams A2, A3 and B2 Prior to commencement of mine dewatering and BR1 to BR5 as required.
	7.12 Line all dams to be used to store groundwater or brine with HDPE liner (permeability $<1 \times 10^{-14}$ m/sec).	Prior to commencement of mine dewatering.
	7.13 Maintain at least 0.5m freeboard in each brine storage (sufficient to cater for design 1 in 100 year ARI event).	Ongoing.
	7.14 Commence construction of brine storage ponds from 12 months prior to the anticipated requirement to accept brine discharge.	As required.
	7.15 Ensure all storages used for the storage of treated raffinate are constructed using a compacted clay lining, to an average depth of 5m and with batter slopes of ~1:3 (V:H).	Prior to commencement of use for raffinate storage.



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>7. Surface Water (Cont'd)</b>		
Prevention of discharge of dirty, contaminated or saline water from the progressive disturbance areas of the Mining Area.	<p>7.16 Prepare and implement a general Erosion and Sediment Control Plan (ESCP) (in accordance with the requirements of Landcom, 2004) to manage surface water flows within each gas drainage or ventilation shaft area. The ESCP will provide for the following management.</p> <ul style="list-style-type: none"> <li>– Prior to disturbance, the area will be marked out and 'no-go' zones identified.</li> <li>– If located on or adjacent to a natural drainage line, a diversion bank will be constructed up-slope of the area to be disturbed.</li> <li>– the requirement for a sediment basin will be determined, using the Revised Universal Soil Loss Equation (RUSLE).</li> <li>– If a sediment basin is required, ie. soil loss &gt;200t/ha/year, the sediment basin design capacity will be calculated.</li> <li>– Soil will stockpiled away from natural drainage lines.</li> <li>– Sediment fencing will be installed along the down-slope boundaries of the disturbed areas.</li> <li>– All sediment control structures will be regularly inspected and repaired.</li> </ul>	Prior to the commencement of gas drainage or ventilation shaft construction.
	7.17 Store potential contaminants, eg. drilling fluid, hydrocarbons, within bunded areas away from natural drainage lines.	Ongoing.
	7.18 Ensure all contaminated liquids are contained in lined sumps at each drill site.	Ongoing.
	7.19 Discharge any groundwater to a lined sump, with this water immediately directed to Dam A1 within the Pit Top Area.	Ongoing.
Minimisation of impact from dirty water contamination event.	7.20 Sample water discharging from licensed discharge points and analyse the water for suspended solids, turbidity, electrical conductivity, oil and grease, and pH.	With 24 hours of discharge.
	<p>7.21 In the event monitoring confirms pollution has occurred, one or more of the following measures will be adopted.</p> <ul style="list-style-type: none"> <li>– The DECCW will be advised. Salient preceding weather information will also be provided.</li> <li>– Additional flocculants will be used to expedite settlement of sediments.</li> <li>– Plans will be set for the subject sediment dam will be enlarged or an additional sediment dam will be constructed downstream which will become the new site discharge point and monitoring location.</li> </ul>	Within 7 days.



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Desired Outcome	Action	Timing
<b>7. Surface Water (Cont'd)</b>		
Minimisation of impact from contaminated water event.	<p>7.22 Undertake the following actions (in the event of a major hydrocarbon spill).</p> <ul style="list-style-type: none"> <li>Collect the contaminated soil at the site of the spill and transport to an approved waste depot or designated 'land farming' area of the Mine Site.</li> <li>Construct pits around the spill with sufficient hydraulic gradient to capture seepage water and contaminated material.</li> <li>Pump out water captured in pits.</li> <li>Monitor the local groundwater for signs of contamination.</li> </ul>	As required.
Minimisation of impact from saline contamination event.	<p>7.23 Prepare a formal contingency plan for a saline contamination event. The plan may include one or a combination of the following measures.</p> <ul style="list-style-type: none"> <li>Dewatering from the underground workings will be transferred to an intact and lined storage structure (or ceased) along with any water remaining in the breached pond.</li> <li>The breached pond or pipe will be repaired immediately and inspected by a suitably qualified person prior to re-integration into the saline water management system.</li> <li>The water cart will be used to transfer non-saline water to the area of the spill to flush and dilute the water discharged. As far as practical, at least 4 times the volume of the spilled water will be used to flush the downstream environment.</li> <li>Downstream vegetation will be monitored for any impacts of increased salinity and treated appropriately.</li> </ul>	Prior to commencement of longwall mining.
Minimisation of erosion and sedimentation.	<p>7.24 <i>Maintain a ground cover of vegetation at 70% or better over areas disturbed but no longer required by the project</i></p> <p>7.25 Armour the banks of the rail loop with ballast in flood zone (larger diameter competent rock).</p> <p>7.26 <i>Inspect the banks of the rail loop and remediate erosion damage within Kurrajong Creek Tributary 1.</i></p>	<p>Ongoing.</p> <p>Ongoing.</p> <p><i>Following flood events.</i></p>



