



Wallerawang Power Station Demolition
Statement of Environmental Effects
EnergyAustralia NSW Pty Ltd

26 September 2018
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Document control

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Executive summary

Project background

Wallerawang Power Station (WWPS) is a coal-fired power station owned by EnergyAustralia NSW Pty Ltd (EnergyAustralia) that is currently undergoing decommissioning. WWPS is located adjacent to the township of Wallerawang, approximately 14 kilometres (km) from Lithgow and 160 km west of Sydney, in the Central Tablelands of NSW. WWPS began operation in 1957, initially consisting of four 30 megawatt (MW) units, with two 60 MW units being added in 1961 and 500 MW units being added in 1976 and 1980. The 30 MW and 60 MW units were decommissioned in the 1990's and their above ground infrastructure was salvaged or demolished at that time.

In November 2014, EnergyAustralia announced it would permanently close WWPS due to ongoing reduced energy demand, lack of access to competitively priced coal and the power station's high operating costs. The WWPS has since been deregistered as an electricity generation facility and EnergyAustralia has commenced its decommissioning, demolition and rehabilitation (DDR).

Purpose of the project

The DDR Project (the Project) is being carried out under a sale and purchase agreement that has been established between the NSW State government and EnergyAustralia.

This Statement of Environmental Effects (SEE) has been prepared to support a development application for the demolition phase of the Project. Separate approvals would be sought for rehabilitation of the site, if required.

Key findings from the assessment

Community and stakeholder engagement

Specific stakeholder management and correspondence procedures and actions would be defined progressively as the Project develops as either sub-plans (such as the action plan for community engagement) or as revisions incorporated into updated versions of the project Stakeholder Management Plan.

Noise and vibration

The key existing noise sources in the areas surrounding the WWPS include major roads, local roads and industrial activities. There are few sensitive receivers near the proposed demolition areas, with the nearest residential receiver approximately 400 metres north of the site in Lidsdale and a church located adjacent to the site in Wallerawang. Based on the worst-case scenario during demolition, the predicted noise levels from the project will comply with the noise criteria during the standard construction hours.

Noise and vibration impacts, if managed properly, can be minimised or avoided altogether through the development and implementation of appropriate environmental management plans and mitigation measures. Noise and vibration impacts to nearby sensitive receivers due to the Project are expected to be minor and short term.

Landscape character and visual amenity

WWPS is a major visual feature of the township of Wallerawang and dominates the local visual landscape. The main street of Wallerawang, 'Main Street', provides the main entry point to the WWPS.

The demolition of WWPS is expected to have a positive long-term visual effect on the township of Wallerawang and surrounding environment, however, there is potential for temporary visual impacts during the demolition works.

Traffic and access



The main access to WWPS is on Main Street, Wallerawang. The proposed demolition works would cause a temporary increase in traffic movements, particularly heavy vehicles, on local and State roads such as Main Street, Pipers Flat Road, Barton Avenue and the Castlereagh and Great Western highways. Most traffic movements would be associated with transporting demolition waste to suitable licenced landfill facilities or recycling depots.

Air quality

Wallerawang is primarily influenced by emissions from coal mining, with a total of 70 diffuse and three industry-specific emitted substances identified. The daily air quality is likely to be influenced by the prevailing weather and climatic conditions, bushfires and other natural factors such as pollen. EPL 766 requires EnergyAustralia to maintain the site in a condition that minimises or prevents the emission of dust from the site.

The proposed demolition works have the potential to cause airborne dust, depending on the methodologies utilised and the prevailing weather conditions at the time. Dust emissions have the potential to impact nearby sensitive receivers.

Non-Aboriginal heritage

The Wallerawang A and B power station chimney stacks are currently listed on the State Heritage Inventory, as locally a locally significant heritage item. Only Wallerawang A power station chimney stack remains within the WWPS site. The remaining Wallerawang A power station chimney stack would not be demolished and would be retained on site in recognition of its heritage value. In addition, two State significant and 12 locally significant listed heritage items are located near WWPS.

There is potential for the proposed demolition works to damage Wallerawang A power station chimney stack due to vibration from blasting and other demolition activities and dust emissions. The proposed demolition works could also similarly impact nearby heritage items. Mitigation measures have been included in this SEE to minimise impacts to non-Aboriginal heritage.

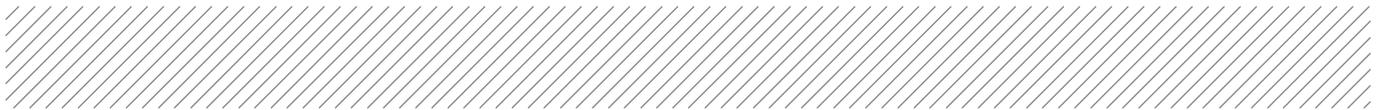
Management measures

A range of management measures have been identified to mitigate or manage the potential environmental impacts from the Project. These measures (and a range of management plans) would form part of a demolition EMP prepared to guide the demolition works.

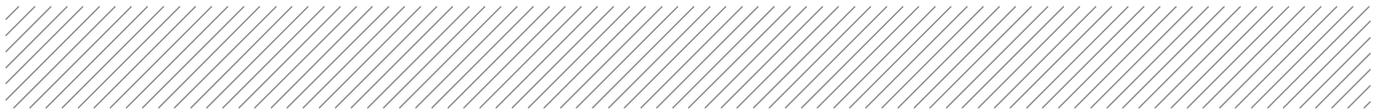


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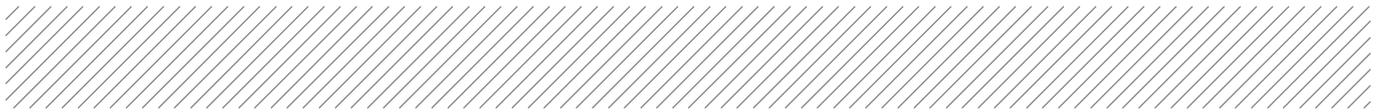
Neutral or Beneficial Effect Assessment

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1 Introduction

1.1 Background

Wallerawang Power Station (WWPS) is a coal-fired power station owned by EnergyAustralia NSW Pty Ltd (EnergyAustralia) that is currently undergoing decommissioning. WWPS is located adjacent to the township of Wallerawang, approximately 14 kilometres (km) from Lithgow and 160 km west of Sydney, in the Central Tablelands of NSW (refer to Figure 1-1). WWPS began operation in 1957, initially consisting of four 30 megawatt (MW) units, with two 60 MW units being added in 1961 and 500 MW units being added in 1976 and 1980. The 30 MW and 60 MW units were decommissioned in the 1990's and their above ground infrastructure was salvaged or demolished at that time.

In November 2014, EnergyAustralia announced it would permanently close WWPS due to ongoing reduced energy demand, lack of access to competitively priced coal and the power station's high operating costs. The WWPS has since been deregistered as an electricity generation facility and EnergyAustralia has commenced its decommissioning, demolition and rehabilitation (DDR). The DDR Project (the Project) is being carried out under a sale and purchase agreement that has been established between the NSW State government and EnergyAustralia.

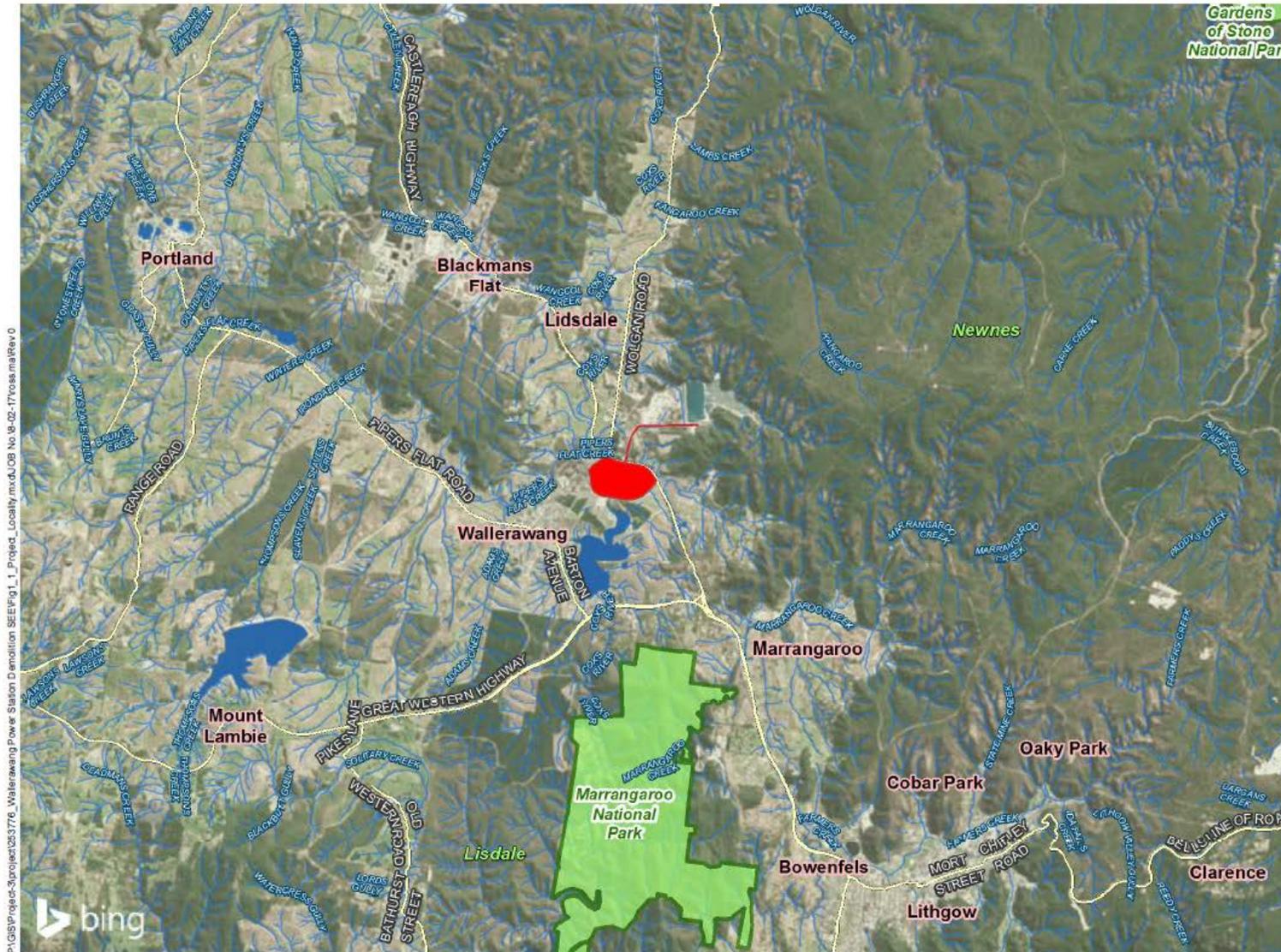
All phases of the project would contribute to the final outcome of leaving the WWPS in a safe, stable, non-polluting and sustainable condition. This Statement of Environmental Effects (SEE) has been prepared to support a development application for the demolition phase of the Project. Separate approvals would be sought for rehabilitation of the site, if required.

1.2 Location and site context

WWPS is in the Central West Region of NSW, immediately north-east of the township of Wallerawang. The site covers an area of approximately 80 hectares (ha) and is bound by the Main Western Railway Line, Main Street and Castlereagh Highway. Coxs River bisects the site and flows southward into Lake Wallace, a man-made reservoir that was used to provide cooling water to WWPS (refer to Figure 1-2).

The site has been progressively developed since the first stages of the WWPS were constructed in 1957 and is a highly modified industrial area with few environmental features. The areas surrounding the WWPS include a mix of residential, industrial, buffer areas and rural land uses. Several abandoned open cut mines and operating underground coal mines are near the site.

Most of the land surrounding the site is buffer land owned by EnergyAustralia. There are also two new switchyards a deconstructed switchyard owned by TransGrid next to the site. There are a few transmission lines and easements, and right of access corridors to TransGrid properties surrounding the site. Mount Piper Power Station, also owned and operated by EnergyAustralia, is approximately five km north-west of the site.



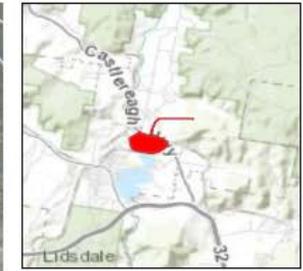
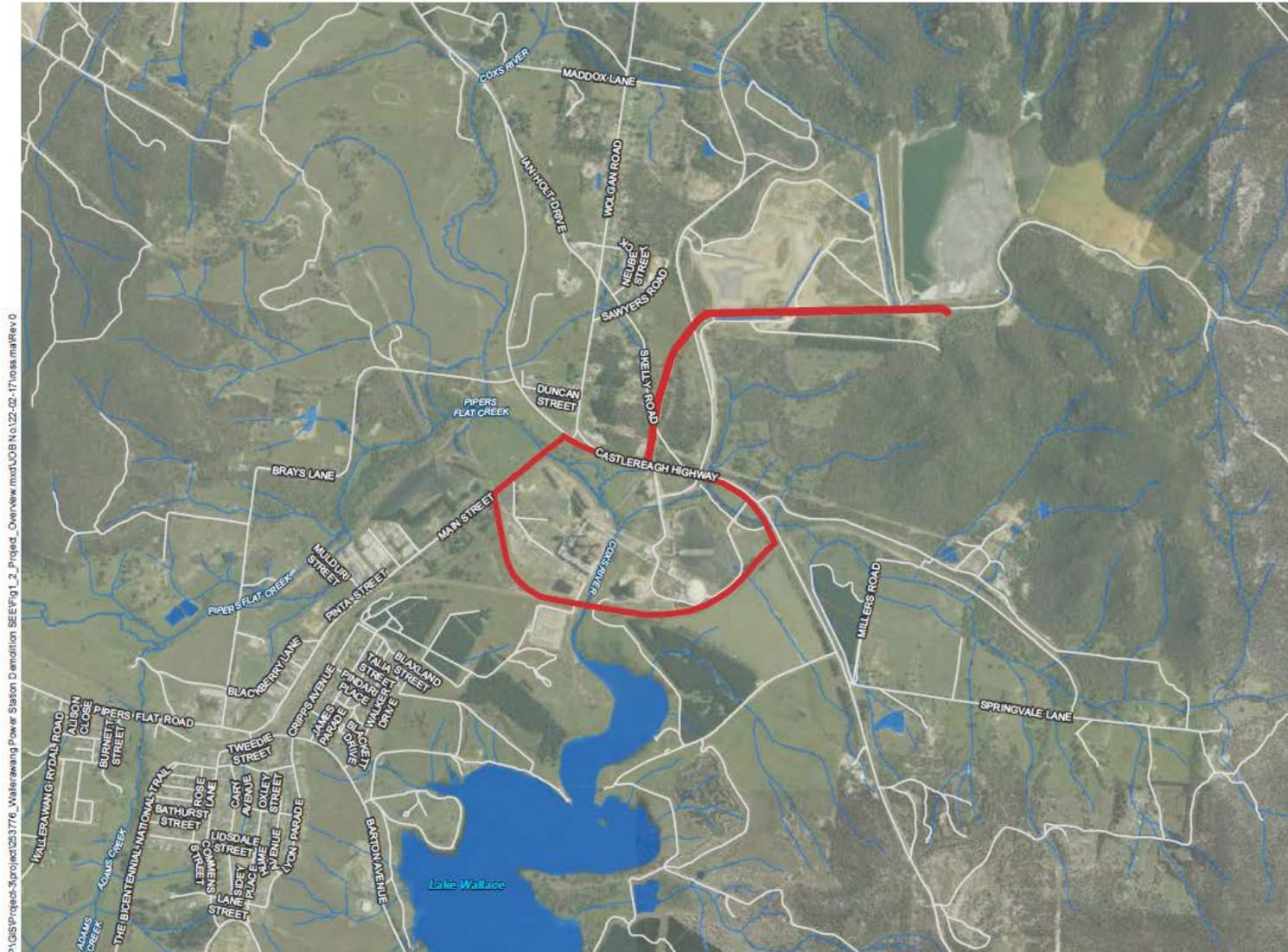
Legend

- Roads
- Waterways
- Water bodies
- National Park
- The project

Source: Aurecon, LPI, Bing maps

Wallerawang Power Station Demolition **SEE**

FIGURE 1-1: Project Locality

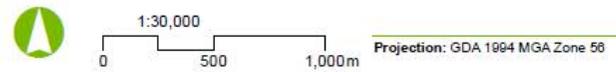


Legend

- The project
- Roads
- National Park
- Water bodies
- Waterways

Source: Aurecon, LPI, Bing maps

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Wallerawang Power Station Demolition **SEE**

FIGURE 1-2: Project Overview



1.3 Purpose and structure of this report

1.3.1 Purpose of this report

The purpose of this SEE is to support a development application to LCC for the demolition of WWPS. This SEE has been prepared by Aurecon on behalf of EnergyAustralia. For the purposes of the proposed works, the proponent is EnergyAustralia and the determining authority under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) is LCC.

An SEE is required for all development applications lodged with LCC. LCC specifies requirements for SEEs in its *Development Application Guide* (the 'DA Guide') (LCC, 2011). This SEE addresses the requirements contained in the DA Guide for a demolition project. This SEE also considers the requirements of:

- relevant environmental planning instruments (State Environmental Planning Policies (SEPPs), and local environmental plans
- any draft environmental planning instrument (that is or has been placed on public exhibition) that may apply to the site
- relevant clauses of any Development Control Plans (DCPs) that apply to the site.

1.3.2 Structure of this report

This SEE is structured as follows:

- Chapter 2 provides a description of the key features of the Project
- Chapter 3 describes the statutory and planning framework relevant to the Project
- Chapter 4 contains an assessment of the potential environmental impacts of the Project for a comprehensive range of environmental factors
- Chapter 5 summaries the safeguards that EnergyAustralia proposes to implement to minimise and mitigate the potential environmental impacts of the Project
- Chapter 6 provides a summary of the key findings of this report.



2 The Project

Chapter 2 provides a description of the key features of the Project.

2.1 Project objectives

The objectives of the Project are to:

- maximises the recovery of saleable assets in a safe, environmentally-compliant, cost effective and timely manner
- protect the workforce from exposure to hazards and risks
- protect the surrounding environment and community from avoidable impacts in compliance with the planning approvals.

The Project would be delivered by a specialist demolition contractor. EnergyAustralia intend to appoint the contractor as the 'principal contractor' for all demolition works at the site. As a licensed demolition contractor, they would prepare and implement a demolition work plan consistent with *AS2601-2001 The Demolition of Structures* and the *Demolition Work Code of Practice* (Safe Work Australia, 2012) prior to the demolition works starting.

2.2 Demolition zones

EnergyAustralia proposes to demolish all remaining structures at the WWPS site, including cooling towers, chimneys, buildings and warehouses, water tanks, fuel tanks and other storage facilities and associated equipment and plant such as coal handling conveyors, aboveground pipelines and electrical systems. The proposed demolition works have been divided into separate zones that are shown in Figure 2-1 and described in the following sections.

2.2.1 Demolition zone 1 – Turbine hall and auxiliary bay area

Demolition zone 1 comprises the turbine hall building. Demolition activities proposed in zone 1 include the removal of:

- the turbine hall building including four ridge ventilators and other internal plant, structures and equipment
- turbine units and associated plant, equipment and auxiliaries, including condensate system, feedwater system, boiler feed pumps and condensers
- control room and electrical and instrumentation switch rooms, plant, equipment, controls, switchboards, cabling and batteries.

In addition to these demolition activities, several subsurface voids, chambers, basins and pits in zone 1 would be backfilled with recycled concrete.



1:5,000
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Projection: GDA 1994 MGA Zone 56

Wallerawang Power Station Demolition SEE

FIGURE 2-1: Wallerawang Power Station Demolition Zones



2.2.2 Demolition zone 2 – Transformer yard area

Demolition zone 2 comprises the transformer yard area, which is adjacent to the turbine hall. Demolition activities proposed in zone 2 include the removal of:

- all aboveground structures, towers and enclosures
- all remaining transformers, electrical plant and equipment
- all fencing and gates
- dangerous goods stores, tanks and associated structures and fittings.

2.2.3 Demolition zone 3 – Boiler house

Demolition zone 3 comprises the boiler house. Demolition activities proposed in zone 3 include the removal of:

- boilers and associated aboveground features and support structures
- coal mills, bunkers, hopper conveyors and supporting structures
- the ash plant, hopper and associated support structures
- electrical systems, diesel generator, compressed air systems and associated plant and equipment.

