



Water Transfer Pipeline Construction Environmental Management Plan Angus Place

April 2021

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DOCUMENT CONTROL

DOCUMENT DETAILS	Name:	Water Transfer Pipeline Construction Environmental Management Plan (CEMP) – Angus Place			
	Author:	Katie Weekes (EMM Consulting)			
	Revision No.:	4			
	Document Status	Final Draft			
APPROVAL DETAILS	Revision No.	Date Sent	Details of Approval	Approved By	Approval Date
CIRCULATION DETAILS	Name	Department			Circulation Date

Introduction

1. Introduction

1.1 Overview

This Construction Environmental Management Plan (CEMP) has been prepared by Centennial Coal Company Limited (Centennial) for the construction of a water transfer pipeline in accordance with Condition 40 of Schedule 3 of the project approval (MP06_0021) for the Angus Place Colliery (Angus Place).

The transfer of mine water will be between the existing Angus Place pipeline and the Springvale Water Treatment Project (WTP) which is located at Mount Piper Power Station (MPPS) as shown on Figure 1.1.

1.2 Background

1.2.1 Angus Place Colliery

Angus Place is an underground coal mine located near Lidsdale, 15 kilometres (km) northwest of Lithgow in NSW and is operated by Centennial Angus Place Pty Limited (Centennial Angus Place).

Angus Place has been operating since 1979, with the Angus Place Coal Project (MP 06_0021) developed and originally approved by the Minister for Planning on 13 September 2006 to extend underground coal mining activities.

The Angus Place Project consent has been transitioned to a State Significant Development (SSD) consent under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and has been modified on six separate occasions, the most recent being Modification 6 approved on 19 March 2021 for the water transfer pipeline project.

The mine has been on care and maintenance since March 2015, with the intent to recommence operations once mining at Springvale is complete or if market conditions improve.

1.2.2 Springvale Water Treatment Plant

The Springvale WTP was approved by the Planning and Assessment Commission (PAC) on 19 June 2017 and has been modified on six occasions, the most recent being Modification 6 approved on 19 March 2021 for the water transfer pipeline project.

The Springvale WTP is located at MPPS and integrated with the MPPS operations through shared infrastructure to assist in meeting the cooling water demands of the power station.

Approved operations at Springvale WTP comprise the following:

- Receival of up to 42 ML/day of water from Newnes Plateau under the Springvale Delta Water Transfer Scheme (SDWTS), Springvale Colliery and Angus Place;
- Operation of the Springvale water treatment facility at MPPS that allows for pre-treatment, desalination and brine management;
- Transfer of treated water from the Springvale water treatment facility to MPPS cooling water system;

- Transfer of residual material from the pre-treatment process to the adjacent Springvale Coal Services site for disposal in the sites reject emplacement area;
- Integration of the Springvale water treatment facility with the MPPS cooling water management and treatment system. This includes an additional reverse osmosis system and brine crystalliser to manage salt load;
- The use of brine to condition ash from MPPS prior to emplacement; and
- Storage of excess treated water in Thompsons Creek Reservoir for later reuse during periods of high demand in the MPPS.

1.2.3 Mount Piper Power Station

MPPS is a coal-fired power station near Portland in NSW and is owned and operated by EnergyAustralia Pty Limited (EnergyAustralia). MPPS was originally approved in 1982 (DA 80/10060) and has been operational since 1984.

MPPS has a high demand for water for use in the cooling system that varies with the power station's energy demands. It ranges from less than 30 ML/day up to 54 ML/day at full capacity.

The Springvale WTP consent authorises integration with the MPPS water and brine management systems, including re-purposing a number of existing ponds at MPPS.

1.3 Environmental Management System overview

Centennial has a formalised environmental management system (EMS), which is implemented, managed and updated, as required by Condition 1 of Schedule 5 of the project approval MP 06_0021. The strategic framework for environmental management at the Colliery is outlined in the EMS for Angus Place (Centennial 2014).

The CEMP fits within the Centennial EMS and should be read and implemented in conjunction with the latest approved versions of:

- Environmental Management Strategy;
- Associated Environmental Management Plans (EMPs) and monitoring programs; and
- Mining Operations Plan (MOP).

Relevant sections of these EMPs and monitoring programs will also be adhered to during the construction phase of the project.

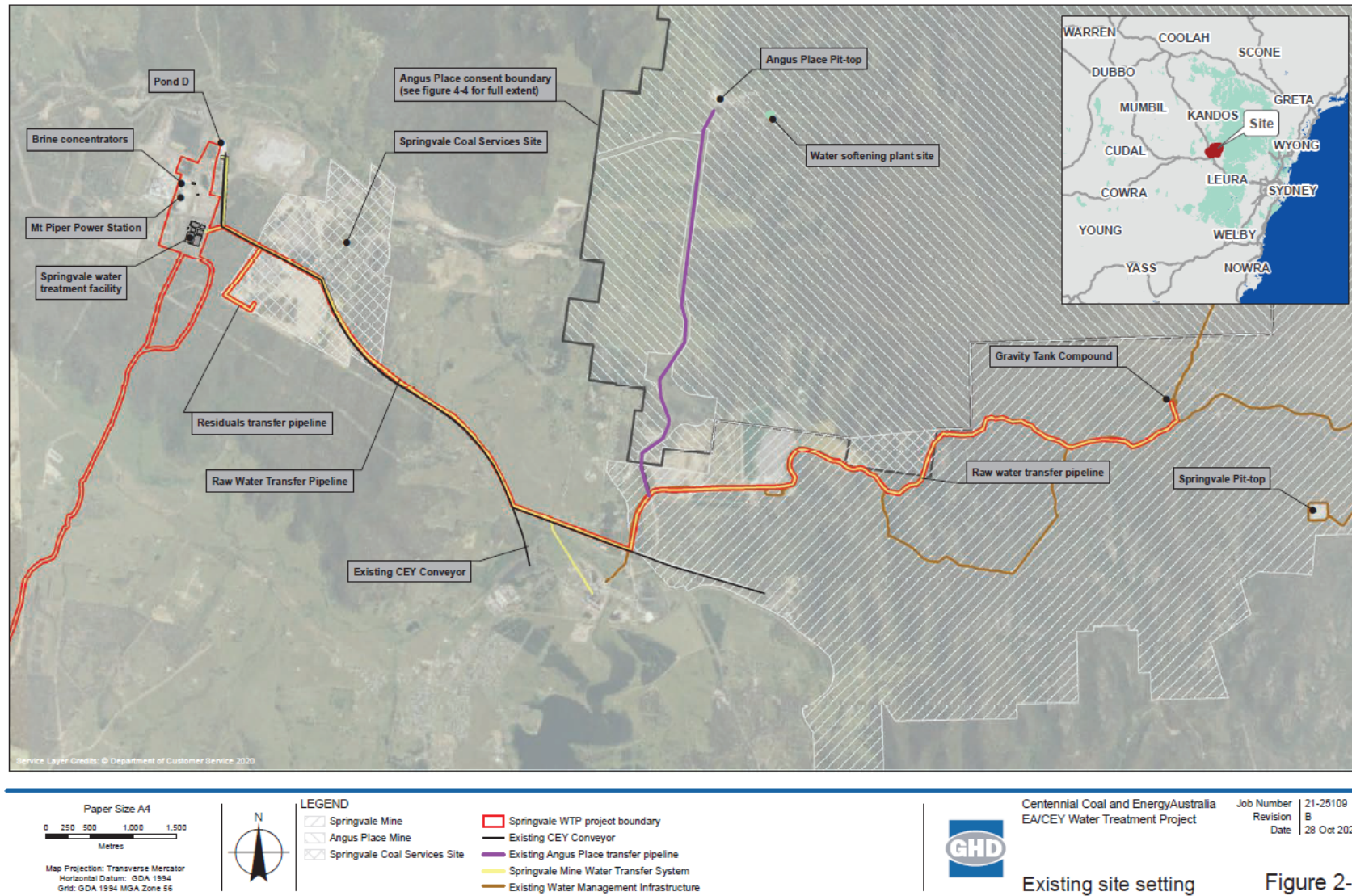


Figure 1.1 Locality plan and existing infrastructure

1.4 Purpose and scope

The purpose of this CEMP is to provide guidance for the identification, protection and management of environmental aspects during the construction of the Angus Place water pipeline project (the Project). It provides all employees and contractors of Angus Place with a clear description and understanding of responsibilities and requirements regarding construction activities.

The CEMP addresses:

- the conditions of the Angus Place Project Approval (PA 06_0021 as modified); and
- the mitigation measures and commitments identified and assessed in the Mod 6 modification report (GHD 2020).

The scope of this CEMP is to describe how Centennial proposes to manage potential environmental issues that could arise during construction of the water transfer pipeline.

Key environmental issues identified in the CEMP and considered in Chapter 5 and Chapter 6 include noise, air quality, traffic and access, Aboriginal heritage, waste, biodiversity, erosion and sediment control.

Further details about construction activities and staging are provided in Chapter 2.

1.5 Document structure

This CEMP is divided into chapters to address specific requirements and objectives as detailed in Table 1.1.

Table 1.1 – CEMP Document Structure

Chapter	Content
Chapter 1 – Introduction	Provides the background, purpose and structure of this CEMP, outlines the conditions of consent, document scope, as well as consultation requirements and outcomes.
Chapter 2 – Project description	Provides a description of the project including construction activities to be undertaken.
Chapter 3 - Planning	Outlines compliance with legislative framework, and approvals, permits and licences required for the construction of the project.
Chapter 4 – Environmental risk management	Provides the outcomes of the risk assessment undertaken as part of the preparation of this CEMP.
Chapter 5 – Background conditions and criteria	Provides specific background conditions and criteria for key environmental aspects requiring management during the construction stage of the project (i.e. noise, air quality, traffic and access, soil and water, Aboriginal heritage, biodiversity and waste).
Chapter 6 – Mitigation and management strategies, triggers and responses	Provides specific mitigation and management strategies for key environmental aspects requiring management during the construction stage of the project (i.e. noise, air quality, traffic and access, soil and water, Aboriginal heritage, biodiversity and waste).

	Also provides references to TARPs for the environmental aspects identified.
Chapter 7 – Monitoring	Refers to inspections and environmental monitoring.
Chapter 8 – Reporting	Monitoring, incident and non-compliance reporting.
Chapter 9 – Communication	Refers to internal/external communications, protocols, incident and emergency response.
Chapter 10 – Roles, responsibility and accountability	For staff, contractors and all other employees and contractors.
Chapter 11 – Competency, training and awareness	Includes information to be covered during inductions, toolbox talks and pre-start meetings.
Chapter 12 – Audit and review	Includes information on audit and review processes.
Chapter 13 – Records and document control	Includes information on records and document control.
Chapter 14 – References	Outlines document references used in the CEMP.
Chapter 15 – Glossary of abbreviations and terms	Provides a glossary of abbreviations and terms used in the CEMP.

1.6 Consultation

1.6.1 Consultation during the environmental assessment process

Extensive government and community consultation has been carried out during the preparation of the Mod 6 Modification Report and other project-related assessment documentation. The primary objective of consultation was to keep the community, government agencies and other stakeholders informed and involved during the project development process.

A complete summary of previous and ongoing government agency and stakeholder consultation is provided in the Modification Report (GHD 2020). Government agencies who were consulted as part of the modification process include:

- Department of Planning, Industry and Environment (DPIE);
- Environment Protection Authority (EPA);
- Transport for NSW (TfNSW);
- Lithgow City Council (LCC);
- Resource Regulator (RR);
- Biodiversity, Conservation & Science Directorate (BCSD); and
- WaterNSW.

Consultation was also undertaken with the following community stakeholders:

- Wallerawang Lidsdale Progress Association;
- Western Region Community Consultative Committee (CCC);
- EnergyAustralia;
- Lithgow Environment Group; and
- MPPS CCC.

1.6.2 Consultation for preparation of the CEMP

In accordance with Condition 40 of Schedule 3 of the project approval, this CEMP has been prepared in consultation with the EPA, WCC and the relevant roads and utilities authorities. Comments received from agencies as part of the preparation of this CEMP, and where they have been addressed in this CEMP are summarised in Appendix A, in addition to evidence of consultation.

1.7 CEMP preparation and approval

This document has been prepared by EMM Consulting Pty Limited (EMM) in conjunction with Centennial.

This CEMP will be submitted for approval to DPIE's Planning Secretary (the Secretary), or nominee, under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act); and in compliance with Condition 40 of Schedule 3 of project approval MP06_0021. In accordance with Condition 40 of Schedule 3 of the project approval, the CEMP will be implemented as approved.

Project Description

2. Project description

2.1 Overview

This chapter provides a summary of key project components, outlines the key construction activities as well as their timing.

2.2 Project summary

The Springvale WTP has been developed to reuse mine water transferred from Angus Place and Springvale Colliery (Springvale) to meet the demands for make-up cooling water at the MPPS.

2.2.1 Angus Place Colliery

Groundwater (also referred to as mine inflows or mine water) is continuously extracted during the care and maintenance phase to prevent flooding of underground workings. The water levels in the underground workings are steadily increasing and if groundwater extraction rates are not increased, the mine will be flooded to a degree that underground care and maintenance operations will not be able to be carried out safely, the cost of recommencing mining will become prohibitive and coal reserves would be sterilised.

In addition, water hardness levels at Angus Place are higher than the specifications required by the Springvale WTP. To meet the contractual limit, Centennial has been blending water from various bores across Angus Place and Springvale, with reduced levels being used from Angus Place to meet these hardness requirements. The current approach to the management of mine water inflows is not sustainable and is impacting significantly on the underground storage capacity at Angus Place.

2.2.2 Springvale WTP

The Springvale WTP is a joint venture industrial water reuse scheme between Centennial and EnergyAustralia Pty Limited (EnergyAustralia). The transfer of mine water into the reverse osmosis Springvale WTP allows the plant to achieve strict water quality performance measures resulting in improved environmental outcomes for the Coxs River catchment.

2.2.3 Water transfer pipeline project

The modification of project approval MP06_0021 MOD 6 (Angus Place) allows for:

- Extension of the existing Angus Place water transfer system to allow up to 2.6 ML/day of mine water to be directly transferred via a new pipeline connection to Pond D at MPPS. This is instead of mixing with the mine water from Springvale within the raw water transfer pipeline;
- Transfer treated mine water to the Springvale WTP;
- If required, store treated mine water in underground storage at Angus Place; and
- Develop and operate a water softening plant at the Angus Place pit top facility. Plans for the construction of the water softening plant are not as advanced as the pipeline at this time and is not considered further in this CEMP.

The modification of development consent SSD 7592 MOD 6 (Springvale Water Treatment Project) approved March 2021 allows for:

- Receipt and storage of water from Angus Place for storage in existing Pond D at MPPS;
- Treatment of mine water from Angus Place using the existing brine concentrators which form part of the MPPS water management system; and
- Beneficial reuse of the mine water treated at the MPPS water management system without being treated first at the Springvale water treatment facility.

2.3 Construction activities

The proposed pipeline consists of four sections as described below and shown in Figure 2.1:

- Section A is an existing pipeline from Angus Place that connects to the Springvale WTP Raw Water transfer pipeline. A valve would allow water to be transferred to either the Raw Water transfer pipeline or Section B;
- Section B involves construction of a new pipeline that would be installed in an existing pipeline corridor and conveyor easement. The pipeline would run both below and above ground before connecting with Section C;
- Section C is an existing unused EnergyAustralia pipeline that previously transferred brine from Wallerawang Power Station to MPPS; and
- Section D involves the construction of approximately 100 metres of pipeline in a previously disturbed footprint at MPPS. It will run from the end of Section C to allow discharge into Pond D.

Construction is only required in Section B (main works area) and Section D. The locations of the three work zones and associated construction access for the main water transfer pipeline construction works in Section B are shown in Figure 2.2.

Section B will be installed adjacent to the Springvale WTP Raw Water transfer pipeline. The pipeline will run along this existing pipeline corridor and then the Centennial conveyor easement to connect with the existing EnergyAustralia brine pipeline (Section C).

In order to traverse Wolgan Road, the Castlereagh Highway and the Cocks River and minimise disturbance, the pipeline will be installed in the existing conveyor tunnel.

The pipeline will be constructed generally above ground using 150 millimetre (mm) diameter galvanised pipe. Where the pipeline is using the existing conveyor easement (Zones 2 and 3), the pipeline will be secured to the conveyor supports to keep walkways adjacent to the conveyor clear. The proposed method of installation will depend on the existing structure, however, will generally involve attaching the galvanised pipe using brackets and U bolts.