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>7. Surface Water (Cont'd)</b>		
Ensure no additional salt load is added to the Namoi River catchment as a consequence of the Longwall Project.	<p>7.27 Participate in, as required, the development of a salt accounting protocol with the NSW Office of Water.</p> <p>7.28 Enter into an agreement for, and contribute sufficient funds to the 'Cap and Pipe the Bores' Program to ensure that there is a sufficient salt 'credit' for the Proponent to offset all planned salt discharges over the life of the mine. (Any agreement that the Proponent enters in relation to this matter will include the opportunity to 'trade' or otherwise dispose of salt credit in excess of that required to offset salt load attributable to mine water discharges.)</p>	Prior to any discharge to the Namoi River.
Identification of alternative methods of disposal/use of brine.	7.29 Initiate a study by a recognised firm of engineering consultants to investigate the technical and economic viability of alternative methods of disposal (or use) of brine produced by the on-site Water Conditioning Plant	Commission within 12 months of receipt of Project Approval and completion of initial report within 3 years of the receipt of Project Approval.
Implement a comprehensive and ongoing surface water monitoring program.	<p>7.30 Monitor surface water quality for: pH, EC, TDS, TSS, Total Organic Carbon at locations upstream and downstream of the Pit Top Area on Kurrajong and Pine Creeks and their tributaries.</p> <p>7.31 Record the volume and quality (pH, EC, TDS, TSS, Total Organic Carbon) of water extracted and discharged to the Namoi River.</p>	<p>Quarterly during surface flow events</p> <p>Weekly.</p>
<b>8. Ecology</b>		
Manage disturbance within the Pit Top Area to minimise disturbance to flora and fauna of conservation significance.	<p>8.1 Clearly identify the boundaries of disturbance within the Pit Top Area and progressive disturbance associated with ventilation and gas drainage infrastructure. Ensure no clearing occurs outside these boundaries.</p> <p>8.2 Avoid disturbance to the vegetation of Community 3 along Kurrajong Creek Tributary 1.</p> <p>8.3 Disperse and spread cleared native vegetation around disturbed areas to provide habitat, increase the seed bank and to provide a mulch material for nutrient cycling and water retention purposes.</p> <p>8.4 Strip all groundcover vegetation with the topsoil to ensure maximum retention of nutrients and native seeds to facilitate rapid vegetation of the soil stockpiles.</p>	<p>Prior to clearing. (see also Commitments 1.1 and 1.2).</p> <p>During clearing.</p> <p>Ongoing.</p> <p>Ongoing.</p>

**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>8. Ecology (Cont'd)</b>		
Manage progressive disturbance over the Mine Site to minimise disturbance to flora and fauna of conservation significance.	8.5	Clearly identify the boundaries of proposed disturbance. As far as practicable avoid disturbance to the vegetation of Community 3 along watercourses of the Mine Site.
	8.6	Commission a qualified ecologist to complete a pre-clearance survey of nominated areas of disturbance (to identify whether any threatened species, population or community or their habitat is present).
	8.7	Include an assessment of whether aquatic or fish habitat is present within the drainage features to be traversed by the access road and/or power line corridors.  The location of access tracks will be determined in conjunction with an ecologist after inspecting each proposed route and determining the path with least impact on environmental values
	8.8	(In the event that an EEC or threatened species or population is identified), relocate or reorientate proposed disturbance, if practicable.  If the relocation or re-orientation of the area to be disturbed is not practicable (for reasons of mine / operational safety), the consultant ecologist will relocate any fauna species residing within the area to be cleared.
	8.9	Retain all substantial habitat trees, wherever possible.
	8.10	Undertake any tree-felling in accordance with a Tree Felling Protocol. The Tree Felling Protocol will be developed by a qualified ecologist and will include, but not necessarily be limited to a description of: <ul style="list-style-type: none"> <li>– the best time of the year for felling;</li> <li>– pre-felling mapping of habitat trees;</li> <li>– inspections of trees on the day of felling;</li> <li>– procedures for the safe removal of fauna species;</li> <li>– a relocation/release protocol; and</li> <li>– a protocol for the assessment and salvaging of tree hollows.</li> </ul>