In addition to these demolition activities, several subsurface voids, chambers, basins and pits in zone 3 would be backfilled with recycled concrete.

2.2.4 Demolition zone 4 – Unit precipitators area

Demolition zone 4 comprises the unit precipitators area. Demolition activities proposed in zone 4 include the removal of:

- the dust collection plant, including precipitator structure and associated structures and features
- electrical and instrumentation plant, equipment, controls, switchboards, cabling and ductwork.

2.2.5 Demolition zone 5 – Chimney stacks area

Demolition zone 5 comprises the chimney stacks area, which is related to Units 7 and 8. Demolition activities proposed in zone 5 include the removal of:

- Units 7 and 8 concrete chimney stacks
- other aboveground structures and features including electrical equipment and cabling and steel ductwork.

2.2.6 Demolition zone 6 – Cooling water plant area

Demolition zone 6 comprises the cooling water plant area. Demolition activities proposed in zone 6 include the removal of:

- infrastructure, structures and features associated with the former Unit 7 and 8 cooling tower structures

- 
- Unit 7 and 8 chlorination and acid dosing plants, buildings and structures
 - Unit 7 ammonia plant, tanks, vessels, piping, building and structures
 - aboveground and on-ground pipes and cabling and associated features.

In addition to these demolition activities, several subsurface voids, chambers, basins and pits in zone 6 would be backfilled with recycled concrete. The Units 7 and 8 underground cooling water conduits that run between the pumping station and the turbine area would also be backfilled.

2.2.7 Demolition zone 7 – Coal handling plant and conveyors area

Demolition zone 7 comprises the coal handling plant and conveyors area. Demolition activities proposed in zone 7 include removal of:

- main coal receival plant and structures, associated infrastructure, plant, equipment and features for the transportation and handling of coal
- storage bins, plants, sheds, structures and associated support structures
- conveyor systems, gantries, transfer towers and associated support structures
- coal sumps
- biomass plant, equipment, building and associated infrastructure
- mechanical plant services workshops and structures
- electrical systems and equipment
- other above ground features.

In addition to these demolition activities, several subsurface voids, chambers, hoppers, pits, sumps and conveyor trenches in zone 7 would be backfilled with recycled concrete or cement stabilised ash.

2.2.8 Demolition zone 8 – buildings and workshops

Demolition zone 8 comprises a range of other buildings and workshops. Demolition activities proposed in zone 8 include removal of:

- administration buildings including the medical centre building and gate house
- large plant and facility building including internal structures and features
- several workshops and storage buildings.

The proposed demolition of these structures would also include the removal of any internal or associated plant and equipment, associated structures, infrastructure or other features that supported the use of these structures.

2.2.9 Demolition zone 9 – miscellaneous

Demolition zone 9 comprises several other miscellaneous structures. Demolition activities proposed in zone 9 include removal of:

- ash infrastructure including dry ash systems, pipelines and return water reservoir and associated infrastructure and support structures

- 
- electrical systems, infrastructure and equipment
 - weigh bridge and truck wash and road spraying facility, structures and associated plant and equipment
 - fuel oil compound, oil and grit traps, settling ponds and associated structures, plant and equipment
 - caustic injection plant facility and associated structures and features
 - Wallerawang Dam pumping station and associated structures and infrastructure
 - contractor buildings and infrastructure including the car park
 - gantry overhead structures and support towers
 - pipelines and cable trenching and associated features
 - retention basin weir structures
 - other aboveground features.

In addition to these demolition activities, subsurface pipelines and cable trenching in zone 9 would be backfilled.

2.3 Deconstruction and demolition process

2.3.1 Decommissioning and salvage

EnergyAustralia commenced decommissioning activities at WWPS in December 2014. The decommissioning phase covers the functional shutdown of the power station plant and includes:

- isolating (de-electrifying) mechanical and electrical plant and equipment
- removing process materials including fuel, water, chemicals, oils and grease, and gases.

As part of decommissioning, site office accommodation is being rationalised to facilitate the closure of the upper floors of the administration building and reduce electrical loads.

The decommissioning phase includes the removal of hazardous materials from site. While every effort is made to ensure the complete removal of such materials, there is potential for remnant hazardous materials to be uncovered during the demolition phase. Any remaining hazardous materials identified by risk assessments during demolition would be removed by a specialist in accordance with relevant legislative requirements and disposed of in a compliant manner (refer to Section 4.12).

Several items such as transformers, telecommunication equipment and other electrical infrastructure have been or will be salvaged for use at Mount Piper Power Station or sale.

2.3.2 Demolition

Demolition works would commence once all salvageable equipment or infrastructure has been removed from a demolition zone. All demolition works would be undertaken within a defined demolition works area and would broadly involve the following activities.

Soft stripping

Prior to the dismantling or demolition of any building or structure the process of soft stripping shall be undertaken to remove the following items:

- 
- Items which constitute hazardous material or controlled waste
 - Building furniture, fixtures and fittings (soft furnishings, doors, windows, fire extinguishers, lighting, floor coverings)
 - Items for recycling or reuse including timber, glass, and plastics.

Soft stripping is generally a manual process with higher levels of exposure to individuals undertaking the work. Consideration of the hazards and risks involved in the process must be undertaken in designing the Work Method Statements and Job Safety Environment Analysis.

Dismantling and demolition of structures

All structures and buildings on-site would be dismantled as far as practicable and mechanically demolished following removal of salvaged items. The chimneys and concrete cooling tower will most likely be demolished using explosive charges.

Conveyors, transfer stations and other ancillary facilities would also be mechanically demolished. This includes elevated conveyors. Where conveyors are inside tunnels, they would be removed as far as possible to avoid removal and safety issues in the future.

Asbestos removal

If asbestos or asbestos containing material is identified, the equipment or structure would be identified with a unique identifier such as sprayed with yellow paint. Equipment or structures containing asbestos materials would be decontaminated before removal from site. Where this process is deemed impractical, the structure or equipment shall be classified as asbestos contaminated waste and EnergyAustralia will manage such waste in accordance with its asbestos policies and procedures (refer to Section 0).

Waste disposal

All materials generated by the Project would be transported off-site for either disposal or recycling at appropriate licenced waste management facilities or would be sold and recycled if feasible.

2.3.3 Rehabilitation

The demolition activities would remove aboveground structures only. Any structures or equipment located at or below ground level would be left in-situ. A Rehabilitation Management Plan would be developed and implemented to ensure the site is left in a stable and safe condition following demolition.

Rehabilitation of the site is not an activity that requires approval and, therefore, is outside the scope of this SEE.

2.3.4 Features to remain on site

A few structures are not proposed to be demolished, including:

- roads and associated drainage structures
- retention and settling ponds
- reverse osmosis plant and associated infrastructure
- ash water return holding tank
- internal and external security fencing

- 
- 'A' Station flue stack
 - ancillary below-ground structures including pipes, concrete slabs, footings, cable tunnels and services
 - hardstand areas
 - underground services (to be verified as being asbestos free).

2.4 Timing

The demolition works are planned to commence upon approval and would take about two years to complete. The Project would be implemented in two stages:

- Stage 1 comprises the dismantling and removal of existing plant and equipment from the site and the stripping of electrical systems, fire services, plastic packing etc.
- Stage 2 comprises the targeted deconstruction and demolition of the remaining buildings and infrastructure at the site.

2.5 Cost

The Project is estimated to cost approximately \$25 million.

2.6 Community and stakeholder engagement

A Stakeholder Management Plan would be prepared for the Project to manage stakeholder risks. The plan would describe the project and its associated social and reputational risks, set out community and stakeholder engagement objectives, identify key stakeholders, propose engagement strategies for these stakeholders and outline a process for tracking engagements with stakeholders including a stakeholder communications register.

Specific stakeholder management and correspondence procedures and actions would be defined progressively as the Project develops as either sub-plans (such as the action plan for community engagement) or as revisions incorporated into updated versions of the project Stakeholder Management Plan.

The following entities have been identified as key stakeholders that would be engaged during Project planning and delivery. The degree of engagement and level of consultation with each stakeholder would be determined and adapted as required during the life of the Project. Additional stakeholders may be identified and incorporated into the key stakeholder list as the project develops:

- NSW Department of Planning and Environment
- LCC
- NSW Environment Protection Authority (EPA)
- NSW Department of Primary Industries
- WaterNSW
- Heritage Council of NSW
- TransGrid
- Centennial Coal Ltd

- 
- Wallerawang community and other local communities
 - Blue Mountains Conservation Society.

2.6.1 Regulatory authorities

During Project delivery it may be necessary to communicate with various government departments and LCC. Formal interactions identifying specific Project directions and requirements would be recorded in minutes and project reports.

2.6.2 Neighbouring landholders

During Project delivery, EnergyAustralia would communicate with neighbouring land holders to provide information and, where appropriate, seek their input on the proposed demolition activities.

Correspondence would be provided formally in writing. A written record would be made of individual verbal correspondence by phone or face-to-face meetings.

2.6.3 Community representation

EnergyAustralia would manage representations and engage with the community in accordance with statutory requirements and the Stakeholder Management Plan. An action plan for community engagement will form part of the Stakeholder Management Plan to ensure that the community is kept informed of project plans, particularly in advance of any major works.

3 Statutory and planning framework

Chapter 3 describes the statutory and planning framework relevant to the Project.

3.1 Environmental Planning and Assessment Act 1979

The EP&A Act regulates development in NSW and provides the statutory context for the Project. Under the Act, development is defined as including '*the demolition of a building or work*' and '*the carrying out of a work*', which covers the Project as described in Chapter 3.

Under the EP&A Act, approval for development is available under the following pathways:

- Division 4.3 applies to development that may not be carried out except with development consent including designated development but excluding complying development
- Division 4.7 provides for State Significant Development (SSD) which is assessed by DPE and determined by the NSW Minister for Planning
- Division 5.1 provides for the assessment and approval of activities that do not require Council approval under Part 4. Typically, this includes activities undertaken by public authorities
- Division 5.2 provides for State Significant Infrastructure (SSI) assessed by DPE and determined by the NSW Minister for Planning.

The State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) provides criteria for SSD and SSI. Demolition of power generating works is not listed under these criteria. Therefore, the Project is not SSD or SSI.

The Project requires assessment and approval by LCC under Part 4 of the EP&A Act. This requires a development application to be lodged with LCC.

In accordance with the Act, LCC must take into consideration any relevant matters of consideration under Section 4.15 of the EP&A Act in determining the Project. The SEE would typically address these matters.

3.1.1 Permissibility

The Project is in Lithgow local government area (LGA) on land zoned SP2 Infrastructure under the Lithgow Local Environmental Plan 2014 (Lithgow LEP). Under this zoning, the demolition of a power station is not listed as a prohibited activity or an activity that is permissible without consent.

3.1.2 Integrated development

Integrated development is development that, in order for it to be carried out, requires approval listed in Section 4.46 of the EP&A Act. This includes approvals under the *Protection of the Environment Operations Act 1997* (POEO Act), *Roads Act 1993* and *Water Management Act 2000*. These are discussed in more detail in the following sections.

Development within 40 metres of the banks of a river is classed as a 'controlled activity' under the *Water Management Act 2000* and requires approval under Section 91 of that Act from the NSW



Department of Primary Industries – Water. As the Project is located within 40 metres of Coxs River and Springvale Creek, the Project is classed as integrated development.

3.1.3 Designated development

Schedule 3 of the Environmental Planning and Assessment Regulation 2000 defines certain development as ‘designated development’. This includes electricity generating stations and associated water or waste storages. Designated development requires assessment under Part 4 of the EP&A Act through an environmental impact statement which is assessed by the Department of Planning and Environment.

The Project would not construct a new electricity generating station or result in any of the activities associated with such a station that are defined as designated development, such as inundation of land, releases of water to adjacent watercourse or generation of electricity power.

As the Project is for the proposed demolition of an existing power station, it is not classed as designated development and an environmental impact statement is not required to enable assessment.

3.1.4 Exempt and complying development

Activities that are exempt from planning approval requirements or are determined to be ‘complying development’ are described in the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (the Exempt and Complying Development SEPP).

Part 2 of the Exempt and Complying Development SEPP describes activities that are exempt from planning approval. Subdivision 13 describes demolition activities that may occur without approval as ‘*demolition of a development that would be exempt development under this code if it were constructed*’. Approval is therefore required for demolition of structures that would require approval under the EP&A Act.

Construction of WWPS would meet the definition of state significant development provided under Clause 20 of Schedule 1 of the SRD SEPP as it would involve development of electricity generating works with a capital investment value of over \$30 million. The project is therefore not exempt development.

Part 2 of the Exempt and Complying Development SEPP describes complying development. This type of development generally relates to housing development and only provides for demolition if this is undertaken as an ancillary activity. The project is therefore not considered complying development.

Division 5, Part 7 of the Exempt and Complying Development SEPP provides ‘Demolition Code’ that specifies standards for demolition activities including the removal of ‘*an industrial building*’. This code should be considered during the planning phase of the Project.

3.2 Commonwealth legislation

3.2.1 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* promotes the preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition. The Act allows the Environment Minister, on the application of an Aboriginal person or group of persons, to make a declaration to protect an area, object or class of objects from a threat of injury or desecration.

The Project involves demolition activities within a highly modified area and is not expected to result in disturbance of any known Aboriginal sites (refer to Section 4.9 for detailed consideration of Aboriginal heritage). Therefore, this Act does not apply and has not been considered further.

3.2.2 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires any action that has, or is likely to have, a significant impact on Commonwealth land or a matter of national environmental significance (MNES) to obtain approval of the Commonwealth Minister for the Environment. The nine MNES that are protected under the EPBC Act are:

- World heritage properties
- National heritage places
- Wetlands of international importance
- Listed threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef National Marine Park
- Nuclear actions (including uranium mines)
- A water resource, in relation to coal seam gas development and large coal mining development.

In addition, approval is required under the EPBC Act for actions taken by the Commonwealth or by anyone on Commonwealth land that will have or are likely to have significant impacts on the environment.

A search of the EPBC Act Protected Matters Search Tool within a three-km radius of the site was undertaken on 5 September 2018. The results of the search are provided in Appendix B and summarised in Table 3-1 .

Table 3-1 EPBC Act protected matters search results

Protected matters	Search results
World heritage properties	None
National heritage places	None
Wetlands of international importance	None
Listed threatened species and ecological communities	39
Migratory species	12
Commonwealth marine areas	None
The Great Barrier Reef National Marine Park	None
Nuclear actions (including uranium mines)	None
A water resource, in relation to coal seam gas development and large coal mining development.	N/A

The search identified that three threatened ecological communities, 36 threatened species and 12 migratory species are present within three km of the site. Section 4.8 provides an assessment of the potential impacts to biodiversity due to the Project and concludes that biodiversity impacts are unlikely.

As such, the Project is not considered to have an impact on any of the nine MNES and a referral to the Commonwealth under the EPBC Act is therefore not required.

3.2.3 Native Title Act 1993

The *Native Title Act 1993* (NT Act) provides native title claimants and appropriate Aboriginal groups with the opportunity to be involved and make comments on proposals that may affect native title. The Australian Attorney-General is responsible for administering the NT Act.

Native title may be extinguished by actions such as private freehold land, valid grants of private freehold land or waters, residential or commercial leases, community purpose leases, public works and crown land.

A search of the Native Title Registrar was conducted on 5 September 2018 and determined the following:

- there are no native title determinations recorded on the National Native Title Register for the Lithgow LGA
- there is one native title claim recorded on the Register of Native Title Claims that covers the site. The Warrabinga-Wiradjuri #7 claim covers an extensive area that includes Lithgow, Mudgee and Dunedoo. As the site it is located on freehold land, native title has been extinguished and the claim would not apply to the site
- there are no Indigenous land use agreements that relate to the site on the Register of Indigenous Land Use Agreements.

Therefore, the NT Act therefore does not apply and has not been considered further.

3.3 Other State legislation

Other State legislation that is relevant to the Project is discussed in Table 3-2.

Table 3-2 Other State legislation relevant to the Project

Legislation	Applicable Y/N?	Comment
<i>Dam Safety Act 2015</i>	N	This Act empowers the Dams Safety Committee and lists certain dams and prescribes certain dams as 'declared dams'. The Sawyers Swamp Creek Ash Dam is a declared dam and requires ongoing safety inspections in accordance with the requirements of the Dams Safety Committee. The Project does not trigger any specified approval requirements under the <i>Dam Safety Act 2015</i> as it would not create any new dams. Liaison with the Dams Safety Committee will be required for the decommissioning of the Ash Repository, however, this is outside the scope of the Project and will be subject to a separate approval process.
<i>Contaminated Land Management Act 1997</i>	N	The site contains suspected and known areas of contamination. However, the Project involves demolition activities to the ground surface only and is not expected to disturb contaminated land.
<i>Crown Lands Act 1989</i>	N	The site is not known to contain any Crown land. Therefore, this Act does not apply.

Legislation	Applicable Y/N?	Comment
<i>Dangerous Goods (Road & Rail Transport) Act 2008</i>	N	The Project is not expected to require the transport or use of any quantities of dangerous goods requiring a licence under this Act. Therefore, this Act does not apply.
<i>Electricity Supply Act 1995</i>	N	This Act applies to electricity distribution systems. The WWPS has been disconnected from the electricity transmission network and therefore this Act does not apply to the project.
<i>Environmentally Hazardous Chemicals Act 1985</i>	N	<p>This Act regulates certain chemicals by prescribing chemical control orders and licences. Chemical control orders apply to:</p> <ul style="list-style-type: none"> ■ Aluminium smelter wastes containing fluoride and/or cyanide ■ Dioxin-contaminated waste materials ■ Scheduled chemical wastes ■ Organotin waste materials ■ Polychlorinated biphenyl (PCB) waste and materials. <p>The Project is not expected to require the handling or disposal of any of these chemicals. If these chemicals are encountered during the demolition process, a licenced chemical waste disposal company would be contracted to remove and dispose of them.</p>
<i>Fisheries Management Act 1994</i>	N	<p>A project requires approval under the <i>Fisheries Management Act 1994</i> if it is predicted to result in blockage to fish passage in any waterways or any impacts to threatened aquatic species or their habitat.</p> <p>Coxs River bisects the WWPS site, however, the Project is not expected to result in any direct impacts to the river or any other waterways. Approval is therefore not expected to be required under this Act.</p>
<i>Heritage Act 1977</i>	Y	<p>There are seven non-Aboriginal heritage items located either in, or near (within 500 m) of the site (refer to Section 0).</p> <p>No impacts are expected to occur to these sites and therefore approval under this Act is not required.</p> <p>This Act will apply if a previously unknown non-Aboriginal heritage site or object is found during the proposed demolition works and may be affected by the Project.</p>
<i>National Parks and Wildlife Act 1974</i>	Y	<p>There are two known Aboriginal heritage sites within the site (refer to Section 0), although the Project is not expected to result in any impacts to these items.</p> <p>Approval under this Act would be required if any previously unidentified Aboriginal heritage sites are found during the proposed demolition works and may be affected by the Project.</p>
<i>Biodiversity Conservation Act 2016</i>	N	The Project involves demolition of a decommissioned power plant on disturbed land. It is unlikely to require clearing of any native vegetation and, therefore, no ecological assessment has been undertaken and the <i>Biodiversity Conservation Act 2016</i> is not applicable.