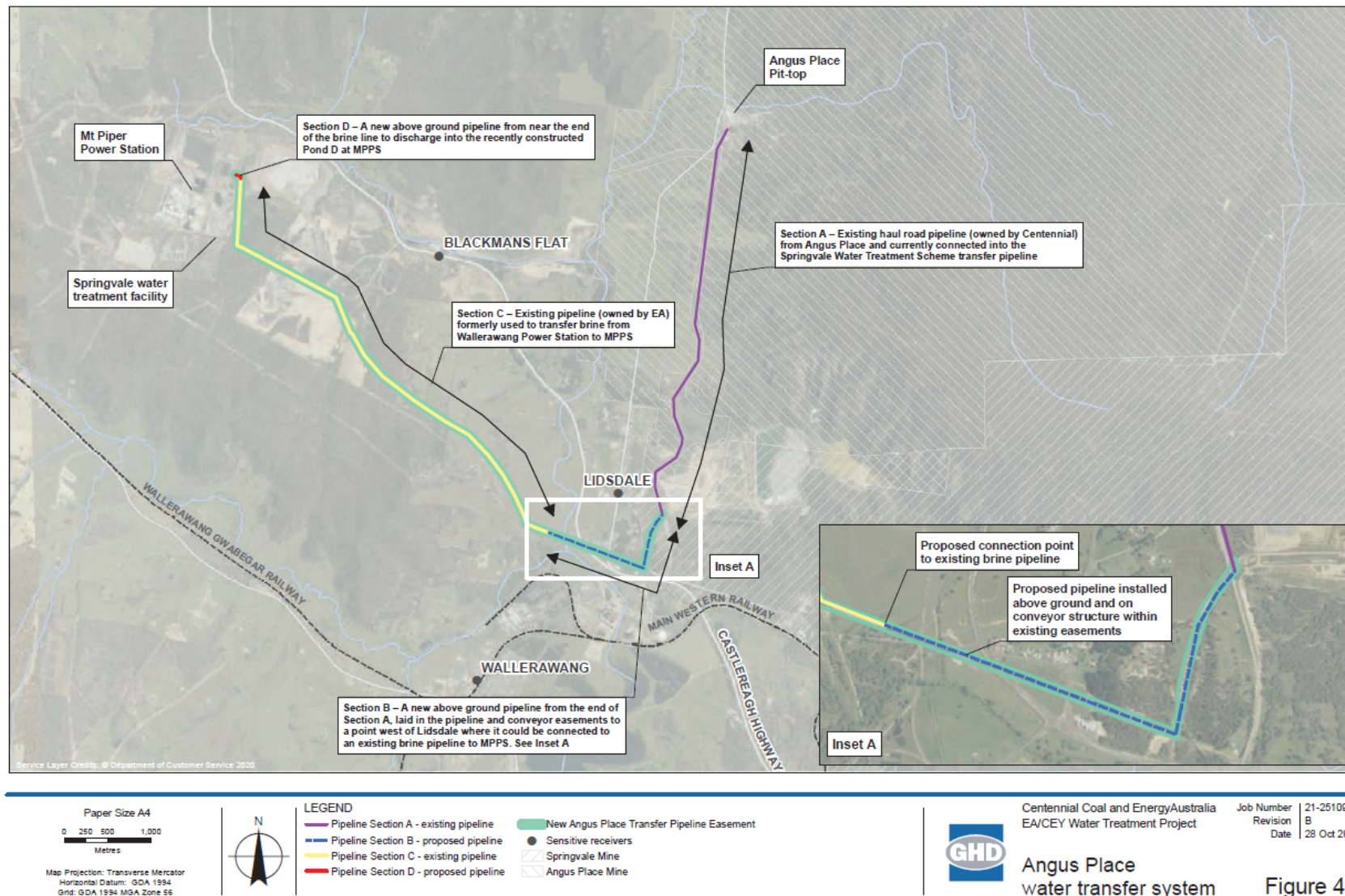


Figure 2.1 Proposed Angus Place water transfer system

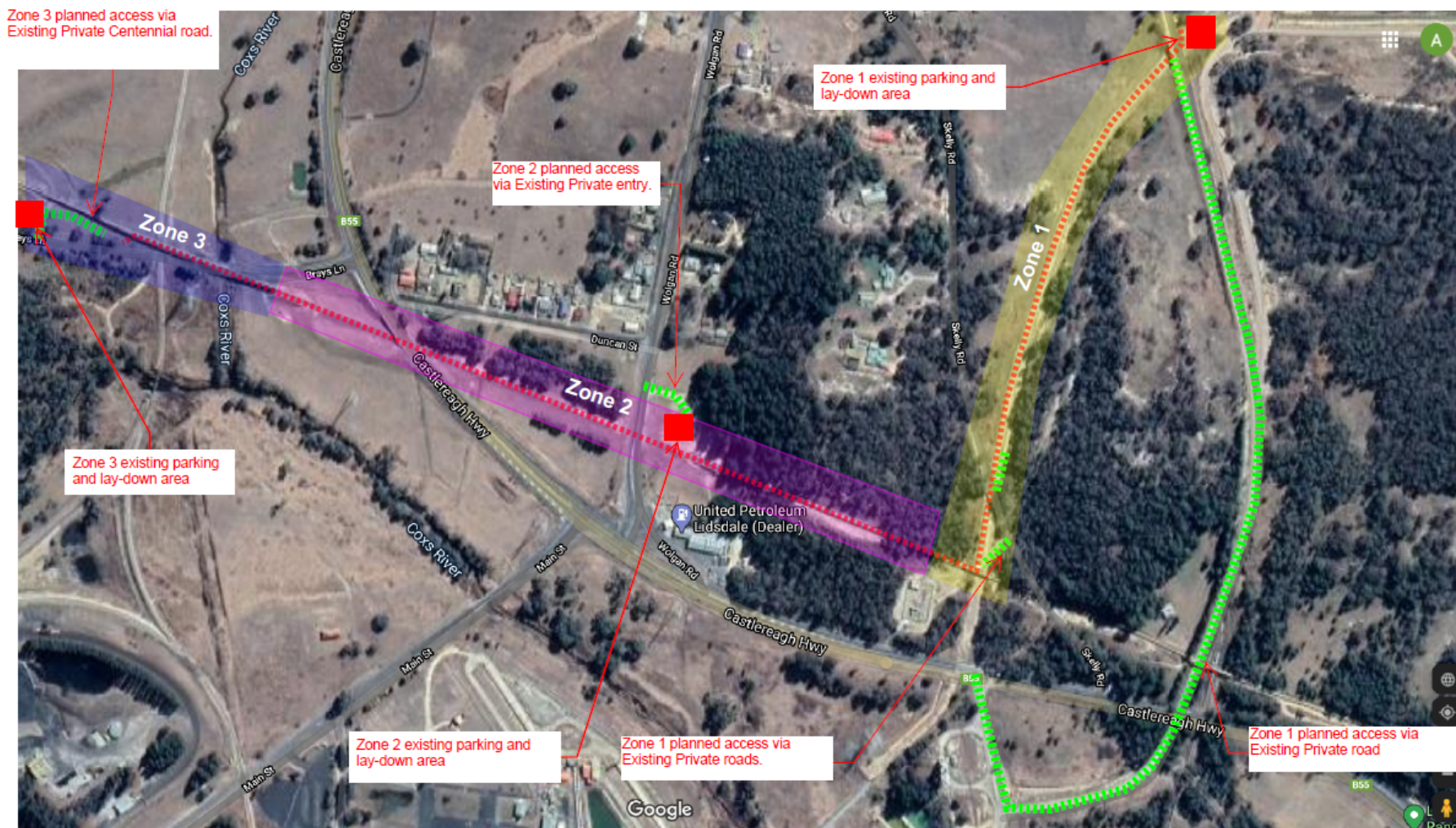


Figure 2.2 Proposed staging for pipeline construction

2.3.1 Zone 1

Zone 1 is an existing easement consisting of existing pipelines, with access being via existing private road and Skelly Road. The pipeline will cross under Skelly Road in this zone with Installation of pipe through the existing culvert crossing at Skelly Road. Work in the vicinity of the culvert will be with hand tools clearing any silt/dirt from the culvert (access will be from private land which is fenced off from the road). Approximately three lengths of the galvanised pipe will then be installed through the culvert crossing.

2.3.2 Zone 2 and 3

Zone 2 and 3 is an existing conveyor easement. Work in these zones will be coordinated with conveyor down times to ensure the safety of workers.

Access to zone 2 will be via Wolgan Road on the east side, 170 m north of the Castlereagh Highway. Zone 3 access will be via Brays Lane on the north side, 370 m west of the Castlereagh Highway.

2.4 Staging of construction

Construction of the project is planned to start in April 2021 and be operational within 3 months. An indicative program is provided in Table 2.1, which outlines the order of construction activities.

Table 2.1 – Overview of construction activities and stages

Component and indicative timeframe	Typical activities
Stage 1: Site establishment and survey 5 days	• Installation of safety and environmental controls; • Implementation of temporary and/or new on-site traffic management measures, including pedestrian access; • Conduct site survey.
Stage 2: Pipe installation 2 months	• Installation of pipeline concurrently along Zone 1 (adjacent to existing pipelines) and Zone 2/3 (existing conveyor section), being a total of approximately 2 km.
Stage 3: Commissioning phase 1 month	• Test and commission fixed plant and infrastructure; • Remove temporary construction mitigation measures and ensure site is safe and tidy.
Stage 4: Operational phase 4 months+	• Confirm full operation.

Equipment expected to be used during above ground construction will include:

- Mobile (franna) crane;
- Trailer; and
- Hand tools.

2.5 Construction hours

As per Condition 40 of Schedule 3 of the development consent (MP06_0021) for the project, construction activities will be undertaken in accordance with the ICNG standard hours being:

- 7:00 am – 6:00 pm, Monday to Friday; and
- 8:00am – 1:00 pm, Saturday.

No construction activities are proposed on Sundays or public holidays. Shift start and finish times will occur outside school bus times.

2.6 Construction workforce

It is anticipated that the project will require a maximum construction workforce of 10 full-time equivalent (FTE) staff for the duration of the main construction period (2 months).

Planning

3. Planning

3.1 Overview

A number of approvals, licences and consents apply to the Colliery, with associated conditions and requirements. The following sections summarise those that are relevant in relation to the CEMP.

Centennial will conduct all approved construction activities consistent with MP 06_0021 and any other legislation that is applicable. A list of legislation applicable (including but not limited to) for construction of the project are listed below:

- Work Health and Safety (Mines and Petroleum Sites) Act 2013;
- Occupational Health and Safety Amendment (Dangerous Goods) Act 2003;
- Mining Act 1992;
- Environmental Planning and Assessment Act 1979;
- Protection of the Environment Operations Act 1997;
- Contaminated Land Management Act 1997;
- Roads Act 1993;
- Biodiversity Conservation Act 2016;
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);
- Biosecurity Act 2015 and Biosecurity Regulation 2017;
- Crown Lands Act 1989;
- Energy and Utilities Administration Act 1987;
- Water NSW Act 2014;
- Water Act 1912;
- Water Management Act 2000; and
- Local Land Services Amendment Act 2016.

A copy of the Compliance Register is maintained on the Centennial Server. The Compliance Register will include both Federal and State legislation, as well as State Environmental Planning Policies (SEPPs) and any Codes of Practice to which Angus Place is required to comply.

3.2 Conditions of consent

The key conditions of consent relevant to this CEMP are listed in Table 3.1. A cross reference is also provided to indicate where the condition is addressed in this CEMP or other documents.

Table 3.1 –CEMP conditions of consent requirements

Conditions of consent	Plan section
Obligation to minimise harm to the environment <i>Condition 1 Schedule 2</i> The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	Section 1.4 Purpose and scope Chapter 6 Mitigation and management strategies
Terms of approval <i>Condition 2 Schedule 2</i> The Proponent shall carry out the project: (a) generally in accordance with the EA; and (b) in accordance with the conditions of this approval	Section 1.4 Purpose and scope Chapter 6 Mitigation and management strategies
Site Water Management Plan <i>Condition 10 Schedule 3</i> The Erosion and Sediment Control Plan shall: (a) be consistent with the requirements of the Department of Housing's Managing Urban Stormwater: Soils and Construction manual; (b) identify activities that could cause soil erosion and generate sediment; (c) describe measures to minimise soil erosion and the potential for the transport of sediment to downstream waters; (d) describe the location, function, and capacity of erosion and sediment control structures; and (e) describe what measures would be implemented to maintain the structures over time.	Chapter 6 Mitigation and management strategies Appendix D Erosion and sediment control plan
METEOROLOGICAL MONITORING <i>Condition 23 Schedule 3</i> Within 6 months of the date of this approval, the Proponent shall ensure that there is a suitable meteorological station operating in the vicinity of the project in accordance with the requirements in Approved Methods for Sampling of Air Pollutants in New South Wales, and to the satisfaction of the EPA and the Secretary.	Section 7.4 Meteorological monitoring (Chapter 7 Monitoring)

CONSTRUCTION <i>Condition 40 Schedule 3</i> Water Transfer Pipeline Construction Environmental Management Plan Prior to the commencement of construction of the Water Transfer Pipeline, the Proponent must prepare a Construction Environmental Management Plan (CEMP) to the satisfaction of the Secretary. The CEMP must be prepared: (a) in consultation with the EPA, TfNSW, WaterNSW and Council; (b) generally in accordance with the Guideline for the Preparation of Environmental Management Plans (DIPNR 2004) to outline environmental management practices and procedures to be followed during construction, including: i) erosion and sediment controls; ii) an unexpected finds protocol for Aboriginal cultural heritage; iii) air quality management measures; iv) waste management measures; v) noise management measures including: • implementing reasonable and feasible noise mitigation measures in accordance with the ICNG; and • undertaking construction during standard hours as defined in the ICNG, unless otherwise agreed by the Secretary; vi) traffic and access management measures; and vii) protocols to avoid or minimise impacts on biodiversity, for example, clearly delineating the disturbance footprint consistent with the EA. The Proponent must implement the approved CEMP.	Section 1.4 Purpose and scope (Chapter 1 Introduction) Section 1.5 Consultation (Chapter 1 Introduction) Chapter 6 Mitigation and management strategies
Management Plan Requirements <i>Condition 2 Schedule 5</i> The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include: (a) detailed baseline data; (b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; • the specific performance indicators that are	Chapter 5 Background conditions and criteria Chapter 3 Planning Chapter 5 Background conditions and criteria

proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures; (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; (d) a program to monitor and report on the: • impacts and environmental performance of the project; • effectiveness of any management measures (see c above); (e) a contingency plan to manage any unpredicted impacts and their consequences; (f) a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and (g) a protocol for periodic review of the plan.	Chapter 6 Mitigation and management strategies Chapter 7 Monitoring Section 9.5 Emergency response (Chapter 9 Communication) Section 6.8 Triggers and responses (Chapter 6 Mitigation and management strategies) Chapter 7 Monitoring Chapter 8 Reporting Chapter 12 Audit and review
Annual Review <i>Condition 3 Schedule 5</i> By the end of December 2012, and annually thereafter, the Proponent shall review the environmental performance of the project to the satisfaction of the Secretary. This review must: (a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the next year; (b) include a comprehensive review of the monitoring results and complaints records of the project over the past calendar year, which includes a comparison of these results against the • the relevant statutory requirements, limits or performance measures/criteria; • the monitoring results of previous years; and • the relevant predictions in the EA; (c) identify any non-compliance over the past year, and describe what actions were (or are being) taken to ensure compliance; (d) identify any trends in the monitoring data over the life of the project; (e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any	Section 12.1 Annual Review (Chapter 12 Audit and review)

significant discrepancies; and (f) describe what measures will be implemented over the next year to improve the environmental performance of the project.	
Revision of Strategies, Plans and Programs <i>Condition 4 Schedule 5</i> Within 3 months of: (a) the submission of an annual review under Condition 3 above; (b) the submission of an incident report under Condition 6 below; (c) the submission of an audit under Condition 8 below; and (d) any modification to the conditions of this approval (unless the conditions require otherwise), the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary. <i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.</i>	Section 12.2 Management plan review (Chapter 12 Audit and review)
REPORTING Incident Reporting <i>Condition 6 Schedule 5</i> The Proponent shall immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Proponent shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Section 8.3 Incident and non-compliance reporting (Chapter 8 Reporting)
Regular Reporting <i>Condition 7 Schedule 5</i> The Proponent shall provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval, and to the satisfaction of the Secretary.	Section 8.1 Monitoring reports (Chapter 8 Reporting)

3.3 Other approvals, permits and licences

All licences, permits and approvals that have and/or will be obtained and maintained as required prior to or throughout the construction of the project are outlined in Table 3.2. For a more comprehensive list of all licences previously obtained and required for the project refer to the site EMS.

Table 3.2 – Environmental approvals, permits and licences required for the construction of the project

Approval/ permit/ licence	Regulatory authority	Timing	Status of the approval/ permit/ licence
Development consent granted under the EP&A Act	DPIE	Prior to commencement of construction works	Approved 19/03/2021
Environment Protection Licence (EPL) will be required for activities listed in Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> (POEO Act)	EPA	Prior to scheduled activities or works that enable a scheduled activity	EPL 467 last updated 14/08/2020
CCL704 CCL702 (sublease)	Resource Regulator	-	Valid to 14/01/2023 Valid to 24/11/2024
EL6293 EL6856 EL8188 EL7415	Resource Regulator	-	Valid to 06/09/2019 Valid to 08/08/2017 Valid to 16/10/2019 Valid to 20/10/2019
ML1424 ML1699 ML1720 ML1326	Resource Regulator	-	Valid to 18/08/2024 Valid to 126/06/2035 Valid to 23/11/2036 Valid to 18/08/2024
Radiation Licence 29229 for measuring product ash percentage in the coal handling plant	EPA		Issued 07/07/2014
Occupation Permit to occupy Newnes State Forest for activities associated with mineral exploration and construction of infrastructure Level 2 Exploration Level 3 Infrastructure	Forestry Corporation of NSW		Issued 01/02/2018
Extractive water licences approved under the <i>Water Act 1912</i> : 10BL601851 10BL601852 10BL601838	Department of primary Industries - NSW Office of Water		Issued 03/09/2012 Issued 03/09/2012 Issued 03/09/2012

Water Access Licences (WAL): WAL 36445 for 2,701 ML/year WAL 36449 for 2,523 ML/year WAL 37340 for 329 ML/year WAL 37343 for 35 ML/year	Department of primary Industries - NSW Office of Water	-	Issued 01/05/2014 Issued 01/05/2014 Issued 09/10/2015 Issued 09/10/2015
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3.4 Guidelines

The CEMP has been prepared to be consistent with the following standards and guidelines:

- Noise Policy for Industry (NPfI) (EPA 2017);
- Interim Construction Noise Guideline (ICNG) (DECC 2009);
- NSW Road Noise Policy (DECCW 2011);
- AS 1055:2018 Acoustics – Description and measurement of environmental noise;
- Australian and New Zealand guidelines for fresh and marine water quality (ANZECC 2000);
- Managing Urban Stormwater – Soils and Construction Volumes 1 (the Blue Book) (Landcom 2004);
- Managing Urban Stormwater – Soils and Construction Volumes 2E Mines and Quarries (DECC 2008);
- AS/NZS 3580.10.1:2016 Methods for sampling and analysis of ambient air Determination of particulate matter - Deposited matter - Gravimetric method;
- AS/NZS 3580.9.8:2008 Methods for sampling and analysis of ambient air Determination of suspended particulate matter - PM 10 continuous direct mass method using a tapered element oscillating microbalance analyser;
- AS/NZS 3580.1.1:2007 Methods for sampling and analysis of ambient air – guide to siting air monitoring equipment; and
- DEC (2006) Approved methods for the sampling and analysis of air pollutants in NSW.