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>8. Ecology (Cont'd)</b>		
Manage progressive disturbance over the Mine Site to minimise disturbance to flora and fauna of conservation significance.	8.11 Disperse and spread cleared native vegetation around disturbed areas to provide habitat, increase the seed bank and to provide a mulch material for nutrient cycling and water retention purposes.	Following clearing if areas available, otherwise when revegetation area available.
	8.12 Strip all groundcover vegetation with the topsoil to ensure maximum retention of nutrients and native seeds to facilitate rapid vegetation of the soil stockpiles.	Ongoing.
	8.13 Re-site all hollows from hollow-bearing trees removed where practicable.	Ongoing.
Minimise long term impact on flora and fauna on and around the Mine Site.	8.14 Implement a weed management strategy, in consultation with the Livestock Health and Pest Authority and the Narrabri Shire Council weeds officer, for the retained or rehabilitated natural vegetation within the Mine Site.	To be developed in the Landscape Management Plan for the Project in accordance with the Stage 1 conditional requirement.
	8.15 Implement a feral animal management program to lower the predator impact upon small terrestrial native species.	Within 6 months of Project Approval.
	8.16 Inspect the sediment dams, evaporation ponds and brine storage ponds for fauna during the course of regular maintenance and operational inspections.	Ongoing.
	8.17 Undertake regular reviews of the revegetation program to ensure it remains relevant.	Annually.
	8.18 <i>Time clearing within woodland communities, where practicable, to avoid fauna breeding seasons.</i>	<i>Ongoing.</i>
	8.19 <i>Undertake progressive and final rehabilitation across the Project Site to recreate a final land use of agriculture and native vegetation.</i>	<i>Ongoing.</i>
Ensure the biodiversity value of the Mine Site and surrounding areas is maintained or improved.	8.20 Establish and implement a biodiversity offset strategy, incorporating vegetation and habitat equivalent to that disturbed by the Longwall Project.	Within 3 years of Project Approval or prior to commencement of LW4 (whichever occurs first).
<b>9. Indigenous Heritage</b>		
Employees and contractors who are sensitive to, and respectful of, the Aboriginal heritage on the Mine Site.	9.1 Involve all site employees and contractors in an awareness program re: Aboriginal heritage issues.	At Site Induction (and re-induction).
Ensure protection of Aboriginal sites and artefacts of scientific significance (Aboriginal Sites 10, 19, 38 and 39).	9.2 Identify the boundaries of Aboriginal Sites 10, 19, 38 and 39 in conjunction with the Aboriginal stakeholders and the archaeologist and fence off (with fluorescent para-webbing (or similar material)).	Prior to any surface disturbance within 100m of the nominated sites.
	9.3 Erect a sign on the fencing identifying an "Environmental Protection Zone".	Prior to any surface disturbance within 100m of the nominated sites.





**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>9. Indigenous Heritage (Cont'd)</b>		
Ensure protection of Aboriginal sites and artefacts of scientific significance (Aboriginal Sites 10, 19, 38 and 39).	9.4 Prohibit access to these sites by locating all surface disturbance (including roads) at least 10m from these fenced off areas.	Prior to any surface disturbance within 100m of the nominated sites.
	9.5 Remove the fencing (erected as nominated in Commitment 9.3) to allow the return of grazing to reduce the potential grass-fire hazard.	Following the completion of surface disturbance in the vicinity of the protected site.
Manage identified Aboriginal sites and artefacts (of Panels 1 to 7) in accordance with agreed management principles.	9.6 For Aboriginal Sites 10, 19, 38 and 39, design surface disturbing activities such as gas drainage operation, ventilation and access road construction to provide a buffer of at least 10m from the site fencing.	Prior to any surface disturbance.
	9.7 For all other Aboriginal sites, design surface disturbing activities such as gas drainage operations, ventilation and access road construction to avoid wherever possible the identified Aboriginal sites.	Prior to any surface disturbance within 100m of any other Aboriginal site.
	9.8 In the event that one of the Aboriginal sites (other than Aboriginal Sites 10, 19, 38 and 39) cannot be avoided, commission an archaeologist and invite representatives of registered Aboriginal stakeholders (Gomeri and Narrabri LALC) to salvage the artefacts identified at the affected site ("the Salvage Area").	Prior to salvage.
	9.9 Undertake a full analysis of the material salvaged from within the Salvage Area by allowing the archaeologist to take the artefacts for further analysis.	Following salvage and prior to any surface disturbance.
	9.10 Return the salvaged artefacts to the authorised Aboriginal organisation.	Within 21 days of salvage.
	9.11 Place the salvaged artefacts in the care and control of the Aboriginal organisation agreed to by Narrabri LALC and Gomeri. (The Proponent (if required) has agreed to provide an interim 'keeping place' in a designated storage facility within the Pit Top Area until such time as a suitable location is identified and agreed to by Narrabri LALC and Gomeri).	Following salvage.
	9.12 Commission the preparation of a report ("Salvage Report") including full descriptions of the salvaged material, and an interpretation of the archaeological record within the Salvage Area.	Following salvage
	9.13 Provide copies of the Salvage Report to Narrabri LALC, Gomeri and the DECCW	Within 3 months of salvage