Legislation	Applicable Y/N?	Comment
<i>Protection of the Environment Operations Act 1997</i> (POEO Act) and Regulations	Y	<p>The generation of electricity is a scheduled activity under the POEO Act and, as such, EnergyAustralia is required to hold an environment protection licence (EPL) for the operation of WWPS. This licence (EPL 766) remains in-force over the site and allows for the following scheduled activities to occur:</p> <ul style="list-style-type: none"> ■ Chemical storage ■ Coal works ■ Crushing, grinding or separating ■ Sewage treatment ■ Water storage. <p>Activities associated with the demolition of a power station generally do not require an EPL, however; it is intended to keep EPL 766 active and potentially modify it in consultation with the NSW Environmental Protection Authority (EPA) to cover the full range of closure and demolition activities anticipated for the Project.</p> <p>The POEO Act will also apply if a polluting discharge is accidentally (or otherwise) released during the Project.</p>
<i>Roads Act 1993</i>	Y	<p>Approval under this Act will be required if the Project requires works within a public roadway. In this case, a Section 138 approval road would need to be obtained from the relevant authority (either LCC or Roads and Maritime Services).</p> <p>Consent would also be required for the transportation of large items and if road closures are required due to the transportation of large items.</p> <p>It is not anticipated that the project would require works to be undertaken within a public road. However, consent may be required for the transportation of large items.</p>
<i>Sydney Water Act 1994</i>	N	<p>Section 78 of the <i>Sydney Water Act 1994</i> requires notification to be provided to Sydney Water for any development application that may adversely affect the corporation's operations. The Project area is not within the area covered by Sydney Water's operations or within any areas beyond the operational area listed in Sydney Water's guideline <i>Types of development that need a section 73 certificate</i>.</p> <p>The Project is located within the catchment of Sydney Water's drinking supplies. Issues associated with potential impacts to Sydney's Drinking Water catchments are addressed through State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011, which is discussed in Section 3.4.1.</p>
<i>Threatened Species Conservation Act 1995</i> (TSC Act)	N	<p>Section 111(4) of the EP&A Act requires that assessment of an activity must consider its impact on threatened species, populations, ecological communities or their habitats.</p> <p>Schedules 1 and 2 of the TSC Act list the species, populations and ecological communities that are threatened in NSW. The TSC Act also lists several factors to be considered in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities and their habitats.</p> <p>If a development may potentially affect any flora or fauna species, population or ecological community listed by the TSC Act, a test of significance is required. The test of significance determines whether the proposed works are likely to have a significant impact. If a significant impact is determined, a species impact statement is required.</p> <p>The Project is not expected to result in a significant impact to any flora or fauna species, population or ecological community listed under the TSC Act.</p>

Legislation	Applicable Y/N?	Comment
<i>Waste Avoidance and Resource Recovery Act 2001 (WARR Act)</i>	Y	<p>The primary aim of the WARR Act is to reduce the volume of waste disposed of in NSW and to establish a hierarchy of avoidance, reuse, recycling and reprocessing and disposal.</p> <p>The Project would generate substantial waste streams which would be managed in accordance with the waste management hierarchy set out in the WARR Act. Section 4.12 provides further details about how the aims of the WARR Act would be achieved.</p>
<i>Water Management Act 2000</i>	Y	<p>The <i>Water Management Act 2000</i> regulates access to and management of water resources in NSW. The Act controls the extraction of water, how water can be used, and the carrying out of activities on or near water sources. Further provisions of this Act apply to water resources for which a water sharing plan has been gazetted.</p> <p>The Project is in an area covered by the following water sharing plans:</p> <ul style="list-style-type: none"> ■ Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011. The water source in this plan that is relevant to the Project is the Sydney Basin Coxs River Groundwater Source ■ Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011. The water source in this plan that is relevant to the Project is the Upper Nepean and Upstream Warragamba Water Source. The Project falls within the Wywandy Management Zone. <p>Under the <i>Water Management Act 2000</i>, should water need to be extracted from a surface water source defined in these water sharing plans the following approvals may need to be obtained:</p> <ul style="list-style-type: none"> ■ an Access Licence to obtain access to a share of the water source ■ a water supply works approval is required to construct and operate water supply works (i.e. pumps, bores) for water supply, drainage or flood mitigation work ■ an Aquifer Interference Approval may be required for extraction or dewatering activities ■ a water use approval is required to use water for a particular purpose, such as irrigation. <p>The Project would require works within the waterfront area defined under this act, which is land within 40 metres of the upper bank of Coxs River and Springvale Creek. Works within waterfront areas require a Controlled Activity Approval under this Act.</p> <p>If temporary dewatering activities are required for the Project, a Water Supply Works Approval may also be required under this Act.</p>

Legislation	Applicable Y/N?	Comment
<i>Work Health and Safety Act 2011 (WHS Act)</i>	Y	<p>The WHS Act and Work Health and Safety Regulations 2011 (WHS Regulation) provide a framework to secure the health and safety of workers and the public. The WHS Act and WHS Regulation promote continuous improvement and progressively higher standards of work health and safety.</p> <p>The WHS Act would apply to the Project following planning approval by requiring EnergyAustralia and any contractors working on the Project to manage risks by:</p> <ul style="list-style-type: none"> ■ Eliminating risks to health and safety so far as is reasonably practicable ■ If elimination is not reasonably practicable, minimising the risks so far as is reasonably practicable. <p>The WHS Regulation requires ‘major hazard facilities’ to be licenced. Major hazard facilities contain certain chemicals in quantities that exceed a prescribed limit. These chemicals and their threshold limits are listed in Schedule 15 of the WHS Regulation and include common industrial chemicals such as chlorine, hydrogen and methane. Types of chemicals are also listed, including explosive materials, compressed or liquefied gases, flammable materials etc.</p> <p>It is understood that WWPS did not store any of these chemicals in quantities that exceed the thresholds specified in the WH S Regulation. Therefore, the site was not a major hazard facility during its operation and the Project would not require the use of, or storage of chemicals in quantities that would change this.</p>
<i>Noxious Weeds Act 1993</i>	Y	<p>The <i>Noxious Weeds Act 1993</i> provides for the classification and management of noxious weeds by the Minister for Primary Industries. Noxious weeds may be considered noxious on a national, state, regional or local scale. All private landholders, occupiers, public authorities and Councils are required to control noxious weeds on their land under Part 3 Division 1 of the Act. As such, if noxious weeds are present at the site they should be assessed and controlled.</p>

3.4 Environmental planning instruments

3.4.1 State environmental planning policies

State Environmental Planning Policy No 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) promotes the remediation of contaminated land to reduce the risk of harm to human health or any other aspect of the environment. SEPP 55 specifies when consent is required for remediation work, and provides considerations for rezoning land and determining DA’s. The SEPP also requires that remediation work is undertaken in accordance with, and meets, certain standards and notification requirements.

If any remediation works are required for the Project, these would be carried out under SEPP 55 and in accordance with *Managing Land Contamination: Planning Guideline* (Department of Urban Affairs and Planning (1998), and guidelines in force under the *Contaminated Land Management Act 1997* (CLM Act). Potential contamination impacts and safeguards are discussed further in Section 0.



State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

The State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (SEPP (Sydney Drinking Water Catchment)) commenced on 1 March 2011 and replaced the Drinking Water Catchments Regional Environmental Plan No 1.

The SEPP (Sydney Drinking Water Catchment) states that a proposed development within the WaterNSW drinking water catchment must have a neutral or beneficial effect on water quality (NorBE). The NorBE assessment needs to be undertaken in line with the *Neutral or Beneficial Effect on Water Quality Assessment Guidelines 2011* (Sydney Catchment Authority, 2011a) and the *Neutral or Beneficial Effect on Water Quality Assessment Tool 2011* (Sydney Catchment Authority, 2011b). This applies to projects that are being assessed under Part 4 of the EP&A Act.

The Project is located within the catchment of the Coxs River, and is within the boundary of the Warragamba Drinking Water Catchment. Consequently, SEPP (Sydney Drinking Water Catchment) is applicable to the Project. A qualitative NorBE assessment has been undertaken and found that the Project is likely to have a neutral or beneficial effect on water quality within the WaterNSW drinking water catchment. Appendix C.1 shows the boundaries of the drinking water catchment and Appendix C.2 provides the qualitative NorBE assessment for the Project.

3.4.2 Local planning policies and strategies

Lithgow Local Environmental Plan 2014

Lithgow LEP provides planning controls for land within Lithgow LGA, including the site. The site is zoned SP2 Infrastructure and designated for 'Electricity Generating Works'. Under this zoning, the demolition of a power station is not a prohibited activity or an activity that is permissible without consent. Therefore, the Project requires approval from LCC under Part 4 of the EP&A Act.

Lithgow Development Control Plan

LCC repealed all DCPs on 20 January 2017. There were no draft DCPs in force at the time of preparing this SEE. Therefore, there are no DCP's relevant to the Project.

Environment Protection Licence 766

The Environment Protection Licence (EPL) that applies to the WWPS is EPL 766. The activities which are regulated under EPL 766 include:

- electricity generation
- chemical storage facilities
- coal works
- crushing, grinding or separating works
- energy recovery
- water storage.

4 Environmental assessment

Chapter 4 provides an assessment of the potential environmental impacts of the Project for a comprehensive range of environmental factors. For each environmental factor, the existing environment is described, the potential impacts of the Project are identified, and safeguards and mitigation measures are proposed to avoid and minimise these potential impacts.

4.1 Water quality and drainage

4.1.1 Existing environment

The Coxs River bisects the WWPS site and proceeds southward into Lake Wallace. Lake Wallace was created as a water storage to service the WWPS and Mount Piper Power Station and is owned and managed by EnergyAustralia. Coxs River and Lake Wallace lie within the Warragamba Dam catchment area, which is Sydney's main water supply and Australia's largest urban water supply dam.

The Coxs River was a primary source of water for the operation of the WWPS and is still used as a method for the disposal of storm water and treated water from WWPS and Mount Piper Power Station. The Coxs River also forms part of the Hawkesbury-Nepean catchment in the Central Tablelands and Blue Mountain regions of south-eastern New South Wales, and lies within the Sydney Water catchment zone. The river begins north of Wallerawang at Gardiners Gap, within Ben Bullen State Forest, and flows south to Lake Wallace and Lake Lyell (both of which assist in supplying water to Wallerawang township, WWPS and Mount Piper Power Station), before reaching its confluence with Warragamba River to form Lake Burragorang (a water supply source for Sydney). Historically, the river has inherent value as a travel corridor through the Blue Mountains having been used by both Indigenous persons and early settlers of the region, and has become more recently valued for its recreational activities and immense irrigation supply.

The current water quality in the Upper Coxs River catchment is generally considered poor and degraded due to extensive agricultural and coal mining land uses that rely on, and discharge into the river's water supply system. Studies undertaken by The Ecology Lab (2004 and 2007), identified that the dominant taxa of the river system are pollution tolerant and that the river exhibits a low diversification of species due to poor water quality. The dominant vegetation is a mixture of introduced and common species from the *Cyperaceae*, *Juncaceae* and *Typhaceae* families, with minimal native or vulnerable populations. Studies of the macroinvertebrates in the system by The Ecology Lab (2004, 2006 and 2007) found between 47 and 52 taxa, which was less diversity than expected, suggesting that the Coxs River is a degraded ecosystem. Fish assemblages have been greatly impacted by lake stocking of brown trout (*Salma trutta*), rainbow trout (*Oncorhynchus mykiss*) and native Australian bass (*Macquaria novemaculeata*) with these and other introduced species dominating the lakes and river system of the Upper Coxs River. The Ecology Lab (2004) found that only five percent of the fish species identified were native to the system.

The Coxs River and its associated lakes are a major contributor to the functionality of both WWPS and Mount Piper Power Station. The river itself intersects the north-western edge of the site and passes through the power station plant and under the Main Western Railway Line at the southern boundary of the site, before reaching Lake Wallace reservoir, which was built as part of the Coxs River water supply system to ensure capable water supply to both WWPS and Mount Piper Power Station. Other

significant parts of this system include Lake Lyell, Lake Wallace, Thompson's Creek reservoir and Sawyers Swamp Creek Ash Dam. The uses and value of the systems are outlined in the table below.

Table 4-1 Uses of the Coxs River Water Supply System

Feature	Details/power station use	Other uses/environmental value
Lake Lyell	Lake Lyell has an active storage of 32,109 megalites (ML) and maximum capacity of 34,192 ML. Water from Lake Lyell is pumped via three pumps to either Mount Piper Power Station or Lake Wallace.	Farmers, Marrangaroo, Pipers Flat and Thompsons creeks feed into Lake Lyell. Lake Lyell is used for grazing, forestry, coal mining, urban (trout fishing) and industrial use. The lake is also prone to blue-green algae events. It is generally considered safe for the public and recreation.
Lake Wallace	Lake Wallace was constructed to supply water to WWPS and Mount Piper Power Station and has a maximum capacity of 4,004 ML. Water is pumped via three pumps to WWPS.	The lake is used by the public for recreational activities. The lake is monitored for blue-green algae and has received amber ratings for cyanobacteria in the past. Lake Wallace also provides drinking water to Wallerawang.
Thompsons Creek Reservoir	Thompsons Creek Reservoir has a capacity of 27,500 ML and supplies water to Mount Piper Power Station.	No boats are permitted on the reservoir. Limited trout fishing is permitted.
Sawyers Swamp Creek Ash Dam	Water is used for ash conditioning and dust suppression.	Managed at a negative water balance.

WWPS has a functioning storm water drainage system. All water flows entering and falling within the site are captured through site drainage and held in retention basins before being passed through an oil and grit separator. Clean water captured can be released into the Coxs River through a monitored licensed discharge point (LDP1). However, since WWPS has been deregistered, LDP1 has been closed and is only opened during large rain events.

The current site practice is to use treated drainage water for equipment washing and dust suppression.

The storm water drainage system manages storm water and will remain as a functioning network both during the demolition phase and following its completion.

4.1.2 Potential impacts

The potential water quality impacts of the Project include:

- chemical, heavy metal, debris, oil and grease or petroleum hydrocarbon spills occurring during the demolition process that directly pollute the Cox's River – this risk would be increased during demolition of structures that cross the river, such as the coal conveyor belt
- increased sediment loads from dust blown off-site causing high sediment loads to be deposited into nearby waterways
- increased levels of litter from demolition activities polluting downstream watercourses.

Water quality in Coxs River and surrounding systems of Lake Wallace and Lake Lyell has the potential to be impacted by the demolition works through spillage of chemicals, oils, fuels, waste and contamination by materials and equipment used during the demolition process. There is also potential

for storm water and the existing storm water drainage system to be impacted during the storing or moving of materials or equipment within the site during the demolition works. Although as storm water from the site is treated prior to discharge, this risk would be minimal.

The existing poor water quality of the Coxs River reduces the potential for the Project to cause water pollution events that have a significant impact on local water quality and aquatic biodiversity.

4.1.3 Safeguards and mitigation measures

The potential impact of the Project on hydrology, water quality and drainage would be minimised by implementing the safeguards and mitigation measures identified in Table 4-2.

Table 4-2 Proposed water quality and drainage environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
WQ-1	A Soil and Water Management Plan (SWMP) shall be prepared as part of the demolition EMP prior to the start of demolition works and would establish soil and water management measures including soil and erosion controls. The SWMP would reflect the staged nature of the works and would be progressively updated. Controls would also be updated according to the staged nature of works.
WQ-2	Any leakages or spills from vehicles or equipment shall be reported to the site's Environment Manager immediately. All fuels, chemicals and hazardous materials shall be stored within an impervious bunded area in accordance with relevant Australian Standards and Environment Protection Authority guidelines.
WQ-3	Building rubble and excess materials from demolition shall be removed from the site and properly disposed of as soon as possible to avoid contamination of storm water and waterways during periods of rain.
WQ-4	The existing storm water drainage system would be retained during construction and inspected and maintained on a weekly basis

4.2 Noise and vibration

4.2.1 Existing environment

Areas adjacent to the site generally consist of bushland, vacant cleared lands and residential, semi-rural and rural residential environments with dominant noise sources being road traffic, industrial and agricultural activities.

Key existing noise sources in the areas surrounding WWPS generally include major roads, such as Castlereagh Highway (B55), Great Western Highway (A32), local roads such as Main Street, Pipers Flat Road and Barton Avenue, and industrial activities associated with nearby power stations and coal mines.

There are only a few sensitive receivers near the proposed demolition work sites. Table 4-3 identifies noise catchment areas (NCAs) and representative receivers within these NCAs. The nearest residential receiver is approximately 400 metres to the north of the site, on Duncan Street, Lidsdale.

Table 4-3 Noise catchment areas and representative receivers

Receiver ID	Representative location	Distance from WPPS (m)	Comments
NCA 1	1 Duncan Street, Lidsdale NSW	417	Representative location for residences along Duncan Street, Lidsdale NSW.

Receiver ID	Representative location	Distance from WPPS (m)	Comments
NCA 2	United Petrol Pump	248	Commercial property.
NCA 3	121 Main Street, Wallerawang NSW	880	Representative location for the Black Gold Country Cabins Motel.
NCA 4	55 Cripps Avenue, Wallerawang NSW	1280	Representative location for residences on southern side of Heel Street and Blaxland Street, Wallerawang NSW.

There is also a church located adjacent to the site on Main Street, Wallerawang. These properties have the potential to be impacted by noise and vibration from the Project.

There are also several non-Aboriginal heritage listed items located within and adjacent to the site that have the potential to be impacted by vibration associated with the Project. These heritage items are discussed further in Section 4.10.

Noise survey

A background noise survey was undertaken for the Project in 2013. The survey comprised eight attended noise measurement locations and two unattended measurement locations (refer to Figure 4-1). These locations were based on the relative distance from the site and proximity of the nearest sensitive residential receiver. The noise survey was conducted on 29/05/2013 and 30/05/2013 during the day and night time.

Ambient noise attended measurements were made using a Larson Davis 831 Type 1 sound level meter which was set to 'A' frequency weighting, 'F' time weighting, and was fitted with an approved windshield. Measurements were typically taken at a height of 1.2 metres and at least 3.5 metres from any reflecting structure other than the ground. The background noise measurements including the averaged A-weighted noise levels (L_{Aeq}), maximum A-weighted noise levels (L_{Amax}) and statistical A-weighted L_{A90} and L_{A10} noise levels¹ were conducted using a Larson Davis 831 Type 1 sound level meter equipped with a LD PRM831 pre-amplifier and a PCB 377B02 ½" microphone. A Larson Davis CAL200 was utilised to calibrate all sound level meters before and after each series of measurements with no significant calibration drift noted. The weather during the noise logging ranged from overcast to rainy conditions, and wind speeds less than 3 m/s at ground level. Measurements were typically taken in accordance with the *Australian Standard AS 1055-1997: Acoustics – Description and measurement of environmental noise*.

Unattended noise data loggers were also installed on site. The loggers were set to record continuously and average over 15-minute intervals (as per the Noise Policy for Industry (Environment Protection Authority, 2017), measuring the averaged A-weighted noise levels (L_{Aeq}), maximum A-weighted noise levels (L_{Amax}) and statistical A-weighted L_{A90} and L_{A10} noise levels. Unattended noise monitoring was undertaken at Location A and Location B (refer to Figure 4-1).

¹ For explanation of the acoustic terms please refer to the attached Glossary of Terminology in Appendix A

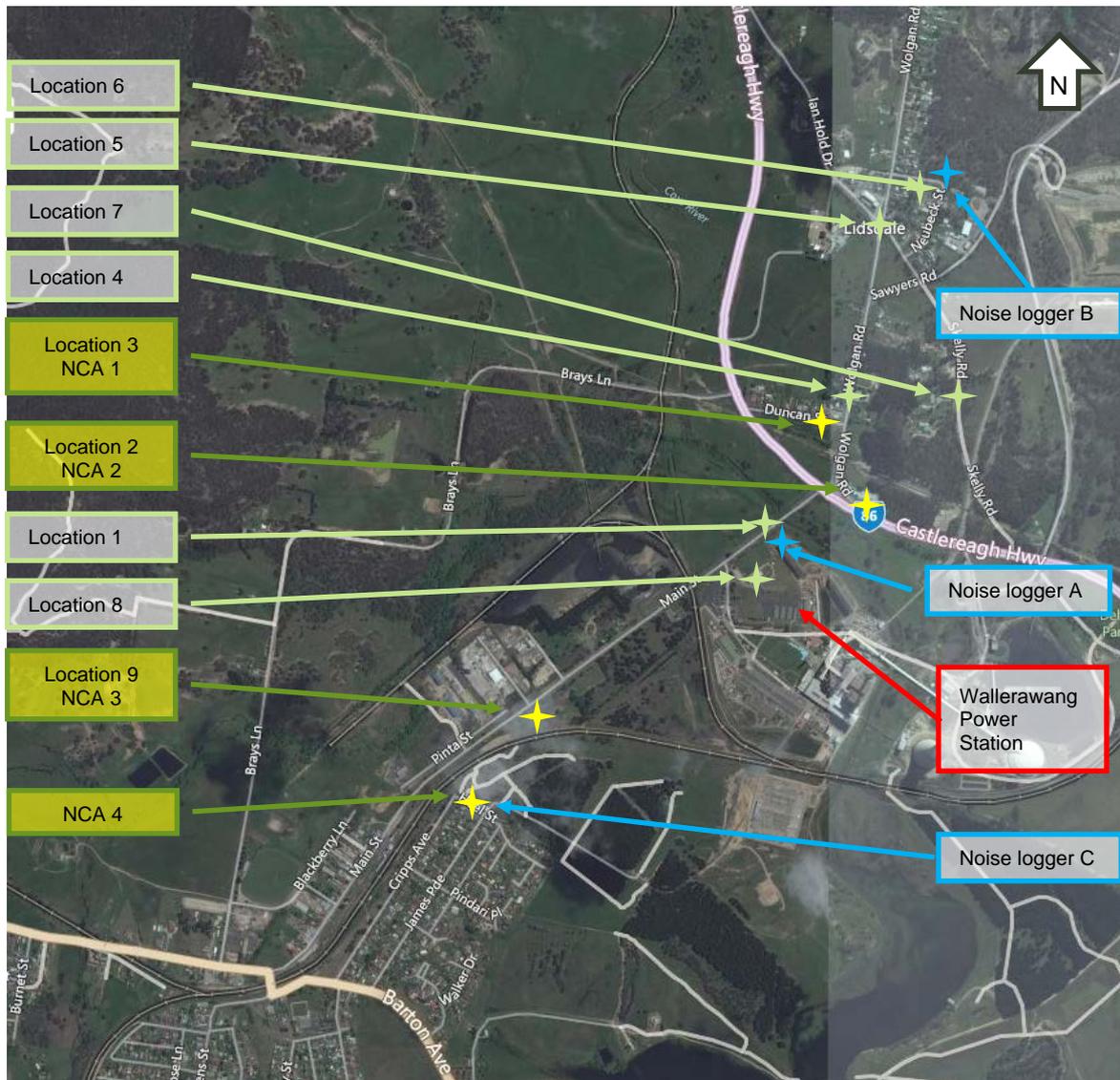


Figure 4-1 Noise measurement locations

The results of the attended and unattended noise monitoring are shown in Table 4-4 and Table 4-5 respectively.

