

## 14. Environmental management

Environmental management is an important aspect of Delta Electricity's decision-making and activities. Environmental direction is guided by Delta Electricity's Sustainability Policy and ISO14001-accredited environmental management system (EMS). The policy and ISO14001-guided EMS provide direction to ensure that the environmental impacts of Delta Electricity projects are well managed. The CEMP and OEMP that would apply to the proposal would be developed in accordance with the EMS and ISO14001.

### 14.1 Construction environmental management plan

A CEMP would be prepared by the successful contractor(s) to address management measures to be implemented for compliance with the Minister for Planning's conditions of approval, including the commitments made in this Environmental Assessment. The CEMP would cover the required environmental protection practices, resources and the sequence of activities, and would incorporate all of the proposed project-specific and standard mitigation measures included in the Environmental Assessment and summarised in the draft Statement of Commitments in Chapter 15.

The contractor(s) in addition to the commitments outlined in this environment assessment would be required to document the following information in the CEMP:

- Roles and responsibilities for planning, approval, implementation, assessment and monitoring of environmental controls.
- The required licences, approvals and permits.
- Objectives and targets for environmental performance with reference to the relevant guidelines.
- Environmental monitoring programs and a mechanism for evaluating environmental performance.
- Communication procedures.
- Document control procedures.
- Emergency response procedures to mitigate potential environmental damage.
- Training, competence and awareness assessment procedures and programs.

This Environmental Assessment has identified the need for specific environmental management measures to mitigate the potential environmental impacts identified. To ensure that these measures are implemented adequately, issue-specific and standard mitigation measures are included in the draft Statement of Commitments (see Chapter 15) and would be included within the CEMP. Project-specific and standard mitigation would address issues including, but not limited to:

- soil and water management
- waste management
- air quality
- surface and groundwater quality, hydrology and drainage
- realignment/rehabilitation of Sawyers Swamp Creek.

The draft Statement of Commitments provided in Chapter 15 outlines Delta Electricity's commitment to preparing and implementing these mitigation measures.

## 14.2 Operational environmental management plan

Delta Electricity has an active environmental management plan (EMP) for the Stage 1 ash repository area. This plan would be applied to the proposed Stage 2 area, with updates as appropriate, to coordinate ongoing monitoring and maintenance once the proposed Stage 2 ash repository is operational. The EMP details statutory and other obligations required to be fulfilled and the requirements for maintenance, monitoring, auditing and reporting. The updated EMP would be consistent with the commitments made in this Environmental Assessment, any future Submissions Report/Preferred Project Report and the Minister for Planning's conditions of approval.

Individual design and management responses to potential environmental impacts are discussed in chapters 7 to 13. These measures would address identified potential operational impacts, including, but not limited to:

- soil and water management
- operational noise and vibration associated with truck movement
- air quality
- ash management.

The draft Statement of Commitments (Chapter 15) provides a summary of the proposed management measures, demonstrating Delta Electricity's commitment to preparing and implementing project-specific environmental management and associated mitigation measures.

## 14.3 Ash management strategy

To extend the life of the ash repository and minimise the need to store ash, Delta Electricity has identified short, medium and long term objectives in relation to ash management.

### 14.3.1 Short-term ash management

#### **Strategy 1: Improve ash quality**

Delta Electricity is installing an extra silo and upgrading milling operations at Wallerawang Power Station to improve plant efficiencies. The use of a finer fuel increases the likelihood of more complete combustion, hence less unburnt carbon in the ash. This in turn may increase the interest of the cement industry and developers of aggregates and road bases in the fly ash from the Wallerawang Power Station. Whilst this forms part of ash management strategies and operational efficiency strategies for the Wallerawang operation, and as such is relevant to this proposal, these improvements are subject to separate approval and do not form part of this approval application.

#### **Strategy 2: Optimise on-site ash storage**

Given the prohibitive costs of mobilising ash, maximising of available storage on the Wallerawang Power Station site in the short term is a priority. Also given that the environmental impacts for this site are known, and have been assessed and managed as

part of the operation of the existing Stage 1 ash repository area, environmental and operational risks are considered reduced. This will include such measures as ensuring material is compacted and placed in small lifts to minimise the creation of void space within the available placement area.