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>9. Indigenous Heritage (Cont'd)</b>		
Manage Aboriginal sites and artefacts (within the remaining Mining Area) in accordance with agreed management principles.	<p>9.14 As mining approaches the completion of Panels 1 to 7, undertake a further detailed field survey, involving representatives of the registered Aboriginal stakeholders, above the Mining Area to be disturbed over the ensuing 7 years.</p> <p>9.15 Identify and protect through fencing and signage, those sites determined to be of high scientific significance as agreed and determined in consultation between the Proponent, the registered Aboriginal stakeholders and the archaeologist.</p> <p>9.16 In the event that an identified site cannot be avoided, commission an archaeologist and invite representatives of registered Aboriginal stakeholders (Gomeri and Narrabri LALC) to salvage the identified artefacts. All salvage is to be undertaken as per Commitments 9.9 to 9.13 above.</p>	<p>At least 12 Months prior to completion of mining in Panel 7.</p> <p>Prior to any surface disturbance associated with Panel 8.</p> <p>Prior to any surface disturbance</p>
Manage Aboriginal heritage values in accordance with agreed management principles.	<p>9.17 Prepare, in consultation with the registered Aboriginal stakeholders and the DECCW, an updated Aboriginal Heritage Cultural Management Plan (ACHMP). The ACHMP will include:</p> <ul style="list-style-type: none"> <li>– protocols and procedures to ensure that all commitments (9.1 to 9.16) are implemented in full;</li> <li>– consultation and communication framework between the Proponent, registered Aboriginal stakeholders and the DECCW;</li> <li>– the accountabilities and responsibilities of the Proponent and registered Aboriginal stakeholders; and</li> <li>– All legal reporting requirements nominated by the DECCW.</li> </ul>	Within 6 months of receiving Project Approval
Appropriate protection and/or salvage of Aboriginal sites and artefacts identified beyond the Aboriginal sites defined during previous field surveys.	<p>9.18 Ensure that if any further Aboriginal artefacts are uncovered at any time during the life of the mine, work in the vicinity of the subject area ceases and the Proponent follows the procedures recorded in the ACHMP.</p> <p>9.19 Wherever possible, if a tree is identified as having culturally made scars, it is retained <i>in situ</i> and protected.</p> <p>9.20 Ensure that, where it is not possible to retain a scarred tree <i>in-situ</i>, the tree is cut down to preserve the scar, and relocated into a designated protected area. All activity associated with cutting of the tree and preservation of the scar is to be conducted in consultation with the Aboriginal stakeholders and the archaeologist.</p>	<p>In the event of an Aboriginal site or artefact being identified.</p> <p>In the event of a scarred tree being identified.</p> <p>In the event of a scarred tree being identified.</p>



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>10. Noise</b>		
All activities are undertaken in such a manner as to reduce the noise level generated and minimise impacts on surrounding landholders and/or residents.	10.1 Ensure that the approved hours of operation are adhered to.	Ongoing.
	10.2 Use equipment with lower sound power levels in preference to more noisy equipment.	Ongoing.
	10.3 Regularly service all equipment used on-site to ensure the sound power levels remain at or below the levels used in the modelling to assess generated noise levels and compliance with the criteria.	Ongoing.
	10.4 Maintain a dialogue between the Proponent and surrounding neighbours and the local community to ensure any concerns over construction, operational or transport noise are addressed.	Ongoing.
Noise generated by construction activities does not exceed DECCW nominated criteria nor significantly impact on neighbouring landowners and/or residents.	10.5 Ensure that all equipment emits sound power levels consistent with the schedules in Appendix A of Spectrum Acoustics (2009).	Ongoing.
	10.6 Restrict the operation of a maximum of two (2) scrapers during construction operations under temperature inversion conditions, to one of the following areas only. <ul style="list-style-type: none"> <li>the longwall unit assembly area;</li> <li>the ROM coal pad area;</li> <li>the Reject Emplacement Area; or</li> <li>the Brine Storage Area.</li> </ul>	During construction phase.
	10.7 Undertake noise monitoring at the residences most likely to be affected by construction noise, "Kurrajong" and "Greylands".	Monthly during the first winter of construction operations.
Noise generated by operational activities does not exceed DECCW nominated criteria nor significantly impact on neighbouring landowners and/or residents.	10.8 Fully enclose the rotary breaker within a shed (or similar) clad with tilt-up aerated concrete panels, or similar.	Prior to commencement of coal processing.
	10.9 Enclose the coal processing plant with clad steel sheeting and line 50% of the internal surface with acoustic insulation.	Prior to commencement of coal processing.
	10.10 Refrain from using the bulldozer on the reject emplacement area under temperature inversion conditions.	Prior to 9:00am during the winter months.
	10.11 Limit the number of truck movements to the Reject Emplacement Area to 2 loads per 15 minute period under inversion conditions.	Prior to 9:00am during the winter months.
	10.12 Ensure specific noise attenuation is provided to surface drills when operating over LW1 to LW3 and LW24 to LW26 to achieve a sound power level of 109dB(A).	Prior to surface drilling (under inversion conditions) above the relevant longwall panels
	10.13 Prepare or update the existing Noise Management Plan.	Prior to the commencement of mining activities