Environmental Risk Management

4. Environmental risk management

4.1 Overview

The modification report (GHD 2020) identified the environmental risks associated with the undertaking of the water softening component of the project.

The primary risks in relation to this construction project can be summarised as:

- Construction noise at start-up – does not comply with the requirements of the ICNG;
- Air quality - particulate emissions generated by the project cause exceedances of the criteria at any residence on privately owned land;
- Water management - the project causes exceedances of the performance measures;
- Access to information – Angus Place does not make the required information and documents publicly available on its website;
- Non-compliance – not having appropriate controls or mitigation measures in place to avoid non-compliance;
- Notification of non-compliance – Angus Place does not notify the Department within 7 days of becoming aware of the non-compliance; or
- There is not a suitable meteorological station operating in the vicinity of the site that complies with the requirements.

A contractor risk assessment workshop will be held with the preferred contractor and relevant personnel to identify any additional environmental risks and mitigation measures that may need to be implemented during construction works.

4.2 Contingency planning

Given the location of the site and potential external influences including bushfire, climate and other emergencies, it is possible that unpredicted events may occur.

The Construction Project Manager (CPM) and Environment & Community Coordinator (E&CC) will be contacted in the event of unpredicted environmental impacts being identified to provide guidance on the appropriate course of action. Further guidance on management and mitigation strategies are provided in Chapter 6.

Impacts that have not been predicted will be addressed on as needs basis. After appropriate action has been implemented, the CEMP will be reviewed by the E&CC.

Background Conditions and Criteria

5. Background conditions and criteria

5.1 Noise

5.1.1 Construction noise

Table 5.1 summarises the rating background levels (RBL) from the modification report (GHD 2020). These were developed in accordance with the NPfI.

Table 5.1 – Summary of RBLs

Location	Rating Background Level 90 th percentile L _{A90(15min)} (dBA)		
	Day	Evening	Night
Lot 20 Noon Street, Blackmans Flat	37	36	35

Table 5.2 provides ICNG noise management levels (NML) which apply to residential assessment locations.

Table 5.2 – ICNG construction noise management levels for residences

Time of day	NML L _{Aeq,15min}	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	The noise-affected level represents the point above which there may be some community reaction to noise. - Where the predicted or measured L_{eq(15-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 dBA	The highly noise-affected level represents the point above which there may be strong community reaction to noise. - 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: - 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); - if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Time of day	NML LAeq,15min	How to apply
Outside recommended standard hours	Noise-affected RBL + 5 dB	- A strong justification would typically be required for works outside the recommended standard hours (refer OOHW Protocol – Appendix B). - 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 dBA above the noise-affected level, the proponent should negotiate with the community. - For guidance on negotiating agreements see Section 7.2.2 of the ICNG.

Source: ICNG (EPA, 2009)

A summary of the construction noise management levels is provided in Table 5.3.

Table 5.3 – Construction noise management levels

	Construction noise management levels, LAeq(15min) (dBA)				
	Standard construction hours		Outside standard construction hours		
	Noise affected	Highly noise affected	Day	Evening	Night
Residential receivers	47	75	42	41	40
Commercial receivers	70 (when in use)				

The predicted construction noise levels comply with the ICNG ‘highly noise affected’ management level of 75 dBA at all identified receivers. However, exceedances of the noise affected level are predicted to occur at 26 receivers on Duncan Street, Neubeck Street, Skelly Road and Wolgan Road in Lidsdale.

Exceedances would only occur for short durations (up to 8 days) while construction equipment is operating in close proximity to receivers. It is estimated that the installation of the pipeline would progress at up to 100 m per day, therefore not affecting any one receiver for an extended period.

As a result of potential short duration exceedances of the ‘noise affected’ management levels, mitigation measures and monitoring outlined in Chapter 6 will be undertaken.

5.1.2 Road traffic noise

The Road Noise Policy (DECCW 2011) provides traffic noise criteria for residential receivers in the vicinity of existing roads. The criteria are applied to construction traffic on public roads to identify potential road traffic impacts and the requirement for reasonable and feasible mitigation measures.

Table 5.4 – Road traffic noise criteria

Type of development	Road traffic noise criteria L _{Aeq} (period) (dBA)	
	Day 7 am to 10 pm	Night 10 pm to 7 am
Existing residence affected by additional traffic on arterial roads generated by land use developments	60 L _{Aeq} (15hr)	55 L _{Aeq} (9hr)
Existing residence affected by additional traffic on local roads generated by land use developments	55 L _{Aeq} (1hr)	50 L _{Aeq} (1hr)

Vehicle movements associated with pipeline construction would be localised and noise level increases would not be significant when compared with existing vehicle numbers.

Mitigation measures and monitoring outlined in Chapter 6 and Chapter 7 will be undertaken. The Western Region Noise Management Plan (2021) will also be referenced.

5.2 Air quality

Air quality impacts were not considered in the modification report as the construction of the pipeline was not considered unlikely to result in impacts at any residential receivers.

Mitigation measures and monitoring outlined in Chapter 6 and Chapter 7 will be undertaken. These measures are based on the measures and principles already in place which are documented in Centennial's approved Western Region Air Quality and Greenhouse Gas Management Plan (2018) which will also be available for reference throughout the construction of the project.

5.3 Traffic

The proposed construction vehicle movements (maximum) at each worksite, including both light (commuter) and heavy (material deliveries) vehicle movements (one way) are identified in the modification report as follows:

- eight light vehicle movements per day; and
- eight heavy vehicle movements per day.

With the development of a more detailed construction program and selection of preferred contractor, construction vehicle movements will most likely be:

- six light vehicle movements per day; and
- two small rigid truck movements per day.

Work will be spread between Zones 1 and Zones 2/3 with works taking place concurrently.

All drivers are subject to the Drivers Code of Conduct provided in the CTMP in Appendix B.

Access to Section B will be dependent on which zone the work will be taking place in and has been described in Section 2.3 of this CEMP. All public roads, with the exception of Skelly Road at the southern end, are sealed up to the site entry points and beyond that within the actual worksite areas roads and tracks are unsealed.

The Castlereagh Highway is the main access road and is a State highway that runs from Marrangaroo (near Lithgow) to central NSW passing through Lidsdale.

Wolgan Road is a local road that runs in a north easterly direction from its intersection with the Castlereagh Highway near Lidsdale, past the Angus Place Mine, through to the Newnes campground. the Castlereagh Highway and Angus Place Mine pit top, Wolgan Road provides two traffic lanes with wide verges. It has a 50 km/h speed limit north of the Castlereagh Highway, through Lidsdale, then changes to 80 km/h north to and past the Angus Place Mine pit top.

The other three local roads which will be utilised for the proposed pipeline construction workforce access are Brays Lane and Skelly Road, near Lidsdale and Boulder Road, near Mount Piper. Duncan Street is a local residential street, which is located within approximately 100 m of the proposed pipeline route. Duncan Street is not proposed to be used for any construction access for the pipeline construction work.

Access to the MPPS and Springvale WTP is via the Castlereagh Highway and Boulder Road. Additional vehicle movements associated with construction of Section D to connect the brine pipeline to Pond D at MPPS will be negligible (GHD 2020).

Outgoing construction traffic will not affect the normal operation of any state or local road.

Mitigation measures and monitoring outlined in Chapter 6 and Chapter 7 and the CTMP in Appendix B will be undertaken.

5.4 Soils and water

As part of surface water management, erosion and sediment control is undertaken to minimise excessive soil loss as a result of activities that require disturbance of existing ground cover. Erosion and sediment controls are implemented for the whole of the Angus Place operation, including construction and maintenance activities and rehabilitation to mitigate impacts on watercourses and the surrounding environment.

Given the majority of the pipeline will be installed above ground, the removal of topsoil will be kept to a minimum and will only occur where necessary. Erosion and sediment control measures are focused on prevention of erosion through the development of an erosion and sediment control plan (ESCP). The plan:

- Identifies activities with the potential to cause erosion and generate sediment;
- Plans activities to minimise the area of disturbance; and
- Considers the need for erosion and sediment controls prior to commencement of disturbance activities.

Erosion risk is estimated based on average monthly rainfall, the area of disturbance and soil loss classes (Table 4.2, Landcom 2004). Typical erosion risk ratings for the western region are provided in Figure 5.1.

When activities are taken within the higher risk months, it is recommended that additional management measures be undertaken to ensure that erosion and sediment controls can operate effectively. Construction activities are proposed to occur during April and May 2021, which have a low to moderate risk rating.

Mitigation measures and monitoring outlined in Chapter 6 and Chapter 7 and the Erosion and Sediment Control Plan (ESCP) in Appendix C will be undertaken. These measures reflect the principles contained within Centennial's approved Western Operations Regional Water Management Plan (2016) and its Angus Place Colliery Water Management Plan (2019) which will also be made available during the construction of the project and appropriately referenced.

Month	Average rainfall (mm)	Erosion risk rating
January	85.1	High
February	79.1	High
March	65.0	Moderate
April	44.6	Low to moderate
May	49.4	Low to moderate
June	49.0	Low
July	50.9	Low
August	64.2	Low
September	52.4	Low to moderate
October	67.1	Moderate
November	72.5	Moderate
December	73.6	High

Figure 5.1 Typical erosion risk

Acceptable water quality objectives for disturbance outside the catchment of a licenced discharge point (LDP) are detailed in Table 5.5.

Table 5.5 – Water quality objectives

Parameter	Units	Concentration limit
pH	pH units	6.5 – 8.5
Oil and grease	mg/L	10
Total suspended solids (TSS)	mg/L	50

5.5 Aboriginal heritage

As detailed in the modification report (GHD 2020), the water transfer system will largely utilise existing infrastructure and will be wholly located within pipeline and conveyor easements. As part of the assessment process, an Aboriginal due diligence assessment was prepared that considered the impacts from the construction of Section B.

The lack of artefact material and the heavy disturbance suggests that there are no identified risks or harm to Aboriginal objects that are likely to occur during construction. However, an unexpected finds procedure based on the existing procedure in the Western Region Aboriginal Cultural Heritage Management Plan (ACHMP) 2017 is provided in Appendix D.

Registered Aboriginal Parties (RAPs) have expressed an interest in monitoring any excavation works carried out. At this stage there is no plan to excavate any part of the pipeline by utilising existing tie in points on existing pipelines. However, should excavation be required, RAPs will be notified and provided the opportunity to monitor excavation works.

Mitigation measures and monitoring outlined in Chapter 6 and Chapter 7 will also be undertaken.

5.6 Biodiversity

Most of the water transfer system is traversing areas that are highly disturbed, comprising existing pipelines and conveyor systems.

A Biodiversity Development Assessment Report (BDAR) waiver was prepared as part of the environmental assessment process for Section B. Ecologists completed a field inspection of Section B to assess if there would be any disturbance to native vegetation resulting from construction.

The field survey identified two threatened and one vulnerable species and one threatened ecological community within or adjacent to the study area.

However, given the pipeline will be using existing infrastructure and corridors that are highly disturbed, the likelihood of impacts to threatened species, communities or their habitat was considered negligible.

Section D comprises approximately 100 m of above ground pipeline connecting the existing brine pipeline with Pond D at MPPS with the work taking place within an existing cleared footprint. There will be no clearing of native vegetation required.

The remainder of the water transfer system (Sections A and C) uses existing pipeline and will not be disturbed.

However, mitigation measures and monitoring outlined in Chapter 6 and Chapter 7 will be undertaken.

5.7 Waste

All wastes produced by the proposed activities will continue to be classified, stored and handled in accordance existing site practices and the Waste Classification Guidelines – Part 1: Classifying Waste (EPA 2014).

The construction of the water transfer pipeline will involve predominately prefabricated components delivered to site. Construction activities are not expected to generate a significant amount of waste material.

Any material off cuts, rags, general packing material will be classified, segregated, and recycled where possible. All chemicals including hydrocarbons and oils will be stored within self-bunded storage pallets.

Other waste that may be generated during the construction phase of the project will include domestic waste. Domestic waste will include food scraps, aluminium cans, glass bottles, plastic and paper containers and putrescibles waste. Domestic waste generated by employees and contractors while onsite will be recycled where practical or otherwise disposed of offsite by a licensed contractor to an appropriate landfill facility. Toilet facilities at the construction site will be provided and maintained by an appropriate service provider.

Mitigation and Management Strategies

6. Mitigation and management strategies

6.1 Overview

This section describes the management and mitigation measures to be implemented during construction to ensure compliance with the criteria, legal and other requirements that apply to the project. These measures have been sourced from:

- The modification report and response to submissions prepared to support the application for project approval;
- Conditions associated with project approval MP 06_0021 and EPL 467;
- Feedback received from government agencies during the consultation process; and
- Industry best practice.

The information in this section should be read in conjunction with the TARPs presented in Appendix E. Measures to monitor the effectiveness of the mitigation and management strategies are detailed in Chapter 7.

6.2 General

Table 6.1 details management and mitigation measures required to manage general impacts during construction of the pipeline.

Table 6.1 – Management and mitigation measures - general

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
A Construction Environmental Management Plan (CEMP) will be prepared and implemented for this project.	Pre-construction	Modification report	Contract Project Manager/ Environment & Community Coordinator	This CEMP
Erect signage in the vicinity of the construction site to provide clear contact information should members of the community wish to contact Angus Place.	Pre-construction	-	Contract Project Manager/ Environment & Community Coordinator	Photographic evidence Inspection records

6.3 Noise

Table 6.2 details management and mitigation measures required to manage potential noise impacts during construction of the pipeline.

Table 6.2 – Management and mitigation measures - noise

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
Implement reasonable and feasible noise mitigation measures in accordance with the ICNG.	Pre-construction/ construction	Conditions of approval	Contract Project Manager	This CEMP Monitoring records Inspection records
Undertake construction during standard hours as defined in the ICNG, unless otherwise agreed by the Secretary.	Pre-construction/ construction	Conditions of approval	Contract Project Manager	Personnel records Site access records
Residences predicted or measured to exceed the construction NML will be notified as to the timing and duration of the construction works and provided with a contact phone number for any complaints during the construction period.	Pre-construction/ construction	Modification report	Contract Project Manager	Community notification/project newsletter Records of communication Centennial website
Site inductions. Inductions for the work crew will include the specific noise issues and mitigation measures required for the site. The induction will include: • All relevant project specific and standard noise mitigation measures; • Relevant licence and approval conditions; • Permissible hours of work; • Location of any sensitive receivers that may exceed the construction NML;	Pre-construction/ construction	Modification report	Contract Project Manager/ Environment & Community Coordinator	Site induction training material Toolbox talk/daily meeting agenda Induction attendance records Clear signage including location of parking areas

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
- Construction employee parking areas; - Designated loading/unloading areas and procedures; - Site opening/closing times (including deliveries); - Behavioural practices that minimise noise; - Avoiding dropping materials from height and avoiding metal to metal contact on material.				
Vehicles, plant and equipment would be regularly maintained and kept in good operating condition. Machines found to produce excessive noise will be removed from site or stood down until repairs or modifications can be made.	Pre-construction/ construction	Modification report	Contract Project Manager	Maintenance records Monitoring records
Plant will be turned off when not in use.	Construction	Modification report Western Region NMP (2021)	Contract Project Manager	Monitoring records Inspection records
Operate mobile plant in a quiet, efficient manner and regular training of operators.	Construction	Western Region NMP (2021)	Contract Project Manager	Visual inspection Maintenance records Monitoring records Training records
Installation of frequency modulated reversing alarms or “quakers” on mobile plant.	Construction	Western Region NMP (2021)	Contract Project Manager	Audible inspection Maintenance records Monitoring records

6.4 Air quality

Table 6.3 details management and mitigation measures required to ameliorate potential air quality impacts during construction of the pipeline.

Table 6.3 – Management and mitigation measures – air quality

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
Outline and implement air quality management measures	Pre-construction/ construction	Condition of approval	Contract Project Manager	This CEMP Inspection records Monitoring records
Regular maintenance of plant and equipment in accordance with the manufacturer's specifications to ensure optimal operating conditions.	Construction	Western Region AQGHGMP (2018)	Contract Project Manager	Visual inspection Maintenance records Monitoring records
Measures such as dust suppression and limiting plant use for only when required will be implemented across the construction site and access tracks.	Construction	-	Contract Project Manager	Visual inspection
Use of water carts to dampen trafficable areas.	Construction	Western Region AQGHGMP (2018)	Contract Project Manager	Visual inspection Water cart records
Any physical construction activities will cease during periods of high wind or high temperatures. This includes vegetation clearing, topsoil stripping or trenching.	Construction	-	Contract Project Manager	Visual inspection
All haulage trucks entering and leaving the sites have their loads covered	Construction	Western Region AQGHGMP (2018)	Contract Project Manager	Visual inspection
Timely rehabilitation of disturbed areas wherever practical.	Post-construction	Western Region AQGHGMP (2018)	Environment & Community Coordinator	Visual inspection Monitoring records

6.5 Traffic

Table 6.4 details management and mitigation measures required to ameliorate potential traffic impacts during construction of the pipeline.