Table 4-4 Summary of attended noise monitoring conducted on 29-30 May 2013

Location	Period	Noise metric (dB (A))				
		L _{Aeq} [#]	L _{A90} [^]	L _{A10} ⁺	L _{Amin}	L _{Amax}
1	Day	62	55	65	54	80
	Night	56	56	57	55	64
2	Day	65	56	68	55	83
	Night	58	53	56	52	76

Location	Period	Noise metric (dB (A))				
		L _{Aeq} [#]	L _{A90} [^]	L _{A10} ⁺	L _{Amin}	L _{Amax}
3	Day	51	48	52	47	63
	Night	47	45	47	44	66
4	Day	63	47	63	46	83
	Night	46	46	47	44	61
5	Day	52	37	50	35	71
	Night	43	41	44	40	56
6	Day	46	39	49	36	62
	Night	Equipment malfunction				
7	Day	42	39	43	37	69
	Night	41	39	42	38	62
8	Day	66	66	67	65	68
	Night	67	67	67	66	68
9	Day	46	44			
	Night	42	40			

[^] L_{A90} refers to the A-weighted noise level which is exceeded for 90% of the measuring period. It is usually used as the descriptor for background noise level during the measurement period.

⁺ L_{A10} refers to the A-weighted noise level which is exceeded for 10% of the measuring period. It is usually used as the descriptor for background noise level during the measurement period.

[#] L_{Aeq} refers to A-weighted equivalent continuous sound pressure level over a measurement period. It is used to quantify the average noise level over a time period.

Table 4-5 Summary of unattended noise monitoring conducted on 29-30 May 2013

Location	Period	L _{Aeq} (dB(A))	RBL ² (dB(A))
A	Day	72	71
	Night	72	72
B	Day	43	35
	Night	42	36
C	Day	55	45
	Night	42	33

4.2.2 Noise criteria

To adopt measured background noise levels for the Project, construction noise criteria for residential and noise sensitive receivers were established with consideration to the *Interim Construction Noise Guideline* (Department of Environment and Climate Change, 2009).

² Rating background level (RBL) is the median value of the measured L_{A90, 15 minute} for the assessment period in accordance with the NSW Industrial Noise Policy

Recommended standard hours

The recommended standard hours identified in the *Interim Construction Noise Guideline* for construction work are shown in Table 4-6, however, they are not mandatory. The likely noise impacts and the ability to undertake works during the recommended standard hours should be considered when scheduling work.

Table 4-6 Recommended standard hours for construction work

Work type	Recommended standard hours of work
Normal construction	Monday to Friday 7am to 6pm
	Saturday 8am to 1pm
	No work on Sundays or public holidays

Airborne noise for residences

Table 4-7 sets out management levels for noise at residences and how they are to be applied. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.

The rating background level (RBL) is used when determining a noise management level. The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours).

Table 4-7 Noise at residents using quantitative assessment

Time of day	Management level $L_{Aeq(15\text{ min})}^*$	How to apply
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <ul style="list-style-type: none"> Where the predicted or measured $L_{Aeq(15\text{ min})}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

	Highly noise affected 75 dB(A)	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <ul style="list-style-type: none"> ■ Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: <ol style="list-style-type: none"> 1. Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences). 2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	<ul style="list-style-type: none"> ■ A strong justification would typically be required for works outside the recommended standard hours. ■ The proponent should apply all feasible and reasonable work practices to meet the noise affected level. ■ Where all feasible and reasonable practices have been applied and noise is more than 5 dB (A) above the noise affected level, the proponent should negotiate with the community.

* Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 metres above ground level. If the property boundary is more than 30 metres from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 metres of the residence. Noise levels may be higher at upper floors of the noise affected residence. The difference between internal noise levels and external noise levels is around 10dB with windows open for adequate ventilation.

For non-residential receivers, the Noise Affected Levels are as follows:

- office/retail: $L_{Aeq, 15min}$ 70 dBA
- places of worship: $L_{Aeq, 15min}$ 45 dBA (internal noise level)
- active recreation areas: $L_{Aeq, 15min}$ 65 dBA.

Sleep disturbance at residences

Sleep disturbance criteria are generally considered in the assessment of any noise likely to occur during the night time. Below are the two most relevant criteria specific to sleep disturbance from the *Noise Policy for Industry* and World Health Organization.

The NSW guidance relating to sleep disturbance are outlined in the *Application notes – NSW Industrial noise policy*. The following section summarises the sleep disturbance screening criterion:

The then Department of Environment, Climate Change & Water (DECCW) (now the Office of Environment and Heritage) reviewed research on sleep disturbance in the NSW Road Noise Policy (RNP) (March 2011). This review concluded that the range of results is sufficiently diverse that it was not reasonable to issue new noise criteria for sleep disturbance.

From the research, DECCW recognised that current sleep disturbance criterion of an $L_{A1, (1\text{ minute})}$ not exceeding the $L_{A90, (15\text{ minute})}$ by more than 15 dBA is not ideal. Nevertheless, as there is insufficient evidence to determine what should replace it, DECCW will continue to use it as a guide to identify the

likelihood of sleep disturbance. This means that where the criterion is met, sleep disturbance is not likely, but where it is not met, a more detailed analysis is required.

The detailed analysis should cover the maximum noise level or $L_{A1, (1 \text{ minute})}$, that is, the extent to which the maximum noise level exceeds the background level and the number of times this happens during the night time period. Some guidance on possible impact is contained in the review of research results in the appendices to the RNP. Other factors that may be important in assessing the extent of impacts on sleep include:

- How often high noise events will occur
- Time of day (normally between 10pm and 7am)
- Whether there are times of day when there is a clear change in the noise environment (such as during early morning shoulder periods).

The $L_{A1, (1 \text{ minute})}$ descriptor is meant to represent a maximum noise level measured under 'fast' time response. DECCW will accept analysis based on either $L_{A1, (1 \text{ minute})}$ or $L_A, (Max)$. If the above screening criterion of $L_{A90, (15 \text{ minute})} + 15 \text{ dBA}$ is exceeded further review of the noise source is recommended.

The World Health Organization has published guidelines which reference a number of studies on sleep disturbance. The general conclusions provided in the *Guideline for Community Noise* (World Health Organization, 1999) suggest that for continuous noise, the sound pressure level should not exceed 30 dBA indoors, and for intermittent noise sources (short term or transient noise events), maximum levels (L_{Amax}) should not exceed 45 dBA internally more than 10-15 times per night.

The conclusions made in the RNP Appendix B: *Technical background to the road traffic noise criteria* are as follows:

Considering all of the foregoing information the following conclusions can be drawn:

- Maximum internal noise levels below 50-55 dBA are unlikely to cause awakening reactions
- One or two events per night with maximum internal noise levels of 65-70 dBA are not likely to affect health and wellbeing significantly.

Management noise criteria

A demolition noise assessment criteria (Noise Management Level) was developed in accordance with the *Interim Construction Noise Guideline* and is summarised in Table 4-8.

Table 4-8 Noise management levels for the demolition phase of the Project

Noise catchment area	Rating background level (dB(A))		L _{Aeq} (15min) dBA Noise management levels		L _{Amax} dBA Sleep disturbance criteria
	Day	Night	Recommended standard hours Mon-Fri: 7am-6pm Sat: 8am-1pm	Outside standard hours	10pm-7am
NCA 1	48	45	58	50	60
NCA 2	56	53	70		N/A
NCA 3	44	40	54	45	55

Noise catchment area	Rating background level (dB(A))		L _{Aeq} (15min) dBA Noise management levels		L _{Amax} dBA Sleep disturbance criteria
	Day	Night	Recommended standard hours Mon-Fri: 7am-6pm Sat: 8am-1pm	Outside standard hours	10pm-7am
NCA 4	45	33	55	38	48

Blasting criteria

Blast criteria are typically based on guidelines prescribed by the Australian and New Zealand Environment and Conservation Council (ANZECC). These guidelines provide recommended maximum levels and blast overpressure and ground vibration to maintain the amenity of residents. Further details on blast safety and criteria are provided in *Australian Standard 2187.2-2006 Explosive – Storage, Transport*.

Where Blasting is required the guidelines are:

- maximum blast overpressure: 115 dB(L)
- maximum peak particle vibration velocity: 5 millimetres per second.

These targets should be met for all but 5% of blasts, and in no case should the blast overpressure exceed 120 dB(L) or peak particle velocity exceed 10 millimetres per second. The guidelines also provide a long-term goal of 2 millimetres per second for peak particle vibration velocity.

4.2.3 Potential impacts

Demolition activities have the potential to create noise and vibration impacts if activities are not managed properly.

The Project has the potential to impact upon sensitive receivers due to:

- noise and vibration impacts associated with the demolition activities
- increased traffic noise and vibrations from work vehicles entering and exiting the site to deliver and dispose of materials and equipment
- noise and vibration impacts from blasting activities associated with the demolition works. Blasts would be planned and timed taking into consideration the distance to nearby sensitive receivers. A Blast Management Plan would be prepared prior to blasting activities, and further management measures would be identified at that stage.

An assessment of potential noise impacts has been undertaken and is discussed further below.

Construction noise

Potential construction noise impacts for the project were predicted in the acoustics assessment through a construction noise model developed using SoundPlan noise modelling software.

Construction noise sources

The demolition activities described in Section 2.3 of this SEE would require the use of noise-generating plant and equipment. The individual sound power levels (SWLs) of anticipated demolition

equipment required for the project have been referenced from *AS2436-2000 Guide to noise and vibration control on construction demolition and maintenance sites* and are summarised in Table 4-9.

Table 4-9 Construction plant and equipment sound power levels

Activity	Mobile plant	Sound Power Level (dBA)
Reverse construction	Hand tools (electric)	102
	Crane (mobile)	104
	Scissor lift	106
	Jackhammer (handheld)	117
	20T excavator	100
	Delivery truck	108
	Delivery truck	108
	Workforce vehicles	106
Total		119
Removal and relocation of fixed equipment	Hand tools (electric)	102
	60t crane	104
	Scissor lift	106
	Jackhammer (handheld)	117
	20T excavator	100
	Flat-bed truck	106
Total		118
Demolition	20t excavator	100
	12t excavator	100
	Dozer (D11)	112
	Excavator (hydraulic hammer)	118
	Delivery truck	108
	Delivery truck	108
Total		120
Stack demolition	Excavator (hydraulic hammer)	118
Total		118
Earthworks	Dozer (D11)	112
	20T excavator	100
	Delivery truck	108
Total		114

Table 4-10 shows the predicted noise at the sensitive NCA.

Table 4-10 Predicted demolition noise impact at the nearest NCA

Activity	Mobile plant	SWL	Predicted Noise level (L _{Aeq}) (dBA)			
			NCA 1	NCA 2	NCA 3	NCA 4
Noise Management Level Standard Construction hours			58	70	54	55
Reverse construction	Hand tools (electric)	102	40	45	34	31
	Crane (mobile)	104	42	47	36	33
	Scissor lift	106	44	49	38	35
	Jackhammer (Hand held)	117	55	60	49	46
	20T excavator	100	38	43	32	29
	Delivery Truck	108	46	51	40	37
	Delivery Truck	108	46	51	40	37
	Workforce vehicles	106	44	49	38	35
Cumulative noise			57	62	51	47
Removal and relocation of fixed equipment	Hand tools (electric)	102	40	45	34	31
	60t Crane	104	42	47	36	33
	Scissor lift	106	44	49	38	35
	Jackhammer (Hand held)	117	55	60	49	46
	20T excavator	100	38	43	32	29
	Flatbed truck	106	44	49	38	35
Cumulative noise			56	61	50	47
Demolition	20T excavator	100	38	43	32	29
	12t Excavator	100	38	43	32	29
	Dozer (D11)	112	50	55	44	41
	Excavator (Hydraulic hammer)	118	56	61	50	47
	Delivery Truck	108	46	51	40	37
	Delivery Truck	108	46	51	40	37
Cumulative noise			58	63	52	48
Stack demolition	Excavator (Hydraulic hammer)	118	56	61	50	47
Cumulative noise			56	61	50	47
Earthworks	Dozer	118	56	61	50	47
	20T excavator	100	38	43	32	29
	Delivery Truck	108	46	51	40	37
Cumulative noise			57	61	50	47

Based on the worst-case scenario during demolition, the predicted noise levels from the project will comply with the noise criteria during the standard construction hours (refer to Table 4-6).

Noise and vibration impacts, if managed properly, can be minimised or avoided altogether through the development and implementation of appropriate environmental management plans and mitigation measures (refer to Table 4-11). Noise and vibration impacts to nearby sensitive receivers due to the Project are expected to be minor and short term.

4.2.4 Safeguards and mitigation measures

The potential noise and vibration impacts of the Project would be minimised by implementing the safeguards and mitigation measures identified in Table 4-11.

Table 4-11 Proposed noise and vibration environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
NV-1	The existing WWPS Noise and Vibration Management Plan shall be updated as part of the as part of the demolition EMP.
NV-2	Where possible, less noisy plant would be selected for demolition.
NV-3	Examine and implement, where feasible and reasonable, the option of reducing noise from metal chutes and bins by placing damping material in the chute or bin.
NV-4	Avoid the use of reversing alarms by designing site layout to avoid reversing, such as by including drive through for parking and deliveries.
NV-5	Provide to nearby residents, reasonably ahead of time, information such as the expected duration of demolition works, what works are expected to be noisy, their duration, what is being done to minimise noise and when respite periods will occur. For works outside standard hours, inform affected residents and other sensitive land use occupants one week before commencement.
NV-6	Use a site information board at the front of the site with the name of the organisation responsible for the site and their contact details, hours of operation and regular information updates. This signage should be clearly visible from the outside and include after-hours emergency contact details.
NV-7	Provide a readily accessible contact point, for example, through a 24-hour toll-free information and complaints line.
NV-8	Noise generating activities shall be restricted to standard construction hours (7am to 6pm Monday to Friday and 8am to 1pm Saturday), unless otherwise agreed with LCC.
NV-9	A Blast Management strategy shall be prepared and implemented prior to blasting activities required for demolition works. This plan would address the potential risks of blasting on the surrounding environment and control measures. The plan would be prepared in accordance with Section 4 of Australia Standard 2187.2-2006 Australia Standard <i>Explosives – Storage and Use, Part 2: Use of Explosives</i> .

4.3 Landscape character and visual amenity

4.3.1 Existing environment

A site visit was undertaken on 2 February 2017 to gain an understanding of the existing visual environment within the site and surrounds. Photographs taken during the site visit are included in Appendix A.

WWPS is a major visual feature of the township of Wallerawang and dominates the local visual landscape. The main street of Wallerawang, 'Main Street', provides the main entry point to the WWPS.

4.3.2 Potential impacts

The demolition of WWPS is expected to have a positive long-term visual effect on the township of Wallerawang and surrounding environment, however, there is potential for temporary visual impacts during the demolition works. The potential amenity impacts of the proposed demolition works include:

- visual amenity impacts caused by poorly executed demolition activities and inappropriate storage of waste
- the visual amenity impacts to road users on the surrounding road network caused by an increase in work vehicles on the local road network
- additional visual clutter from temporary signage at demolition work sites
- if demolition works are required at night, increased light spill towards sensitive receptors (i.e. residential receivers).

The demolition works and equipment that may be visible to the surrounding areas and roadways would be removal of the twin cooling stacks, coal conveyor belts and the use of large cranes on site.

The demolition works would likely generate minor, temporary adverse effects on the existing landscape setting, although any impacts would be consistent with any existing operations associated with the industrial nature of the site.

The removal of power station infrastructure from the site would have a positive impact on the landscape character and visual character of Wallerawang.

4.3.3 Safeguards and mitigation measures

The potential landscape character and visual amenity impacts of the Project would be minimised by implementing the safeguards and mitigation measures identified in Table 4-12.

Table 4-12 Proposed landscape character and visual amenity environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
LC-1	Following completion of the demolition works, all vehicles, equipment, machinery, materials and waste relating to the works shall be removed from the site.

4.4 Topography and soils

4.4.1 Existing environment

The site is in a broad river valley created by the Coxs River and its tributaries. The site is at an elevation of about 880 metres Australian Height Datum. The operational parts of the site are generally flat with gentle slopes occurring toward the Coxs River. Hills are located to the south-west of the site, forming a divide between the site and Lake Wallace to the south.

The area is located on the western edge of the Sydney Basin and is generally underlain by shale and sandstone. Soils at the site are highly disturbed and generally consist of fill materials. Undisturbed parts of the site are generally underlain by sandy-clay soils and alluvial deposits.

4.4.2 Potential impacts

Topography and soil impacts have the potential to occur during the Project. Demolition activities which could result in potential impacts include:

- removal of structures resulting in exposed soils

- 
- stockpiling of materials, such as crushed and waste materials
 - movement of heavy vehicles across exposed earth.

It is expected that soil disturbance during demolition activities would be very limited. Structures at the site would be demolished to ground level and any at-ground features such as roads, drains and hardstand areas will remain.

Extensive temporary sediment control measures would be implemented on-site during the demolition where appropriate to minimise any impacts from additional sediments entering surrounding environments. As described in Section 4.1, all storm water at the site is captured and treated in the site's existing storm water management system, hence erosion and sediment controls would only be established where there is a risk of demolition waste being washed into the storm water system.

4.4.3 Safeguards and mitigation measures

The potential impact of the Project on soils would be minimised by implementing the safeguards and mitigation measures identified in Table 4-2 for water quality. No further measures are required.

4.5 Social impacts

4.5.1 Existing environment

The Project is in the Lithgow LGA, which had a population of 21,090 in the 2016 Census. Most of the population live within the urban centres of Lithgow (11,530), Wallerawang-Lidsdale (2,059) and Portland (1,944). The remainder of the population reside in rural localities and villages.

Major industries in Lithgow LGA include coal mining, power generation, grazing, forestry and tourism. The three most popular industry sectors within the LGA are retail, mining and health care and assistance, with these sectors employing 31.3% of the population (LCC, 2012b).

In comparison to NSW, residents of Lithgow LGA are more likely to be employed in technical and trades positions, community and personal services or as machinery operators, drivers or labourers. The increase in clerical and administrative workers can be attributed to the establishment of call centres in Lithgow (LCC, 2012b).

The suburb of Wallerawang has a younger population than the wider Lithgow LGA due to a higher percentage of children and young people and a lower percentage of people aged 65 years and over. Children aged 0 to 14 years made up 22 percent of the population of the suburb of Wallerawang and people aged 65 years and over made up 16 percent of the population. The median age in the suburb of Wallerawang in the 2016 Census was 40 years, compared to 45 years for the Lithgow LGA.

To encourage young people and families to stay in the Lithgow LGA the community identified the need to target the following areas: tertiary education, increased job opportunities, trades/skills based training facilities and improved cultural and recreational facilities (LCC, 2012b).

Lithgow LGA has a strong industrial heritage and still relies heavily on the employment base and economic spinoffs of the mining and power generation industries and is therefore subject to the vagaries of changes to the domestic and international coal markets and pricing of electricity (LCC, 2010).

The population characteristics of the Lithgow LGA between 2006 and 2016 are provided in Table 4-14.