### **Strategy 3: Reuse bottom ash**

Bottom ash can be used in the construction of site stability structures, minimising the requirement for naturally extracted materials and prolonging the operational life of the proposed Stage 2 ash repository area. As discussed in Section 2.3.8 and Section 13.1, the suitability of bottom ash material for use in stability structures for the proposal has been considered in the design of these structures. The proposed stability structures required for the Stage 2 ash repository have been designed to allow for the use of bottom ash.

Delta Electricity will continue to investigate opportunities to use bottom ash within site works to reduce natural resource requirements and extend the life of the proposed Stage 2 ash repository. This will be undertaken on a project-specific basis and will incorporate an assessment of any environmental impacts associated with reuse of bottom ash. If environmental impacts are considered likely, mitigation measures to manage these would also be investigated.

## **14.3.2 Medium-term ash management**

### **Strategy 4: Influence regulators**

Delta Electricity will continue to discuss ash reuse options and opportunities with regulators to:

- Encourage the development and use of ash for agricultural applications.
- Enforce cooperation and joint responsibility for management of ash between coal mine and power station operators. Progressive backfilling during mine operation is likely to be the safest, most efficient and effective means of managing mine rehabilitation.

### **Strategy 5: Assess alternative ash storage sites**

The identification and assessment of alternative sites for the storage of ash produced at Wallerawang Power Station would be continued by Delta Electricity under this strategy. Actions to be undertaken by Delta Electricity would include:

- Undertaking title searches in the local Lithgow area for derelict or closed mine sites.
- Continue working with coal mine landholders to discuss backfilling options.

### **Strategy 6: Minimise environmental and community impacts of ash management**

Delta Electricity would continue to monitor the environmental effect of Wallerawang Power Station (and other site) ash management operations, including continuing identification and application of measures to reduce environmental and community impacts where appropriate.

### 14.3.3 Long-term ash management

#### **Strategy 7: Work collaboratively with industry, research organisations and government agencies**

This strategy is associated with Delta Electricity's financial contribution and support for research to assess, improve and explore new reuse options for fly and bottom ash. To date, some research has been undertaken by CSIRO Material Science and Engineering Branch, industry specialists, doctoral students, universities, ADAA and CCSD.

## 15. Draft Statement of Commitments

This Environmental Assessment has identified a range of potential environmental impacts and recommended management measures to avoid or reduce the potential impacts of the proposal.

This draft Statement of Commitments identifies the environmental management and mitigation measures that the proposal proponent, Delta Electricity, commits to adhere to in the construction and operation phases of the proposed Stage 2 Kerosene Vale ash repository area (the 'Activity'). It brings together all of the environmental management and mitigation measures contained in the various sections of the Environmental Assessment to mitigate the impacts of the Activity on the environment.

The Statement of Commitments is expected to be used during the construction and operation phases of the Activity to measure the environmental performance of the Activity.

**Table 15-1 Draft Statement of Commitments**

<b>Action</b>
<p><b>Environmental management</b></p> <ul style="list-style-type: none"> <li>▪ A CEMP and an OEMP will be prepared to address management measures to be implemented for compliance with the Minister for Planning's conditions of approval, including the commitments made in this Environmental Assessment.</li> </ul>
<p><b>Ash management</b></p> <ul style="list-style-type: none"> <li>▪ Delta Electricity will maximise on-site storage of ash through filling placement areas to capacity by using small lifts and compaction techniques to reduce void creation and associated impacts.</li> <li>▪ Delta Electricity will continue to discuss ash reuse options and opportunities with regulators to encourage the development and use of ash for agricultural applications and promote cooperation and joint responsibility for management of ash between coal mine and power station operators.</li> <li>▪ Delta Electricity will continue to monitor the environmental effect of Wallerawang Power Station ash management operations, including continued identification and application of measures to reduce environmental and community impacts where appropriate.</li> <li>▪ Delta Electricity will continue to contribute to and support research to assess, improve and explore new reuse options for fly and bottom ash.</li> <li>▪ Bottom ash will be used in the construction of berms and other site stability structures where appropriate to meet engineering requirements.</li> </ul>
<p><b>Groundwater</b></p> <ul style="list-style-type: none"> <li>▪ The potential for changed groundwater levels will be controlled by capping and rehabilitating as soon as ash placement in that area has ceased.</li> <li>▪ Ash stacking rates will be staged and lift sizes limited to reduce the potential for pore pressure related change to groundwater levels, ongoing monitoring will be undertaken to track any change in groundwater level.</li> <li>▪ The exposed area of ash face will be limited to reduce the potential for infiltration of water to the groundwater system through the ash repository.</li> <li>▪ A detailed groundwater monitoring program will be established for the operational phase of the proposal as part groundwater management measures set out in the OEMP. The monitoring program will also encompass surface water quality at likely groundwater discharge areas.</li> <li>▪ Following completion of the Stage 2 ash repository area the final landform will be capped and revegetated and surface runoff from the site will enter the catchment as clean water (see Chapter 9 for the definition of 'clean water').</li> <li>▪ The area of ash face exposed at any one time will be limited to reduce the potential leachate from placed ash reaching the groundwater system.</li> </ul>