**Table 5.1 (Cont'd)**  
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Desired Outcome	Action	Timing
<b>10. Noise (Cont'd)</b>		
Noise generated by transport activities does not exceed DECCW nominated criteria nor significantly impact on neighbouring landowners and/or residents.	10.14 Ensure strict adherence to hours of operation, including transport activities.	Ongoing.
	10.15 Instruct all project employees and contractors to enter and exit the Mine Site in a courteous manner and without causing undue traffic noise.	On induction (and re-induction).
	10.16 <i>Maintain the on-site road network to limit body noise from empty trucks travelling on internal roads.</i>	Ongoing.
Blasting undertaken that complies with the nominated DECCW criteria.	10.17 Ensure that all blasts are designed by a suitably qualified and experienced blasting engineer or shot-firer and that each blast is designed to ensure compliance with the relevant assessment criteria or conditional requirements	Ongoing.
Implementation of an appropriate noise monitoring program to ensure continuing compliance with DECCW guideline levels during longwall mining operations.	10.18 Undertake attended noise monitoring at the residences most likely to be affected by Longwall Project generated noise. “Bow Hills”      “Belah Park” “Naroo”      “Kurrajong” “Oakleigh”      “Matilda” <sup>1</sup> “Newhaven”      “Haylin View” <sup>1</sup> “Greylands”      “Merrilong” <sup>1</sup>	Quarterly.
	10.19 Increase the frequency of monitoring during the first winter (May to September) of mining operations proposed under this approval.	Monthly.
	10.20 Review and submit noise monitoring results to the DECCW.	Annually.
<b>11. Air Quality</b>		
Site activities are undertaken without exceeding DECCW air quality criteria or goals.	11.1 Avoid disturbing areas outside those identified on <b>Figures 2.1</b> and <b>2.2</b> .	Ongoing.
	11.2 Minimise the extent of clearing across the Mine Site including the campaigns to construct the area for reject emplacement and construct brine storage ponds.	Ongoing.
	11.3 Retain cleared trees and branches on the margins of cleared areas for use in stabilising disturbed areas once they are no longer required.	Ongoing.
	11.4 <i>Undertake soil stripping at times when most appropriate (such as when there is sufficient soil moisture to prevent significant lift-off of dust and at times other than periods of high winds).</i>	Ongoing.
	11.5 Operate water sprays on all continuous miners, the longwall unit and the breaker feeder to minimise dust creation underground.	Ongoing.

<sup>1</sup> Monitoring to commence as surface activities approach the eastern end of the southern longwall panels.