Table 4-13 Lithgow LGA time series data (2006-2016)

Selected medians	2006	2011	2016
Population	19,756	20,160	21,090
Median age	40	42	45
Median total personal income (\$ weekly)	\$353	\$450	\$510
Median total family income (\$ weekly)	\$1,028	\$1,193	\$1,328
Median total household income (\$ weekly)	\$741	\$895	\$987
Median mortgage repayments (\$ monthly)	\$1,107	\$1,430	\$1,387
Median rent (\$ weekly)	\$135	\$170	\$230
Average household size	2.4	2.3	2.3

Source: ABS Census data: 2006, 2011 and 2016

4.5.2 Potential impacts

WWPS was a major regional employer and the main feature of the township of Wallerawang until its closure in 2014. The closure of the plant would have had several social impacts such as loss of employment and reduction in trade from visiting service providers. These impacts have now occurred however.

Generally, the Project is not expected to result in socio-economic impacts to surrounding communities, rather it will provide economic benefits through expenditure and engagement of local businesses during the demolition period, and long-term amenity benefits by removing large, unused and redundant infrastructure and creating an opportunity for future alternative uses of the site.

Minor amenity impacts such as noise and traffic impacts may occur during the demolition period.

4.5.3 Safeguards and mitigation measures

The potential socio-economic impacts of the Project would be minimised by implementing the safeguards and mitigation measures identified in Table 4-15.

Table 4-14 Proposed social impacts environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
S-1	Affected stakeholders shall be notified prior to the commencement of demolition works. The notification would include of the start date and estimated duration of the demolition works and provide a contact name and number for obtaining further information and making complaints.
S-2	Complaints shall be recorded in a complaints management system and addressed as soon as possible by the projects environment and community coordinator.
S-3	Adequate security fencing and signage shall be installed where required to notify the public of demolition activities occurring and ensure public access to the site is restricted.

4.6 Traffic and access

4.6.1 Existing environment

The existing road network near WWPS includes:

- Castlereagh Highway (B55) – a State highway along the northern and eastern site boundaries

- 
- Great Western Highway (A32) – a State highway about 2.3 km south of the site
 - Main Street, Wallerawang – a local road along the western sit boundary. This is the main street of Wallerawang township
 - Wolgan Road, Lidsdale – a local road located north of the site that intersects the Castlereagh Highway
 - Barton Avenue – a local road about 1.3 km south-west of the site that connects the Great Western Highway to Wallerawang township
 - Pipers Flat Road – a local road located about 1.7 km south-west of the site that intersects with Main Road and Barton Avenue and connects Wallerawang to Portland.

The main access to WWPS is on Main Street, Wallerawang. The entrance includes a gatehouse to prevent unauthorised access to the site. There are also numerous access gates to the site along the Castlereagh Highway that are not open to the public.

4.6.2 Potential impacts

4.6.2.1 Impacts on traffic

The proposed demolition works would cause a temporary increase in traffic movements, particularly heavy vehicles, on local and State roads such as Main Street, Pipers Flat Road, Barton Avenue and the Castlereagh and Great Western highways.

Demolition vehicle traffic on State and local roads would vary depending on:

- the nature of the demolition works being undertaken at any particular time and the number of vehicles required to support the works
- the capacity of the demolition work site(s) to accommodate construction vehicles, particularly at material loading and unloading areas
- haulage routes to and from the site
- location of suitable waste, landfill and recycling facilities, and resale locations for salvageable materials
- details of over-size and over-mass components being transported on public roads and any bridge load capacity restrictions.

These details would be determined by the demolition contactor and would be confirmed in a Traffic Management Plan prepared for the project prior to the commencement of demolition. Notwithstanding this, designated access routes for demolition traffic would generally be along the arterial road network. Access to the site for demolition works would remain the same via Main Street, Wallerawang.

Most traffic movements would be associated with transporting demolition waste to suitable licenced landfill facilities or recycling depots. The project would require the following materials to be removed and disposed of off-site:

- salvage equipment
- reinforced and structural steel
- cladding
- electrical wiring
- pipes, valves, concrete and bricks

- 
- hazardous materials
 - glass
 - plastics
 - general waste.

It is assumed that this material would be transported via road using rigid and articulated vehicles with and without trailers such as semi-trailers. Over-sized items would also be removed and transported using this method as required. Other traffic generated by the project would include light vehicles used to transport staff and for delivery purposes.

4.6.2.2 Impacts on local roads, users and properties

Potential impacts to roads, road users and property access as a result of the project would include:

- Additional wear on the road network as a result of use by heavy vehicles and increased traffic volumes
- Minor delays to road users during the demolition works as salvage and scrap material is removed from the site as potential oversize or over-mass loads
- Additional truck movements in and out of the site along Main Street, Wallerawang
- Increased safety risk to road users due to increased traffic volumes entering and existing the site on Main Street, Wallerawang.

Dilapidation surveys of local roads around the site would be undertaken prior to construction as well as after construction is complete. Any damage to roads, other than typical wear and tear attributable to use by demolition traffic would be assessed against the dilapidation surveys.

The Project is not expected to result in any property access restrictions.

4.6.2.3 Impacts on public transport

The Castlereagh Highway, Main Street, Wolgan Road, Pipers Flat Road and Barton Avenue are all dedicated bus routes. There are three bus stops located on Main Street near the entrance to WWPS.

The Project would have a negligible impact on existing passenger and school bus services as no bus routes would need to be modified or temporarily relocated for the proposed works. There may be minor temporary travel time increases due to reduced speeds near site access points.

The Main Western Railway Line would not be impacted by the Project.

4.6.2.4 Impacts on pedestrians and cyclists

There are no pedestrian footpaths or cycleways located on Main Street, Wallerawang. The potential impact of the Project on pedestrians and cyclists would be similar to its impact on other road users near the site.

4.6.3 Safeguards and mitigation measures

The potential impact of the Project on traffic and access would be minimised by implementing the safeguards and mitigation measures identified in Table 4-16.

Table 4-15 Proposed traffic and access environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
TA-1	<p>A Traffic Management strategy shall be prepared as part of the demolition EMP.. The Traffic Management strategy shall identify:</p> <ul style="list-style-type: none"> ■ haulage routes to and from the site ■ how safe and efficient movement of traffic into and out of the site would be maintained ■ how emergency vehicle access to the site would be maintained ■ requirements and methods for informing the local community of any potential impacts on the local road network and traffic.
TA-2	<p>The demolition contractor shall be responsible for obtaining permits for oversize and/or overmass vehicles to travel on a local road. An oversize vehicle permit is required when:</p> <ul style="list-style-type: none"> ■ the height, width or length of an over-size vehicle (including any load) exceeds any of the maximum dimension limits specified in the General Class 1 Oversize Notice ■ travel by a vehicle operating under the General Class 1 Oversize Notice is proposed on a restricted road.

4.7 Air quality

4.7.1 Existing environment

The National Pollutant Inventory is maintained by the Department of the Environment and Energy and contains emission estimates for 93 toxic substances around Australia that are important due to their possible effect on human health and the environment. The inventory includes the source and location of these emissions.

A search of the National Pollutant Inventory was undertaken in September 2018 for the suburb of Wallerawang (postcode 2845) (see Appendix D). The search indicates that the existing air quality in Wallerawang is primarily influenced by emissions from coal mining, with a total of 70 diffuse and three industry-specific emitted substances identified. Diffuse emission sources in the locality include service stations, motor vehicles, barbecues, railways, lawn mowing, recreational boating, domestic/commercial solvents and aerosols, windblown dust and bushfires. The most commonly reported substances included manganese, mercury and zinc emissions from industry and total volatile organic compounds, toluene, benzene, xylenes and cadmium from diffuse sources.

The Project area is in a semi-rural area with a small number of nearby residential and commercial land uses. The closest residential properties is located around 400 metres to the north of the site, on Duncan Street, Lidsdale. A mixture of open grassed space, roads and trees are located between the site and these residential properties.

The daily air quality is likely to be influenced by the prevailing weather and climatic conditions, bushfires and other natural factors such as pollen.

EPL 766 requires EnergyAustralia to maintain the site in a condition that minimises or prevents the emission of dust from the site.

4.7.2 Potential impacts

The Project is not expected to cause a noticeable increase to any of the regional air pollutants described in Section 4.7.1.

The proposed demolition works have the potential to cause airborne dust, depending on the methodologies utilised and the prevailing weather conditions at the time. Dust emissions have the potential to impact nearby sensitive receivers.

4.7.3 Safeguards and mitigation measures

The potential impact of the Project on air quality would be minimised by implementing the safeguards and mitigation measures identified in Table 4-17.

Table 4-16 Proposed air quality environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
AQ-1	<p>Air Quality Management Plan shall be prepared as part of the demolition EMP prior to the start of demolition works. The measures contained in the Air Quality Management Plan to prevent dust emissions shall be reviewed prior to commencement of the Project to ensure they adequately address the risks associated with the proposed demolition works and include the safeguards identified in this SEE. The Air Quality Management Plan shall:</p> <ul style="list-style-type: none"> ■ identify potential sources of dust ■ identify dust sensitive receivers ■ include an environmental risk assessment that identifies the demolition activities with the highest risk of causing dust emissions that could impact sensitive receivers ■ identify mitigation measures to be implemented to avoid and minimise dust emissions, including measures that respond to the greater risk of dust emissions being generated during dry and/or windy weather conditions ■ record and identify corrective measures for incidents where excessive dust is generated ■ include a progressive stabilisation/ rehabilitation strategy for disturbed surfaces with the aim of minimising exposed surfaces.
AQ-2	Pre-wetting and use of water sprays to control dust emissions where appropriate during major demolition activities.
AQ-3	Scheduling the controlled demolition works to occur when weather conditions are favourable to avoid strong winds.
AQ-4	Carry out regular inspections to monitor compliance with the air quality management strategy

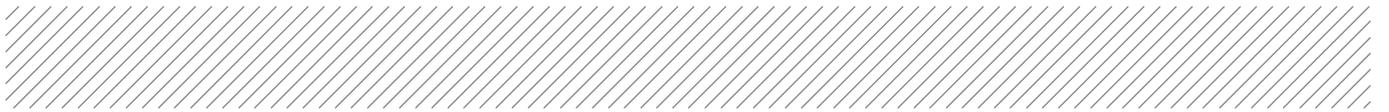
4.8 Biodiversity

4.8.1 Existing environment

The site is near Marrangaroo National Park within an area known for diverse biodiversity. However, the site itself is a largely cleared and highly disturbed environment.

The site has had all native vegetation cleared from it and contains areas of maintained lawn and garden beds which are planted with non-endemic species.

In 2012, Delta Electricity prepared the 'Delta Western Land Management Plan 2012-2017' which reviewed local fauna and flora populations, heritage sites and waste management for WWPS, Mount Piper Power Station, Lake Wallace, Lake Lyell, Thompsons Creek and buffer lands surrounding the ash repository sites at Kerosene Vale and Mount Piper Ash Dam. The plan did not assess parts of the power station that do not provide fauna or flora habitat such as concreted areas, roads, buildings or cooling towers.



The management plan undertook a review of NSW Bionet in 2012, and it was identified that the Delta Western Landholding (as previously described) was habited by 14 threatened species comprising 12 fauna and two flora species (refer to Table 4-18).

Table 4-17 Threatened fauna and flora species identified in the Delta Western Landholding

Common Name	Scientific Name	TSC Status	EPBC Status
Gang-Gang Cockatoo	<i>Callocephalon fimbriatum</i>	Vulnerable, Protected	-
Glossy-Black Cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable, Protected	-
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable	-
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus victoriae</i>	Vulnerable	-
Varied Sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable	-
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable	-
Little Eagle	<i>Hieraaetus morphnoides</i>	Vulnerable, Protected	-
Eastern Bentwing-Bat	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable	-
Powerful Owl	<i>Ninox strenua</i>	Vulnerable	-
Bathurst Copper Butterfly	<i>Paralucia spinifera</i>	Endangered	Vulnerable
Scarlet Robin	<i>Petroica boodang</i>	Vulnerable	-
Koala	<i>Phascolarctos cinereus</i>	Vulnerable	Vulnerable
Capertee Stringybark	<i>Eucalyptus cannonii</i>	Vulnerable	
Silver-leafed Gum	<i>Eucalyptus pulverulenta</i>	Vulnerable	Vulnerable

Previous studies at the site conducted by Ecotone (1995 & 1996) identified the Glossy-Black Cockatoo, Powerful Owl and the Eastern False Pipistrelle as well as two additional species not found in the Bionet search including the Common Bent-wing Bat (*Miniopterus schreibersii*) and the Greater Broad-nosed Bat (*Scoteanax rueppellii*). Additional flora species identified in this study included regionally significant species including Clustered Daisy-bush (*Olearia suffruticosa*), Sticky Daisy-bush (*Olearia elliptica*) and *Aristida ramosa* var. *ramose*. An analysis by SKM (2007, 2009a & 2009b) predicted that the habitats in the Delta Western Landholding have the potential for 34 threatened flora and 29 threatened fauna species to exist in the area.

There is the potential for local micro-bat and bird communities to have created nest areas within the WWPS since its decommissioning.

4.8.2 Potential impacts

WWPS is a highly modified industrial site and is not considered to contain suitable habitat for threatened flora species that are known to occupy the areas surrounding the site. Impacts to threatened flora species are therefore not expected.

The Project is not expected to require any vegetation clearing; however, minor tree trimming and removal of garden beds may be necessary to allow for demolition activities to occur. This would impact on areas of lawn and planted exotic species.

Potential impacts to fauna on the site are considered low, however, native bats, birds, aquatic or semi-aquatic species may have inhabited the WWPS since its decommissioning, therefore these species have the potential to be impacted by the demolition works. A suitably qualified ecologist would inspect structures to be demolished immediately prior to their demolition to ascertain the potential for fauna species to be impacted. If fauna species are found to inhabit any structures, a suitably qualified wildlife handler would be engaged to move them to a suitable location prior to demolition occurring.

The project also has the potential to facilitate the movement of exotic weeds during the demolition works, including those declared noxious weeds under the *Noxious Weeds Act 1993*. Exotic weed species have the potential to impact on the biodiversity of the adjoining habitats and are known to reduce the ecological functioning of adjacent native communities, particularly EECs.

The Project could facilitate the movement of weeds as a result of:

- the increase in human activity in ancillary sites and areas being demolished
- machinery movements, including the attachment of seed (and other propagules) to vehicles and machinery
- earthworks and movement and disturbance of soil profiles.

Following completion of the Project, there is the potential that weeds may establish within the site and adjacent areas. As such, weeds would need to be managed during the Project.

The potential impacts of the project on biodiversity are considered minor. A Biodiversity Management strategy would be developed as part of the demolition emp. The safeguards and mitigation measures identified in Table 4-19 would be implemented to ensure minimal impact on biodiversity within the site and the surrounding environment.

4.8.3 Safeguards and mitigation measures

The potential impact of the Project on biodiversity would be minimised by implementing the safeguards and mitigation measures identified in Table 4-19.

Table 4-18 Proposed biodiversity environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
B-1	Biodiversity Management Plan shall be prepared as part of the demolition EMP prior to the start of demolition works. This Plan would include measures to protect native flora and fauna on and close to the site.
B-2	All personnel required to undertake vegetation clearance activities or activities adjacent to native vegetation would be informed of biodiversity protection measures
B-3	The project site boundary would be clearly delineated in areas where vegetation disturbance is required to limit the extent of any vegetation clearance
B-4	To control invasive flora species, appropriate weed monitoring and control shall be implemented during and following the demolition works.

4.9 Aboriginal heritage

4.9.1 Methodology

Advisian (2018) has undertaken a cultural heritage survey for the proposed decommissioning, demolition and rehabilitation of WWPS and the ash repository. The assessment undertook database searches and a field investigation to identify heritage sites, assess potential impacts and make recommendations for the protection of Aboriginal heritage.

The assessment was carried out under Part 6 of the *National Parks and Wildlife Act 1974* and in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010a).



The Aboriginal community was consulted regarding the heritage management of the Project throughout its lifespan. Consultation was undertaken in accordance with the process outlined in *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010b).

4.9.2 Existing environment

WWPS is located around the border of the Wiradjuri and Darug tribal areas, as identified by Tindale (1974). Tindale described the Darug tribal boundaries as extending west to Mount Victoria, located approximately 30 km to the south-east of WWPS, however, these boundaries can only be considered indicative, and may not represent the true nature of Aboriginal occupation in the area.

4.9.2.1 Recorded Aboriginal heritage sites

Advisian (2018) undertook a search of the Aboriginal Heritage Information Management System (AHIMS) database maintained by the Office of Environment and Heritage (OEH), which identified 93 Aboriginal archaeological sites within a 10 km by 10 km search area, centred on the WWPS. One of these registered sites is located within the WWPS site (AHIMS# 45-1-0211).

Two burial sites have been registered about 1.5 km south of WWPS. However, previous studies have found that the location of one of these sites, AHIMS 45-1-0048, the burial of the Former King of Wallerawang, is incorrect due to early mapping techniques. The site is more accurately located at the intersection of Duncan Street, the abandoned Wallerawang Colliery Railway Line and the Springvale Colliery Coal Conveyor (McIntyre 1993). This places AHIMS 45-1-0048 to the north of the Castlereagh Highway.

The other burial site, AHIMS# 45-1-0211, was originally recorded by Rich and Baker in 1992 during a survey in advance of the proposed Springvale Conveyor, and consisted of approximately 100 stone artefacts in an area of 200 metres by 40 metres located on a low rise above and adjacent to Pipers Flat Creek. The site was in a poor condition when recorded, having been bulldozed previously, but it was considered that two of the quartz concentrations represented in-situ working floors. The artefacts primarily comprised of quartz, with a few quartzite and indurated mudstone flakes present. The site was subject to a Section 90 “consent to destroy” (Consent#516) in July 1993 to make way for the construction of the coal conveyor.

Advisian (2018) reviewed the mapping and location description provided on the site card and determined that the site is actually located about 300 metres west of WWPS.

4.9.2.2 Aboriginal field investigation

A field survey of WWPS was undertaken on 31 August 2017 by Biosis in conjunction with the Bathurst Local Aboriginal Land Council.

Most of the WWPS site has been subject to disturbance from past land use activities, which has greatly decreased the potential for Aboriginal sites to be located within the area.

One isolated artefact and two areas of archaeological potential were identified at the WWPS site during the field survey and are discussed in the following sections and shown in Figure 4-2.

WWPS Isolated Find 1

WWPS Isolated Find 1 (WPSIF1) consists of an isolated chert artefact located to the west of a fenceline in a mown area in the southern portion of the site. The overall condition of the site was listed as poor, as the area had been subject to landscaping and lawn maintenance, with heavy surface disturbances nearby. There was no archaeological potential associated with the site, owing to its disturbed condition.



Owing to the relative commonality of this site type locally and regionally, the lack of archaeological potential surrounding it and the lack of further research potential associated with the find, it was assessed as having low archaeological significance.

WPS Potential Archaeological Deposit 1

WWPS Potential Archaeological Deposit 1 (WPSPAD1) is located on the southern side of the Coxs River, overlooking it on an alluvial terrace. The area was inaccessible as a part of the survey, and as such could not be traversed on foot, but a visual inspection from the southern side of the fence line marking its boundary indicated that the PAD is in good condition, with the only apparent disturbances being the clearing of vegetation, most likely having been undertaken to allow cattle to graze on the land.

Based on a visual inspection, it was not possible to determine the scientific significance of the PAD. If it is to be impacted, further assessment of it would be required in the form of test excavations.

