EnergyAustralia

Mount Piper Power Station- Water Storage Pond Modification report

April 2019

Executive summary

The Mount Piper Power Station (MPPS) is located in the western coalfields near Lithgow, NSW. EnergyAustralia own and operate the power station and has identified a need for additional water storage capacity at MPPS to assist in the management of various water process streams.

A new double-lined, 60 ML pond is proposed immediately adjacent to the existing Blowdown Pond B. The new pond will function as a multi-use storage pond to provide storage redundancy for a number of process streams. It will receive flows from the existing blowdown ponds, the coal settling basin, the ash repositories and the new water treatment plant.

The proposed multi-purpose storage pond represents new water infrastructure to the development subject to the existing consent and will require a modification to the existing consent.

The pond is proposed to be located within a highly disturbed area within MPPS between existing coal stockpiles, conveyors and pond infrastructure. The site is located within an area of historic open cut mining of the Western Main Colliery, which has subsequently been backfilled prior to the establishment of MPPS.

The site has been previously cleared of all native vegetation and the potential for environmental impacts during the construction of the pond is considered minimal. The pond will provide additional flexibility to the operation of the existing pond network and reduce the risk of uncontrolled discharges from MPPS impacting upon receiving waters. The project is considered to achieve a neutral to beneficial effect on the drinking water catchment.

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1. Introduction

1.1 Background

The Mount Piper Power Station (MPPS) is located in the western coalfields near Lithgow, NSW, and is owned and operated by EnergyAustralia (refer Figure 1-1). MPPS is a coal fired power station that has been fully operational since 1994 and is operated as a between 'base load' and 'peak load' plant with a total generation of up to 36,000 MWh/day (two 750 MW units operated 24 hours at 100% capacity).

MPPS has a high demand for make-up water for use in the cooling water system. Site operations currently include an existing water management system for the treatment of blowdown water from the cooling water circuit. This includes desalination facilities in addition to a series of water storages to enable the capture, storage and reuse of the various water streams from across the operations.

Make-up water is currently supplied through the Coxs River Water Supply System, and also from the Fish River, in accordance with respective water access licences. The Springvale Water Treatment Project (Springvale WTP) is approaching the final construction and commissioning phase. It will enable the transfer and reuse of underground mine water within the cooling water system to supplement existing catchment supplies. The Springvale WTP will also involve integrating the existing blowdown water management system with the new water treatment system, and re-purposing of a number of the existing ponds at MPPS to integrate with the design of the water treatment facility.

EnergyAustralia has identified a need for additional water storage capacity at MPPS to assist in the management of various water process streams. This requirement is in addition to its existing water management infrastructure.

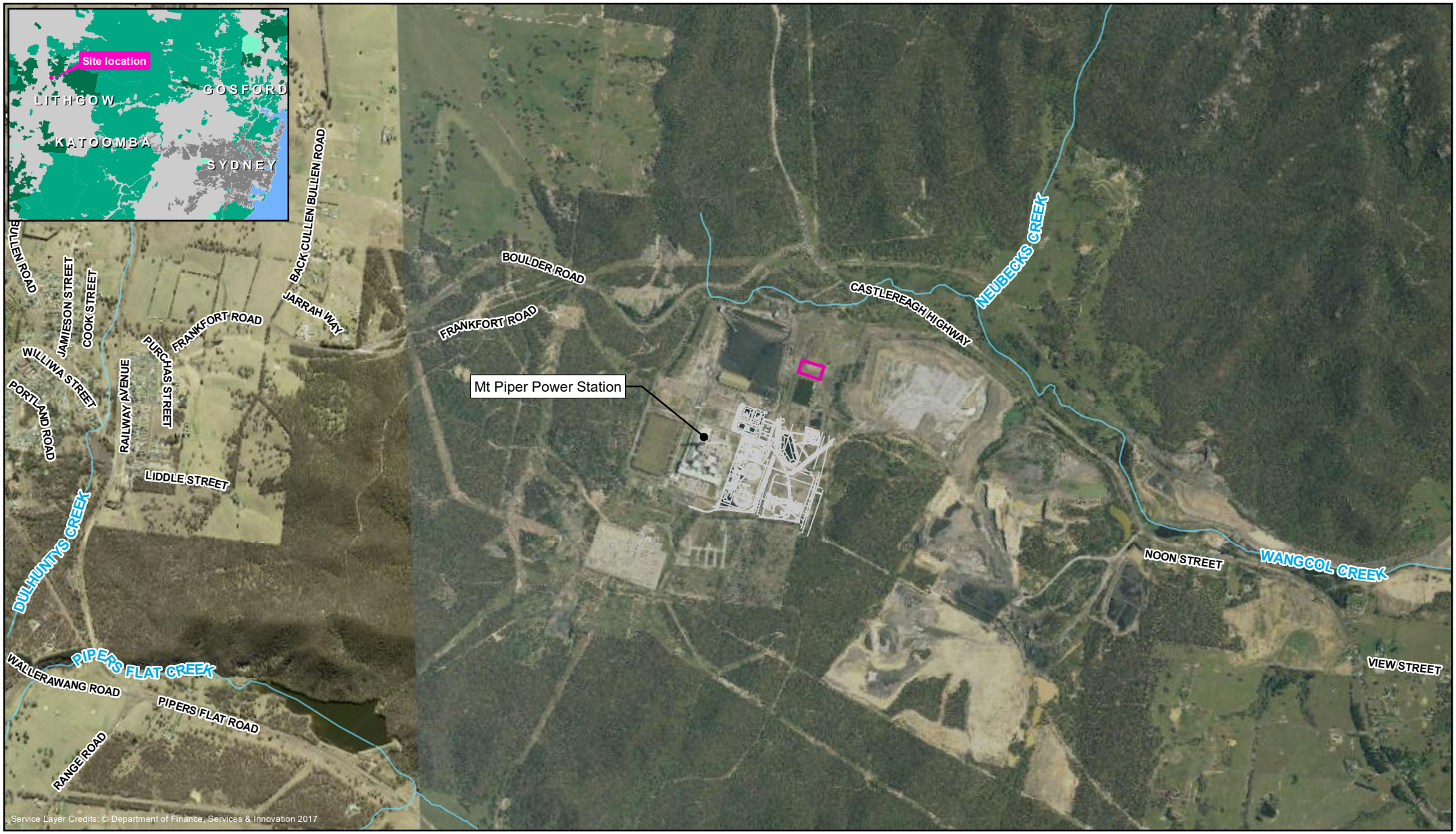
It is proposed to establish a new double-lined 60 ML pond immediately adjacent to the existing Blowdown Pond B. The pond will be located within a central location on the MPPS site and comprise around 0.5% of the existing operational footprint for the operations. The new pond will function as a multi-use storage to provide redundancy for a number of process streams. It will receive flows from the existing blowdown ponds, the coal settling basin, the ash repositories and the new water treatment plant.