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**Action**

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**Surface water**

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- A water-retention system will be established to serve as a water collection basin to ensure that all site runoff is captured for treatment and reuse within the power station operations. This system will be designed to minimise impacts on Sawyers Swamp Creek.
- Mitigation measures will be required to manage impacts that may result during the construction of the proposed Stage 2 ash repository. Erosion and sediment control measures will be detailed, as part of the CEMP and the Sawyers Swamp Creek Rehabilitation Plan, in accordance with Soils and construction: managing urban stormwater (Landcom 2004) prior to the commencement of construction. Mitigation measures set out in the plan will include:
  - ▶ installing erosion and sediment controls such as sediment basins, staked straw bales, and sediment fences
  - ▶ ensuring appropriate planning of creek construction works to reduce the risk of sediment discharge to the existing waterway through limiting the length of time that soil is exposed
  - ▶ restricting construction traffic to defined internal roads, and where required, operating wheel-cleaning areas at locations where vehicles leave the construction sites
  - ▶ ensuring that chemicals and fuels are appropriately stored and banded.
  - ▶ training of construction employees to implement spill response procedures and implement, maintain and be aware of sediment and erosion control measures and requirements
- The realignment of a section of Sawyers Swamp Creek and construction of a stability berm for the ash area embankments will be designed to reduce the potential for impact on potential flows in Sawyers Swamp Creek.
- Sawyers Swamp Creek will have erosion and sediment controls installed prior to the commencement of any construction of earthworks, which will take high flows into consideration. With the exception of the creek realignment and associated works, earthworks will be avoided within 50 metres of the watercourse, where feasible. Disturbed areas will be rehabilitated or revegetated following the completion of construction and any remaining spoil will be removed or re-used within the proposed development activities.
- The realignment of the creek will include rehabilitation in line with the requirements of the Department of Water and Energy (see Draft Rehabilitation Plan in Appendix B).
- Following completion of the operational life of the Stage 2 ash repository area, the final landform will be capped and revegetated and all surface water from the area will enter the catchment as clean water.
- The proposed creek realignment design commits to the following environmental improvements:
  - ▶ improved geomorphic stability
  - ▶ improved water quality within the creek through a reduction of sediment loads from erosion
  - ▶ riparian corridors extending 20 metres from the top of bank on both sides of the creek.
- The existing water quality management system for the Stage 1 ash repository will be continued throughout the proposed Stage 2 operations. The existing plan will be updated and incorporated into a water management plan work instruction. The plan includes implementing several water quality control measures.

A detailed surface water monitoring program will be established in conjunction with surface water management measures to be set out in the OEMP for the proposed Stage 2 area. The surface water management measures will indicate trigger values (based on the ANZECC water quality guidelines), which, if exceeded, will lead to an appropriate management response. This will include wet weather monitoring.

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**Action**

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**Aquatic ecology**

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- The draft Sawyers Swamp Rehabilitation Plan will be implemented post creek realignment and will include revegetation of in-stream and riparian zoned areas with appropriate endemic species. Rehabilitation/revegetation will be undertaken in consultation with relevant government agencies, including the Department of Planning, Department of Primary Industries (Fisheries), and the Department of Environment and Climate Change.
- Monitoring of aquatic ecology will be undertaken and incorporated into the Sawyers Swamp Creek Rehabilitation Plan (see Appendix B).

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**Air quality**

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- Operators will apply standard dust-control measures until the ash material is placed and standard dust suppression (using water) in areas of site activity.
- The area of uncovered ash face will be kept to a minimum through the use of a staged stacking approach, with completed areas capped to minimise erosion.
- Works undertaken during the proposed Stage 2 activities will be carried out in accordance with a documented management plan. The plan will detail all approaches adopted to minimise dust emissions and specific mitigation measures to be incorporated during emplacement activities. The plan will also include an operating protocol for the irrigation system, at a minimum: the wet suppression technique should be activated when 15 minute wind speed thresholds exceed 5 m/s. Application rates and coverage area should be such that no visible emissions from the repository area occur.
- Ongoing monitoring of dust deposition at local gauges will be undertaken to confirm and manage potential impacts.