WWPS Potential Archaeological Deposit 2

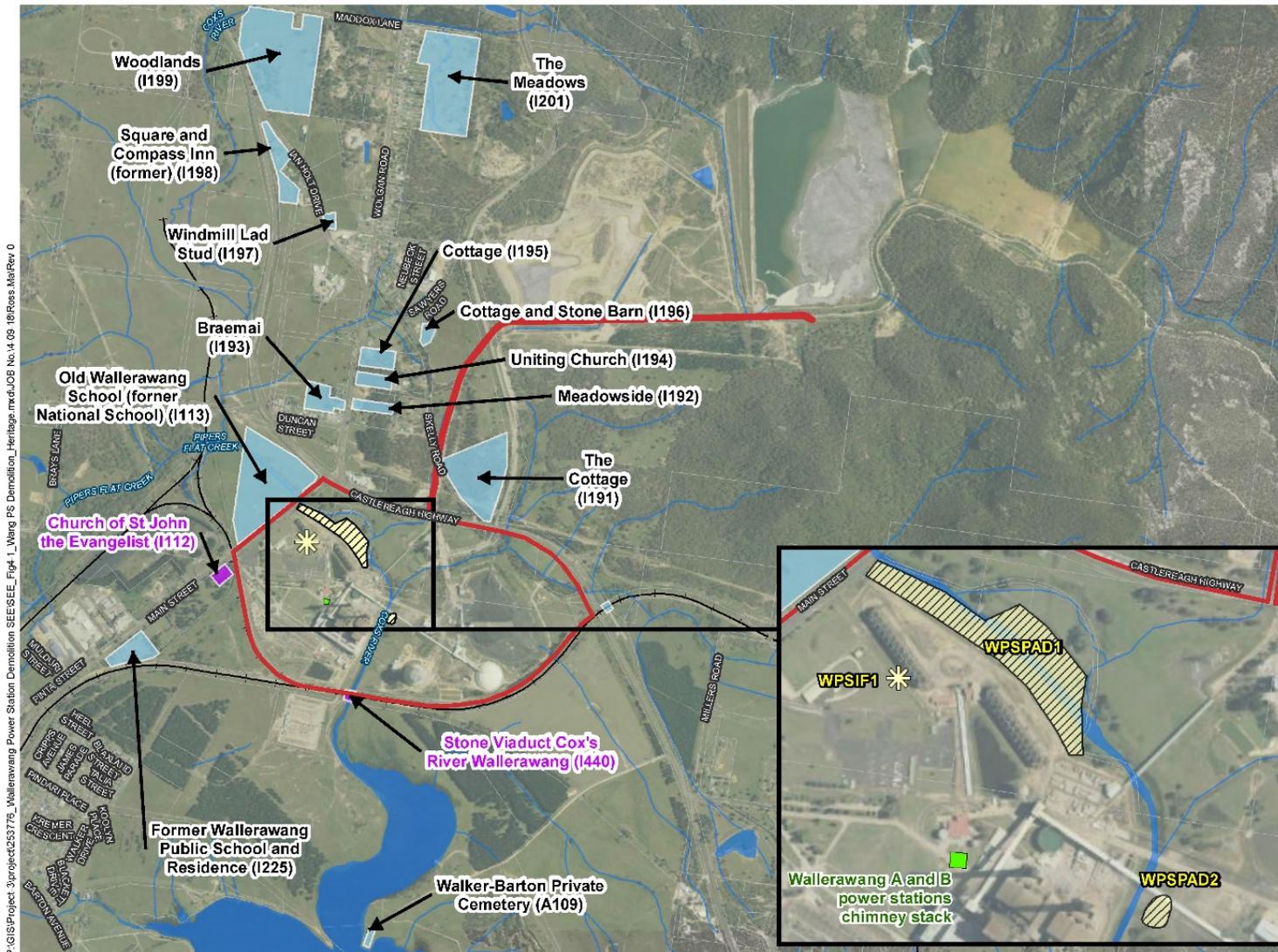
WWPS Potential Archaeological Deposit 2 (WPSPAD2) is located on the western side of the Coxs River, overlooking it on an alluvial terrace. The area was surveyed on foot, however owing to dense grass cover, the overall visibility of the site was extremely low, limiting the surveyors' ability to identify surface artefacts. The survey determined that the PAD is in good condition with the only apparent disturbances being the clearing of vegetation, most likely having been undertaken to allow cattle to graze on the land.

Based on a visual inspection, it was not possible to determine the scientific significance of the PAD. If it is to be impacted, further assessment of it would be required in the form of test excavations.



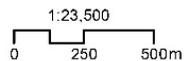
Legend

- The project
- lot
- Water bodies
- Waterways
- railway
- Aboriginal Heritage Item**
- * Surface artefact
- Potential archaeological deposit
- Non-Aboriginal Heritage Item**
- State heritage
- Local heritage
- Former heritage item - S.170 heritage and conservation register



P:\GIS\Project_3\project253776_Wallerawang Power Station Demolition_SEE\SEE_Fig4_1_Wang PS Demolition_Heritage.mxd JOB No.14.09.18/Ross.MatRev.0

Source: Aurecon, LPI, Esri



Projection: GDA 1994 MGA Zone 56

Wallerawang Power Station Demolition SEE

FIGURE 4-2: Heritage Items

4.9.3 Potential impacts

The footprint of the proposed demolition works is largely limited to the existing footprint of disturbance and, therefore, it is unlikely that the proposed works would impact identified Aboriginal site and areas of archaeological potential. Accordingly, no further assessment or approvals are considered necessary.

Once the demolition plan has been confirmed by the demolition contractor, impacts to these sites should be re-evaluated. If works would impact the site or potential archaeological deposits, the measures identified in the following section should be followed.

4.9.4 Safeguards and mitigation measures

The potential impact of the Project on Aboriginal heritage would be minimised by implementing the safeguards and mitigation measures identified in Table 4-20.

Table 4-19 Proposed Aboriginal heritage environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
AH-1	Exclusion zones shall be established around WPSIF1, WPSPAD1, and WPSPAD2 prior to the commencement of the proposed demolition works to avoid any accidental damage. These exclusion zones should incorporate a 10-metre buffer within lands owned by EnergyAustralia.
AH-2	If previously undiscovered Aboriginal objects, sites or places (or potential Aboriginal objects, sites or places) are discovered during the proposed demolition works, all works near the find shall cease and the Office of Environment and Heritage notified in accordance with the <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i> (DECCW, 2010c).
AH-3	Should suspected human skeletal material be identified, all works should cease and the NSW Police would be notified immediately.
AH-4	All personnel working on-site would receive training in their responsibilities under the <i>National Parks and Wildlife Act 1974</i> .
AH-5	If the works would impact the sites, the following actions would be undertaken: <ul style="list-style-type: none">■ for WPSIF1, an Aboriginal Heritage Impact Permit (AHIP) would be obtained■ for WPSPAD1 and/or WPSPAD2, further test excavations will be undertaken prior to the start of works. Should test excavations in these areas identify any Aboriginal objects, an AHIP will be required prior to the start of works.

4.10 Non-Aboriginal heritage

4.10.1 Existing environment

Advisian (2018) undertook database searches and a field investigation to identify heritage sites, assess potential impacts and make recommendations for the protection of non-Aboriginal heritage for the proposed decommissioning, demolition and rehabilitation of WWPS and the ash repository. Advisian searched the following heritage database and inventory to identify non-Aboriginal heritage items in or near to the site:

- the Australian Heritage Database maintained by the Department of the Environment and Energy
- the NSW State Heritage Inventory maintained by the Office of Environment and Heritage, which includes the State Heritage Register, Interim Heritage Orders, State agency heritage registers and local environmental plans.

Non-Aboriginal heritage items identified in these searches are listed in Table 4-21 and shown on Figure 4-2.

Table 4-20 Heritage-listed items within or near the site

Name	Heritage listing/register	Heritage significance	Distance from WWPS (metres)
Heritage items within the WWPS site			
Wallerawang A and B power stations chimney stack	Former Delta Electricity Section 170 Heritage and Conservation Register (this register no longer exists, however, the item remains listed on the State Heritage Inventory)	Local	Within site. Only the Wallerawang A power station chimney stack remains
Heritage items and archaeological sites near WWPS			
Church of St John the Evangelist	State Heritage Register (SHR 7511) Lithgow LEP	State	52 (adjacent)
Stone Viaduct Cox's River	State Heritage Register (SHR 1546) RailCorp Section 170 Heritage and Conservation Register	State	63
Old Wallerawang School (former National School)	Lithgow LEP	Local	70
The Cottage	Lithgow LEP	Local	227
Tunnel Hill tunnels and overbridge Main Western Railway	Lithgow LEP	Local	274
Former Wallerawang Public School	Lithgow LEP	Local	472
Cottage	Lithgow LEP	Local	593
Braemai	Lithgow LEP	Local	763
Uniting Church	Lithgow LEP	Local	936
Cottage and Stone Barn	Lithgow LEP	Local	966
Windmill Lad Stud	Lithgow LEP	Local	1,535
Square and Compass Inn	Lithgow LEP	Local	1,900
The Meadows	Lithgow LEP	Local	2,126
Woodlands	Lithgow LEP	Local	2,290

Advisian (2018) undertook a field survey of accessible areas of the site on 2 May 2017 to assess the potential archaeological heritage significance of WWPS in accordance with the *Assessing Heritage Significance* guideline (NSW Heritage Office, 2001). Advisian determined that the site is unlikely to hold any historical archaeological potential or significance.

4.10.2 Potential impacts

The remaining Wallerawang A power station chimney stack would not be demolished and would be retained on site in recognition of its heritage value.

The proposed demolition of all other aboveground structures at the site would remove all physical evidence of the former power station and, therefore, the heritage context for the retained Wallerawang A power station chimney stack. There is also potential for the proposed demolition works to damage Wallerawang A power station chimney stack due to vibration from blasting and other demolition activities and dust emissions. The proposed demolition works could also similarly impact nearby heritage items.

As such, it is recommended that a Heritage Management Plan be prepared to provide interpretation of the history of the power station and its site.

4.10.3 Safeguards and mitigation measures

The potential impact of the Project on non-Aboriginal heritage would be minimised by implementing the safeguards and mitigation measures identified in Table 4-22.

Table 4-21 Proposed non-Aboriginal heritage environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
NA-1	A Heritage Management Strategy shall be developed in consultation with key stakeholders to examine surviving fabric and potential for long-term conservation and interpretation and future ownership and maintenance responsibilities of the heritage items and archaeological located within the WWPS and its buffer lands. The management strategy shall identify interpretation methods (such as an oral history program) to continue the interpretation of the site.
NA-2	Prior to and during the proposed demolition works, archival recordings shall be undertaken in accordance with <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (NSW Heritage Office, 2006).
NA-3	If an item (or suspected item) of non-Aboriginal heritage is discovered, all nearby works shall cease and EnergyAustralia shall notify the Office of Environment and Heritage of the find. Demolition works shall only recommence once the heritage value of the item has been determined and appropriate protection measures implemented.
NA-4	As part of the site induction, all workers shall be advised of their obligations in relation to non-Aboriginal heritage and the procedure to follow if unanticipated heritage items or deposits are located during the proposed demolition works.
NA-5	All identified non-Aboriginal heritage items within or near the site shall be mapped and provided to the demolition contractor so they are aware of their responsibilities under the <i>Heritage Act 1977</i> .
NA-6	Blasting (if required) shall be planned and undertaken in accordance with the <i>Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration</i> (Australia and New Zealand Environment Council, 1990).

4.11 Contamination

4.11.1 Existing environment

As outlined in the *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and EPA, 1998), and National Environmental Protection (Assessment of Site Contamination) Measure 1999, a power station site is likely to be contaminated.

A search of the 'List of NSW contaminated sites notified to the EPA' was undertaken on 5 September 2018 and confirmed that WWPS at 1 Main Street Wallerawang is a contaminated site. Sites appear on the list if the notifying party consider it to be contaminated and warrants reporting to the Environment Protection Authority. However, the contamination may or may not be significant enough to warrant regulation by the Environment Protection Authority. The Environment Protection Authority needs to review and, if necessary, obtain more information before it can determine whether the site warrants regulation. The Environment Protection Authority has determined that the WWPS site does not require regulation under the CLM Act.

Several contamination assessments have been undertaken across the site. These included a Stage 2 environmental site assessment undertaken by ERM in 2014 to assess soil, sediment, surface and groundwater data to develop a baseline assessment of environmental conditions at the site to inform future remediation activities. This study built on earlier studies by GHD in 2012 and Parsons Brinckerhoff in 2010.

The ERM study made the following key conclusions:

- contamination found at the site is considered unlikely to represent a risk to human health and the environment, provided appropriate ongoing management measures are implemented
- key contaminants identified at the site include metals in groundwater, metals in surface water and asbestos fibres in surface soils within the footprint of the former A and B boilers, and adjacent to the coal storage area.

Asbestos is also known to occur within power station structures, and within pipework and paintwork in some areas. EnergyAustralia has developed a *Standard for Asbestos Management* (DES SA001-05) and *Guidelines for the Safe Handling of Material Containing Asbestos* (DEG SA05-01) and disposes of any asbestos materials found at the WWPS at an approved asbestos landfill located to the north of the site.

Since decommissioning the WWPS, EnergyAustralia has removed several storage tanks from the site. However, several large underground storage tanks remain at the site. EnergyAustralia operates a monitoring system around its underground storage tanks to detect leaks and any contamination in groundwater. EnergyAustralia would continue to operate this system following the Project for any underground storage tanks that are not removed from the site.

4.11.2 Potential impacts

As the Project involves the demolition and removal of aboveground structures only, it is unlikely to result in disturbance of existing ground contamination. The following impacts may occur during the proposed demolition works:

- accidental spills or releases of hazardous materials including asbestos, lead based paints, PCBs, synthetic mineral fibres and mercury containing devices
- disturbance of previously unidentified remnant dangerous goods, storage equipment or goods and equipment brought onto the site during demolition works.

The Project would result in the generation of around 7,000m³ of asbestos and asbestos containing material as various buildings and structures are demolished. The main hazard with asbestos is human exposure to airborne asbestos.

The demolition works would not create a significant pathway for potential release of asbestos fibres to the environment or nearby residents during normal operation and closure conditions. Should an accident occur during operation or closure of the proposed asbestos disposal area, potential release of asbestos fibres is unlikely, as the only potential accidents would be discrete spills that could be contained quickly. An accident during the closure phase of the Proposal would only occur if there is a systematic site management failure. An asbestos management plan would be developed to guide the correct procedures including appropriate handling and hygiene procedures across the lifecycle of the Proposal to avoid potential impacts.

With regards to site workers, during normal operation of the proposed asbestos disposal area and the closure phase, exposure to asbestos fibres is unlikely. Site workers would be trained to handle asbestos products, the asbestos products would be sealed in two protective layers and the appropriate personal protective equipment would be worn. All asbestos waste would be disposed of on site, and as such, there won't be any wider exposure to the surrounding community.

4.11.3 Safeguards and mitigation measures

The potential impact of the Project on contaminated land and its potential to cause land contamination would be minimised by implementing the safeguards and mitigation measures identified in Table 4-23.

Table 4-22 Proposed contamination environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
C-1	A Contaminated Land Management Plan shall be prepared as part of the demolition EMP prior to the start of demolition works. The plan would provide guidance on managing: <ul style="list-style-type: none"> ■ disturbance to areas of known or potential contamination ■ unexpected contamination finds ■ any land contamination caused during the proposed demolition works.
C-2	Hazardous waste generated by the proposed demolition works shall be removed and disposed of in accordance with the <i>Waste Classification Guidelines</i> (EPA, 2014a).
C-3	A fully equipped emergency spill kit shall be kept on-site at all times during the proposed demolition works.
C-4	Storage of excess materials within compound areas shall be minimised. As far as practical, materials shall be ordered on, or as close as possible to, an as needs basis.
C-5	Refuelling of equipment and vehicles washouts shall be carried out within a designated bunded area on an impervious surface or carried out off-site.
C-6	Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) shall be carried out on a regular basis to identify potential spills or the effects of sediment-laden runoff.
C-7	Vehicles and plant shall be properly maintained and regularly inspected for fluid leaks.

C-8	<p>An Asbestos Management Plan shall be prepared as part of the demolition EMP prior to the start of demolition works. This will guide the demolition and identify appropriate safety precautions to be implemented. This will include:</p> <ul style="list-style-type: none"> ■ Procedures for the identification and recording of asbestos and asbestos containing material. ■ Asbestos removal procedures in accordance with the Australian National Codes of Practice, prior to any dismantling, removal, or demolition of structures ■ Decontamination procedures of structures prior to demolition. Where this is deemed impractical, the structure or equipment shall be classified as asbestos contaminated waste and disposed of accordingly.
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4.12 Waste management

4.12.1 Existing environment

EPL 766 permits EnergyAustralia to dispose of the following wastes generated by WWPS at Wallerawang Ash Repository:

- ash
- mill pyrites
- demineralisation and polisher plant effluents
- chemical clean solutions
- cooling tower sediments
- ion exchange resins
- biomass co-firing ash
- settling pond sediments (including from the settling ponds of the Springvale Water Transfer Scheme)
- oil and grit trap sediments.

The Kerosene Vale Ash Repository area has a history of being used to dispose of waste from WWPS. An Environmental Site Assessment conducted in 2000 (PPK 2000), reported landfills present to the north of Wallerawang in the Kerosene Vale area. There are two recorded asbestos landfill sites and one location used for disposal of demolition waste. One of the asbestos landfill sites remains in use, which is permitted by EPL 766.

Classified dangerous goods

Hazardous materials held at the WWPS site are identified in the WWPS Dangerous Goods Notification, which describes the type, quantity and volume of dangerous goods held at the site. The location of hazardous materials stored at the site is tracked in a site register and map. External audits of WWPS's compliance with waste handling and storage requirements are undertaken every three years by an external consultant.

With the instigation of the closure process EnergyAustralia has commenced a process of removing all classified dangerous goods from site. These materials are either identified for reuse and/or classified as waste. Materials that are to be reused are subsequently removed by authorised and licenced contractors in accordance with the scope of work and procedures developed by EnergyAustralia.

Hazardous materials



Other sources of contamination such as hazardous materials are known to exist on the site. These materials may be in the form of construction or consumable materials, or by-product materials utilised or formed in the operation and maintenance of the power station. These hazardous materials exist within the building structures, or the plant and equipment in either solid, liquid, or dust form. Prior to the proposed demolition works commencing it is a requirement to conduct detailed surveys to identify all possible sources and locations of hazardous materials and subsequently develop an appropriate planning process to remove or control these materials from in-situ through to the waste stream.

4.12.2 Potential impacts

The Project would result in substantial quantities of waste being generated during the proposed demolition works, which would require transportation and disposal to either recyclers or approved waste receivers. The following waste materials would be generated by the Project:

- recyclable materials:
 - ferrous scrap metals
 - Non-ferrous scrap metals
- general construction and demolition waste:
 - timber
 - glass
 - plastics
 - organic and vegetation
 - synthetic mineral fibre
 - concrete and building materials
- prescribed wastes:
 - waste oil
 - oil contaminated waste
 - oily water
 - grease
 - grease contaminated waste
 - lead acid batteries
 - fluorescent lights
 - plastic drums
 - e-waste
 - rubber tyres
- classified wastes:
 - asbestos
 - PCB
 - hazardous wastes
 - materials contaminated with hazardous wastes.



The potential to reuse or recycle materials would be investigated further by the demolition contractor. Unsuitable fill material that cannot be used on-site would be classified in accordance with the *Waste Classification Guidelines* (Environment Protection Authority, 2014a) and disposed of at an approved materials recycling or waste disposal facility.

Wastes have the potential to have adverse impacts on public safety and the environment if not appropriately managed, particularly during removal and transport to and from the site. As such, all waste from the Project would require management to ensure it is disposed of appropriately. Safeguards and mitigation measures would be implemented to minimise and manage waste where appropriate (see Table 4-24).

4.12.3 Safeguards and mitigation measures

The potential waste management impact of the Project would be minimised by implementing the safeguards and mitigation measures identified in Table 4-24.

Table 4-23 Proposed waste environmental safeguards and mitigation measures

ID	Environmental safeguards and mitigation measures
W-1	<p>A Waste Management shall be prepared as part of the demolition EMP prior to the start of demolition works. The measures contained in the plan shall be reviewed prior to commencement of the Project to ensure they adequately address the risks associated with the proposed demolition works and include safeguards identified in this SEE. The plan shall be guided by the following publications:</p> <ul style="list-style-type: none"> ■ <i>Waste Classification Guidelines</i> (Environment Protection Authority ,2014a) ■ <i>NSW Government Waste Reduction and Resource Recovery Strategy 2014-21</i> (Environment Protection Authority, 2014b) ■ EnergyAustralia' <i>Standard for Asbestos Management</i> (DES SA001-05) and <i>Guidelines for the Safe Handling of Material Containing Asbestos</i> (DEG SA05-01). <p>The Waste Management Plan shall:</p> <ul style="list-style-type: none"> ■ identify waste streams that will be generated by the Project, including: <ul style="list-style-type: none"> – how and where waste generated by the project is to be reused and disposed of – the receptacles that would be used for storing identified waste materials prior to reuse, recycling, stockpiling and disposal – how, and by whom, would waste be transported between generation, storage and point of reuse, recycling, stockpiling or disposal – procedures for verifying licences or permits for handling, transportation and disposal of waste ■
W-2	<p>The following resource management hierarchy principles shall be followed:</p> <ul style="list-style-type: none"> ■ avoid unnecessary resource consumption as a priority ■ avoidance shall be followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery) ■ disposal shall be a last resort (in accordance with the WARR Act).