The new pond will provide additional storage to enable the site to continue to operate as a zero process water discharge site. The new pond will also assist EnergyAustralia to continue to meet their environmental obligations for prevention of water pollution in accordance with Section 120 of the *Protection of the Environment Operations Act 1997* (PoEO Act).

1.2 Purpose of this report

This modification report has been prepared to support the application to modify the development consent for the Mount Piper Power Station under Section 4.55 (1A) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The report describes the need for additional water storage capacity at MPPS to assist in the management of various water process streams, in addition to the existing water management infrastructure.



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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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LEGEND

Proposed 60 ML storage pond

Existing site facilities

Centennial Coal and EnergyAustralia
Mount Piper Power Station - Modification 8

Job Number	21-25109
Revision	A
Date	19 Mar 2019

MPPS site location

Figure 1.1

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Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

Data source: General Topo - NSW LPI DTDB 2012, Imagery - sixmaps 2015. Created by:afoddy

1.3 The applicant

EnergyAustralia is the owner and operator of MPPS and is the applicant for the proposed application.

EnergyAustralia is a part of the EnergyAustralia Group, and a wholly owned subsidiary of CLP Holdings Limited.

The relevant postal address for Mount Piper Power Station is:

Mt Piper Power Station
Locked Bag 1000
Portland, NSW, 2000.

1.4 Statutory approval framework

1.4.1 Consent History

The MPPS was initially approved in 1982 by the Minister for Planning and Environment under Section 101 of the EP&A Act. Section 101 formerly related to determination of development applications where the Minister was of the opinion that the development was of state or regional significance. The proposal was therefore called in for Ministerial determination and was the equivalent of state significant development in accordance with the current EP&A Act.

Consent was granted to the applicant, being the Electricity Commission of New South Wales, for the construction and operation of the MPPS in accordance with the instrument of consent. The instrument of consent included the requirement to carry out the proposed development in accordance with the MPPS environmental impact statement (EIS) and supplementary information included with the development application, subject to a number of conditions including:

- All necessary approvals from the State Pollution Control Commission (SPCC - now the NSW Environment Protection Authority (EPA)) under a range of legislation now repealed by the PoEO Act.
- That the applicant shall meet the reasonable requirements of all public authorities having statutory responsibilities in respect of construction and operation of the power station.
- That the applicant is required to prepare and submit development applications supported by an EIS in accordance with the EP&A Act for any new coal mines to supply coal or any other designated development associated with the project.
- That the applicant shall prepare and submit for the approval of the SPCC (now EPA) plans for the proposed desalination plant and plans for disposal of the salt residues.

The Mount Piper Power Station EIS and Supplementary Information included a broad description of the power station operations including the water management system and cooling water system. Water was to be supplied to MPPS from the Fish River Water Supply Scheme and the Coxs River Water Supply Scheme being constructed at the time in connection with Unit No. 8 at the Wallerawang Power Station. The EIS also described the proposed operation of a desalination plant using either reverse osmosis or electro-dialysis to treat condenser circulating water that would otherwise need to be controlled by blowing down to Neubecks Creek.

The original MPPS development consent has been modified on seven occasions as outlined in

Table 1-1. The modifications mostly relate to the establishment of additional facilities for the storage and management of brine waste streams as part of power station operations.

Table 1-1 Mount Piper planning approval

Modification Number	Date	Approval
0	4 May 1982	Original development consent
1	18 March 1991	Construct and operate a temporary storage facility for brine waste
2	21 June 1996	Temporary storage of brine water shall cease by 30 June 2000
3	30 November 1998	Extend approval to conduct and operate one additional brine storage pond
4	18 January 1999	Rewording of Condition 1 to replace the licencing and approval requirements of the State Pollution Control Commission with the Environment Protection Authority
5	3 April 2000	Placement of brine conditioned fly ash
6	3 June 2006	Increase capacity of MPPS from 1400 MW to 1500 MW
7	23 March 2008	Extension to existing brine and ash co-placement area

A number of other development consents and approvals have also been granted for the operation of MPPS. Approval was granted by Lithgow City Council in March 1990 for ash placement in a former Western Main open cut coal mine void next to the power station. The area is known as Storage Area 1 and is used for dry ash placement. In June 2009, the Minister for Planning granted Part 3A major project approvals to Delta Electricity by for the Western Coal Unloader and in February 2012 by the Minister for Planning and Infrastructure for new ash placements at the Lamberts South and Lamberts North sites.