Table 6.4 – Management and mitigation measures – traffic

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
Outline and implement traffic and access management measures	Pre-construction/ construction	Condition of approval	Contract Project Manager/ Environment & Community Coordinator	CTMP Drivers Code of Conduct
The Driver's Code of Conduct will be required to be read and signed by drivers coming to and from site and will include procedures to address all relevant site and locality road safety and traffic management measures	Pre-construction/ construction	CTMP and Drivers Code of Conduct	Contract Project Manager	Signed drivers code of conduct document
Sufficient construction workforce car parking will be provided within each work site, to eliminate any on-street parking demand	Pre-construction/ construction	CTMP	Contract Project Manager	Complaints/ communications record Inspection records
Drivers will minimise compression braking	Construction	CTMP and Drivers Code of Conduct	Contract Project Manager	Audit results Complaints/ communications record Noise monitoring records
All vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site	Construction	CTMP	Contract Project Manager	Audit results Complaints/ communications record Inspection records

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
All recommended signs must be installed at the start of the shift and removed at the end of the shift on a typical construction day. No sign should be placed when construction activities are not scheduled to occur	Construction	CTMP	Contract Project Manager	Inspection record Complaints/ communications record
Where it is possible, deliveries to the construction areas will be scheduled to avoid school bus hours and peak commuter times.	Construction	CTMP	Contract Project Manager	Inspection record Complaints/ communications record

6.6 Soils and water

Table 6.5 details management and mitigation measures required to ameliorate potential soil and water impacts during construction of the pipeline.

Table 6.5 – Management and mitigation measures – soil and water

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
Erosion and sediment control plans will be prepared and implemented to manage run-off during installation of new water infrastructure including water softening plant and for any ground disturbance associated with installation of new sections of pipeline.	Pre-construction/ construction	Modification report	Contract Project Manager	This CEMP Visual inspections
Surface flows will be directed to pollution control structure where possible and clean water diversions will be in place.	Pre-construction/ construction	Angus Place Colliery PIRMP (2019)	Contract Project Manager	Inspection records
Site induction details the potential for water contamination	Pre-construction/ construction	Angus Place Colliery PIRMP (2019)	Contract Project Manager	Site induction training material Toolbox talk/daily meeting

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
				agenda Induction attendance records
Safe work method statements (SWMS) include environmental considerations for all contractors.	Construction	Angus Place Colliery PIRMP (2019)	Contract Project Manager	Site induction training material Toolbox talk/daily meeting agenda Induction attendance records
Flocculent is available if required.	Construction	Angus Place Colliery PIRMP (2019)	Contract Project Manager	Purchasing records
A waste contractor vacuum sucker truck will be used if required.	Construction	Angus Place Colliery PIRMP (2019)	Contract Project Manager	Licensed waste contractor records/reports

6.7 Aboriginal heritage

Table 6.6 details management and mitigation measures required to ameliorate potential Aboriginal heritage impacts during construction of the pipeline.

Table 6.6 – Management and mitigation measures – Aboriginal heritage

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
An unexpected find procedure will be developed and implemented as part of the Construction Environmental Management Plan (CEMP) and Centennials existing Western Region Aboriginal Heritage Management Plan (ACHMP) 2017, will be adopted and updated to include for this modification.	Pre-construction/ construction	Modification report	Contract Project Manager/ Environment & Community Coordinator/ Group Environment Manager	This CEMP Appendix D, Unexpected Finds Procedure

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
All relevant staff and contractors involved in construction of the project will be made aware of their statutory obligations for heritage under the <i>National Parks and Wildlife Act 1974</i> and the <i>Heritage Act 1977</i> , as part of the site induction process.	Construction	Modification report	Contract Project Manager/ Environment & Community Coordinator	Site induction training material Toolbox talk/daily meeting agenda Induction attendance records
An opportunity for Aboriginal parties to monitor trenching will be provided.	Construction	Modification report	Contract Project Manager/ Environment & Community Coordinator	Correspondence with RAPs
If, during the course of development works, cultural heritage sites not previously identified as uncovered, onsite works will stop immediately in the vicinity of the site and the areas will be cordoned off as appropriate with high visibility flagging tape.	Construction	Western Region ACHMP (2016) Appendix D, Unexpected Finds Procedure	Contract Project Manager/ Environment & Community Coordinator	Photographic evidence Incident report
If any skeletal remains are identified, all work will halt in the immediate area to prevent further harm to the remains. The NSW Police will be contacted immediately. If the remains are identified as Aboriginal, Heritage NSW and register Aboriginal parties (RAPs) will be contacted.	Construction	Western Region ACHMP (2016) Appendix D, Unexpected Finds Procedure	Contract Project Manager/ Environment & Community Coordinator	Photographic evidence Incident report Action Plan

6.8 Biodiversity

Table 6.7 details management and mitigation measures required to ameliorate potential biodiversity impacts during construction of the pipeline.

Table 6.7 – Management and mitigation measures – biodiversity

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
Protocols to avoid or minimise impacts on biodiversity, for example, clearly delineating the disturbance footprint consistent with the EA.	Pre-construction/ Construction	Condition of approval	Contract Project Manager	This CEMP
All approved construction corridors and lay down areas will be clearly demarcated to ensure all works remain within the nominated areas. This will ensure that any areas beyond those approved are not damaged.	Pre-construction	-	Contract Project Manager	Inspection records Photographic records
The removal of topsoil will be kept to a minimum and only occur where necessary. Ensuring topsoil is left undisturbed as much as possible will greatly increase the likelihood of natural regeneration.	Construction	-	Contract Project Manager	Inspection records Photographic records
Construction works to occur during standard construction hours (daylight) to minimise noise disturbance.	Construction	Modification report	Contract Project Manager	Personnel records Site access records
Dust suppression and sediment transport will be minimised throughout construction.	Construction	Modification report	Contract Project Manager	Photographic records Inspection records Monitoring records
Vehicles, plant and equipment are to remain on existing roadways and tracks where practicable, a speed limit of	Construction	Modification report	Contract Project Manager	Vehicle data Site access records

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
20 km/hr will apply during construction to ensure the risk of fauna strike is adequately managed.				Speed limit of 10 km/hr on site as per CTMP
Disturbance or clearing of native vegetation, in particular Derived grasslands of the Southern Eastern Highland Bioregion and South East Corner Bioregion – lower slopes and flats of Upper Cox’s and Tuglow River catchments, would be limited to the total area and locations identified in this assessment.	Construction	Modification report	Contract Project Manager	Inspection records Monitoring records
Ongoing weed monitoring will be implemented, and potential weed infestations appropriately managed to ensure surrounding communities are protected from invasive species.	Post construction	-	Environment & Community Coordinator	Inspection records Monitoring records

6.9 Waste

Table 6.8 details management and mitigation measures required to ameliorate potential waste impacts during construction of the pipeline.

Table 6.8 – Management and mitigation measures – waste

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
Take all reasonable and feasible steps to minimise the waste generated by the development.	Pre-construction/ Construction	Condition of approval	Contract Project Manager	Provision of waste disposal facilities at the construction site
Classify all waste in accordance with the Waste Classification Guidelines (EPA, 2014).	Construction	Condition of approval	Contract Project Manager	Photographic evidence of waste disposal facilities provided at the construction

Management/mitigation measure	Timing	Source	Responsibility	Evidence for compliance
				site Monthly reports Licenced waste contractor records/reports
Dispose of all waste at appropriately licenced facilities.	Construction	Condition of approval	Contract Project Manager	Photographic evidence of any non-compliance Monthly reports Licenced waste contractor records/reports
Monitor and report on the effectiveness of the waste minimisation and management measures in the Annual Review referred to in condition 3 of Schedule 5.	Construction/ Post construction	Condition of approval	Contract Project Manager/ Environment & Community Coordinator	Photographic evidence of any non-compliance Monthly reports Annual Review
A waste contractor vacuum sucker truck will be used if required.	Construction	Angus Place Colliery PIRMP (2019)	Contract Project Manager	Licenced waste contractor records/reports

6.10 Triggers and responses

The trigger action response plan (TARP) defines the minimum set of corrective actions that are required by site personnel in response to unpredicted impacts or deviation from normality.

The TARP defines what is 'normal' by way of a set of criteria for a range of aspects as shown in green in the TARP. Criteria relating to abnormal conditions (including trigger values) are rated based on increased risk and potential impact and shown as orange or red. Corresponding corrective actions for each risk level are also identified.

The TARPs (those specifically relevant to construction) for noise, air quality, traffic, soil and water management are reproduced in Appendix E.

It is important to note that corrective actions do not have to wait until a trigger is exceeded. Site personnel may initiate corrective actions earlier than required under a TARP.

Monitoring

7. Monitoring

7.1 Daily inspections

The CPM or delegate will undertake daily reviews of the construction site and will schedule any routine maintenance of control measures or additional management measures.

7.2 Weekly and post rainfall inspections

The CPM will undertake formal weekly inspections of the construction site and will attend weekly project meetings where specific environmental issues will be raised and discussed.

The CPM, Environment & Community Coordinator (E&CC) or delegate will undertake inspections of the work site weekly and after significant rainfall events (more than 20 mm in 24 hours) to evaluate the effectiveness of environmental controls.

The results of the inspections will be recorded in the site Environmental Inspection Checklist.

If any maintenance or deficiencies in environmental controls or in the standard of environmental performance are observed, they will be recorded on the checklist.

Records will also include details of:

- Any maintenance required;
- The nature of the deficiency;
- Any actions required; and
- An implementation priority.

The completion of the actions will be monitored to ensure they are implemented within the agreed timeframes.

7.3 Environmental monitoring

The monitoring required under the CEMP during construction is described in detail in Chapter 6 of this CEMP (Chapter 6).

The E&CC will be advised of any non-conformances identified through monitoring activities. Details will be reported by the E&CC in the monthly report.

Where a non-conformance is detected or monitoring results are outside the expected range and are directly attributable to the construction project (i.e. are influenced by factors under the direct control of the project e.g. noise from construction equipment), the incident and non-conformance reporting process will be implemented.

Steps in the process will typically include:

- An analysis of the results by the CPM, E&CC to determine possible causes of the non-conformance;
- A site inspection by the CPM, E&CC or delegate;
- Advising relevant personnel of the problem;
- Identifying and agreeing on actions to resolve or mitigate the non-conformance; and

- Implementing actions to rectify or mitigate the non-conformance.

An Environmental Incident Report may be issued by the E&CC in response to a non-conformance if it is found to be related to the pipeline construction project.

The timing for any improvement will be agreed between the relevant Construction Manager and E&CC based on the level of risk (e.g. a significant risk will require immediate action).

All environmental monitoring equipment will be maintained and calibrated according to the manufacturer's specifications and appropriate records kept.

7.4 Meteorological monitoring

The meteorological station located at Angus Place is used for noise, air quality and surface water monitoring and reporting.

Data recorded by the weather station satisfies requirements of the NPfI, with parameters including:

- Date and time;
- Temperature;
- Humidity;
- Solar radiation;
- Barometric pressure;
- Wind speed;
- Wind direction;
- Sigma theta (standard deviation of wind direction); and
- Rainfall.

Reporting

8. Reporting

8.1 Monitoring reports

On receipt of monitoring results, these will be reviewed to confirm compliance with relevant criteria specified in Chapter 5. This will ensure corrective action is taken where results might indicate a non-compliance or risk of future non-compliance.

Monitoring reports will be published on the Centennial website to satisfy requirements under the Protection of the Environment Legislation Amendment Act 2011 to publish or make pollution monitoring data available to the public.

8.2 Construction compliance report

The following specific reports that are required to be prepared during the course of the construction works:

- Reporting on construction compliance will be undertaken on a weekly basis as supported by an inspection routine. Regular meetings will be held with the construction contractor to discuss the outcomes of weekly inspections; and
- Construction Compliance Report (at the completion of the contract).
- The Construction Compliance Report must include the following information:
- Compliance with the CEMP and Conditions of Approval;
- Compliance with any other relevant approvals or licenses;
- The implementation and effectiveness of environmental controls. The assessment of effectiveness should be based on a comparison of actual impacts against performance criteria identified in the CEMP;
- The number and details of any complaints, including a summary of the main areas of complaint, action taken response given and intended strategies to reduce recurring complaints; and
- Details of any review and amendments to the CEMP resulting from construction during the reporting period.

8.3 Incident and non-compliance reporting

Incidents and non-compliance will be managed through established procedures as detailed in the Incident Reporting Standard (CIMOS-006) and EMS.

8.3.1 Incidents

The project approval defines:

- an 'incident' to be "a set of circumstances that:
- causes or threatens to cause material harm to the environment; and/or
- breaches or exceeds the limits or performance measures/criteria in this approval".

- ‘material harm to the environment’ as “actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial”.

As required by Condition 6 of Schedule 5, Centennial will immediately notify the Secretary and any relevant agencies after becoming aware of an incident. Centennial will provide the Secretary and relevant agencies with a report of the incident within seven days of becoming aware of it.

In the event of an incident or complaint, the following procedure will be followed:

- The CPM and/or E&CC will investigate the likely source of the incident or complaint, based on location of current equipment of construction activities;
- mitigation or control measures will be deployed immediately where possible, or cease activity if mitigation is not feasible;
- The complaint/incident will be logged in the appropriate register; and
- An incident report will be created, including the corrective actions that were taken and signed off by an authorised person at the site.

The incident report will:

- describe the date, time and nature of the incident;
- detail who was involved;
- identify the cause (or likely cause) of the damage;
- describe what action has been taken to date; and
- describe the proposed measures to address the damage and prevent further such occurrences.

8.3.2 Non-compliance

Centennial will notify the Secretary and any relevant agencies of any non-compliance within seven days of becoming aware of it.

The notification will set out the condition of the consent that the project is non-compliant with, why it does not comply, the reasons for the non-compliance (if known), and what actions have been, or will be, undertaken to address the non-compliance.

Communication

9. Communication

9.1 Internal communication

Communication throughout all levels and functions (management, staff members and subcontracted service providers), is key to minimising environmental impacts and achieving continual improvements in environmental performance during construction.

The environmental team will meet regularly to discuss on-site construction environmental management, amendments to plans, changes to construction activities, environmental monitoring results and other relevant aspects of the project. Regular meetings may also be scheduled with the Contractor or delegate to communicate ongoing environmental performance and to discuss issues to be addressed.

9.2 Communication with relevant agencies and authorities

The E&CC will be the main point of contact regarding specific environmental issues and has responsibility to report on the ongoing environmental performance of the project to DPIE, the EPA and relevant agencies.

The E&CC, or delegate, will prepare monthly reports addressing all key environmental matters.

9.3 Communication with the community

Centennial recognises that regular contact with the local community is important in maintaining a positive relationship with stakeholders. Ensuring the local community and relevant agencies are aware of the progress of construction will be achieved via:

- The community consultative committee (CCC);
- Project newsletters, letterbox drops or notifications (as required); and
- The Centennial website.

Information that will be supplied to the community will include:

- Details of application and approval documents;
- Planned work schedules;
- Contact names, emails and telephone numbers of relevant staff to make a complaint or receive further information;
- Environmental management measures;

9.4 Complaint protocol

Any community enquiries or complaints received will be managed through established procedures as detailed in the Community Complaints and Enquiries Procedure. The Angus Place Community Complaints and Enquiries line (026354 8700) is provided on the Centennial website and will be displayed on a sign at each entrance to the construction site.

The nature of the enquiry/complaint will be investigated with follow up by the CPM or E&CC as soon as the outcomes of the investigation are complete. All community complaints and enquiries will be recorded in the Centennial Environment and Community Database (ECD).

9.5 Incident and emergency response

Once notified of an incident, the Control Room Operator (CRO) is to mobilise internal and external expertise and resources. Where an incident represents an immediate threat to human health or property, the first point of contact should be the Emergency response hotline on 000.

All environmental incidents and emergencies will be managed in accordance with the Centennial Incident Management Procedure. Emergency arrangements in relation to activation of evacuation procedures and notifying site personnel will be undertaken in accordance with the Angus Place Emergency Management System (MSEmerg).

The E&CC, Mine Manager and the Group Manager Environment will be responsible for managing the response to any pollution incidents in accordance with the Angus Place Pollution Incident Response Management Plan (PIRMP) (August 2019). A copy is held in the Control Room.

External reporting of pollution incidents will be undertaken in accordance with Section 8 of the PIRMP and SWP0229 – External Environmental Incident Reporting. The relevant authorities to be notified are detailed in the PIRMP. Section 8.4 of this CEMP provides further details on reporting.

Procedures and evacuation planning will be prepared prior to the commencement of construction to address emergency access/egress requirements, particularly in the case of bushfire. Toolbox talks/training will include details on protocols for emergency management and evacuation procedures.

9.5.1 Hydrocarbon spill

In the event of off-site or on-site contamination from a hydrocarbon or chemical spill, the following controls will be implemented:

- Spill kits will be made available at the site and site personnel trained in their use;
- Bunded storage areas will be provided for any oil or hydrocarbons;
- Limited quantities of oil or hydrocarbons will be stored onsite;
- Safety data sheets (SDS's) will be kept up to date and onsite; and
- A waste contractor vacuum sucker truck will be used if required.

9.5.2 Discharge of contaminated water

In the event of off-site or on-site discharge of contaminated water or stormwater during a high rainfall event, the following controls will be implemented:

- Surface flows will be directed to pollution control structure where possible;
- Clean water diversions are in place;
- Site induction details the potential for water contamination;
- Safe work method statements (SWMS) include environmental considerations for all contractors;
- Flocculent is available if required; and
- A waste contractor vacuum sucker truck will be used if required.