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**Noise**

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- Truck movements will be limited to between 7 am and 10 pm during normal operations to reduce noise impacts. Operations outside these times will be limited to abnormal and emergency conditions.
- Proven effective noise limiting operating practices will be implemented including residential class mufflers and, where applicable, engine shrouds (acoustic lining) to engines. Noise emissions will also be an important consideration when selecting equipment for the site. All equipment will be maintained in good order including mufflers, enclosures and bearings to ensure unnecessary noise emissions are eliminated.
- Noise management measures will be developed (as part of the CEMP and OEMP) to identify and address noise impacts on all potentially affected receivers, and detail procedures, noise mitigation measures and noise management practices to be implemented throughout the duration of the works.
- Ongoing noise monitoring will be undertaken to validate predicted noise impacts and confirm compliance with NSW INP noise design goals.

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**Terrestrial ecology**

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- Once the active ash surface reaches design height, it will be capped and rehabilitated with minimal delay.

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**Erosion and sediment control**

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- Capping and revegetation of areas will be undertaken with minimal delay. Erosion and sediment controls will be implemented as interim water control measures. Once areas are capped and revegetated, runoff will be diverted to the clean water system. All work on disturbed areas will be ceased during heavy rainfall.
  - A detailed monitoring program for the realignment of Sawyers Swamp Creek will be established and will include scour and erosion monitoring. As a minimum, reference monitoring as part of aquatic ecology monitoring will be undertaken over the first 5 years in order to adjust rehabilitation as required.
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**Action**

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- Erosion and sediment control measures will be detailed as part of the CEMP and OEMP and the Sawyers Swamp Creek Rehabilitation Plan, in accordance with *Soils and construction: managing urban stormwater* (Landcom 2004) prior to the commencement of construction. Plan contains several mitigation actions.

**Traffic, transportation and access**

- Traffic management will be undertaken in accordance with existing site management procedures and plans.
- Short-term increases in traffic movements on the local road network during construction will be managed through the CEMP.

**Land use and property**

- Site fencing will be erected on the boundary of all construction sites, including storage and other ancillary areas, to avoid unnecessary off-site damage to vegetation, trees and general landscape values.
- Where practical ash will be re-used in local manufacturing and in on-site structures.
- Construction personnel, equipment and vehicles will be confined to the works areas as defined by the site fences/hoardings erected at the works boundary.
- The repository areas will be rehabilitated following completion of placement activities in line with identified rehabilitation plans.
- Placement of ash in mining areas will be delayed (within power station operating constraints) to allow Centennial Coal time to further assess the viability of identified reserves.
- As part of the OEMP for the site a rehabilitation and landscaping plan will be developed to reduce visual and landscape impacts.
- Access will be negotiated with Centennial to enable mining should Centennial Coal determine that the identified resources are viable and obtain the necessary approvals.

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**Indigenous heritage**

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- Disturbance of the western portion of the study area will be kept to a minimum to reduce the potential for inadvertent disturbance of the Aboriginal heritage values of the area.
- If, during the course of development of the area, any objects (as defined under the *National Parks and Wildlife Act 1974*) are discovered, all work will cease and both the DECC regional archaeologist and the Bathurst Local Aboriginal Land Council will be notified so that an appropriate course of action can be determined.

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**Non-Indigenous heritage**

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- If, during the course of development of the area, any objects (as defined under *the Heritage Act 1977*) are discovered, all work will cease and the Department of Heritage will be notified so that an appropriate course of action can be determined.

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**Landscape and visual**

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- As far as practicable and without jeopardising the safety of the operation, lighting associated with the operation of the proposal will continue to be directed away from residential properties in the vicinity and towards SSCAD.
- Industry recognised visual impact mitigation and landscaping measures will be applied, including tree screening and landscaping, returning the modified areas to similar to pre-use forms and revegetation following capping.