1.4.2 Consent modification

Under Section 4.55 of the EP&A Act, state significant development consents may be modified provided information stipulated in Clause 115 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) is contained within the application, and the development as modified will be substantially the same development for which consent was originally granted.

The proposed multi-purpose storage pond represents additional water infrastructure to the development subject to the existing consent. The multi-purpose pond will provide additional flexibility and controls for the management of water within the power station to minimise the potential for discharge of process water from the site.

The power station operations will remain substantially in accordance with the development originally approved and there will be no changes to the power generating capacity or the intended use of the site as a result of the modification.

The appropriate modification pathway for the proposed design changes is considered to be Section 4.55(1A) relating to modification involving minimal environmental impact. The requirements of Clause 115 of the EP&A Regulation and where they are addressed in this document are outlined in Table 1-2.

Table 1-2 Requirements for application for modification of development consent

Requirement	Response/reference
(1) An application for modification of a development consent under section 4.55(1), (1A) or (2) or 4.56 (1) of the Act must contain the following information:	
(a) the name and address of the applicant,	Section 1.3
(b) a description of the development to be carried out under the consent (as previously modified),	Section 2.1
(c) the address, and formal particulars of title, of the land on which the development is to be carried out,	Section 2.1
(d) a description of the proposed modification to the development consent,	Section 3
(e) a statement that indicates either: (i) that the modification is merely intended to correct a minor error, misdescription or miscalculation, or (ii) that the modification is intended to have some other effect, as specified in the statement,	Section 1.4.2
(f) a description of the expected impacts of the modification,	Section 4
(g) an undertaking to the effect that the development (as to be modified) will remain substantially the same as the development that was originally approved,	Section 1.4.2
(g1) in the case of an application that is accompanied by a biodiversity development assessment report, the reasonable steps taken to obtain the like-for-like biodiversity credits required to be retired under the report to offset the residual impacts on biodiversity values if different biodiversity credits are proposed to be used as offsets in accordance with the variation rules under the Biodiversity Conservation Act 2016,	Not applicable
(h) if the applicant is not the owner of the land, a statement signed by the owner of the land to the effect that the owner consents to the making of the application (except where the application for the consent the subject of the modification was made, or could have been made, without the consent of the owner),	Not applicable – applicant is owner of land
(i) a statement as to whether the application is being made to the Court (under section 4.55) or to the consent authority (under section 4.56),	Not applicable - The application is being made to the consent authority under Section 4.55(1A)

When assessing an application under Section 4.55 for modification to consent, the consent authority is required to take into consideration the relevant matters outlined in Section 4.15 of the EP&A Act.

1.4.3 Drinking water catchment SEPP

State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (the Sydney Drink Water Catchment SEPP) applies to land within Sydney's Drinking Water Catchment including the Upper Coxs River system. The aims of the Policy are:

(a) to provide for healthy water catchments that will deliver high quality water while permitting development that is compatible with that goal, and

(b) to provide that a consent authority must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality, and

(c) to support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment.

Under clause 10 of the Sydney Drinking Water Catchment SEPP, the consent authority must "not grant consent to carrying out of development" in the drinking water catchment unless it would have a 'neutral or beneficial effect' on water quality (the NorBe test).

While the consent authority must apply the NorBe test in "*grant(ing) consent to the carrying out of development*", section 4.55 (4) of the EP&A Act provides that the modification of a development consent is "*taken not to be the granting of development consent*". The Sydney Drinking Water Catchment SEPP as a whole must be considered as part of the broader considerations under Section 4.15 of the EP&A Act; however, the NorBe test does not strictly apply to a modification in the same way as it does to the granting of consent and does not operate to constrain the determination of a modification.

However, it is recognised that the intent of the NorBe test is for the protection of water within the catchment and this has been considered as part of the proposed modification. The objective of the modification is to provide additional storage volume as part of the integrated water management operations to reduce the potential for an uncontrolled process water release from the site, thereby resulting in a neutral to beneficial effect upon the catchment.

1.4.4 Protection of the Environment Operations Act

The POEO Act is administered by the EPA. The POEO Act regulates and requires licensing for environmental protection, including for waste generation and disposal, and for water, air, land and noise pollution.

Under the POEO Act, an environment protection licence (EPL) is required for premises at which a 'scheduled activity' is conducted. Energy Australia holds EPL 13007 for the operation of MPPS, which was recently amended to allow brine from the Springvale WTP to be brought to site and inclusion of the overflow weir from the Coal Handling Plant (CHP) Settlement Basin as a licenced discharge location.

2. Project Setting

2.1 Mount Piper Power Station

2.1.1 Overview

EnergyAustralia owns and operates the MPPS, which is located off Boulder Road in Blackmans Flat, about 17 kilometres north-west of the Lithgow. MPPS is a two-unit coal fired power station that has been fully operational since 1994. The station is operated with a total generation of up to 36,000 MWh/day). MPPS has around 200 direct employees with an additional 90 contractors on full time equivalent basis.

The total area of the Mount Piper site is approximately 820 hectares and includes:

- The main operational area of the power station, which comprises electricity generating activities and the associated coal stockpile.
- The ash emplacement area within the former Western Main Open Cut void adjacent to the operational area.
- A buffer zone comprising native forested areas and open woodland, including rehabilitated and revegetated land, and a number of ancillary activities such as transmission line easements and former waste dumps.

The formal particulars of the land are included in Table 2-1.