Role, Responsibility and Accountability

10. Role, responsibility and accountability

Employees and contractors are responsible for adhering to the Centennial Environmental Policy. Whilst the obligations of complying with the Environmental Policy lies with the entire workforce, further environmental management responsibilities that are considered a part of the normal functioning of some positions are described in Table 10.1.

Table 10.1 – CEMP roles and responsibilities

Role	Responsibilities
Mine Manager/Group Environment Manager	• Overall responsibility for environmental compliance with Mining Lease, EPL, Project Approval and other mining approvals as they pertain to the construction of the pipeline. • Authorisation of the CEMP and any changes made to the document. • Support the implementation of the CEMP through delegation of site resources and planning processes. • Ensure that adequate financial and personnel resources are made available for the implementation of the CEMP.
Construction Project Manager (CPM)	• Responsible for overseeing the implementation of this CEMP. • Maintain accountability for the management of the construction site and all employees and contractors entering the site. • Communicate the importance of the CEMP and its contents to all employees and contractors entering the construction site. • Accountable for the implementation, maintenance and monitoring of compliance with the CEMP. • Carry out regular inspections of erosion and sediment control works and site access, and remedial actions implemented where required. • Advising management of potential environmental issues. • Ensuring the E&CC and Mine Manager are informed of all incidents and non-compliances. • Ensuring appropriate signage is deployed around the construction site when required.
Environment and Community Coordinator (E&CC)	• Ensuring compliance with the Centennial Environmental Policy. • Administration and maintenance of the CEMP, including compliance with all licences and approvals for environmental management. • Reporting environmental incidents as required to external stakeholders. • Regulatory and community liaison. • Responding to any community complaints, regulatory liaison and registration in the internal Environmental & Community Database (ECD). • Internal incident investigation and reporting/recording. • Managing the response to any pollution incidents as required.

	• Ensuring regular inspections of erosion and sediment control works and site access are undertaken, and remedial actions implemented where required. • Review and revise the CEMP as required. • Coordinating external audits and reporting, corporate reporting and management.
All employees and contractors	• Must comply with the Centennial Environmental Policy. • Must comply with the requirements of this CEMP and other Centennial EMPs. • Immediately report any environmental incidents or community complaints/enquiries to the E&CC. • Obtain Permit to Clear or Disturb Land or Permit to Dig if required. • Identify and implement appropriate controls for environmental risks from a risk assessment and job safety analysis and communicate with relevant staff.

Training and awareness

11. Training and awareness

11.1 Environmental induction

All Centennial employees and contractors undertaking work at Centennial's operations are required to undertake a site-specific induction prior to commencing work. The environmental component will include an overview of:

- The importance of Centennial's Environmental Policy and an overview of the framework of Centennial's EMS;
- Regulatory requirements, including conditions of environmental licences, permits and approvals;
- Key environmental issues (i.e. protection of sensitive areas, Aboriginal heritage considerations, dust and noise management);
- Specific environmental management requirements and responsibilities;
- Mitigation measures and procedures for the control of environmental issues;
- Incident response and reporting requirements; and
- Information relating to the location of environmental constraints.

A record of all environment inductions will be maintained and kept on site. The E&CC may authorise amendments to the induction where required to address project modifications, legislative changes or amendments to this CEMP or related documentation.

11.2 Toolbox talks

Toolbox talks will be used to raise awareness and educate personnel on construction related environmental issues. The Toolbox talks will be used to ensure environmental awareness continues during construction.

Toolbox talks will be tailored to specific environmental constraints as relevant to the package of works, including:

- Hours of work;
- Emergency and spill response;
- Erosion and sediment control;
- Biodiversity, clearing controls and vegetation protection;
- Aboriginal heritage requirements;
- Weed management;
- Noise;
- Housekeeping and waste;
- Works in waterways;
- Dust control; and
- Traffic management.

Toolbox Talk attendance is mandatory, with attendees required to sign an attendance form. Records of Toolbox Talk attendance will be maintained.

Targeted environmental awareness training will be provided to individuals or groups of workers with a specific authority or responsibility for construction environmental management or those undertaking an activity with a high risk of environmental impact.

The E&CC and Mine Training Manager will review the training program and monitor its implementation.

11.3 Daily pre-start meeting

The pre-start meeting is a tool for informing the workforce of the day's/ shift's activities, safe work practices, environmental protection practices, safe work method statement (SWMS) for a particular area of work, work area restrictions, activities that may affect the works, coordination issues with other trades, hazards and other information that may be relevant to the day's work.

The Construction Manager, or other appropriate site staff member, will conduct a daily pre-start meeting for the site workforce before the commencement of work each day (or shift) or where changes occur during a shift. Pre-start meetings may be project-wide and/or held for specific work areas.

The environmental component of pre-starts will include any environmental issues that could potentially be impacted by, or impact on, the day's construction activities. All attendees will be required to sign on to the pre-start and acknowledge their understanding of the issues explained.

Pre-start topics, dates delivered, and a register of attendees will be recorded and the records maintained.

Audit and review

12. Audit and review

12.1 Annual review

In accordance with Condition 3 of Schedule 5 of the project approval, an Annual Review will be completed detailing the environmental performance of the project. For the past calendar year, the report will include the following information relevant to construction of the pipeline:

- Details of activities carried out;
- A review of monitoring results and complaints records;
- Details of any non-compliances or incidents and what actions were taken; and
- Identification of any trends in the data.

12.2 Management plan review

Revisions of this CEMP and related EMPs are to be instigated by the E&CC or delegate. The outcomes of reviews will be documented by updating sections of the relevant document where required. Revised documents will be approved by the Group Manager Environment and submitted to DPIE for approval. Once approved, the revised EMP will be placed on the Centennial website.

If the CEMP is updated, an updated and approved copy of the document will be issued to all applicable stakeholders.

12.2.1 Monthly review

The Construction Project Manager (CPM) will review the adequacy of this plan on a monthly basis (given the short timeframe of the project). If required, the proposed management strategies and control measures will be modified to address evolving site conditions and/or changes to the proposed construction staging and methodology.

Any changes to the plan will be communicated to the relevant site personnel via the daily pre-start meeting, toolbox talks and weekly project meetings.

12.2.2 Review following an audit

Audits (internal or external) can provide an assessment of compliance with the project approval, EMS and EMPs. They also allow for continual improvement and resource allocation.

The objectives of an audit are to:

- Identify compliance with the statutory requirements; and
- Identify opportunities for improvement.

This management plan will be reviewed following the completion of an audit if opportunities for improvement are identified.

12.2.3 Review following an incident or non-compliance

Non-compliances may be identified during site inspections, through audit findings, monitoring and as a result of either an exceedance, incident or community complaint. This management plan will be reviewed following any non-compliance investigation.

12.2.4 Event-based review

Other events which will trigger a review of this management plan include:

- Modifications/improvements to the system;
- Changes in the construction process;
- New approvals, guidelines or codes of practice that require a review; and
- As otherwise directed by the Secretary.

Records and document control

13. Records and document control

13.1 Environmental records

The E&CC is responsible for maintaining all environmental management documents so that they are always current at the point of use.

Types of records include:

- Monitoring, inspection and compliance reports/records;
- Correspondence with public authorities;
- Induction and training records;
- Reports on environmental incidents, other environmental non-conformances, complaints and follow-up action;
- Community engagement information; and
- Minutes of environmental management system review meetings and evidence of any action taken.

All construction environmental management documents are subject to ongoing review and continual improvement. This includes times of change to scheduled activities or to legislative or licensing requirements.

Only the E&CC and Group Environment Manager, or delegate, has the authority to change any of the construction environmental management documentation.

13.2 Document control

During construction, the environmental documents will be stored at Angus Place.

The CEMP will be developed, approved, implemented and maintained in accordance with the Centennial Document Control Procedure.

This document and all others associated with the EMS shall be maintained in a document control system which follows the site Document Control Standard and is available to all site personnel. Any proposed change to this document will be via the E&CC.

References

14. References

Centennial Coal (March 2014). Environmental Management Strategy V1.2 – Angus Place Colliery.

Centennial Coal (November 2016). Western Operations Regional Water Management Plan.

Centennial Coal (July 2016). Western Region Aboriginal Heritage Management Plan.

Centennial Coal (June 2018). Western Region Air Quality and Greenhouse Gas Management Plan.

Centennial Coal (August 2019). Pollution Incident Response Management Plan - Angus Place Colliery.

Centennial Coal (February 2021). Western Region Noise Management Plan.

DECC (2009). Interim Construction Noise Guideline (ICNG).

DECCW (2011). NSW Road Noise Policy.

EPA (2014). Waste Classification Guidelines – Part 1: Classifying Waste.

EPA (2017). Noise Policy for Industry (NPfI).

GHD (February 2019). Angus Place Colliery Water Management Plan prepared for Centennial Angus Place Pty Limited.

GHD (November 2020). Report for Centennial and Energy Australia Angus Place Coal Project (MP 06_0021) and Springvale Water Treatment Project (SSD 7592 Modification 6 – Modification Report.

Glossary and Abbreviation of Terms

15. Glossary and abbreviation of terms

Abbreviations	
CCC	Community Consultative Committee
CCL	Consolidated Coal Lease
CPM	Contract Project Manager
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
DCC	Drivers Code of Conduct
DPIE	NSW Department of Planning, Industry and Environment
EA	Environmental assessment
EMM	EMM Consulting Pty Limited
EMP	Environmental Management Plan
E&CC	Environment and Community Coordinator
EMS	Environmental Management System
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ICNG	Interim construction noise guideline
LGA	Local Government Area
ML	Mining Lease
MPL	Mining Purpose Lease
MPPS	Mount Piper Power Station
Npfl	Noise Policy for Industry
NSW	New South Wales
PAC	Planning Assessment Commission
SEPP	State Environmental Planning Policy

Terms	
Angus place	Angus Place Colliery
the Planning Secretary	The Planning Secretary of the Department of Planning, Industry and Environment (DPIE)
The Project	The water transfer pipeline project
Centennial Coal Company Limited	Centennial

Appendix A – Agency consultation

Table A.1 – Consultation undertaken as part of the preparation of this CEMP

Agency	Issue	Where addressed
EPA	The EPA has no comments on the proposed CEMP.	-
Lithgow City Council (LCC)	LCC traffic department have no comments on the proposed CTMP.	-
	The CTMP and Driver Code of Conduct (DCC) are to include information on how carpooling will be encouraged and monitored.	Section 2.4 and 2.5 of CTMP and DCC
	The CTMP and DCC are to include detail of how the DCC will be enforced with staff and contractors.	Appendix D (DCC) of CTMP
	The CTMP is to provide the detail of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing each of the construction sites and how heavy vehicle deliveries will be managed to avoid impacts on the network and manage traffic safety at the intersections and access points.	Figure 2.2 and Section 4.6 of CTMP
	The CTMP is to provide existing and projected background traffic, peak hour volumes and types and their interaction with projected development related traffic, including assessment how the potential impacts will be mitigated with respect construction traffic management and any required infrastructure upgrades.	Section 3.2 of CTMP
	The CTMP is to detail what the loads, weights, lengths and number of movements of haulage and construction related vehicles including Over Size Over Mass (OSOM) loads will be and how the potential impacts will be mitigated with respect construction traffic management and any required infrastructure upgrades.	Section 4.5 of CTMP
	The CTMP is to detail how construction and staff vehicle movements to the site will be managed to limit disruption to other motorists, including special OSOM management measures and any required infrastructure upgrades.	Section 4.4 and 4.5 of CMTP OSOM vehicles will not be required
	The CTMP is to provide the detail of daily commuter peak periods, special events, school bus operations and demonstrate how haulage vehicle movements will be scheduled to occur outside the daily commuter peak periods.	Section 2.3, 4.2, 4.6 and Appendix D (DCC) of CTMP
	The CTMP is to identify of daily commuter peak periods, special events, school bus operations and other hazards and detail the active communication procedures to provide awareness and mitigate impacts.	Section 2.4 and 4.17 of CTMP
	The CTMP is to clarify the difference between maximum and probably heavy vehicle numbers and demonstrate how haulage vehicle movements will be scheduled to occur outside the daily commuter peak periods and how convoy or platoon lengths will be minimised when vehicle numbers exceed the “probably” one per day.	Section 2.4 of CTMP Convoys of heavy vehicles will not be required

	The CTMP is to provide the detail of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing each of the construction sites and demonstrate how the route lengths have been considered and what steps considered or taken to minimise road transport.	Section 2.4, 4.3 and 4.6 of CTMP
	The CTMP is to confirm that no over size or over mass vehicles will be required for the project.	Section 4.5 of CTMP OSOM vehicles will not be required
	The CTMP is to demonstrate consideration of the climatic conditions on the transport routes including staff accessing and leaving the site and demonstrate how risks associated with the climate conditions will be managed to mitigate the risks.	Section 4.14 of CTMP
	The CTMP is to confirm that no hazardous material will be transported as part of the project.	Section 4.6 of CTMP
	The CTMP is to assess the project traffic impacts on the road network and assess whether upgrading works are required (in accordance with Austroads road safety and design manuals).	Section 3.3 of CTMP Intersection and road upgrade works are not required
	The CTMP is to identify affected stakeholders including regulatory authorities, landowners, businesses, bus operators and so forth and demonstrate consultation with them on traffic impacts and proposed mitigation.	Section 1.3 and 4.17 of TCMP and TCP
	The CTMP and DCC are to include measures to ensure responsible fatigue management and discourage driving under the influence of alcohol and/or drugs, dangers of mobile phone use and driving to the conditions, and adherence to posted speed limits and what enforcement measures will be in place in regard to these.	Appendix D (DCC) of CTMP

WaterNSW	WaterNSW notes that: • The pipeline elements are mostly within existing easements and land owned by Centennial Coal and Energy Australia, and include existing Angus Place water pipeline in Section A, new above ground section B under the Springvale Mine coal conveyor, and an existing Energy Australia old brine water pipeline; • Information provided in Section 5.4 (soil and water issues), Section 6.6 (Soil erosion and water management), Chapter 7 (monitoring) and Appendix C (Erosion and Sediment Control Plan) is adequate; • WaterNSW notes that much of the new section pipeline to be constructed is above ground and will result in minimal excavation. Construction if done during the low rainfall June to August period will reduce the risk of soil erosion; • The Erosion and Sediment Control Plan notes that “All works in the vicinity of the Coxs River are planned to be undertaken on a conveyor gantry. Disturbance to lands within 40 m of the high bank of Coxs River would be avoided where possible with works scheduled to be completed prior to the high rainfall erosivity period of October through to March”. WaterNSW is satisfied that the implementation of soil erosion and water mitigation measures detailed in the CEMP will lead to a neutral effect on receiving water quality in the Upper Coxs River catchment.	-
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EPA

Please find attached draft Construction Environmental Management Plan (CEMP) for a water transfer pipeline for Angus Place Colliery submitted for your review on behalf of Centennial Coal.

In accordance with Condition 40, Schedule 2 of project approval MP06_0021, this CEMP has been prepared to address issues related to the construction of a water transfer pipeline between Angus Place and Mount Piper Power Station. A requirement of Condition 40 is consultation with the EPA in the preparation of the CEMP.

Due to the time constraints surrounding this project, if you could provide comments in the next two weeks that would be much appreciated.

If you have any questions, please do not hesitate to contact me on the mobile number below.

Kind regards, Katie

Katie Weekes

Senior Environmental Scientist - ECAD



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M 0418 267 532
D 02 4907 4819
Connect with us

NEWCASTLE | Level 3, 175 Scott Street, Newcastle NSW 2300

The EPA has no comments on the proposed CEMP.

Regards

Sandie

Dr Sandie Jones

Regional Manager

Regulatory Operations – Regional South

NSW Environment Protection Authority

+61 2 6333 3801 Mobile +61 0429901743

L102, 346 Panorama Avenue BATHURST NSW 2795

sandie.jones@epa.nsw.gov.au www.epa.nsw.gov.au [@EPA NSW](#)

Report pollution and environmental incidents 131 555 (NSW only) or +61 2 9995 5555



www.epa.nsw.gov.au [@NSW_EPA](#)

The EPA acknowledges the traditional custodians of the land and waters where we work. As part of the world's oldest surviving culture, we pay our respect to Aboriginal elders past, present and emerging.

Report pollution and environmental incidents
131 555 or +61 2 9995 5555

WaterNSW

Please find attached draft Construction Environmental Management Plan (CEMP) for a water transfer pipeline for Angus Place Colliery submitted for your review on behalf of Centennial Coal.

In accordance with Condition 40, Schedule 2 of project approval MP06_0021, this CEMP has been prepared to address issues related to the construction of a water transfer pipeline between Angus Place and Mount Piper Power Station. A requirement of Condition 40 is consultation with WaterNSW in the preparation of the CEMP. In particular, Sections 5.4 and 6.6, Chapter 7 and Appendix D (Erosion and Sediment Control Plan) address soil and water in relation to construction activities.

Due to the time constraints surrounding this project, if you could provide comments in the next two weeks that would be much appreciated.

If you have any questions, please do not hesitate to contact me on the mobile number below.