4.13 Cumulative impacts

Cumulative impacts have the potential to arise from the interaction of individual elements of the Project and the additive effects of other external projects. As the potential impacts of the Project are envisaged to be minor and localised, it is expected that the Project contribution to any cumulative environmental impact would be negligible, on both a local or regional scale, provided that the safeguards and mitigation measures identified in this SEE are implemented. There are no known future Projects located in the areas nearby to WWPS.

However, if the Project interacts with another external project, the potential for adverse cumulative impacts would be addressed through the application of individual project-specific environmental safeguards and mitigation measures that would be determined by the demolition contractor.

5 Summary of safeguards and mitigation measures

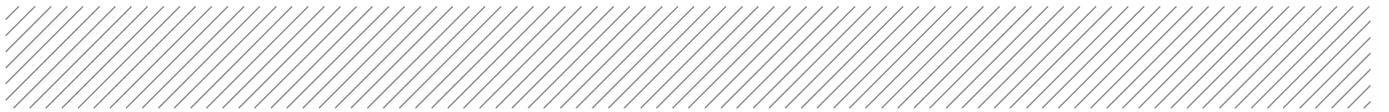
The environmental safeguards identified in Chapter 4 would be implemented during the proposed demolition works. These safeguards would minimise any potential adverse impacts arising from the proposed works on the surrounding environment. The safeguards and management measures proposed in Chapter 4 are listed in Table 5-1.

Table 5-1 Summary of safeguards and mitigation measures for the Project

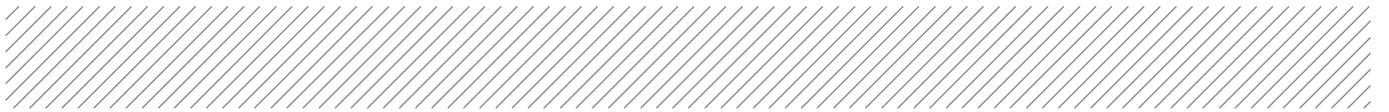
ID	Environmental safeguards and mitigation measures
General	
G-01	A demolition EMP shall be prepared to guide the demolition works. This EMP will contain the measures and management plans identified in this table.
Water quality and drainage	
WQ-1	A Soil and Water Management Plan (SWMP) shall be prepared as part of the demolition EMP prior to the start of demolition works and would establish soil and water management measures including soil and erosion controls. The SWMP would reflect the staged nature of the works and would be progressively updated. Controls would also be updated according to the staged nature of works.
WQ-2	Any leakages or spills from vehicles or equipment shall be reported to the site's Environment Manager immediately. All fuels, chemicals and hazardous materials shall be stored within an impervious bunded area in accordance with relevant Australian Standards and Environment Protection Authority guidelines.
WQ-3	Building rubble and excess materials from demolition shall be removed from the site and properly disposed of as soon as possible to avoid contamination of storm water and waterways during periods of rain.
WQ-4	The existing storm water drainage system would be retained during construction and inspected and maintained on a weekly basis
Noise and vibration	
NV-1	The existing WWPS Noise and Vibration Management Plan shall be updated as part of the as part of the demolition EMP.
NV-2	Where possible, less noisy plant would be selected for demolition.
NV-3	Examine and implement, where feasible and reasonable, the option of reducing noise from metal chutes and bins by placing damping material in the chute or bin.
NV-4	Avoid the use of reversing alarms by designing site layout to avoid reversing, such as by including drive through for parking and deliveries.
NV-5	Provide to nearby residents, reasonably ahead of time, information such as the expected duration of demolition works, what works are expected to be noisy, their duration, what is being done to minimise noise and when respite periods will occur. For works outside standard hours, inform affected residents and other sensitive land use occupants one week before commencement.
NV-6	Use a site information board at the front of the site with the name of the organisation responsible for the site and their contact details, hours of operation and regular information updates. This signage should be clearly visible from the outside and include after-hours emergency contact details.
NV-7	Provide a readily accessible contact point, for example, through a 24-hour toll-free information and complaints line.

Environmental safeguards and mitigation measures	
NV-8	Noise generating activities shall be restricted to standard construction hours (7am to 6pm Monday to Friday and 8am to 1pm Saturday), unless otherwise agreed with LCC.
NV-9	A Blast Management strategy shall be prepared and implemented prior to blasting activities required for demolition works. This plan would address the potential risks of blasting on the surrounding environment and control measures. The plan would be prepared in accordance with Section 4 of Australia Standard 2187.2-2006 Australia Standard <i>Explosives – Storage and Use, Part 2: Use of Explosives</i> .
Landscape character and visual amenity	
LC-1	Following completion of the demolition works, all vehicles, equipment, machinery, materials and waste relating to the works shall be removed from the site.
Social	
S-1	Affected stakeholders shall be notified prior to the commencement of demolition works. The notification would include of the start date and estimated duration of the demolition works and provide a contact name and number for obtaining further information and making complaints.
S-2	Complaints shall be recorded in a complaints management system and addressed as soon as possible by the projects environment and community coordinator.
S-3	Adequate security fencing and signage shall be installed where required to notify the public of demolition activities occurring and ensure public access to the site is restricted.
Traffic and access	
TA-1	A Traffic Management strategy shall be prepared as part of the demolition EMP.. The Traffic Management strategy shall identify: <ul style="list-style-type: none"> ■ haulage routes to and from the site ■ how safe and efficient movement of traffic into and out of the site would be maintained ■ how emergency vehicle access to the site would be maintained ■ requirements and methods for informing the local community of any potential impacts on the local road network and traffic.
TA-2	The demolition contractor shall be responsible for obtaining permits for oversize and/or overmass vehicles to travel on a local road. An oversize vehicle permit is required when: <ul style="list-style-type: none"> ■ the height, width or length of an over-size vehicle (including any load) exceeds any of the maximum dimension limits specified in the General Class 1 Oversize Notice ■ travel by a vehicle operating under the General Class 1 Oversize Notice is proposed on a restricted road.
Air quality	
AQ-1	Air Quality Management Plan shall be prepared as part of the demolition EMP prior to demolition works commencing. The measures contained in the Air Quality Management Plan to prevent dust emissions shall be reviewed prior to commencement of the Project to ensure they adequately address the risks associated with the proposed demolition works and include the safeguards identified in this SEE. The Air Quality Management Plan shall: <ul style="list-style-type: none"> ■ identify potential sources of dust ■ identify dust sensitive receivers ■ include an environmental risk assessment that identifies the demolition activities with the highest risk of causing dust emissions that could impact sensitive receivers ■ identify mitigation measures to be implemented to avoid and minimise dust emissions, including measures that respond to the greater risk of dust emissions being generated during dry and/or windy weather conditions ■ record and identify corrective measures for incidents where excessive dust is generated ■ include a progressive stabilisation/ rehabilitation strategy for disturbed surfaces with the aim of minimising exposed surfaces.

Environmental safeguards and mitigation measures	
AQ-2	Pre-wetting and use of water sprays to control dust emissions where appropriate during major demolition activities.
AQ-3	Scheduling the controlled demolition works to occur when weather conditions are favourable to avoid strong winds.
AQ-4	Carry out regular inspections to monitor compliance with the air quality management strategy
Biodiversity	
B-1	Biodiversity Management Plan shall be prepared as part of the demolition EMP prior to the start of demolition works. This Plan would include measures to protect native flora and fauna on and close to the site.
B-2	All personnel required to undertake vegetation clearance activities or activities adjacent to native vegetation would be informed of biodiversity protection measures
B-3	The project site boundary would be clearly delineated in areas where vegetation disturbance is required to limit the extent of any vegetation clearance
B-4	To control invasive flora species, appropriate weed monitoring and control shall be implemented during and following the demolition works.
Aboriginal heritage	
AH-1	Exclusion zones shall be established around WPSIF1, WPSPAD1, and WPSPAD2 prior to the commencement of the proposed demolition works to avoid any accidental damage. These exclusion zones should incorporate a 10-metre buffer within lands owned by EnergyAustralia.
AH-2	If previously undiscovered Aboriginal objects, sites or places (or potential Aboriginal objects, sites or places) are discovered during the proposed demolition works, all works near the find shall cease and the Office of Environment and Heritage notified in accordance with the <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i> (DECCW, 2010c).
AH-3	Should suspected human skeletal material be identified, all works should cease and the NSW Police would be notified immediately.
AH-4	All personnel working on-site would receive training in their responsibilities under the <i>National Parks and Wildlife Act 1974</i> .
AH-5	If the works would impact the sites, the following actions would be undertaken: <ul style="list-style-type: none"> ■ for WPSIF1, an Aboriginal Heritage Impact Permit (AHIP) would be obtained ■ for WPSPAD1 and/or WPSPAD2, further test excavations will be undertaken prior to the start of works. Should test excavations in these areas identify any Aboriginal objects, an AHIP will be required prior to the start of works.
Non-Aboriginal heritage	
NA-1	A Heritage Management Strategy shall be developed in consultation with key stakeholders to examine surviving fabric and potential for long-term conservation and interpretation and future ownership and maintenance responsibilities of the heritage items and archaeological located within the WWPS and its buffer lands. The management strategy shall identify interpretation methods (such as an oral history program) to continue the interpretation of the site.
NA-2	Prior to and during the proposed demolition works, archival recordings shall be undertaken in accordance with <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (NSW Heritage Office, 2006).
NA-3	If an item (or suspected item) of non-Aboriginal heritage is discovered, all nearby works shall cease and EnergyAustralia shall notify the Office of Environment and Heritage of the find. Demolition works shall only recommence once the heritage value of the item has been determined and appropriate protection measures implemented.
NA-4	As part of the site induction, all workers shall be advised of their obligations in relation to non-Aboriginal heritage and the procedure to follow if unanticipated heritage items or deposits are located during the proposed demolition works.



Environmental safeguards and mitigation measures	
NA-5	All identified non-Aboriginal heritage items within or near the site shall be mapped and provided to the demolition contractor so they are aware of their responsibilities under the <i>Heritage Act 1977</i> .
NA-6	Blasting (if required) shall be planned and undertaken in accordance with the <i>Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration</i> (Australia and New Zealand Environment Council, 1990).
Contamination	
C-1	A Contaminated Land Management shall be prepared as part of the demolition EMP prior to the start of demolition works. The plan would provide guidance on managing: <ul style="list-style-type: none"> ■ disturbance to areas of known or potential contamination ■ unexpected contamination finds ■ any land contamination caused during the proposed demolition works.
C-2	Hazardous waste generated by the proposed demolition works shall be removed and disposed of in accordance with the <i>Waste Classification Guidelines</i> (EPA, 2014a).
C-3	A fully equipped emergency spill kit shall be kept on-site at all times during the proposed demolition works.
C-4	Storage of excess materials within compound areas shall be minimised. As far as practical, materials shall be ordered on, or as close as possible to, an as needs basis.
C-5	Refuelling of equipment and vehicles washouts shall be carried out within a designated bunded area on an impervious surface or carried out off-site.
C-6	Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) shall be carried out on a regular basis to identify potential spills or the effects of sediment-laden runoff.
C-7	Vehicles and plant shall be properly maintained and regularly inspected for fluid leaks.
C-8	An Asbestos Management Plan shall be prepared as part of the demolition EMP prior to the start of demolition works. This will guide the demolition and identify appropriate safety precautions to be implemented. This will include: <ul style="list-style-type: none"> ■ procedures for the identification and recording of asbestos and asbestos containing material. ■ asbestos removal procedures in accordance with the Australian National Codes of Practice, prior to any dismantling, removal, or demolition of structures ■ decontamination procedures of structures prior to demolition. Where this is deemed impractical, the structure or equipment shall be classified as asbestos contaminated waste and disposed of accordingly.
Waste management	



ID	Environmental safeguards and mitigation measures
W-1	<p>A Waste Management shall be prepared as part of the demolition EMP prior to the start of demolition works. The measures contained in the plan shall be reviewed prior to commencement of the Project to ensure they adequately address the risks associated with the proposed demolition works and include safeguards identified in this SEE. The plan shall be guided by the following publications:</p> <ul style="list-style-type: none">■ <i>Waste Classification Guidelines</i> (Environment Protection Authority ,2014a)■ <i>NSW Government Waste Reduction and Resource Recovery Strategy 2014-21</i> (Environment Protection Authority, 2014b)■ EnergyAustralia' <i>Standard for Asbestos Management</i> (DES SA001-05) and <i>Guidelines for the Safe Handling of Material Containing Asbestos</i> (DEG SA05-01). <p>The Waste Management Plan shall:</p> <ul style="list-style-type: none">■ identify waste streams that will be generated by the Project, including:<ul style="list-style-type: none">– how and where waste generated by the project is to be reused and disposed of– the receptacles that would be used for storing identified waste materials prior to reuse, recycling, stockpiling and disposal– how, and by whom, would waste be transported between generation, storage and point of reuse, recycling, stockpiling or disposal– procedures for verifying licences or permits for handling, transportation and disposal of waste
W-2	<p>The following resource management hierarchy principles shall be followed:</p> <ul style="list-style-type: none">■ avoid unnecessary resource consumption as a priority■ avoidance shall be followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery)■ disposal shall be a last resort (in accordance with the WARR Act).



6 Conclusion

This SEE has been prepared to support a development application for the demolition of WWPS.

The Project is consistent with all relevant legislation, including the EP&A Act and Lithgow LEP. The SEE concludes that the Project is:

- permissible with consent under Lithgow LEP
- 'Integrated Development' under the Water Management Act 2000
- not a 'Designated Development' under Section 4.10 of the EP& Act.

The environmental assessment of the project contained in this SEE has established that the Project is consistent with the objectives of Lithgow LEP and is an appropriate form of development which has merit within the context of the locality.

The Project would result in the demolition and removal of most infrastructure at WWPS down to ground-level. All roads and hard-stand areas would remain, as would the heritage-listed 'A' Station Chimney Stack.

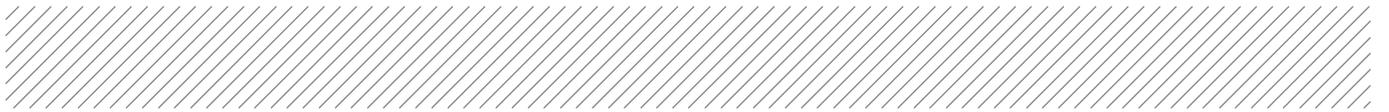
The Project would provide substantial long-term benefits to the environment and local community, including:

- management and assessment of contaminated materials on-site
- improved visual character of the site following demolition of infrastructure
- creation of vacant industrial land with the potential for alternative future uses of the site.

The environmental impacts of the Proposed demolition works would primarily be related to noise and vibration, air quality, surface water, contamination, traffic and visual amenity impacts. These impacts, however, would be short term and temporary in nature and are not considered significant, provided that the safeguards and mitigation measures described in Chapter 4 and Chapter 5 are implemented.

7 Glossary of terms

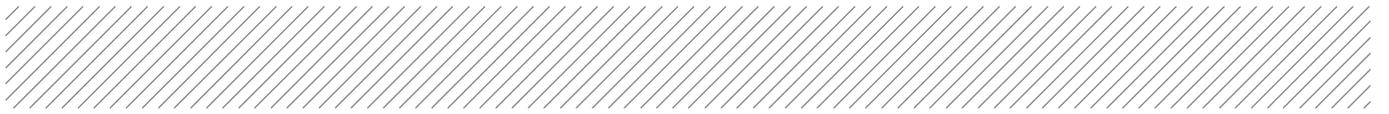
Term	Definition
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ANZECC	Australia and New Zealand Environment Conservation Council
CLM Act	<i>Contaminated Land Management Act 1997</i>
DCP	Development control plan
DDR	Decommissioning, demolition and rehabilitation
DECC	Department of Environment and Climate Change (former)
DECCW	Department of Environment, Climate Change and Water (former)
EEC	Endangered ecological community
EMP	Environmental Management Plan
EnergyAustralia	EnergyAustralia NSW Pty Ltd
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environment protection licence
Exempt and Complying Development SEPP	State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
ha	Hectares
km	Kilometres
LA90	The A-weighted noise level which is exceeded for 90 percent of the measuring period. It is usually used as the descriptor for background noise level during the measurement period.
LA10	The A-weighted noise level which is exceeded for 10 percent of the measuring period. It is usually used as the descriptor for background noise level during the measurement period.
LAeq	The A-weighted equivalent continuous sound pressure level over a measurement period. It is used to quantify the average noise level over a time period.
LCC	Lithgow City Council
LDP	Licensed discharge point
LGA	Local government area
m	Metres
ML	Megalitres
MNES	Matters of National Environmental Significance
MW	Megawatts
NorBE	Neutral or Beneficial Effect
NSW	New South Wales



Term	Definition
NT Act	<i>Native Title Act 1993</i>
PAD	Potential Archaeological deposit
PCB	Polychlorinated Biphenyl
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
The Project	The Wallerawang Power Station decommissioning, demolition and rehabilitation Project
RBL	Rating background level
SEE	Statement of Environmental Effects
SEPP	State environmental planning policy
SEPP 55	State Environmental Planning Policy No. 55 – Remediation of Land
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
SSD	State significant development
SSI	State significant infrastructure
TSC Act	<i>Threatened Species Conservation Act 1995</i>
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i>
WHS Act	<i>Work Health and Safety Act 2011</i>
WHS Regulations	Work Health and Safety Regulations 2011
WRAPP	Waste Reduction and Purchasing Policy
WSP	Water sharing plan
WWPS	Wallerawang Power Station

8 References

- Advisian (2018), *Wallerawang Power Station Cultural Heritage Survey*, January 2018
- Australia and New Zealand Environment Council (1990), *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration*, September 1990
- ANZECC (2000), *Australian Water Quality Guidelines for Fresh and Marine Waters*. Australian and New Zealand Environment and Conservation Council
- DECCW (2010a), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, September 2010
- DECCW (2010b), *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, April 2010
- DECCW (2010c), *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*, September 2010
- Delta Electricity (2012), *Delta Western Land Management Plan 2012-2017*
- Department of Environment and Climate Change (2009), *Interim Construction Noise Guideline*, July 2009
- Department of Urban Affairs and Planning and Environment Protection Authority (1998), *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land*
- The Ecology Lab (2007), *Aquatic Ecology Studies for the Kerosene Vale Stage 2 Ash Repository Area*, October 2007
- The Ecology Lab (2006), *Monitoring of Aquatic Macroinvertebrates in Relation to the Operation of Austen Quarry: Autumn and Spring 2006*
- The Ecology Lab (2004), *Environmental Flows in Coxs River – Environmental Flows from Lyell Reservoir to the Cox River: Condition of the Aquatic Environment 1995-2003 Second Year Report*, August 2004
- Environment Protection Authority (2017), *Noise Policy for Industry* (2014a), *NSW Government Waste Reduction and Resource Recovery Strategy 2014-21*, December 2014
- Environment Protection Authority (2014b), *Waste Classification Guidelines*, November 2014
- NSW Heritage Office (2006), *Photographic Recording of Heritage Items Using Film or Digital Capture*
- LCC (2013), *Lithgow Community Strategic Plan 2013-2026*
- LCC (2012a), *Lithgow Aging Strategy*
- LCC (2012b), *2012-2016 State of the Environment Report*
- LCC (2011), *Development Application (DA) Guide*, November 2011
- McIntyre, S (1993), *Springvale Coal Project: An Investigation to Determine the Likelihood of Aboriginal Skeletal Material Occurring in the Area to be Affected by the Springvale to Mt Piper Coal Conveyer at the Coxs River, Lidsdale*
- Safe Work Australia 2012, *AS2601-2001 The Demolition of Structures and the Demolition Work Code of Practice*
- World Health Organization (1999), *Guideline for Community Noise*