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Desired Outcome	Action	Timing
<b>11. Air Quality (Cont'd)</b>		
Site activities are undertaken without exceeding DECCW air quality criteria or goals.	11.6 Apply water to the coal at the feed hopper, crusher and at all conveyor transfer and discharge points.	Ongoing.
	11.7 Fit all surface conveyors with appropriate cleaning and collection devices to minimise the amount of material falling from the return conveyor belts.	Prior to commencement of coal processing.
	11.8 Enclose the rotary breaker (as per Commitment 10.8).	Prior to commencement of coal processing.
	11.9 Partly enclose all surface conveyors to minimise dust lift off.	Prior to commencement of coal processing.
	11.10 Cease construction of the brine storage ponds when the prevailing winds are from the northwest quadrant.	Ongoing.
	11.11 Apply water onto stockpiles and hardstand areas.	Ongoing.
	11.12 Progressively rehabilitate areas of disturbance including gas drainage areas.	Ongoing.
	11.13 Progressively rehabilitate areas no longer required for operational purposes.	Ongoing.
Minimise the potential for spontaneous combustion of the coal stored and handled on site.	11.14 Minimise the length of time coal is held in stockpiles.	Ongoing.
	11.15 Monitor coal stockpiles for signs of spontaneous combustion.	Ongoing.
	11.16 Immediately report incidents.	Ongoing.
	11.17 Extinguish fire by removal from stockpile, spreading and saturation with water.	In the event of ignition.
Ensure no employee's health is adversely affected as a result of employment at the Longwall Project.	11.18 Install underground ventilation system to provide fresh air to employees.	Ongoing and as required.
Minimise greenhouse gas, other gas and odour emissions through reduction in diesel consumption.	11.19 Optimise and schedule vehicle operations to minimise vehicle movements.	Ongoing.
	11.20 Maintain engines according to manufacturers' guidelines and keep tyres at optimum pressure.	Ongoing.
	11.21 Minimise vehicle idling time.	Ongoing.
	11.22 Prepare an updated Energy Savings Action Plan (ESAP).	Within 12 months of Project Approval.
Implementation of an appropriate air quality monitoring program to ensure continuing compliance with DECCW guideline levels.	11.23 Monitor deposited dust levels at 8 sites (ND1 to ND8).	Monthly.
	11.24 Monitor PM <sub>10</sub> levels at 2 sites (ND9 to ND10).	1 in 6 days as per DECCW schedule.
	11.25 Review and submit dust monitoring results to relevant government agency.	Annually.



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Desired Outcome	Action	Timing
<b>12. Soils and Land Capability</b>		
Maintenance of soil value for rehabilitation and minimisation of soil loss through erosion.	12.1 Strip topsoil to a depth of 15cm and strip subsoil to a depth of 25cm (where sufficient soil depths are available).	During soil stripping operations.
	12.2 Avoid stripping or replacing under wet conditions.	During soil stripping operations.
	12.3 Stockpile topsoil and subsoil separately with topsoil stockpiles not exceeding 2m in height and subsoil stockpiles not exceeding 3m in height.	During stockpiling operations.
	12.4 Carefully select soil stockpile locations to avoid subsequent movement, to ensure that the soil structure is not degraded.	During soil stripping operations.
	12.5 Position soil stockpiles to prevent surface water runoff coming into contact with the soil stockpiles.	During soil stockpiling operations.
	12.6 Construct soil stockpiles with a 'rough' surface to assist in runoff control and seed retention and germination.	During soil stockpiling operations.
	12.7 Construct up slope water diversion banks to direct overland surface water flow away from soil stockpiles.	During soil stockpiling operations.
	12.8 Install protective earthworks such as straw bale or contour bank protection to protect the soil stockpile from overland flow as required.	Following stockpile construction.
	12.9 Install silt-stop fencing or similar protection immediately down slope of stockpiles and retain until such time as they develop a stable cover of vegetation.	Following stockpile construction.
	12.10 Sow soil stockpiles with stabilising groundcover species.	Following stockpile construction.
	12.11 Retain soil conservation structures, or if disturbed, reinstate these structures to maintain pre-mining soil and water management on the Mine Site.	Ongoing.
Minimise erosion on the Mine Site as a consequence of subsidence.	12.12 Inspect drainage lines, predicted surface cracking zones and other areas of the Mine Site susceptible to erosion, ie. soils of the Purlawaugh Formation on slopes >10°.	At least quarterly.
	12.13 Undertake remedial actions on areas of accelerated erosion, eg. reinstatement or realignment of contour banks, regrading of channels, sowing of cover crops, etc.	Ongoing and as required.
Ensure no tunnelling erosion occurs as a consequence of pipeline channel excavation and backfill.	12.14 Replace soil material in the reverse order to that removed, ie. lower subsoil layers, upper subsoil layers then topsoil	When under construction.