Kind regards, Katie

Katie Weekes

Senior Environmental Scientist - ECAD



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NEWCASTLE | Level 3, 175 Scott Street, Newcastle NSW 2300

RE: Submission of Centennial Angus Place CEMP for review

Thank you for providing WaterNSW a copy of the above CEMP for review. WaterNSW has reviewed the CEMP with specific regard to soil and water management due to the construction of the pipeline elements. WaterNSW notes that:

- The pipeline elements are mostly within existing easements and land owned by Centennial Coal and Energy Australia, and include existing Angus Place water pipeline in Section A, new above ground section B under the Springvale Mine coal conveyor, and an existing Energy Australia old brine water pipeline.
- Information provided in Sections 5.4 (soil and water issues), 6.6 (Soil erosion and water management), Chapter 7 (monitoring) and Appendix C (Erosion and Sediment Control Plan) is adequate.
- WaterNSW notes that much of the new section pipeline to be constructed is above ground and will result in minimal excavation. Construction if done during the low rainfall June to August period will reduce the risk of soil erosion.
- The Erosion and Sediment Control Plan notes that "All works in the vicinity of the Cocks River are planned to be undertaken on a conveyor gantry. Disturbance to lands within 40 m of the high bank of Cocks River would be avoided where possible with works scheduled to be completed prior to the high rainfall erosivity period of October through to March".

WaterNSW is satisfied that the implementation of soil erosion and water mitigation measures detailed in the CEMP will lead to a neutral effect on receiving water quality in the Upper Cocks River catchment.

Please contact me or Jessie Evans if you wish to discuss the above.

Regards

Ravi

Ravi Sundaram
Mining Catchment Specialist



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Transport for NSW

20 April 2021

WST12/000136/08 SF2012/046027

EMM Consulting
Ground Floor
20 Chandos Street
ST LEONARDS NSW 2065

Attention: Abdullah Uddin

Dear Sir

SSD 7592 MOD 6, Angus Place Colliery Water Transfer Pipeline Draft Construction Environmental Management Plan Review

Thank you for the referral regarding the abovementioned Draft Construction Environmental Management Plan via email dated 31 March 2021 for consultation in accordance with Condition 40, Schedule 2 of project approval MP 06_0021.

TfNSW have reviewed the documents provided as a part of the referral for modification 6 and understand that the modification involves:

- Redirecting mine water via existing and new pipelines to a storage pond at Mount Piper Power Station for subsequent treatment and re-use.
- Constructing and operating a water softening plant at the Angus Place pit top.
- Transfer of treated (softened) mine water (4.2ML/day) to the Springvale Water Treatment Facility or to underground storage.
- Construction period of 8 weeks utilising Wolgan Road and Castlereagh Highway, with a traffic generation of 8 light vehicles and 8 heavy vehicles a day.
- Installation of pipeline under the Castlereagh Highway within conveyor easements to a point west of Lidsdale (referred to as section B).

The Draft Environmental Management Plan incorporating the Construction Traffic Management Plan (CTMP) and Drivers Code of Conduct has been reviewed and does not adequately address the matters identified within the TMP annexure attached to TfNSW letter dated 24 December 2020.

TfNSW requires that the CTMP and DCoC be revised to address the matters identified within the TMP annexure attached to TfNSW letter dated 24 December 2020. TfNSW comments in relation to relevant points are provided in the annexure attached.

If you wish to discuss this matter further, please contact Howard Orr on (02) 6861 1530.

Yours faithfully

Alexandra Power
Team Leader of Development Services-West

Transport for NSW

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256
P 6861 1449 | W development.western@rms.nsw.gov.au | ABN 18 804 239 602

Annexure: Comment on Draft CTMP and DCC in relation to points identified within the TMP annexure attached to TfNSW letter dated 24 December 2020

a. Specific commitments for the provision and use of buses and car-pooling during construction to limit peak hourly traffic in accordance with the approved Environmental Impact Statement (EIS) and conditions of consent. Plans and measures to manage the impacts of personal vehicle parking at pickup points (e.g. in towns) are to be detailed.

The provided information does not adequately address how the impacts will be managed.

The CTMP and DCC are to include information on how carpooling will be encouraged and monitored.

b. An enforceable policy for staff and contractors to use the designated commuter route in preference to back roads, where the journey is not unreasonably lengthened, as detailed in the approved EIS.

The provided CTMP and DCC do not indicate the designated routes. The TMCE and DCC do not provide an indication of the issue being an enforceable one.

The CTMP and DCC are to include detail of how the DCC will be enforced with staff and contractors.

c. Details of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing the site.

The provided CTMP provides minimal information on transport routes showing only access points to the land on which the work will be carried out and minimal broad detail on vehicle movements.

The CTMP is to provide the detail of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing each of the construction sites and how heavy vehicle deliveries will be managed to avoid impacts on the network and manage traffic safety at the intersections and access points.

e. Existing and projected background traffic, peak hour volumes and types and their interaction with projected development related traffic.

The provided CTMP provides peak traffic information at some points on the transport routes but does not provide information in relation to some of the transport and access routes that will be used for the development. Intersection assessments do not include all relevant intersections and include Ian Holt Drive which does not appear to be a transport route for this proposed development.

The CTMP is to provide existing and projected background traffic, peak hour volumes and types and their interaction with projected development related traffic, including assessment how the potential impacts will be mitigated with respect construction traffic management and any required infrastructure upgrades.

f. Loads, weights, lengths and number of movements of haulage and construction related vehicles including Over Size Over Mass (OSOM) loads.

No specific information on loads provided other than up to 8 x 19 m vehicles will be utilised per day across the two concurrently operating construction sites.

The CTMP is to detail what the loads, weights, lengths and number of movements of haulage and construction related vehicles including Over Size Over Mass (OSOM) loads will be and how the potential impacts will be mitigated with respect construction traffic management and any required infrastructure upgrades.

g. The management and coordination of construction and staff vehicle movements to the site and measures to limit disruption to other motorists, including special OSOM management measures.

Transport for NSW

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No specific information on management and coordination of construction and staff vehicle movements to the site and measures to limit disruption to other motorists, including special OSOM management measures is provided.

The CTMP is to detail how construction and staff vehicle movements to the site will be managed to limit disruption to other motorists, including special OSOM management measures and any required infrastructure upgrades.

h. Scheduling of haulage vehicle movements to occur outside of daily commuter peak periods, local special event times, school bus (both in rural and town areas) and school zone operating hours.

The CTMP does not provide adequate information in relation to identification of daily commuter peak periods, special events, school bus operations.

The CTMP is to provide the detail of daily commuter peak periods, special events, school bus operations and demonstrate how haulage vehicle movements will be scheduled to occur outside the daily commuter peak periods.

i. Active communication procedures for traffic such as school buses or haulage vehicles from other quarries, or near potential safety hazards.

The CTMP does not provide adequate information in relation to identification of daily commuter peak periods, special events, school bus operations and does not demonstrate what communication procedure will be put in place.

The CTMP is to identify of daily commuter peak periods, special events, school bus operations and other hazards and detail the active communication procedures to provide awareness and mitigate impacts.

j. Scheduling of heavy vehicle movements to minimise convoy or platoon lengths.

The CTMP provides total vehicle movement per day and in relation to heavy vehicle indicates up to 8 per day but more likely 1 per day. It is not clear how the variation will come about and how this will be managed to ensure that peak commuter periods are avoided and convoy or platoon lengths will be minimised.

The CTMP is to clarify the difference between maximum and probably heavy vehicle numbers and demonstrate how haulage vehicle movements will be scheduled to occur outside the daily commuter peak periods and how convoy or platoon lengths will be minimised when vehicle numbers exceed the "probably" one per day.

k. Consideration to minimise the route length for road transport, particularly for OSOM loads.

The provided CTMP provides minimal information on transport routes showing only access points to the land on which the work will be carried out and minimal broad detail on vehicle movements.

The CTMP is to provide the detail of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing each of the construction sites and demonstrate how the route lengths have been considered and what steps considered or taken to minimise road transport.

l. Any OSOM will be the subject of separate permits through the National Heavy Vehicle Regulator.

The CTMP indicates the largest delivery vehicle will be 19m.

The CTMP is to confirm that no over size or over mass vehicles will be required for the project.

m. Mitigation of local climate conditions that may affect road safety for vehicles used during construction, operation and decommissioning of the facility (e.g. scheduling during daylight hours, or outside of fog, wet weather, ice or snow).

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The CTMP does not demonstrate any consideration of local climate conditions or climate conditions on transport routes. The DCC provides a broad statement on speed being appropriate for the conditions.

The CTMP is to demonstrate consideration of the climatic conditions on the transport routes including staff accessing and leaving the site and demonstrate how risks associated with the climate conditions will be managed to mitigate the risks.

n. Transport of hazardous materials in accordance with the relevant transport codes.

The CTMP does not indicate the transport of any hazardous materials will be required.

The CTMP is to confirm that no hazardous material will be transported as part of the project.

o. Specific mitigation measures along the approved transport routes. Road and intersection improvement works are to be completed prior to the commencement of on-site construction unless specifically approved otherwise in the conditions of consent.

The CTMP does not assess or specify any mitigation works including intersection or road upgrade required (assessed against Austroads road safety and design manuals).

The CTMP is to assess the project traffic impacts on the road network and assess whether upgrading works are required (in accordance with Austroads road safety and design manuals).

p. Consultation and engagement with affected stakeholders, including regulatory authorities, landowners, businesses, bus operators and so forth.

The CTMP does not demonstrate consultation and engagement with affected stakeholders other than TfNSW and Lithgow City Council.

The CMPT is to identify affected stakeholders including regulatory authorities, landowners, businesses, bus operators and so forth and demonstrate consultation with them on traffic impacts and proposed mitigation.

u. Measures to ensure responsible fatigue management and discourage driving under the influence of alcohol and/or drugs, dangers of mobile phone use and driving to the conditions, and adherence to posted speed limits.

The CTMP indicates the DCC will address the issue of drug and alcohol use. The DCC does not appear to address this issue.

The CTMP and DCC are to include measures to ensure responsible fatigue management and discourage driving under the influence of alcohol and/or drugs, dangers of mobile phone use and driving to the conditions, and adherence to posted speed limits and what enforcement measures will be in place in regard to these.

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Appendix B - CTMP

Angus Place Coal Project

Construction Traffic Management Plan - water transfer pipeline

Prepared for Centennial Angus Place Pty Ltd
April 2021

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Angus Place Coal Project

Construction Traffic Management Plan - water transfer pipeline

Report Number

H210140 RP1

Client

Centennial Angus Place Pty Ltd

Date

29 April 2021

Version

v3 Final

Prepared by



Abdullah Uddin
Associate Traffic Engineer
29 April 2021

Approved by



Tim Brooker
Associate Transport Planner
29 April 2021

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

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1 Introduction

1.1 Overview

This Construction Traffic Management Plan (CTMP) has been prepared by Abdullah Uddin (Associate Traffic Engineer, TfNSW#0051686678) of EMM Consulting Pty Limited (EMM) as a suitability qualified and experienced person on behalf of Centennial Coal Company Limited (Centennial) to manage transport impacts associated with the construction of a water transfer pipeline for Angus Place Colliery. The site is shown in Figure 1.1.

The CTMP has been prepared in accordance with Condition 40 of Schedule 3 of project approval MP06_0021 (as modified):

40. Prior to the commencement of construction of the Water Transfer Pipeline, the Proponent must prepare a Construction Environmental Management Plan (CEMP) to the satisfaction of the Secretary. The CEMP must be prepared:
 - a) in consultation with the EPA, TfNSW, WaterNSW and Council;
 - b) generally in accordance with the Guideline for the Preparation of Environmental Management Plans (DIPNR 2004) to outline environmental management practices and procedures to be followed during construction, including:
 - i) erosion and sediment controls;
 - ii) an unexpected finds protocol for Aboriginal cultural heritage;
 - iii) air quality management measures;
 - iv) waste management measures;
 - v) noise management measures including:
 - vi) implementing reasonable and feasible noise mitigation measures in accordance with the ICNG; and
 - vii) undertaking construction during standard hours as defined in the ICNG, unless otherwise agreed by the Secretary;
 - viii) traffic and access management measures; and
 - ix) protocols to avoid or minimise impacts on biodiversity, for example, clearly delineating the disturbance footprint consistent with the EA.

The Proponent must implement the approved CEMP.

1.2 The Project

This CTMP includes:

- a background review, including relevant plans and documents;
- evidence of liaison with Lithgow City Council (Council) and Transport for NSW (TfNSW);
- details of:
 - the location of proposed work site access points;
 - construction vehicle types and haulage routes;
 - construction workers parking;
 - proposed construction program and hours of construction;
 - estimated number of construction vehicle movements (light and heavy);
 - any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during construction; and
- a Drivers Code of Conduct.

1.3 Consultation

Preliminary liaison and consultation for this CTMP has been undertaken with Council and TfNSW. A copy of the consultation responses is included as Attachment A.

Consultation with local residents and businesses will be undertaken as part of the implementation of the Traffic Control Plans (see Section 4.17 for further detail).

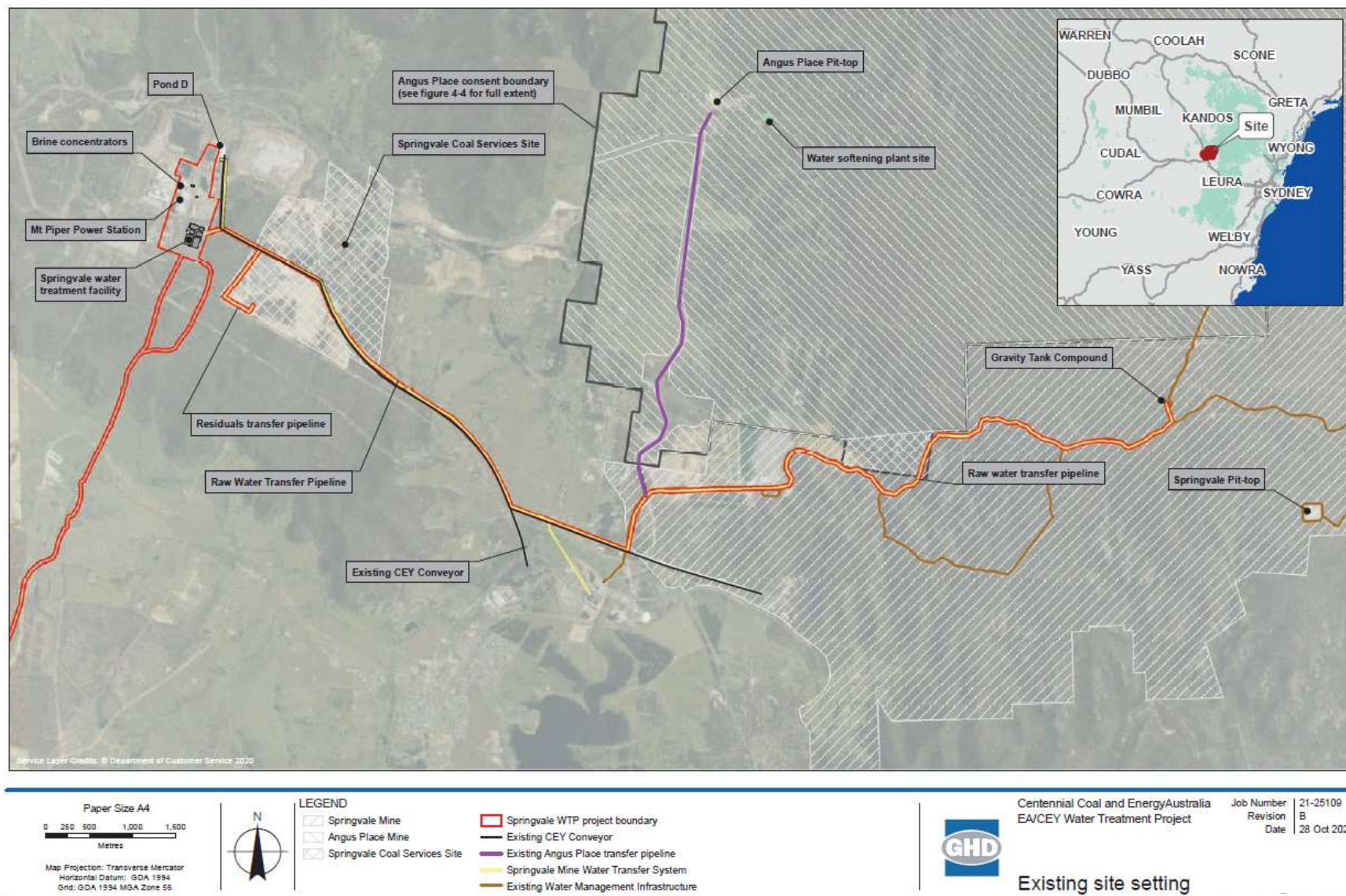


Figure 1.1 Site location

2 Background conditions

2.1 Site description

The pipeline route bypasses the main urban area of Lidsdale to the south, although the route passes within approximately 100 metres (m) of the nearest residential properties at Duncan Street as shown on Figure 2.1. This section of the pipeline route passes through a conveyor tunnel under Wolgan Road and the Castlereagh Highway.

2.2 Project construction details

Further details of the pipeline design along different sections of the route are shown in Figure 2.1. The locations of the proposed construction access for the pipeline construction works are shown in Figure 2.2.

- Zone 1 construction access is via either one of the following:
 - the Castlereagh Highway on the southern side at a disused Wallerawang Power Station Gate, 450 m east of Wolgan Road;
 - Skelly Road on the eastern side, 250 m north of the Castlereagh Highway (left turn in and left turn out only at The Castlereagh Highway);
- Zone 2 access is via Wolgan Road on the eastern side, 170 m north of the Castlereagh Highway; and
- Zone 3 access is via Brays Lane on the northern side, 370 m west of the Castlereagh Highway.