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**Waste**

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- Cleared vegetation will be mulched, chipped or re-used on-site for sediment filter fences or other uses, where appropriate. Suitable logs and limbs may be used to provide aquatic habitat and fauna refuge in the realigned Sawyers Swamp Creek.
  - All other waste streams, including construction waste, will be removed and disposed of in accordance with relevant guidelines.
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**Action**

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- Maintenance wastes such as oils and greases will be disposed of to an appropriate facility. Waste generated by site personnel will be collected on a regular basis. Waste will either be recycled or disposed of to an appropriate facility.

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**Demand on resources**

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- To ensure that use of recycled water is maximised and waste minimised, the soil and water management plan within the CEMP will include measures requiring the construction contractor to prioritise recycling/reuse of water. The soil and water management plan will be prepared prior to construction and implemented throughout construction. In addition, operational water use will be managed through the OEMP.
  - Bottom ash will be used in the construction of berms and other site stability structures to minimise the need to use naturally extracted materials, subject to engineering safety constraints. The use of bottom ash in these structures will also extend the operational life of the proposed Stage 2 ash repository.
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## 16. Justification and residual risk

Delta Electricity has identified a need for alternative storage for ash by-products from coal-fired power production in order to maintain power production at Wallerawang Power Station. To meet this need and maintain base load power supply from this operation, the Stage 2 placement of ash in the Kerosene Vale ash repository has been identified. This area provides the capacity to enable the continued production of power to the NSW electricity grid, and as such, provide a significant benefit to ongoing electricity demands in NSW.

The Environmental Assessment addressed the key environmental issues identified in the environmental risk assessment and the Director-General's Environmental Assessment requirements. This assessment has been undertaken under Part 3A of the EP&A Act. A checklist of the Director General's Environmental Assessment requirements and where they are addressed in this Environmental Assessment is provided in Appendix C.

Against the benefit of ongoing electricity production the following key potential environmental impacts have been identified in association with the proposal:

- noise impacts on the local community
- aquatic ecology impacts associated with the realignment of Sawyers Swamp Creek
- water quality impacts
- dust and air emission impacts.

The environmental assessment and design process has identified proposed mitigation and management measures to mitigate and manage these impacts, as outlined in this Environmental Assessment and summarised in the draft Statement of Commitments.

A summary of the residual environmental risk following implementation of mitigation measures is provided in Table 16-1; this is based on the environmental risk assessment undertaken prior to the commencement of the environmental assessment (see Chapter 6). The risk categories A, B and C are defined in Table 6-1 in Chapter 6. Given implementation of the proposed measures, it is considered that the environmental risk of the project can be adequately managed and mitigated.

**Table 16-1 Residual environmental risk assessment**

Issue	Risk	Initial risk	Mitigation measures	Post-mitigation risk
Air quality	<ul style="list-style-type: none"> <li>▪ Impacts from dust and emissions from vehicles, plant and equipment during Stage 2 operations.</li> <li>▪ Impacts from dust during ash placement and stockpile management operations.</li> </ul>	A	<ul style="list-style-type: none"> <li>▪ As part of daily operational control, monitoring of weather conditions and visual inspection of site will determine if and when dust suppression through the use of water trucks is used.</li> <li>▪ Ensuring all ash haulage trucks are covered.</li> <li>▪ Minimising site footprint and exposed sites.</li> <li>▪ Maintaining sealed haul roads in a clean condition.</li> <li>▪ Maintaining moisture levels in the ash at 15% until the material is placed.</li> </ul>	C
Aquatic ecology	<ul style="list-style-type: none"> <li>▪ Loss of, or disturbance to, threatened aquatic flora and/or fauna species.</li> <li>▪ Potential impacts on/loss of endangered ecological communities.</li> <li>▪ Loss of aquatic habitat.</li> <li>▪ Impacts of realignment of Sawyers Swamp Creek on aquatic ecology.</li> </ul>	A	<ul style="list-style-type: none"> <li>▪ Implementation of standard construction and river restoration sediment and erosion control procedures as discussed in Chapter 9.</li> <li>▪ Maximising the geomorphological stability of the realigned channel, through appropriate design and location of creek.</li> <li>▪ Ensuring the creek restoration program is consistent with state policy and legislation and undertaking a monitoring program to ensure that restoration meets the regulatory objectives.</li> </ul>	C
Erosion and sediment control	<ul style="list-style-type: none"> <li>▪ Soil erosion and sedimentation associated with surface flows, increased runoff and the realignment of Sawyers Swamp Creek.</li> </ul>	B	<ul style="list-style-type: none"> <li>▪ A soil and water management plan would be prepared as part of the CEMP and OEMP. These plans would include standard mitigation and management measures and would be developed in accordance with <i>Soils and construction: managing urban stormwater</i> (Landcom 2004).</li> </ul>	C
Groundwater	<ul style="list-style-type: none"> <li>▪ Impacts of realignment of Sawyers Swamp Creek on groundwater quality and volumes.</li> <li>▪ Potential for infiltration of surface/rain water to groundwater, affecting groundwater levels and/or quality.</li> </ul>	A	<ul style="list-style-type: none"> <li>▪ Progressively remove the capping from areas where ash is to be placed and replace the capping as soon as ash placement in that area has been completed.</li> <li>▪ Stage the stacking rates.</li> <li>▪ Groundwater monitoring as per Section 7.5.2.</li> <li>▪ Capture of surface water and runoff (see surface water)</li> </ul>	B