Table 2-1Lot and DPs for Mount Piper Power Station

Premises details – Mount Piper Power Station – 350 Boulder Road Portland NSW 2847
LOT 1 DP 325532, LOT 1 DP 400022, LOT 191 DP 629212, LOT 1 DP 702619, LOT 2 DP 702619, LOT 362 DP 740604, LOT 366 DP 740604, LOT 67 DP 751636, LOT 1 DP 803655, LOT 5 DP 804929, LOT 7 DP 804929, LOT 8 DP 804929, LOT 9 DP 804929, LOT 1 DP 813288, LOT 1 DP 829065, LOT 1 DP 920999, LOT 1 DP 999329, LOT 2 DP 999329, LOT 3 DP 999329, LOT 4 DP 999329, LOT 5 DP 999329, LOT 4 DP 1151441 LOT 102 DP 1164619, LOT 103 DP 1164619, LOT 140 DP 1185660, LOT 141 DP 1185660, LOT 142 DP 1185660, LOT 146 DP 1185660, LOT 147 DP 1185660, LOT 148 DP 1185660, LOT 149 DP 1185660, LOT 150 DP 1185660, LOT 151 DP 1185660, LOT 152 DP 1185660, LOT 101 DP 1240974

2.1.2 Water Supply

MPPS primarily sources cooling water makeup water from the Coxs River Water Supply System. The system comprises a number of storage dams, interconnecting pipelines and pumping stations, which were established to provide water for local power station operations. Major water storages include:

- Lake Wallace (Wallerawang Reservoir) with a capacity of around 4,300 ML
- Lake Lyell with a capacity of around 32,000 ML
- Thompsons Creek Reservoir with a capacity about 27,500 ML.

MPPS currently draws water from Lake Lyell, which is either pumped directly to the power station cooling water system or directed into Thompsons Creek Reservoir as an off-line staging dam. A Water Management Licence authorises up to 23,000 ML/year from the Coxs River System.

MPPS also has access to supplementary water from the Fish River scheme via a limited water allocation of 8,184 ML/yr for supplementary flows from a Water NSW Licence for the Fish River Water Supply.

2.1.3 Brine management

Brine is derived from the evaporative cooling process in the cooling towers. As water evaporates from the cooling towers, the concentration of salts contained in the circulating water slowly increases and would eventually impact upon the operation of the cooling system. A portion of the salty water is therefore regularly blown down and replaced with fresh “make up” water.

Blowdown from the cooling towers is currently treated in two brine concentrators, removing salts from the cooling water system and recycling distillate back into the cooling water cycle. To supplement treatment capacity of the brine concentrators, there is also a micro-filtration (MF) / reverse osmosis (RO) water treatment system installed to treat blowdown.

The RO system is currently only operated intermittently when additional treatment capacity is required. Around 8 ML of brine is typically produced per year under normal weather conditions where the region’s rainfall maintains the low saline conditions of the raw water sources in the catchment. The brine is temporarily stored in two 20 ML lined holding ponds until needed to condition the fly ash disposed of on site in approved ash placement areas.

The MPPS operates as a zero liquid discharge site with no release of cooling water or other by-products of the water treatment process to receiving waters.

2.2 Springvale Water Treatment Project

2.2.1 Overview

The Springvale WTP involves the transfer of water from existing dewatering facilities on the Newnes Plateau to a new water treatment plant located at MPPS. Treated water will be used as a priority for industrial reuse to meet the demand for make-up water requirements within the MPPS cooling water system. Any excess treated water will be temporarily stored within Thompsons Creek Reservoir for subsequent reuse during periods of high water demand in the MPPS cooling water system. The approved project comprises the following major elements:

- A system to transfer up to 42 ML/day of dewatered mine water from the existing gravity tank forming part of the approved Springvale Delta Water Transfer Scheme (SDWTS) on the Newnes Plateau to the MPPS site.
- A new water treatment plant at MPPS incorporating desalination processes to reduce the salinity in mine water.
- Transfer of treated water from the water treatment plant to the MPPS cooling water system to contribute to the demand for make-up water.
- Use of the existing Coxs River Water Supply pipeline to transfer excess treated water to Thompsons Creek Reservoir for storage and subsequent reuse in the cooling water system.
- Disposal of residuals from the pre-treatment process in the reject emplacement area (REA) at the neighbouring Springvale Coal Services site (part of Western Coal Services Project, SSD 5579).
- Implementation of an Optimised Pre-treatment and Unique Separation (OPUS) process, including the addition of an additional reverse osmosis system to replace the use of the brine concentrators and manage salt load from the new water treatment plant (WTP). Disposal of brine will continue in accordance with existing approvals and practices at MPPS.