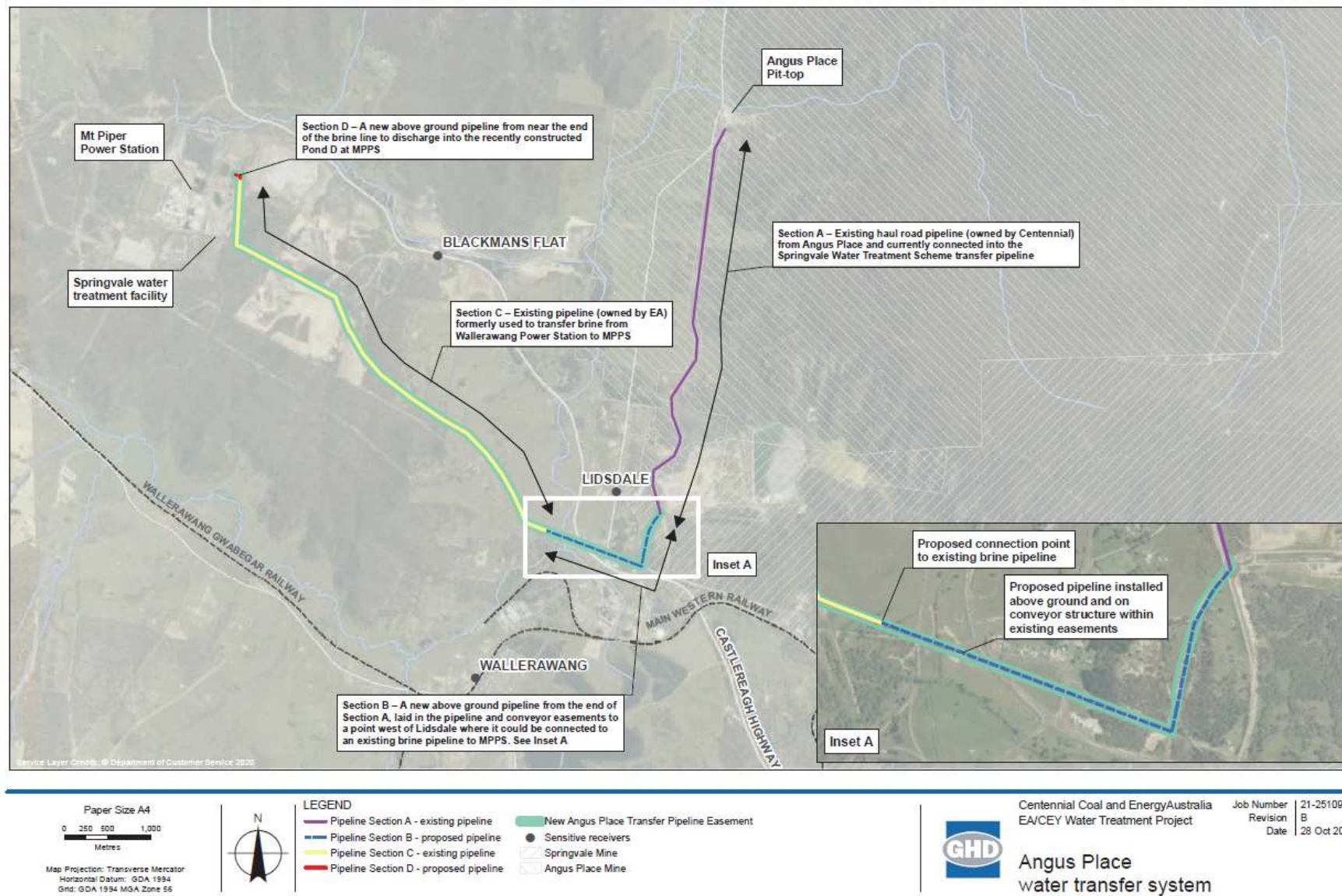


Figure 2.1 Angus Place water transfer system

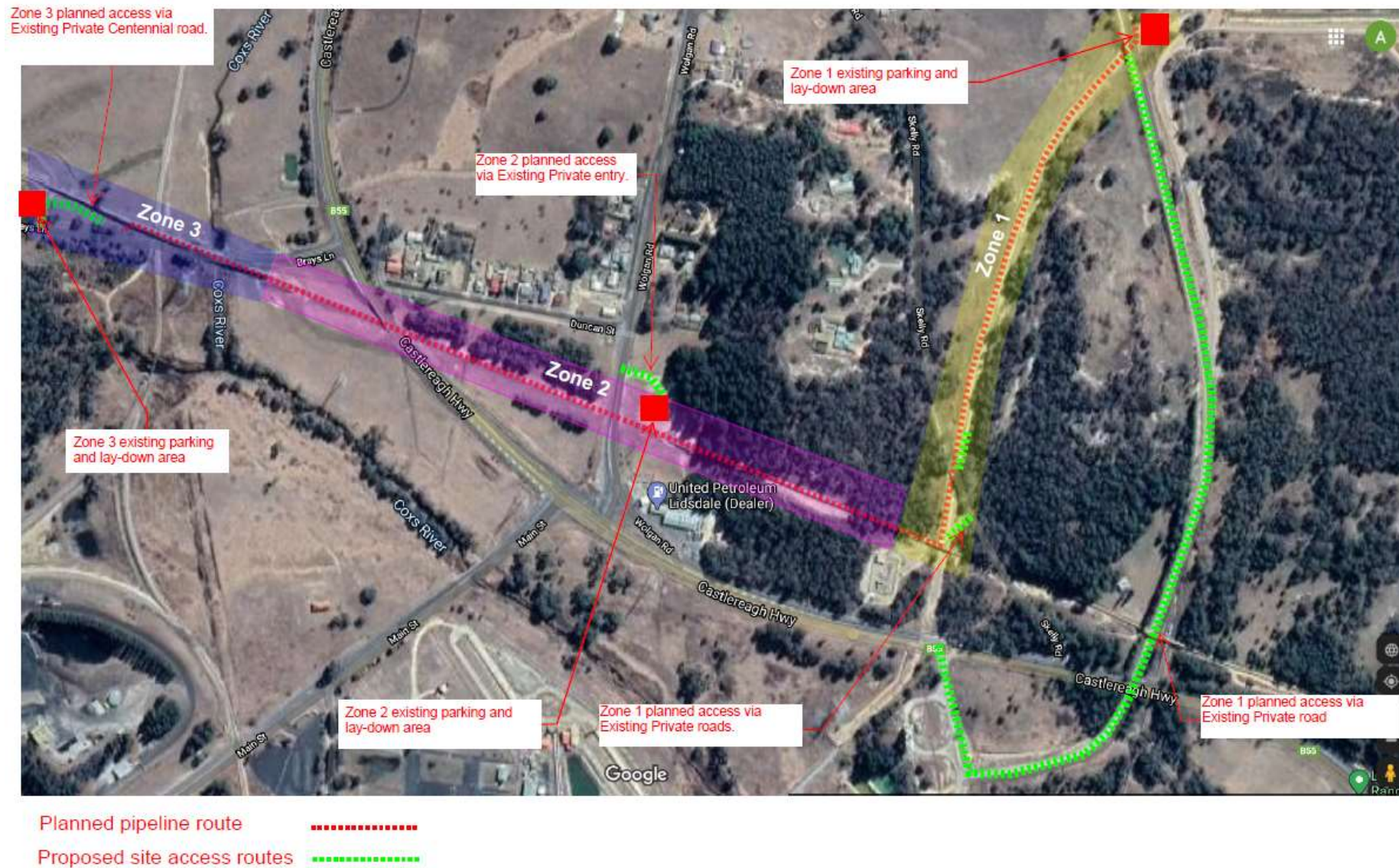


Figure 2.2 Locations of construction vehicle access to each work zone

2.3 Construction work hours

As per Condition 40 of the Angus Place project approval (MP06_0021), construction activities will be undertaken during standard construction hours as per the Interim construction Noise Guideline (ICNG), being:

- 7:00 am – 6:00 pm, Monday to Friday; and
- 8:00 am – 1:00 pm, Saturday.

No construction activities are proposed on Sundays or public holidays. Shift start and finish times will occur outside school bus times.

See the Driver Code of Conduct in Attachment D for further information.

2.4 Construction traffic movements

The proposed construction vehicle movements (maximum) at each worksite, including both light (commuter) and heavy (material deliveries) vehicle movements (one way) are identified in the modification report as follows:

- eight light vehicle movements per day; and
- eight heavy vehicle movements per day.

With the development of a more detailed construction program and selection of preferred contractor, construction vehicle movements will most likely be:

- six light vehicle movements per day; and
- two small rigid truck movements per day.

Work will be spread between Zones 1 and Zones 2/3 with works taking place concurrently.

The light vehicle movements each day at construction worksites will mainly be concentrated within two one hour “construction traffic” peak periods at the beginning and the end of each working day shift. Delivery of material will be discussed with the contractor and actively scheduled to avoid school bus times and peak periods where possible. Pipe deliveries will be coming from a storage site approximately 1 km from the construction site, therefore drive time is minimal.

The contractor will discourage car usage by promoting the use of public transport and/or car sharing. Due to the small workforce numbers, construction work hours and rural nature of the area, car sharing and use of public transport may not be viable.

2.5 Proposed workforce shuttle bus operations

Proposed shuttle bus operations will be considered for the construction workforce. However, due to the relatively low workforce numbers (a maximum of 5 contractors), short duration of the project and the likely dispersed residential locations of the workforce, the use of shuttle buses is unlikely to be reasonably or technically feasible for the proposed project worksites.

3 Existing traffic conditions

3.1 Road hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

- State roads - freeways and primary arterials (TfNSW managed);
- regional roads - secondary or sub arterials (Council managed and part funded by the State); and
- local roads - collector and local access roads (Council managed).



Source: Carto

Figure 3.1 TfNSW road hierarchy

Figure 3.1 shows the location of roads and Table 3.1 to Table 3.5 provide a detailed description of each of the roads in the vicinity of the water pipeline.

The Castlereagh Highway is a State highway that runs in a north westerly direction from Marrangaroo (near Lithgow) to Central NSW and passes through the Lidsdale and Mount Piper areas. Table 3.1 and Photograph 3.1 provide further details.

Table 3.1 Castlereagh Highway

Road classification and connectivity	State road
Alignment	Generally northwest/southeast between Golden Highway (Dunedoo) and Great Western Highway (Marrangaroo)
Number of lanes	One lane each way
Carriageway type	Sealed road
Carriageway width	7 m wide with travel lanes 3.5 m wide
Posted speed limit	Posted speed limit of 80 km/h in Lidsdale and 100 km/h in the vicinity of Boulder Road
Heavy vehicle access	26 m B-double approved
Traffic function	Provides connection between townships



Source: Google streetview

Photograph 3.1 Castlereagh Highway looking south towards Brays Lane

The other three local roads which will be utilised for the proposed pipeline construction workforce access are Brays Lane and Skelly Road, near Lidsdale and Boulder Road, near Mount Piper. Table 3.2 and Photograph 3.2 provide further details on Brays Lane.

Table 3.2 Brays Lane

Road classification and connectivity	Local road
Alignment	Generally northeast/southwest between Castlereagh Highway and Piper Flat Road
Number of lanes	One lane each way
Carriageway type	Sealed road
Carriageway width	Generally 5 m, 3 m at the bridge under the conveyor system
Posted speed limit	50 km/h
Heavy vehicle access	Approved for heavy vehicle access for trucks up to 19 m long
Traffic function	Provides local access



Source: Google streetview

Photograph 3.2 Brays Lane looking west from Castlereagh Highway

Duncan Street is a local residential street, which is located within approximately 100 m of the proposed pipeline route. Duncan Street is not proposed to be used for any construction access for the pipeline construction work. Table 3.3 and Photograph 3.3 provide further details.

Table 3.3 **Duncan Street**

Road classification and connectivity	Local road (cul-de-sac)
Alignment	East-west
Number of lanes	One lane each way with kerbside parking on the northern side
Carriageway type	Sealed road
Carriageway width	Generally 7 m with travel lane approximately 3.5 m
Posted speed limit	50 km/h
Heavy vehicle access	No heavy vehicle access is proposed for the project
Traffic function	Carries local traffic



Source: Google streetview

Photograph 3.3 **Duncan Street looking west from Wolgan Road**

Wolgan Road is a local road that runs in a north easterly direction from its intersection with the Castlereagh Highway near Lidsdale, past the Angus Place Mine, through to the Newnes campground. the Castlereagh Highway and Angus Place Mine pit top, Wolgan Road provides two traffic lanes with wide verges. It has a 50 km/h speed limit north of the Castlereagh Highway, through Lidsdale, then changes to 80 km/h north to and past the Angus Place Mine pit top. Table 3.4 and Photograph 3.4 provide further details.

Table 3.4 **Wolgan Road**

Road classification and connectivity	Local road
Alignment	Generally north-south between Wolgan and Wallerawang
Number of lanes	One lane each way
Carriageway type	Sealed road
Carriageway width	Generally 6 m with 3 m travel lanes
Posted speed limit	50 km/h in the vicinity of the site
Heavy vehicle access	Approved for heavy vehicle access for trucks up to 19 m long
Traffic function	Provides access to Wolgan and Wolgan Valley



Source: Google streetview

Photograph 3.4 **Wolgan Road looking north from Castlereagh Highway**

Table 3.5 and Photograph 3.5 provide further details on Boulder Road.

Table 3.5 **Boulder Road**

Road classification and connectivity	Local road
Alignment	Generally east-west between Castlereagh Highway and Back Cullen Bullen Road
Number of lanes	Two lanes eastbound and one lane westbound near Mt Piper Power Station
Carriageway type	Sealed road
Carriageway width	Generally 12 m with travel lane approximately 4 m
Posted speed limit	60 km/h near Mt Piper Power Station
Heavy vehicle access	Approved for heavy vehicle access for trucks up to 19 m long
Traffic function	Provide connection between Portland and Blackmans Flat



Source: Google streetview

Photograph 3.5 **Boulder Road looking west from the Castlereagh Highway**

Table 3.6 and Photograph 3.6 provide further details on Skelly Road.

Table 3.6 **Skelly Road**

Road classification and connectivity	Local road
Alignment	Generally northwest-southeast between Castlereagh Highway and Sawyers Road
Number of lanes	One lane each way
Carriageway type	Unsealed road at southern end, sealed northern end
Carriageway width	Generally 5 to 7 m, 6 m at the bridge over the existing pipelines
Default speed limit	50 km/h
Heavy vehicle access	Approved for heavy vehicle access for trucks up to 19 m long
Traffic function	Provide local access to properties



Source: Google streetview

Photograph 3.6 **Skelly Road looking northwest from the Castlereagh Highway**

3.2 Traffic volumes

Peak hourly traffic surveys were undertaken in August 2019 at two intersections in the vicinity of the proposed works, which are included as Attachment B. While Ian Holt Drive is not an access route for the project, this data presents traffic counts on the Castlereagh Highway immediately north of the access routes to the construction site.

These traffic surveys show the following peak hourly times and volumes for the relevant locality road network:

Castlereagh Highway, east of Wolgan Road

- Morning peak hour traffic (two way) = 356 vehicles at 6-7 am.
- Afternoon peak hour traffic (two way) = 415 vehicles at 3.45-4.45 pm.

Wolgan Road, north of the Castlereagh Highway

- Morning peak hour traffic (two way) = 107 vehicles at 6-7 am.
- Afternoon peak hour traffic (two way) = 141 vehicles at 3.45-4.45 pm.

Castlereagh Highway at Brays Lane (south of Ian Holt Drive)

- Morning peak hour traffic (two way) = 345 vehicles at 6-7 am.
- Afternoon peak hour traffic (two way) = 357 vehicles at 3-4 pm.

Castlereagh Highway towards Mount Piper (north of Ian Holt Drive)

- Morning peak hour traffic (two way) = 359 vehicles at 6-7 am.
- Afternoon peak hour traffic (two way) = 373 vehicles at 3-4 pm.

No detailed peak hourly intersection peak hourly intersection traffic count data is available for Brays Lane, Skelly Road and Boulder Road at their intersections with the Castlereagh Highway. However, a sample one-hour traffic survey of the current traffic usage of Brays Lane was undertaken on Thursday 11th March 2021, which recorded 8 hourly vehicle movements during the locality afternoon peak traffic, from the other surveys, which was 3 to 4 pm.

Based on the intersection traffic counts above, the additional vehicle movements proposed as part of this construction project are not significant when compared to total vehicle movements on the Castlereagh Highway. The Highway has sufficient capacity to handle the small number of vehicles required for the construction of the pipeline. Given this, no specific mitigation measures or infrastructure upgrades have been identified as being necessary to be implemented in relation to construction traffic.

3.3 Traffic safety

The intersection safety for sight distance at the relevant project access intersections which are proposed to be used by construction traffic, has been assessed by intersection sight line photographs which are included as Attachment C. These photographs show the intersection visibility meets the Austroads (2017) required intersection safety sight distance requirements which are.

- 181 m typically for the 80 km/h posted speed limit on the Castlereagh Highway near Lidsdale, and
- 97 m typically for the 50 km/h posted speed limit on Wolgan Road and Brays Lane.

The Centre for Road Safety within TfNSW publishes crash history within Lithgow LGA for a five-year period from 2015 to 2019. Figure 3.2 presents the crash history in the vicinity of the proposed construction site access.



Figure 3.2 Crashes history in the vicinity of the site

The locality crash map shows there were eight crashes on Castlereagh Highway near the locality of the site works in the five-year period, which has not resulted in any fatalities. These crashes mostly occurred in clusters at intersections. Table 3.7 presents a summary of the crashes.