Issue	Risk	Initial risk	Mitigation measures	Post-mitigation risk
Hazards and risk	<ul style="list-style-type: none"> <li>▪ Potential for spillage of hazardous material.</li> <li>▪ Potential impacts associated with storage of hazardous materials during construction.</li> <li>▪ Operational hazards.</li> </ul>	C	<ul style="list-style-type: none"> <li>▪ Standard management practices for the storage of hazardous material during construction and operation.</li> </ul>	C
Archaeology and heritage	<ul style="list-style-type: none"> <li>▪ Direct or indirect impacts on items of Indigenous or non-Indigenous heritage value.</li> <li>▪ Potential for impacts to heritage context/viewsheds associated with identified heritage items.</li> </ul>	C	<ul style="list-style-type: none"> <li>▪ Disturbance to the western-most portion of the study area should be kept to a minimum.</li> <li>▪ If during the course of development of the area, any objects (as defined under the <i>National Parks and Wildlife Act 1974</i>) are discovered, all work would cease and both the DECC regional archaeologist and the Bathurst Local Aboriginal Land Council would be notified so that an appropriate course of action can be determined.</li> <li>▪ If during the course of development of the area, any objects (as defined under the <i>Heritage Act 1977</i>) are discovered, all work would cease and the Department of Heritage would be notified so that an appropriate course of action can be determined.</li> </ul>	C
Landscape and visual impacts	<ul style="list-style-type: none"> <li>▪ Visual impacts on nearby residents (within up to 20 kilometres of the site).</li> <li>▪ Change in view from residences located west and south-west of the site.</li> </ul>	C	<ul style="list-style-type: none"> <li>▪ Potential for some screening of the site from affected residents through the planting of screening trees.</li> </ul>	C
Land use and mining	<ul style="list-style-type: none"> <li>▪ Potential land use conflicts.</li> <li>▪ Ownership of mining reserves beneath/adjacent to the site.</li> </ul>	C (B) <sup>1</sup>	<ul style="list-style-type: none"> <li>▪ Delay placement of ash in mining areas (within power station operating constraints) to allow Centennial Coal time to further assess the viability of identified reserves.</li> <li>▪ Provide access to areas of mining should Centennial coal determine identified areas are viable and obtain the necessary approval, as per Section 12.4.</li> <li>▪ Site fencing shall be erected on the border of all construction sites and ancillary areas to avoid unnecessary off-site damage to vegetation, trees and the landscape generally.</li> <li>▪ Where practical ash will be re-used in local manufacturing and in on-site structures.</li> <li>▪ Construction personnel, equipment and vehicles shall be confined to the works areas as defined by site fences/hoardings erected at the works boundary.</li> <li>▪ Rehabilitate area following completion of placement activities in line with identified rehabilitation plans.</li> </ul>	B <sup>1</sup>