2.2.2 Pond strategy

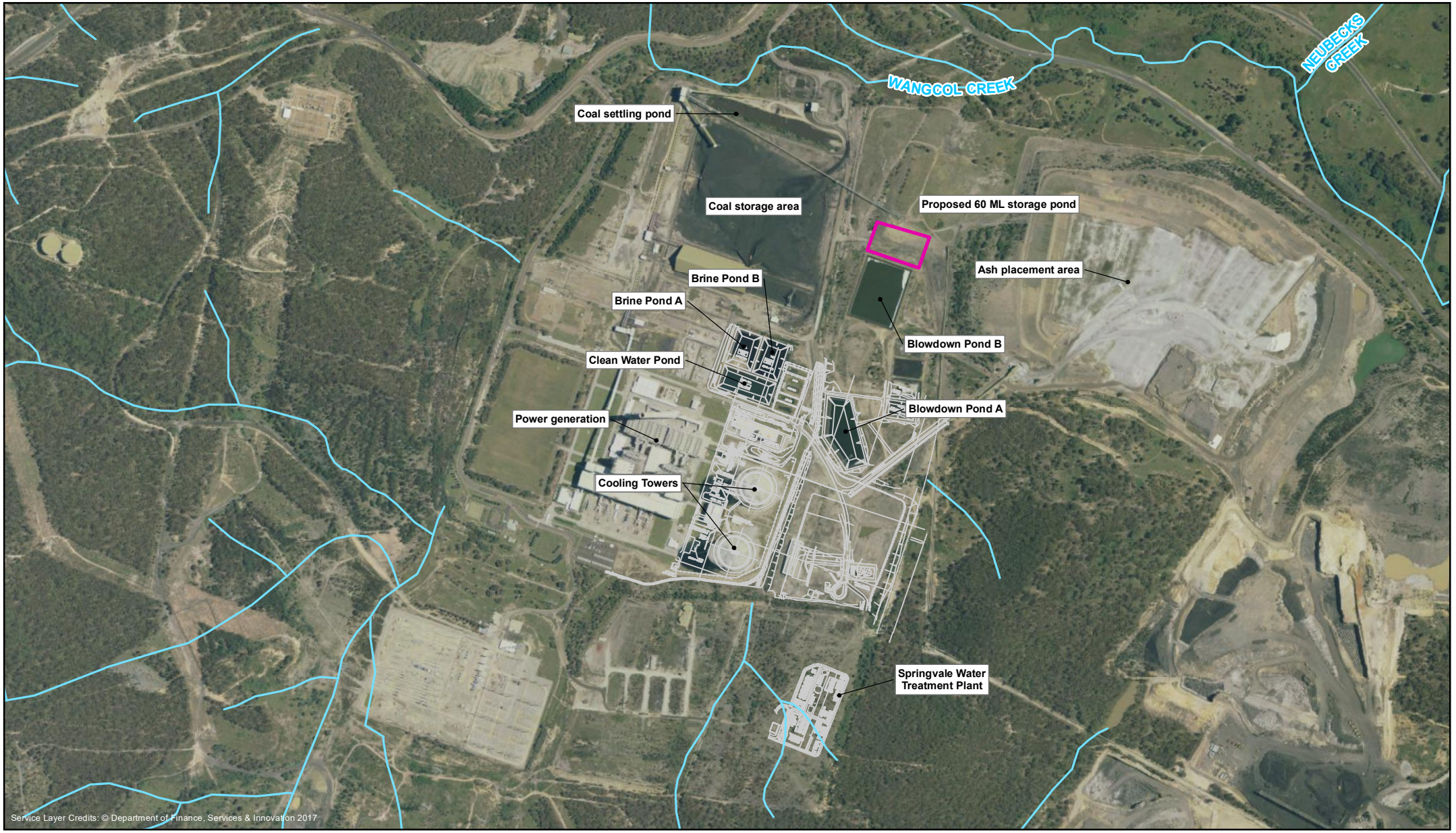
The Springvale WTP incorporates a pond strategy, which involves repurposing a number of existing ponds at the MPPS to integrate with the design of the WTP as shown on Figure 2-1.

Treated water in excess of the immediate MPPS cooling water system make-up water requirements will be sent to the Clean Water Pond. The Clean Water Pond will also receive permeate (treated water) from the new OPUS treatment units and be used to provide a buffering capacity for intra-day make-up water requirements. The intra-day buffering capacity will reduce the volume of treated water that is pumped to Thompsons Creek Reservoir for storage and reuse, minimising pumping costs and energy consumption.

The proposed design involves re-purposing of the existing MPPS Blowdown Pond B to function as a buffer storage for the water treatment plant (refer Figure 2-1). Incoming mine water will typically flow directly to the clarifiers as part of the water treatment process. A hydraulic standpipe will be configured to allow the flow to be split between the clarifiers and the buffer storage located at Blowdown Pond B. Any overflows from the clarifiers, filters and filtered water tank will also be diverted directly to the buffer pond. Water temporarily stored in the buffer pond will be pumped back to the transfer pipeline for subsequent treatment when capacity is available in the treatment system.

Blowdown Pond A will also be re-purposed as part of the modified project (refer Figure 2-1). The Springvale WTP RO brine stream and the existing MPPS blowdown RO system brine stream will be directed to Blowdown Pond A. This pond would form the feed stream for the new OPUS brine management system.

The permeate (treated water from the OPUS system) would be returned to the Clean Water Pond for use in the cooling water system and the RO concentrate (brine stream) will be transferred to either the crystalliser feed tank or to the existing Brine Ponds A and B for ash conditioning in accordance with existing approved practice. The OPUS/ brine crystalliser system produces a mixed salt and a dewatered lime salt, which will be disposed of with the brine stream in the approved MPPS ash placement area.



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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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LEGEND

- Proposed 60 ML storage pond
- Existing site facilities
- Watercourses

Centennial Coal and EnergyAustralia
Mount Piper Power Station - Modification 8

Job Number 21-25109
Revision A
Date 29 Mar 2019

Proposed 60 ML storage

Figure 2-1

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Level 15, 133 Castlereagh Street Sydney NSW 2000 **T** 61 2 9239 7100 **F** 61 2 9239 7199 **E** sydmail@ghd.com.au **W** www.ghd.com.au

Data source: General Topo - NSW LPI DTDB 2012, Imagery - sixmaps 2015. Created by:afoddy

3. Proposed Modification

3.1 Need for the modification

The new 60 ML pond is required as a multi-purpose storage facility and is designed to be able to receive flows from a number of process streams from across the site as described above.

The pond will initially be used for the storage of brine during the commissioning of the integrated OPUS brine management system being developed as part of the Springvale WTP. The storage is required as the OPUS system will be commissioned concurrently with the operation of the existing brine concentrators at MPPS and the re-purposed ponds will not be available for use during the commissioning phase whilst the existing blowdown management system is in operation.