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Desired Outcome	Action	Timing
<b>12. Soils and Land Capability (Cont'd)</b>		
Remediate contaminated soils.	12.15 Excavate and remove soils contaminated with hydrocarbons or saline water.	Within one month of contamination occurring.
	12.16 (If the contamination is widespread) Remove contaminated material to facility licensed to accept the nominated contamination.	Within one month of contamination occurring.
	12.17 (If the hydrocarbon contamination is limited in area) Remove to a designated 'land farming' location (away from natural drainage) for bio-remediation of hydrocarbon contaminated material.	Within one month of contamination occurring.
<b>13. Transportation</b>		
All motorists travel safely to and from the Mine Site with minimal disruption to Kamilaroi Highway or Kurrajong Creek Road traffic.	13.1 Transport coal entirely by rail.	Ongoing.
	13.2 Erect appropriate road signage.	As required.
	13.3 Ensure all employees and contractors are regularly informed about the safe driving requirements to and from the Mine Site.	On induction and ongoing.
	13.4 Instruct all employees regarding the possible scenario where the rail crossing is closed at shift change-over and requirement for patience whilst the crossing is closed	On induction.
	13.5 Transport all oversize loads with all necessary permits.	As required.
	13.6 Manage the maintenance of the Mine Access Road, Kurrajong Creek Road, North Western Branch Railway Crossing.	Ongoing for the life of the mine.
An improved understanding of the cumulative impacts of increased rail traffic on all stakeholders impacted by increased rail traffic to Port Newcastle.	13.7 Work co-operatively with the relevant authorities, and as required ARTC, in terms of financial and in kind commitment of resources (to be agreed with the relevant authority and on an equitable basis with other rail users) in a study into the cumulative impacts of increased rail traffic from all sources.	When commissioned by the relevant authority.
An understanding of the implications of the cumulative impacts of increased rail traffic, on traffic flow in and about the township of Gunnedah.	13.8 Work co-operatively with Gunnedah Shire Council in terms of financial and in-kind commitment of resources (to be agreed with Gunnedah Shire Council and on an equitable basis with other rail users) in an Integrated Traffic Management Study to be commissioned by Gunnedah Shire Council.	When commissioned by Gunnedah Shire Council.
<b>14. Visual</b>		
The operation of the Siding Springs Observatory is not affected by project operations.	14.1 Use soft lighting on the Pit Top Area to minimise impact on surrounding residents while allowing for evening maintenance and deliveries / night train loading activities.	Night-time operations.
Restriction of vantage points of project activities from neighbouring residences and public roads.	14.2 Maintain the perimeter amenity bund and vegetate with native grasses, shrubs and trees.	During the site establishment phase.
	14.3 Construct and vegetate a bund wall around the ventilation shaft areas to restrict the visibility of the activities from neighbouring residences.	During the site establishment phase.



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Desired Outcome	Action	Timing
<b>14. Visual (Cont'd)</b>		
Restriction of vantage points of project activities from neighbouring residences and public roads.	14.4 Rehabilitate and revegetate all areas no longer required for site operations to ensure the maximum area of grassed paddock is present.	Ongoing.
	14.5 Construct/paint the load-out bin above the rail load-out area and site buildings in a grey/green hue to limit their overall visibility	During the site establishment phase.
<b>15. Community Contributions</b>		
Keep surrounding land owners and land users informed about site activities.	15.1 Maintain the Community Consultative Committee or similar and include local community representatives.	Ongoing.
	15.2 <i>Provide regular newsletters regarding project progress and operations.</i>	Ongoing.
<b>16. Environmental Monitoring</b>		
Implement a comprehensive and ongoing surface water monitoring program.	16.1 Monitor surface water quality for: pH, EC, TDS, TSS, Total Organic Carbon at locations upstream and downstream of the Pit Top Area on Kurrajong and Pine Creeks and their tributaries. (See also Commitment 7.27)	Quarterly during surface flows.
	16.2 Record the volume and quality (pH, EC, TDS, TSS, Total Organic Carbon) of water extracted and discharged to the Namoi River. (See also Commitment 7.28)	Weekly.
Implement a comprehensive and ongoing groundwater monitoring program.	16.3 Record extraction volumes including weekly totals from all pumping bores, and weekly totals from underground and open cut sump. (see also Commitment 6.4)	Weekly.
	16.4 Record Volumes of water introduced to the mine for longwall operation and other requirements. (see also Commitment 6.5)	Weekly.
	16.5 Record the groundwater quality (EC and pH) discharged from the underground workings and water supply bores. (see also Commitment 6.6)	Monthly.
	16.6 Sample and analyse water from all pumping bores and underground for the following parameters. <ul style="list-style-type: none"> <li>• EC, TDS, TSS and pH.</li> <li>• Calcium, magnesium, sodium and potassium.</li> <li>• Carbonate, bicarbonate, sulphate and chloride.</li> <li>• Aluminium, arsenic, boron, cobalt, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, selenium, zinc.</li> <li>• Ammonia, nitrate, phosphorus, reactive phosphorus. (see also Commitment 6.7)</li> </ul>	Quarterly