Appendix A Photographs

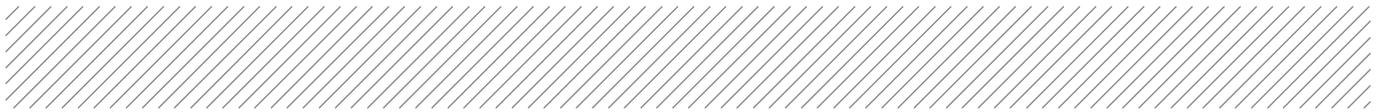


Photo 1: Coal handling and storage area

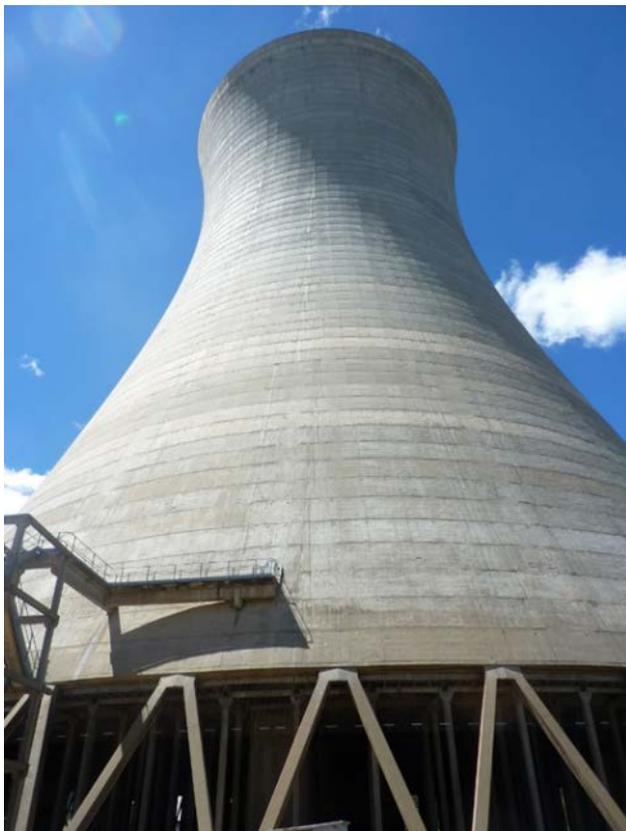


Photo 2: Unit 8 cooling tower

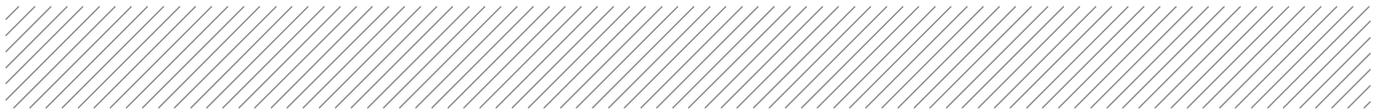


Photo 3: Transformer yard behind the turbine hall



Photo 4: Clear span warehouse and old Nissen hut

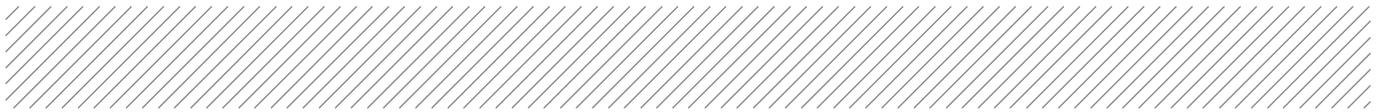


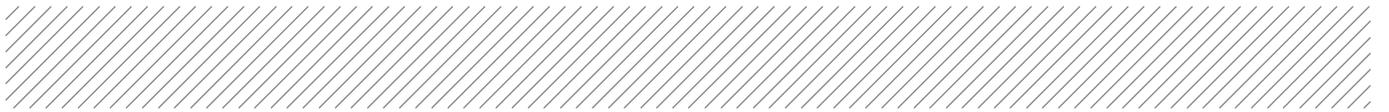
Photo 5: Waste oil store near the warehouse



Photo 6: Fuel storage tanks S & T adjacent to the warehouse



Photo 7: 'A' station chimney stack (to be retained)



Appendix B

EPBC Act Protected Matters

Report



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 05/09/18 10:17:04

[Summary](#)

[Details](#)

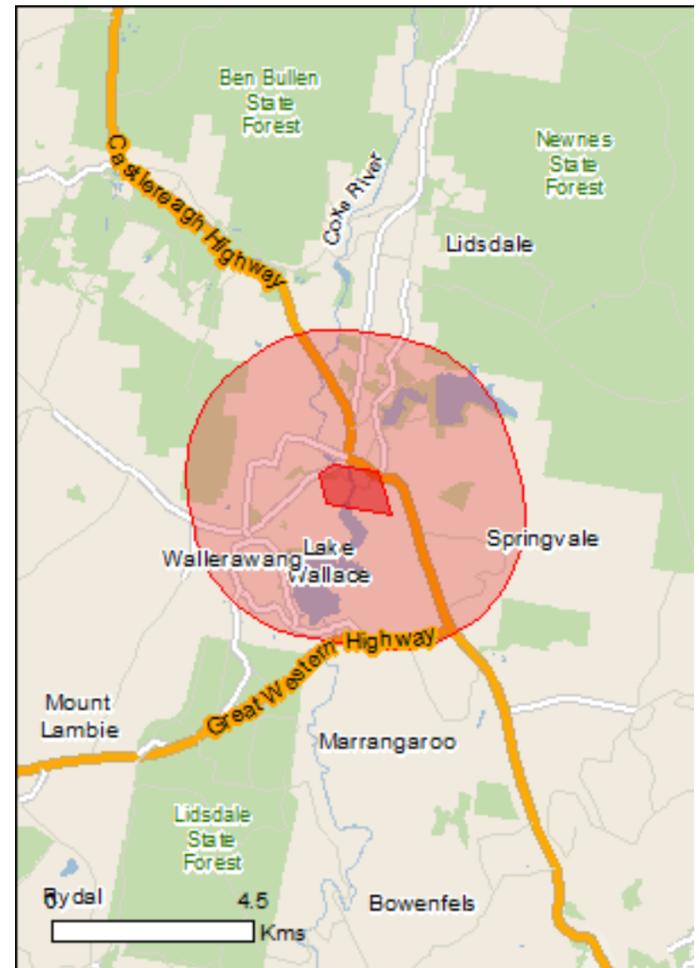
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

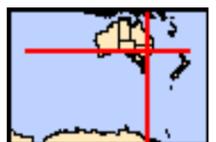
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 3.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	36
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	32
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community may occur within area
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species

[\[Resource Information \]](#)

Name	Status	Type of Presence
------	--------	------------------

Birds

Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area

Fish

Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat known to occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area

Frogs

Name	Status	Type of Presence
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
Litoria booroolongensis Booroolong Frog [1844]	Endangered	Species or species habitat likely to occur within area
Litoria littlejohni Littlejohn's Tree Frog, Heath Frog [64733]	Vulnerable	Species or species habitat may occur within area
Insects		
Paralucia spinifera Bathurst Copper Butterfly, Purple Copper Butterfly, Bathurst Copper, Bathurst Copper Wing, Bathurst-Lithgow Copper, Purple Copper [26335]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area
Asterolasia elegans [56780]	Endangered	Species or species habitat likely to occur within area
Boronia deanei Deane's Boronia [8397]	Vulnerable	Species or species habitat may occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Eucalyptus aggregata Black Gum [20890]	Vulnerable	Species or species habitat known to occur within area
Eucalyptus pulverulenta Silver-leaved Mountain Gum, Silver-leaved Gum [21537]	Vulnerable	Species or species habitat known to occur within area
Euphrasia arguta [4325]	Critically Endangered	Species or species

Name	Status	Type of Presence
Leucochrysum albicans var. tricolor Hoary Sunray, Grassland Paper-daisy [56204]	Endangered	habitat may occur within area Species or species habitat likely to occur within area
Pelargonium sp. Striatellum (G.W.Carr 10345) Omeo Stork's-bill [84065]	Endangered	Species or species habitat may occur within area
Philothea ericifolia [64942]	Vulnerable	Species or species habitat may occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Xerochrysum palustre Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Eulamprus leuraensis Blue Mountains Water Skink [59199]	Endangered	Species or species habitat may occur within area
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat likely to occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat likely to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		habitat may occur within area Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian Telecommunications Commission

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Forestry Management Areas in Bathurst	NSW

Invasive Species	[Resource Information]
------------------	--

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species

Name	Status	Type of Presence
Alauda arvensis Skylark [656]		habitat likely to occur within area Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species

Name	Status	Type of Presence
<p>Sus scrofa Pig [6]</p>		<p>habitat likely to occur within area</p> <p>Species or species habitat likely to occur within area</p>
<p>Vulpes vulpes Red Fox, Fox [18]</p>		<p>Species or species habitat likely to occur within area</p>
Plants		
<p>Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Genista sp. X Genista monspessulana Broom [67538]</p>		<p>Species or species habitat may occur within area</p>
<p>Lycium ferocissimum African Boxthorn, Boxthorn [19235]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Nassella neesiana Chilean Needle grass [67699]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Opuntia spp. Prickly Pears [82753]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]</p>		<p>Species or species habitat may occur within area</p>
<p>Rubus fruticosus aggregate Blackberry, European Blackberry [68406]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]</p>		<p>Species or species habitat likely to occur within area</p>
<p>Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]</p>		<p>Species or species habitat likely to occur within area</p>

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.4 150.07833,-33.40472 150.07944,-33.40667 150.0925,-33.39944 150.09,-33.39833 150.08083,-33.4 150.07833

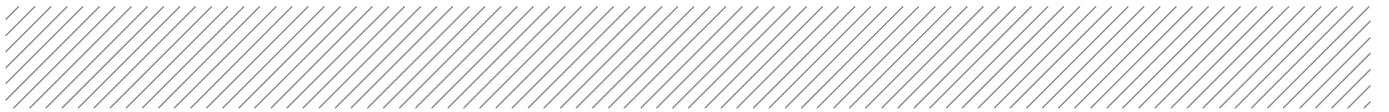
Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
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- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
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- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
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- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

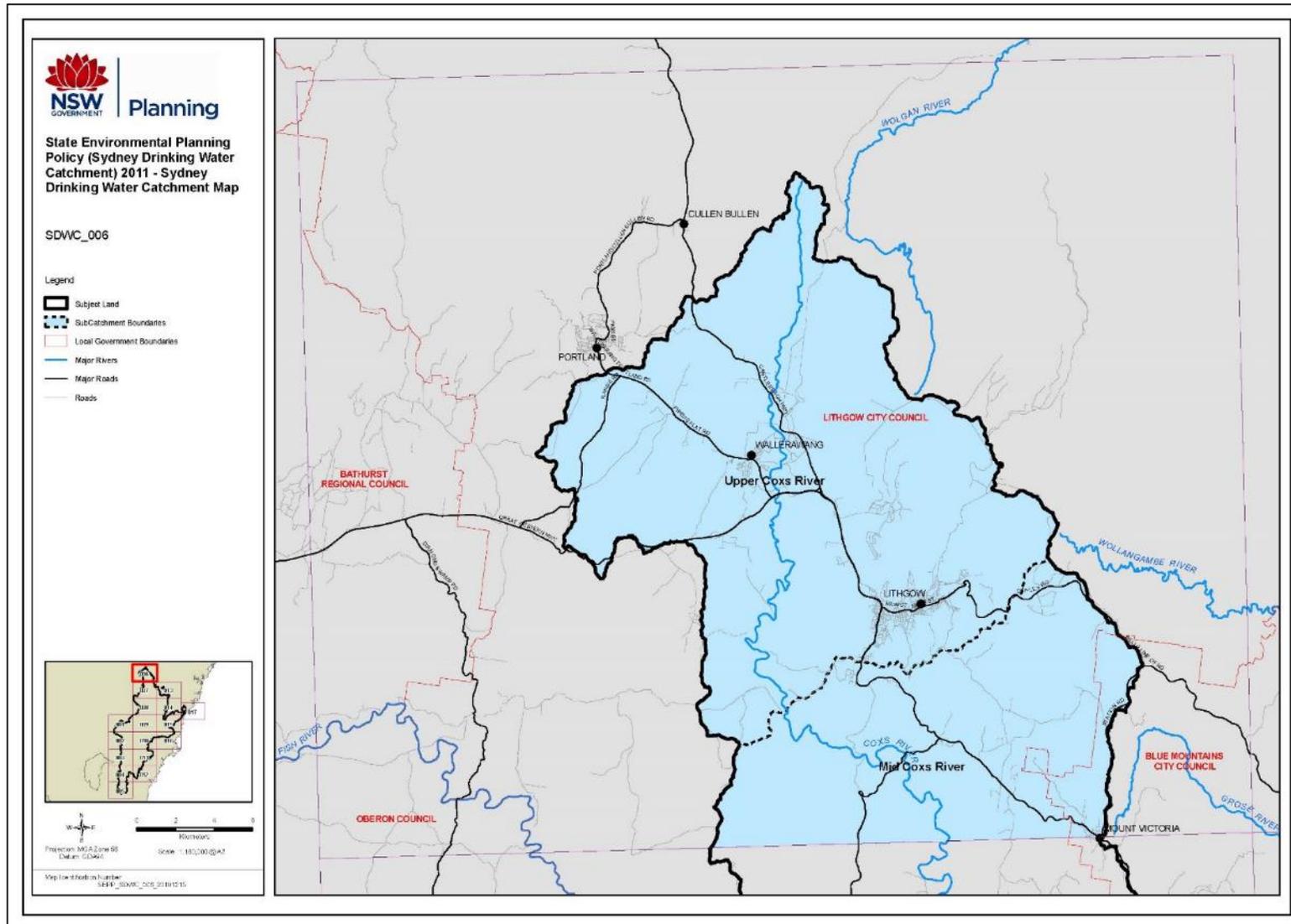
Please feel free to provide feedback via the [Contact Us](#) page.



Appendix C

Neutral or Beneficial Effect Assessment

Appendix C.1 Sydney Drinking Water Catchment Map



Appendix C.2 Neutral or Beneficial Effects on Water Quality Assessment

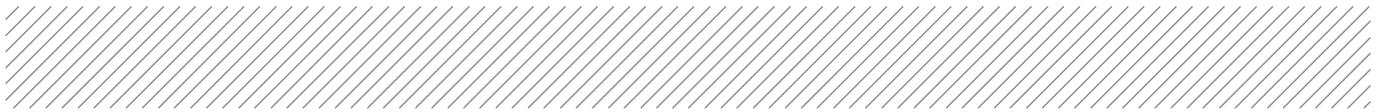
A qualitative NorBE assessment has been undertaken for the Project (refer to Table C1).

Table C1 NorBE assessment for public authorities that will be assessment under Part 4 of the EP&A Act, as specified in Clause 12 of State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

NorBE Assessment – will there be a neutral or beneficial effect on water quality? (Assessment must consider surface and ground waters and must consider construction and operation stages)	
<p>1. Are there any identifiable potential impacts on water quality? What pollutants are likely? <i>Major potential pollutants are sediments (fine and coarse), nitrogen, phosphorus, pathogens and hazardous chemicals and contaminates such as oil/fuel.</i> During construction and/or post construction?</p>	<p>The main potential impacts to surface water quality would be during demolition activities that result in disturbance of the ground and potential spills of waste materials, or fuels and chemicals. Potential impact of unmitigated demolition activities includes:</p> <ul style="list-style-type: none"> ■ Increased sedimentation and elevated turbidity levels of nearby creeks from exposed soils during excavation and movement of vehicles, particularly following rainfall events. ■ Increased sedimentation of downstream watercourses smothering aquatic life and affecting the ecosystems of downstream sensitive waterways, wetlands and flood plains. ■ Increased levels of nutrients, metal or other pollutants transported via sediment to downstream watercourses. ■ Chemicals, heavy metals, oil and grease and petroleum hydrocarbon spills from construction plant and machinery contaminating downstream waterways. ■ Increased levels of litter from construction activities polluting downstream watercourses. <p>These impacts would be mitigated through the implementation of the measures specified in Section 4.1 of the SEE. As long as these measures are effectively implemented, it is expected that there would be no impacts to water quality resulting from the Project.</p>



NorBE Assessment – will there be a neutral or beneficial effect on water quality? (Assessment must consider surface and ground waters and must consider construction and operation stages)	
<p>2. For each pollutant list the safeguards needed to prevent or mitigate potential impacts on water quality (these may be WaterNSW endorsed current recommended practices (CRPs) and/or equally effective other practices)?</p>	<p>Safeguards that would be implemented to mitigate potential impacts on water quality are identified in Chapter 5 of this SEE.</p> <p>An existing storm water system is in place to capture run-off at WWPS. This system treats captured storm water through an oil/water separator prior to discharge at a licenced discharge point. Additional erosion and sediment controls would be established if demolition activities may affect the storm water system or may in areas outside those covered by the storm water system. The storm water system will remain in-situ following completion of the Project.</p> <p>Best practice handling and storage of any required fuel and oils (in bunded areas) as well as appropriate spill response procedures would be implemented to ensure potential impacts to local waterways, storm water systems and WaterNSW land associated with the use/or spillage of chemicals are minimised as far as practicable.</p> <p>Demolition phase mitigation measures are based on the Blue Book (Landcom 2004 and DECC 2008b) which are endorsed by WaterNSW as “current recommended practice”.</p>
<p>3. Will the safeguards be adequate for the time required? How will they need to be maintained?</p>	<p>The safeguards to be implemented are standard erosion and sediment controls and spill safeguards, and are adequate for the nature of the works and the time required on site.</p>
<p>4. Will all impacts on water quality be effectively contained on the site by the identified safeguards (above) and not reach any watercourse, waterbody or drainage depression? Or will impacts on water quality be transferred outside the site for treatment? How? Why?</p>	<p>All potential impacts from the demolition phase are expected to be contained at the site. Offsite discharge of storm water will continue to occur, in accordance with current site practices.</p> <p>The disposal of all liquids would be undertaken in accordance with the site’s EPL and Sydney Water’s Discharge Protocol.</p>



**NorBE Assessment – will there be a neutral or beneficial effect on water quality?
(Assessment must consider surface and ground waters and must consider construction and operation stages)**

<p>5. Is it likely that a neutral or beneficial effect on water quality will occur? Why?</p>	<p>Given that the Project would be confined to involves above ground works in an area covered by an established storm water management system, it is likely to have a neutral or beneficial effect on water quality. Standard safeguards as outlined in Chapter 5 of this SEE would be implemented to minimise the risk of any potential impacts to water quality.</p> <p>All de-watering and flushing activities would be undertaken in accordance with Sydney Water's Discharge Protocol. Decommissioned pipework and skids would be flushed, and flushing water would be contained and disposed of off-site with no discharges to the environment.</p>
--	---



Appendix D National Pollutant Inventory Search Results – Wallerawang (2845)

You are here: [NPI Home](#) > [NPI data](#) > [Search NPI data](#) > [Search by Form](#) > View data

[Summary](#) | [Sources](#) | [Emissions](#) | [Transfers](#) | [Download](#) | [Map](#)

2016/2017 data within 2845 - All Substances from All Sources

Summary of returned search results with information related to the search criteria. Click on the tabs for a more detailed view of the search results.

The search results contain the following data

Industry data		Diffuse data	
• Number of facilities	1	• Number of airsheds	1
• Number of substances emitted	3	• Number of substances emitted	70
• Number of substances transferred	1	• Number of catchments	1
		• Number of substances emitted	2

Most commonly reported substances for the Location: 2845

Industry Emissions	Industry Transfers	Diffuse Emissions
<ul style="list-style-type: none"> Manganese & compounds Mercury & compounds Zinc and compounds 	<ul style="list-style-type: none"> Zinc and compounds 	<ul style="list-style-type: none"> Total Volatile Organic Compounds Toluene (methylbenzene) Benzene Xylenes (individual or mixed isomers) Cadmium & compounds

Display time: 0.207s

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NPI

- [NPI Home](#)
- [NPI Database Search](#)

Search Criteria

- Source Type = All
- Include subthreshold facility data = Yes
- Reporting year = 2016/2017
- Postcode = 2845
- State = National
- Substance = All
- Destination type = All

[Edit Criteria](#)

Key

- [🔗](#) Links to an another web site
- [📄](#) Opens a pop-up window

You are here: [NPI Home](#) > [NPI data](#) > [Search NPI data](#) > [Search by Form](#) > View data

[Summary](#) | [Sources](#) | [Emissions](#) | [Transfers](#) | [Download](#) | [Map](#)

[Facility Sources](#) | [Diffuse Sources](#)

2016/2017 data within 2845 - All Substances from All Sources

A list of all reporting facilities included in the search results. Click on a Facility Name to view the facility's annual report.

One item found.

Registered Business Name	Facility Name	Suburb	State
IVANHOE COAL PTY LIMITED	Liddale Coal Loading Facility	Wallerawang	NSW

One item found. Records per page: 10

Export to: [📄](#) [CSV](#)

Display time: 0.033s

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NPI

- [NPI Home](#)
- [NPI Database Search](#)

Search Criteria

- Source Type = All
- Include subthreshold facility data = Yes
- Reporting year = 2016/2017
- Postcode = 2845
- State = National
- Substance = All
- Destination type = All

[Edit Criteria](#)

Key

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Swaziland, Tanzania, Thailand, Uganda,
United Arab Emirates, Vietnam.