The pond will also be used to provide supplementary storage for the coal settling ponds, which has recently been added as a licence discharge point on the MPPS EPL. During high rainfall conditions, water can be pumped from the coal settling ponds to the new 60 ML pond to minimise the potential for discharge from the site.

The pond will also be designed to allow water to be received from all water management sources including brine, clean water and stormwater systems and the ash placement areas. This will provide additional flexibility to the operations and maintenance of existing pond infrastructure (e.g. cleaning, replacement of liners etc.).

3.2 Modification description

It is proposed to construct a new 60 ML pond immediately to the north of the existing Blowdown Pond B as shown on Figure 3-1. Figure 3-2 and Figure 3-3 show the current physical condition of the area proposed for the new pond. The pond will be located in a highly developed area of the MPPS site between existing conveyors, the coal stockpile and the existing pond infrastructure.

The pond will be developed with an earth bank design with approximate dimensions of 140 metres by 80 metres, for a total approximate area of 1.12 ha, representing a footprint of around 1.4 % of that covered by the MPPS. Construction will aim to balance cut and fill and involve excavation to a depth of approximately four metres and a surrounding embankment of up to four metres above the ground surface. Excavated material will be reused during the construction of the embankment.

The pond will include dual 2.0 mm high-density polyethylene (HDPE) liners and an overflow weir to direct flows to Blowdown Pond B (approximate 100 ML capacity) to prevent any process water release from the integrated pond network.

The pond will be designed with pipeline connections to the existing water network and electrical supply to the pumping and telemetry system.

Construction of the new 60 ML pond is anticipated to take approximately two months.

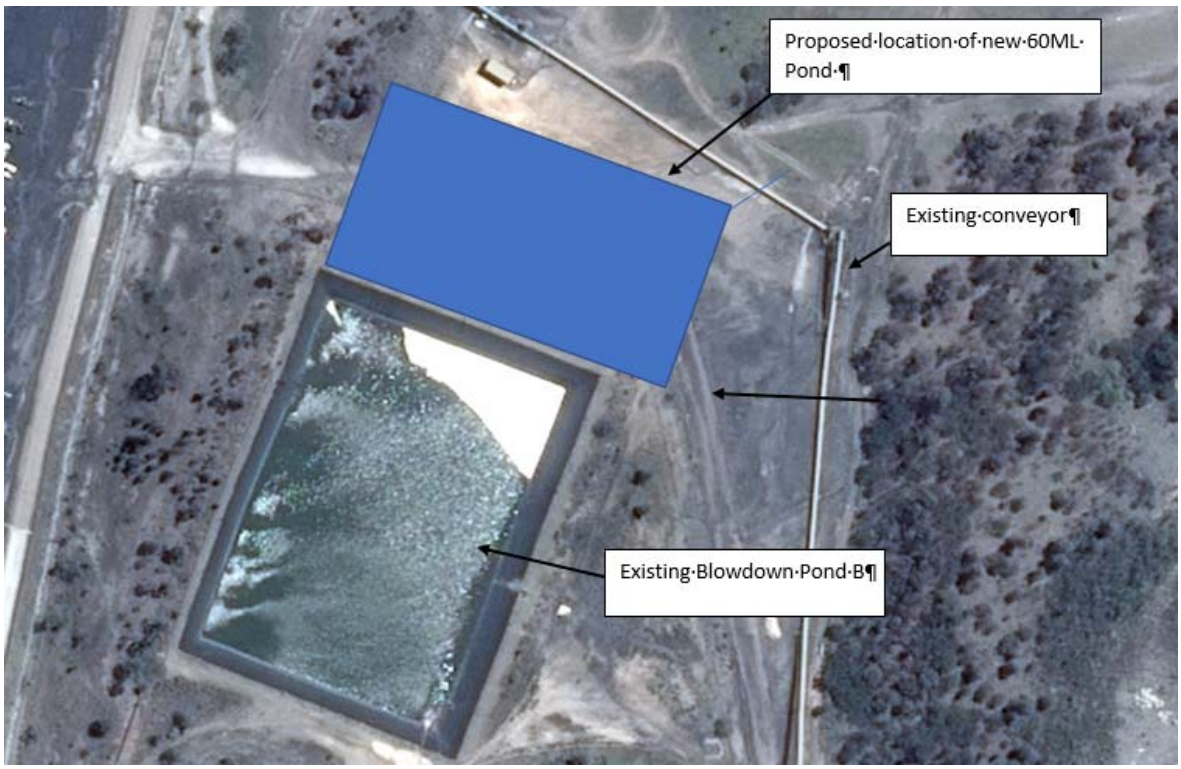

Figure 3-1 Proposed additional water storage pond

Figure 3-2 Proposed new pond location looking north from southern boundary

Figure 3-3 Proposed new pond location looking north-west from the south-eastern boundary

4. Environmental assessment

4.1 Introduction

The proposed modification includes the development of a new 60 ML storage pond within a highly disturbed area within MPPS together with associated transfer pipelines. The proposed pond site is located within an area of historic open cut mining of the Western Main Colliery, which has subsequently been backfilled prior to the establishment of MPPS.

The potential impacts associated with the proposed modification have been assessed qualitatively commensurate with the low level of environmental risk associated with the proposed works.

4.2 Soil and geology

4.2.1 Environmental interactions

The current surface level at the site is approximately RL 930 m AHD within a disturbed soil landscape, which has historically included the removal of all soils and disturbance of the underlying bedrock during open cut mining operations. Bedrock is Late Permian aged Illawarra Coal Measures, comprising sandstone, claystone, tuff, coal, mudstone and conglomerate.