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Desired Outcome	Action	Timing
<b>16. Environmental Monitoring (Cont'd)</b>		
Implement a comprehensive and ongoing groundwater monitoring program.	16.7 Record (by manual monitoring, or continuous automated monitoring) the standing water levels of piezometers P1 to P27 and WB1 to WB8 (and others as constructed). (see also Commitment 6.8)	Monthly initially and Quarterly after first 12 months
	16.8 Monitor the flow rate and water quality of the spring discharge from “Mayfield Spring”. (see also Commitment 6.9)	Monthly initially and Quarterly after first 12 months.
	16.9 Install additional multi-level vibrating wire piezometers over LW1 to LW3 to obtain detailed data as to the impact of mine subsidence on the groundwater of the various strata above the underground workings. (see also Commitment 6.10)	Prior to commencement of longwall mining.
	16.10 Collect data from the vibrating wire piezometers and compare against initial groundwater and subsidence modelling predictions. (see also Commitment 6.11)	Data collected continuously and downloaded and analysed quarterly.
	16.11 <i>Commission an experienced hydrogeologist to collate and review the monitoring data collected annually in order to assess the impacts of the project on the groundwater environment, and to compare any observed impacts with those predicted from groundwater modelling.</i> (see also Commitment 6.12)	Annually.
	16.12 Develop the groundwater monitoring program in consultation with the Proponent’s consultant hydrogeologist, the Department of Environment, Climate Change and Water – Office of Water and those groundwater users potentially affected by the project. (see also Commitment 6.13)	Prior to commencement of longwall mining.
Implementation of an appropriate noise monitoring program to ensure continuing compliance with DEC guideline levels.	16.13 Undertake attended noise monitoring at the residences most likely to be affected by Longwall Project generated noise. “Bow Hills” “Belah Park” “Naroo” “Kurrajong” “Oakleigh” “Matilda” <sup>2</sup> “Newhaven” “Haylin View” <sup>2</sup> “Greylands” “Merrilong” <sup>2</sup> (see also Commitment 10.17)	Quarterly.
	16.14 Increase the frequency of monitoring during the first winter (May to September) of construction or mining operations. (see also Commitment 10.18)	Monthly.
	16.15 Review and submit noise monitoring results to the DECCW. (see also Commitment 10.19)	Annually.

<sup>2</sup> Monitoring to commence as surface activities approach the eastern end of the southern longwall panels.



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Desired Outcome	Action	Timing
<b>16. Environmental Monitoring (Cont'd)</b>		
Implementation of an appropriate air quality monitoring program to ensure continuing compliance with DEC guideline levels.	16.16 Monitor deposited dust levels at 8 sites (ND1 to ND8). (see also Commitment 11.23)	Monthly.
	16.17 Monitor PM <sub>10</sub> levels at 2 sites (ND9 to ND10). (see also Commitment 11.25)	1 in 6 days as per DECCW schedule.
	16.18 Review and submit dust monitoring result to relevant government agency. (see also Commitment 11.26)	Annually.
<b>17. Documentation</b>		
A systematic set of documents are in place to guide the planning and implementation of all environmental management strategies.	17.1 <i>Incorporate the environmental procedures in an on-site management system.</i>	<i>Prior to relevant activity.</i>
	17.2 Prepare or update the following management and monitoring plans; <ul style="list-style-type: none"> <li>• Mining Operations Plan</li> <li>• Aboriginal Cultural Management Plan</li> <li>• Energy Savings Action Plan</li> <li>• Waste Management Plan</li> <li>• Surface Water Management Plan</li> <li>• Water Management Plan</li> <li>• Landscape Management Plan</li> <li>• Greenhouse Gas Minimisation Plan</li> <li>• Flora &amp; Fauna Management Plan</li> <li>• Gas Drainage &amp; Outburst Management Plan</li> <li>• Major Hazard Management Plan</li> <li>• Salinity Contamination Contingency Plan</li> <li>• Subsidence Management Plan</li> <li>• Erosion &amp; Sediment Control Plan</li> <li>• Noise Management Plan</li> </ul>	Various and as nominated by project approval.
	17.3 <i>Incorporate relevant environmental data / information in Annual Environmental Management Reports.</i>	<i>Annually.</i>

**Table 5.1 (Cont'd)**  
**Draft Statement of Commitments for Site Operations and Management**

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Desired Outcome	Action	Timing
<b>18. General</b>		
All buildings meet necessary building codes and specifications.	18.1 Construct all buildings with certification by Narrabri Shire Council.	During site establishment phase.
All employees and contractors are trained and assessed as competent to undertake those activities influencing the environment.	18.2 Implement a policy encouraging employment of local district personnel, with arrangements for training and certification.	Prior to commencement of project.
	18.3 Include environmental issues in the site induction process for new employees and/or contractors.	Prior to commencement of project.
	18.4 Develop and incorporate an environmental training program to ensure all employees and contractors are environmentally responsible and follow all relevant site-specific procedures.	Prior to commencement of project.
	18.5 Include environmental issues in the agenda for toolbox meetings with employees and/or contractors.	Ongoing.



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