Issue	Risk	Initial risk	Mitigation measures	Post-mitigation risk
Noise	<ul style="list-style-type: none"> <li>▪ Noise and vibration impacts on sensitive receivers associated with construction equipment and vehicles.</li> <li>▪ Noise and vibration impacts on sensitive receivers associated with operations including ash haulage.</li> </ul>	A	<ul style="list-style-type: none"> <li>▪ Hours of operation would be limited to 7 am to 10 pm with the exception of abnormal operations and emergencies to reduce the potential for noise impacts on nearby residents.</li> <li>▪ Residential class mufflers and, where applicable, engine shrouds (acoustic lining) to engines would be used. Noise emissions would be an important consideration when selecting equipment for the site. All equipment would be maintained in good order including mufflers, enclosures and bearings to ensure unnecessary noise emissions are eliminated.</li> <li>▪ Appropriate use of all plant and equipment, and speed limit restrictions would be expected to result in a reduced noise impact potential.</li> <li>▪ Development of an operational noise management plan as part of OEMP.</li> </ul>	C
Surface water	<ul style="list-style-type: none"> <li>▪ Impacts of realignment of Sawyers Swamp Creek on surface water quality and flows.</li> <li>▪ Impacts of ash repository on site drainage and surface runoff.</li> </ul>	A	<ul style="list-style-type: none"> <li>▪ Update the existing Stage 1 Water Management Plan Work Instruction water quality management system.</li> <li>▪ Implement the key operational water quality control measures, as detailed in Section 8.4.2.</li> <li>▪ Establish a surface water monitoring program in conjunction with a surface water management measures in the OEMP, as per Section 8.4.3.</li> <li>▪ Implement Sawyer Swamp Creek rehabilitation plan (Appendix B)</li> </ul>	B
Terrestrial ecology	<ul style="list-style-type: none"> <li>▪ Loss of or disturbance to threatened flora and/or fauna species.</li> <li>▪ Potential impacts on/loss of endangered ecological communities.</li> <li>▪ Vegetation clearance and loss of habitat.</li> </ul>	B	<ul style="list-style-type: none"> <li>▪ Standard measures to manage/mitigate potential impacts on terrestrial ecology would be incorporated in the CEMP and OEMP.</li> </ul>	C
Traffic	<ul style="list-style-type: none"> <li>▪ Increase in traffic on haul road during construction and operation.</li> <li>▪ Increased hours of operation of haul road during operation.</li> <li>▪ Short-term increase in traffic movements on local road network during construction of stability berm and creek realignment.</li> </ul>	C	<ul style="list-style-type: none"> <li>▪ Hours of operation would be limited to between 7 am and 10 pm, with the exception of abnormal operations and emergencies, to reduce the potential for noise impacts on nearby residents.</li> <li>▪ Construction contractor to develop and implement a construction traffic management measures as part of CEMP to address increased traffic on local roads during construction.</li> </ul>	C

Issue	Risk	Initial risk	Mitigation measures	Post-mitigation risk
Waste, energy and demand on resources	<ul style="list-style-type: none"> <li>▪ Demand on resources during construction and operation.</li> <li>▪ Energy consumption during construction and operation.</li> <li>▪ Generation of waste materials during construction and operation.</li> </ul>	C	<ul style="list-style-type: none"> <li>▪ Measures for the management of waste would be included in the CEMP and OEMP.</li> <li>▪ Cleared vegetation would be mulched, chipped or re-used on-site for sediment filter fences or other uses, where appropriate. Suitable logs and limbs may be used to provide aquatic habitat and fauna refuge in the realigned Sawyers Swamp Creek.</li> <li>▪ Other wastes would be removed and disposed of in accordance with the relevant guidelines.</li> <li>▪ Maintenance wastes such as oils and greases would be disposed of to an appropriate facility.</li> <li>▪ Waste generated by site personnel would be collected on a regular basis. Waste would either be recycled or disposed of to an appropriate facility.</li> <li>▪ The use of recycled/re-used water would be prioritised.</li> <li>▪ Bottom ash would be used in the construction of stability structures to reduce demand on resources and to prolong the operational life of the facility where appropriate to meet Engineering requirements.</li> </ul>	C



## References

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## **Appendix A**

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### **Design drawings**

## **Appendix B**

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### **Draft Sawyers Swamp Creek Rehabilitation Plan**

## **Appendix C**

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### **Environmental Assessment requirements and cross-reference**

## **Appendix D**

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**Agency, stakeholder and  
community  
correspondence,  
consultation and meeting  
materials**

## **Appendix E**

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### **Technical Report 1: Groundwater**

## **Appendix F**

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### **Technical Report 2: Surface water**

## **Appendix G**

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### **Technical Report 3: Aquatic ecology**

## **Appendix H**

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### **Technical Report 4: Air quality**

## **Appendix I**

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### **Technical Report 5: Noise and vibration**

## **Appendix J**

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### **Technical Report 6: Preliminary Ecology Assessment**

## **Appendix K**

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### **Technical Report 7: Preliminary Archaeology and Heritage Assessment**