Open cut mining occurred across the area proposed for the new 60 ML pond between the 1950s and 1980s to the base of the Lithgow Seam (i.e. removing the Irondale, Lidsdale and Lithgow Seams). The final depth of the open cut mine was between RL 920 m AHD and RL 918 m AHD, with the land surface having been backfilled to the current level. Subsurface soil conditions are anticipated to comprise backfilled overburden comprising reworked local soils and rock overlying natural bedrock.

Construction of the pond will involve excavation to create a balance between cut and fill for the walls of the pond embankments. The site is relatively flat and presents a low risk or erosion and sediment-laden run-off from the work area. Adequate construction management will prevent uncontrolled run-off from the work area.

Previous contamination investigations undertaken at MPPS for Delta Electricity have included targeted sampling in the area surrounding the coal stockpile area and existing ponds . Potential contamination sources in the area included the coal stockpiles, conveyors, washdown ponds and existing ponds. No field indicators of contamination such as staining or odours were detected within the soil profile, and laboratory analytical results were all below the adopted health and environmental screening values in the study.

Development of the pond will involve excavation within the backfilled overburden from the former open cut mining operations. There is potential that the excavation will encounter low levels of contamination associated with the historical and existing land use at the site, although widespread contamination is not anticipated. Given the extent of fill material at the site, an unexpected finds protocol for contamination should be prepared for the construction phase of the modification.

As the design will aim to balance cut and fill during construction, off-site disposal of excavated material is not anticipated.

4.2.2 Mitigation

- The following mitigation strategies are proposed to reduce the risk of impacts during construction: An Erosion and Sediment Control Plan (ESCP) would be prepared and incorporated into the Construction Environmental Management Plan (CEMP) for the project. The ESCP would incorporate the following guidelines as relevant: *Managing Urban Stormwater: Soils and Construction Volume 1* (The 'Blue Book'; Landcom, 2004).
- An unexpected finds protocol would be included in the CEMP for the proposed modification.
- Further sampling of material for waste classification purposes would be undertaken should there be a need for off-site licensed disposal of excavated material.

4.3 Water Resources

4.3.1 Environmental interactions

MPPS is located in the Wangcol Creek catchment, which forms part of the Upper Coxs River catchment in the broader Hawkesbury Nepean basin. Wangcol Creek is a highly modified creek that runs adjacent to the MPPS operations, ash repositories and mining operations, before its confluence with the Coxs River some five kilometres downstream. Three reservoirs are located in the Upper Coxs River catchment including Lake Wallace, Thompsons Creek Reservoir and Lake Lyell before it eventually discharges into to Lake Burragorang, thereby forming part of Sydney's drinking water catchment.

Construction of the 60 ML pond will involve disturbance to soil materials that have potential to generate sediment laden run-off impacting upon receiving waters. The pond is located more than 400 metres from Wangcol Creek, therefore, the use of appropriate construction management and mitigation strategies as described above will limit the potential for adverse impacts during construction.

The groundwater environment consists of a shallow and deep aquifer which are not believed to be connected. Groundwater levels in the shallow aquifer across MPPS are generally 907 to 918 mAHD but can vary in accordance with local topography and rainfall. The nearest groundwater monitoring well is located approximately 180 metres to the north of the proposed pond adjacent to the coal settling pond has recorded groundwater level of 13 metres below top of casing at a relative level of 918 mAHD. The deep aquifer is present at around 885mAHD within the Marrangaroo Conglomerate flows. Historic mining activities has had a considerable effect on the local groundwater regime, influencing aquifer properties and groundwater flows. Groundwater quality within the shallow aquifer is representative of past mining activities with elevated metals and EC (specific elevated ions).

Three boreholes were drilled immediately adjacent to Blowdown Pond B in 2018 to a depth of six metres (924 mAHD). Two of the three boreholes did not encounter groundwater with the third encountering groundwater at a depth of four metres below the surface. This indicates potential for localised perched groundwater to be encountered during excavation activities.

The current surface level of the 60 ML pond site is around 930 mAHD and significant groundwater interception during excavation is not anticipated. If groundwater is encountered, it is predicted to be minimal and would be adequately managed within the excavation footprint. The base of the new pond will be above the base of the adjacent Blowdown Pond B, with no reported issues associated with groundwater infiltration during construction or operation of the existing pond network.

The pond will be dual lined to prevent seepage to groundwater and include a weir to direct any overflows to the existing Blowdown Pond B (capacity 100ML), preventing any impacts associated with seepage to groundwater or overflows to receiving waters.

Overall, the new pond will limit the potential for discharges from MPPS and is considered to have a neutral to beneficial effect on the catchment.

4.3.2 Mitigation

As noted above, should perched groundwater be encountered, it will be managed within the excavation footprint. Whilst unexpected, if dewatering of the excavation footprint is required, the water will be pumped to the existing blowdown ponds.

4.4 Biodiversity

The location of the proposed storage pond is within a highly disturbed area within the MPPS site between the existing coal stockpiles, conveyors and existing blowdown ponds. As noted above, the pond will be located within overburden used as back-fill for former open cut mining operations. Further, no clearance of native vegetation is required; therefore, no impact upon the habitat of threatened species or ecological communities is anticipated.

Consideration of the impact upon biodiversity values at the site is included in Appendix A.

4.5 Heritage

Detailed investigations were undertaken as part of the Springvale WTP EIS to investigate the potential impacts upon Aboriginal and European cultural heritage values. The work included the area surrounding the existing pond network at MPPS. The assessments found that the MPPS site had been highly modified and there were no Aboriginal or historic heritage items predicted to be impacted through implementation of the project.

The new pond will form an extension the series of existing ponds currently servicing MPPS and proposed to be re-purposed as part of the Springvale WTP. Ground disturbance will be limited to within a highly modified environment where the soil profile has been completely removed during historical open cut mining operations.

A review of the NSW Office of Environment and Heritage AHIMS database for a 200 metre buffer surrounding the site for the proposed 60 ML pond was undertaken on the 11th of February, 2019. It confirmed that there are no recorded Aboriginal sites or places in proximity to the proposed construction footprint.

4.6 Traffic and access

Access to MPPS is via the Castlereagh Highway, Boulder Road and the Mount Piper access road. Castlereagh Highway (Route No. B55) is a state highway that runs in a north-westerly direction from Marrangaroo (near Lithgow) to central NSW via Lidsdale. Boulder Road is a sub-arterial road that provides a link to the Portland town centre from Castlereagh Highway and provides a connection to the Mount Piper access road.

Detailed traffic investigations were undertaken as part of the Springvale WTP EIS and demonstrated that additional traffic movements during construction would have a negligible impact on traffic conditions and the road network has adequate spare capacity to accommodate the predicted vehicle movements.

Construction of the new 60 ML pond will form and extension of the existing construction activities being undertaken as part of the Springvale WTP at MPPS. Additional construction vehicle movements are expected to be accommodated within the daily variation in construction activities at the WTP site and will not impact upon the capacity or safety of the road network.

4.7 Noise and vibration

There is a significant buffer distance between MPPS and the nearest sensitive residential receivers located approximately 2.4 km to the east in Blackmans Flat and 3.5 km to the west in Portland.

A detailed construction noise assessment was undertaken for to assess impacts associated with the construction of the Springvale WTP at the MPPS site. The modelling demonstrated that construction noise would not be audible at any nearby receivers and construction was approved to be undertaken 24 hours a day to enable an accelerated program.

Construction of the 60 ML pond will form an extension to the existing construction activities at the MPPS and is expected to continue to comply with construction noise management levels at all surrounding receivers.

4.8 Air Quality

Earthworks required for development of the new pond has potential to result in minor dust generation during dry and windy conditions. Adequate construction management will minimise the potential for impacts to surrounding receivers.

4.9 Visual

The new pond will form an extension to the network of existing ponds established at MPPS and will be visually integrated within the industrial setting. The pond embankments will be similar height to the adjoining Blowdown Pond B and are not anticipated to be visible from any key viewer locations in the surrounding area.

5. Conclusion

EnergyAustralia has identified a need for additional water storage capacity at MPPS to assist in the management of various water process streams.

A new double-lined, 60 ML pond is proposed immediately adjacent to the existing Blowdown Pond B. The new pond will function as a multi-use storage pond to provide storage redundancy for a number of process streams. It will receive flows from the existing blowdown ponds, the coal settling basin, the ash repositories and the new water treatment plant.

The proposed multi-purpose storage pond represents new water infrastructure to the development subject to the existing consent and will require a modification to the existing consent.

The new 60 ML storage pond is proposed to be located within a highly disturbed area within MPPS between existing coal stockpiles, conveyors and pond infrastructure. The site is located within an area of historic open cut mining of the Western Main Colliery, which has subsequently been backfilled prior to the establishment of MPPS.

The potential environmental impacts associated with the construction of the pond are considered minimal. Further, operation of pond will reduce the risk of uncontrolled discharges from MPPS impacting upon receiving waters. The project is considered to achieve a neutral to beneficial effect on the drinking water catchment.

6. References

GHD (2016). *Springvale Water Treatment Project Environmental Impact Statement.*

Appendices

Appendix A – Biodiversity values

Table 1: Impacts on biodiversity values from the proposed modification			
Biodiversity values	**Meaning**	**Relevant or NA* (✓or NA)**	**Likely impacts**
Vegetation integrity	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	NA	All native vegetation at the site of the proposed 60 ML pond and surrounding landscape has been completely removed during previous open cut coal mining operations and for the initial development of the MPPS. The pond will be located between an existing coal stockpile, conveyors and Blowdown Pond B
Habitat suitability	Degree to which the habitat needs of threatened species are present at a particular site	NA	The proposed 60 ML pond is located in an area that has been previously cleared of native vegetation and is an active power station site. The proposed modification has avoided impacts upon threatened species or ecological communities and their habitats through positioning the new pond in the area immediately adjacent to the existing blowdown ponds. There will be no additional clearing required for implementation of the proposed modification
Threatened species abundance	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	NA	The proposed modification has avoided impacts upon threatened species or ecological communities and their habitats through siting the pond in an active operational area within the power station
Vegetation abundance	Occurrence and abundance of vegetation at a particular site	NA	The site has been previously cleared during open cut mining and during the construction of the power station.
Habitat connectivity	Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range	NA	The development site does not contribute to habitat connectivity. Physical disturbance is limited to an active operational area within the power station.
Threatened species movement	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	NA	The proposed modification will not impact upon the movement of threatened species to maintain their lifecycle

Table 1: Impacts on biodiversity values from the proposed modification			
Biodiversity values	**Meaning**	**Relevant or NA* (✓or NA)**	**Likely impacts**
Flight path integrity	Degree to which the flight paths of protected animals over a particular site are free from interference	NA	The proposed pond will have embankments of up to four metres and be consistent with the surrounding pond infrastructure. The pond is not anticipated to influence the flight paths of protected animals.
Water sustainability	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site	NA	The new 60ML pond is proposed to be developed to reduce the risk of process water discharges from the MPPS site. The proposed modification will not impact upon water quality or hydrological processes that sustain threatened species or threatened ecological communities.

GHD

133 Castlereagh St Sydney NSW 2000
-T: +61 2 9239 7100 F: +61 2 9239 7199 E: sydmail@ghd.com.au

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