Table 3.7 Crash history near the proposed site

Area	Crash year	Degree of crash	Lighting	Incident	Heavy vehicle involvement	Speeding	Fatigue
Lidsdale pipeline	2015	Moderate injury	Daylight	1	0	0	0
	2016	Moderate injury	Darkness	1	0	1	0
	2018	Non-casualty (towaway)	Daylight	1	1	0	0
Mt Piper Power Station pipeline	2015	Non-casualty (towaway)	Darkness	1	1	0	1
	2016	Serious injury	Daylight	1	0	0	1
	2017	Non-casualty (towaway)	Darkness	1	1	0	0
	2018	Non-casualty (towaway)	Darkness	1	1	0	0
	2019	Moderate injury	Daylight	1	1	1	0
Total				8	5	2	2

Source: Transport for NSW – Centre for Road Safety

4 Construction traffic management

4.1 Objective

This CTMP aims to ensure the safety of all workers and road users within the vicinity of the construction site and the following are the primary objectives:

- to minimise the impact of the construction vehicle traffic on the overall operation of the road network;
- to ensure continuous, safe and efficient movement of traffic for both the general public and construction workers;
- installation of appropriate advance warning signs to inform users of the changed traffic conditions;
- to provide a description of the construction vehicles and the volume of these construction vehicles accessing the construction site;
- to provide information regarding the changed access arrangement and a description of the proposed external routes for vehicles including the construction vehicles accessing the site; and
- establishment of a safe pedestrian environment in the vicinity of the site.

4.2 Hours of work

As per Condition 40 of the Angus Place project approval (MP06_0021), construction activities will be undertaken during standard construction hours as per the Interim construction Noise Guideline (ICNG), being:

- 7:00 am – 6:00 pm, Monday to Friday; and
- 8:00 am – 1:00 pm, Saturday.

No construction activities are proposed on Sundays or public holidays. Shift start and finish times will occur outside school bus times.

The transportation of materials to and from worksites will be limited to the hours detailed above. Delivery of material will be discussed with the contractor and scheduled to avoid school bus times and peak periods where possible.

It should be noted that due to Covid-19 the NSW State Government is flexible with ¹construction work hours.

¹ <https://www.planning.nsw.gov.au/-/media/Files/DPE/Media-Releases/2020/April/media-release-hours-extended-to-support-industry-during-covid-19-2020-04-02.pdf>

4.3 General requirements

In accordance with TfNSW requirements, all vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site. All subcontractors must be inducted by the lead contractor to ensure that the CTMP and related traffic control procedures are met for all vehicles entering and exiting the construction site. The lead contractor will monitor the roads leading to and from the site for dirt/debris and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

4.4 Site access

There are four separate site accesses proposed that will be used for the pipeline construction vehicle access. They are:

- the Castlereagh Highway;
- Skelly Road;
- Wolgan Road; and
- Brays Lane.

Due to the low to moderate peak hourly traffic volumes currently using these roads and the very low peak hourly traffic volumes which are proposed for the project construction traffic, no traffic safety or traffic congestion impacts are anticipated to occur for the project construction traffic at these locations.

4.5 Construction vehicle types

The development will require the removal and delivery of mixed materials. Deliveries will be generally using small rigid trucks with no need for over size over mass (OSOM) vehicles.

4.6 Construction vehicle routes

The proposed transport routes which will be used by truck traffic when either approaching or departing from the proposed construction work sites are shown on Figure 2.2.

All contractors are locally based (depots are all within a 5 km radius of the site) and pipe deliveries will be coming from a storage site approximately 1 km from the construction site via the Castlereagh Highway, therefore drive time for light and heavy vehicle driver is minimal. There will be no hazardous materials transported during construction.

There are three bus routes that service the Lidsdale area in the mornings and afternoons with times varying between 7.30 am to 9 am and 4 pm to 6 pm. Bus routes are limited to the Castlereagh Highway and Wolgan Road and the operation of the bus routes will not be affected by the construction of the pipeline. Where it is possible, deliveries to the construction areas will be scheduled to avoid school bus hours and peak commuter times.

4.7 Construction staging

The proposed timeframe for the construction and commissioning works is three months. An indicative program is provided in Table 4.1, which outlines the order of construction activities.

Table 4.1 Overview of construction activities and stages

Components and indicative timeframe	Typical activities
Stage 1: Site establishment and survey 5 days	• installation of safety and environmental controls; • implementation of temporary and/or new on-site traffic management measures; • site survey.
Stage 2: Pipe installation 2 months	• installation of pipeline concurrently along Zone 1 (adjacent to existing pipelines) and Zone 2/3 (existing conveyor section), being a total of approximately 2 km.
Stage 3: Commissioning phase 1 month	• test and commission fixed plant and infrastructure; • remove temporary construction mitigation measures and ensure site is safe and tidy.
Stage 4: Operational phase 4 months	• confirm full operation.

4.8 Stakeholder consultation

State and local government transport agency stakeholders will be identified and informed of the proposed timing of the works and possible impacts. The initial consultation stakeholders have been identified as follows with the preliminary consultation responses are included as Attachment A:

- Lithgow City Council (LCC); and
- TfNSW.

4.9 Pedestrian access

To provide segregation and protection for pedestrians, existing site fencing will define the extents of the works site. All pedestrian access points are to be securely locked when construction activities are not in progress.

4.10 Works zone requirements

No work zones will be required for this project.

4.11 Road occupancy licences

If the works require a lane or road closure (for example on Brays Lane near the overhead conveyor bridge), the proponent shall submit a Road Occupancy Licence (ROL) application to the TMC for approval, prior to carrying out the associated works.

4.12 Staff parking

Sufficient construction workforce car parking will be provided within each work site, to eliminate any on-street parking demand.

Notwithstanding this, the contractor will aim to minimise car usage by construction workers travelling to and from the project worksites site by promoting public transport usage where this is available in the vicinity of work sites. Car sharing by workers will also be encouraged.

Due to the relatively low workforce numbers at each location and the likely dispersed residential locations of the workforce, the use of shuttle buses is unlikely to be reasonably or technically feasible for the proposed project worksites.

4.13 Works site security

To ensure security to the construction site and protection to the general public, temporary road barriers and fences will be used to secure the site boundaries. All access points are to be securely locked when construction activities are not in progress.

4.14 Staff induction

All staff and subcontractors will be required to undergo a site induction prior to commencement of work. The induction will include permitted commuter traffic routes to and from the construction site for light and heavy vehicles, as well as standard environmental, occupation health and safety, driver protocols and emergency procedures.

The lead contractor will also discuss relevant traffic management requirements regularly as part of a toolbox talk and remind workers of when there are adverse climate conditions, public transport and car sharing opportunities.

4.15 Occupational health & safety

Any personnel required to undertake works or traffic control within the public domain shall be suitably trained and covered by appropriate insurances. If any traffic controllers are used, they must be TfNSW accredited.

4.16 Driver's Code of Conduct

The Driver's Code of Conduct (Attachment D) will be required to be read and signed by light and heavy vehicle drivers coming to and from site and will include procedures to address all relevant site and locality road safety and traffic management measures such as:

- compliance with all road rules and regulations;
- commuter traffic routes;
- vehicle speeds;
- driving to local road conditions;
- driver behaviour near schools, residential and shopping areas;
- courtesy to other road users;

- fatigue management;
- drug and alcohol testing;
- dangers of mobile phone use while driving;
- checking vehicles and covering loads;
- the appropriate use of compression braking; and
- safety procedures for accidents and breakdowns.

4.17 Traffic control measures

A Traffic Control Plan (TCP) is being developed in accordance with the Australian Standards and the RMS Traffic Control at Work Sites Manual Version 5 (RMS 2018). The TCP will be lodged separately along with the relevant Section 138 application and submitted to the relevant authorities. Communication with local residents and businesses will be undertaken as part of this process prior to the commencement of construction.

All recommended signs must be installed at the start of the shift and removed at the end of the shift on a typical construction day to actively communicate to bus drivers and commuter traffic that activities associated with construction are occurring. No sign should be placed when construction activities are not scheduled to occur.

References

Austroads (2017). Guide to Road Design Part 4A: Unsignalised & Signalised Intersections.

RMS (2018). Traffic Control at Work Sites.

Appendix A

Consultation responses

Tim Brooker

From: Abdullah Uddin
Sent: Wednesday, 3 March 2021 5:25 PM
To: Leanne Kearney
Cc: Tim Brooker; Baqir Husain; Katie Weekes
Subject: RE: Construction Traffic Management - Angus Place Mine

Hi Leanne

Thanks for your prompt response.

We will address all the points you have raised in our CTMP.

Best Regards

Abdullah Uddin

Associate Traffic Engineer



T 02 9493 9500
M 0425 478 650
E auddin@emmconsulting.com.au
in Connect with us

SYDNEY | Ground floor, 20 Chandos Street, St Leonards NSW 2065

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From: Leanne Kearney <leanne.kearney@lithgow.nsw.gov.au>
Sent: Tuesday, 2 March 2021 2:08 PM
To: Abdullah Uddin <auddin@emmconsulting.com.au>
Subject: Re: Construction Traffic Management - Angus Place Mine

CAUTION: This email originated outside of the Organisation.

Hi Abdullah

From Council’s perspective, you would need to provide details of any Council owned / controlled roads that may be impacted by works, including any temporary closures proposed to allow construction works to be undertaken.

I am assuming from the information provided that this work would involve accessing the above ground section of conveyor infrastructure that traverses overhead of sections of Brays lane.

In this instance, you would need to provide a Traffic Guidance Scheme showing how motorists will be protected from any risks whilst the works will be undertaken, as well as any temporary access points that need to be created off Council owned roads.

If you could provide a map showing the location of works, I would be able to provide more specific advice.

Regards

Leanne Kearney | Assets and Infrastructure Planning Manager

Infrastructure Services | [Lithgow City Council](#)
Phone: (02) 6354 9999 | Fax: (02) 6351 4259

From: Lithgow City Council <council@lithgow.nsw.gov.au>
Sent: Monday, 1 March 2021 3:11 PM
To: Technology One Connect <T1Connect@lithgow.nsw.gov.au>
Subject: FW: Construction Traffic Management - Angus Place Mine

#ECMBODY

Amy Tamasauskas | Records officer

Records | [Lithgow City Council](#)
Phone: (02) 6354 9999 | Fax: (02) 6351 4259

From: Abdullah Uddin <auddin@emmconsulting.com.au>
Sent: Monday, 1 March 2021 3:01 PM
To: Lithgow City Council <council@lithgow.nsw.gov.au>
Cc: Katie Weekes <kweekes@emmconsulting.com.au>; Tim Brooker <tbrooker@emmconsulting.com.au>; Baqir Husain <bhusain@emmconsulting.com.au>
Subject: Construction Traffic Management - Angus Place Mine

Attention: Mr Lewis Bezzina & Miss Leanne Kearney

Dear Lewis/ Leanne

We have been engaged by Centennial to prepare a Construction Traffic Management Plan (CTMP) for Angus Place Mine. We would like to get some initial feedback in preparation of the CTMP.

About the project:

Centennial Coal is currently awaiting approval for Modification 6 (MP 06_0021 and SSD 7592) for a proposed water transfer system between Angus Place Colliery and Springvale Water Treatment Plant at Mt Piper Power Station (MPPS). The pipeline will be using existing infrastructure in the vicinity of Lidsdale and Coks River (Section B).

Section B will be a new section of pipeline traversing an existing pipeline corridor and the Centennial conveyor easements, connecting to existing pipelines at either end. The Modification Report indicates that this section of pipeline will be installed above ground within the existing conveyor tunnel to traverse the Castlereagh Highway and Coks River and attached on brackets to the existing conveyor to minimise disturbance and construction footprint where possible.

TfNSW comments (attached):

TfNSW comments and our responses are provided below:

1. *The proposed works for the pipeline within the existing conveyor easement under the Castlereagh Highway will require concurrence per s138(2) of the Roads Act 1993 from TfNSW prior to the commencement of the work referred to as “Section B”.*

Response: [A section 138\(2\) may not be required as no works will be within 3 meters of the road reserve.](#)

2. *Plans confirming the location (in the form of coordinates) and specifications for the pipeline will need to be provided to TfNSW as a part of the s138(2) application.*

Response: [Centennial will provide plans confirming the location in the form of coordinates however it will not be part of a s138\(2\) application as this is not required.](#)

3. *A Road Occupancy Licence (ROL) is required prior to any works commencing within three (3) metres of the travel lanes of a State classified road, or work that has potential to impact traffic flow such as the use of traffic control devices or signage to protect workers. Please contact 1300 656 371 for further information regarding a ROL. A Traffic Control Plan prepared by a TfNSW accredited person is to be submitted as part of the ROL application.*

Response: [A ROL may not be required as no works will be within 3 meters of the road reserve. Below streetview and attached images of the construction method proposed. I understand that any work on this gantry would not be classified as within 3 metres.](#)

Before we start the CTMP, I would like to get your initial comments on the matters that we should cover in the CTMP.

We would appreciate your response on this at your earliest convenience.





Best Regards

Abdullah Uddin

Associate Traffic Engineer



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M 0425 478 650
E auddin@emmconsulting.com.au
in Connect with us

SYDNEY | Ground floor, 20 Chandos Street, St Leonards NSW 2065



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20 April 2021

WST12/000136/08 SF2012/046027

EMM Consulting
Ground Floor
20 Chandos Street
ST LEONARDS NSW 2065

Attention: Abdullah Uddin

Dear Sir

SSD 7592 MOD 6, Angus Place Colliery Water Transfer Pipeline Draft Construction Environmental Management Plan Review

Thank you for the referral regarding the abovementioned Draft Construction Environmental Management Plan via email dated 31 March 2021 for consultation in accordance with Condition 40, Schedule 2 of project approval MP 06_0021.

TfNSW have reviewed the documents provided as a part of the referral for modification 6 and understand that the modification involves:

- Redirecting mine water via existing and new pipelines to a storage pond at Mount Piper Power Station for subsequent treatment and re-use.
- Constructing and operating a water softening plant at the Angus Place pit top.
- Transfer of treated (softened) mine water (4.2ML/day) to the Springvale Water Treatment Facility or to underground storage.
- Construction period of 8 weeks utilising Wolgan Road and Castlereagh Highway, with a traffic generation of 8 light vehicles and 8 heavy vehicles a day.
- Installation of pipeline under the Castlereagh Highway within conveyor easements to a point west of Lidsdale (referred to as section B).

The Draft Environmental Management Plan incorporating the Construction Traffic Management Plan (CTMP) and Drivers Code of Conduct has been reviewed and does not adequately address the matters identified within the TMP annexure attached to TfNSW letter dated 24 December 2020.

TfNSW requires that the CTMP and DCoC be revised to address the matters identified within the TMP annexure attached to TfNSW letter dated 24 December 2020. TfNSW comments in relation to relevant points are provided in the annexure attached.

If you wish to discuss this matter further, please contact Howard Orr on (02) 6861 1530.

Yours faithfully



Alexandra Power
Team Leader of Development Services-West

Annexure: Comment on Draft CTMP and DCC in relation to points identified within the TMP annexure attached to TfNSW letter dated 24 December 2020

a. Specific commitments for the provision and use of buses and car-pooling during construction to limit peak hourly traffic in accordance with the approved Environmental Impact Statement (EIS) and conditions of consent. Plans and measures to manage the impacts of personal vehicle parking at pickup points (e.g. in towns) are to be detailed.

The provided information does not adequately address how the impacts will be managed.

The CTMP and DDC are to include information on how carpooling will be encouraged and monitored.

b. An enforceable policy for staff and contractors to use the designated commuter route in preference to back roads, where the journey is not unreasonably lengthened, as detailed in the approved EIS.

The provided CTMP and DCC do not indicate the designated routes. The TMCE and DDC do not provide an indication of the issue being an enforceable one.

The CTMP and DDC are to include detail of how the DCC will be enforced with staff and contractors.

c. Details of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing the site.

The provided CTMP provides minimal information on transport routes showing only access points to the land on which the work will be carried out and minimal broad detail on vehicle movements.

The CTMP is to provide the detail of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing each of the construction sites and how heavy vehicle deliveries will be managed to avoid impacts on the network and manage traffic safety at the intersections and access points.

e. Existing and projected background traffic, peak hour volumes and types and their interaction with projected development related traffic.

The provided CTMP provides peak traffic information at some points on the transport routes but does not provide information in relation to some of the transport and access routes that will be used for the development. Intersection assessments do not include all relevant intersections and include Ian Holt Drive which does not appear to be a transport route for this proposed development.

The CTMP is to provide existing and projected background traffic, peak hour volumes and types and their interaction with projected development related traffic, including assessment how the potential impacts will be mitigated with respect construction traffic management and any required infrastructure upgrades.

f. Loads, weights, lengths and number of movements of haulage and construction related vehicles including Over Size Over Mass (OSOM) loads.

No specific information on loads provided other than up to 8 x 19 m vehicles will be utilised per day across the two concurrently operating construction sites.

The CTMP is to detail what the loads, weights, lengths and number of movements of haulage and construction related vehicles including Over Size Over Mass (OSOM) loads will be and how the potential impacts will be mitigated with respect construction traffic management and any required infrastructure upgrades.

g. The management and coordination of construction and staff vehicle movements to the site and measures to limit disruption to other motorists, including special OSOM management measures.

Transport for NSW

51-55 Currajong Street PARKES NSW 2870 | PO Box 334 PARKES NSW 2870 DX20256

P 6861 1449 | W development.western@rms.nsw.gov.au | ABN 18 804 239 602

No specific information on management and coordination of construction and staff vehicle movements to the site and measures to limit disruption to other motorists, including special OSOM management measures is provided.

The CTMP is to detail how construction and staff vehicle movements to the site will be managed to limit disruption to other motorists, including special OSOM management measures and any required infrastructure upgrades.

h. Scheduling of haulage vehicle movements to occur outside of daily commuter peak periods, local special event times, school bus (both in rural and town areas) and school zone operating hours.

The CTMP does not provide adequate information in relation to identification of daily commuter peak periods, special events, school bus operations.

The CTMP is to provide the detail of daily commuter peak periods, special events, school bus operations and demonstrate how haulage vehicle movements will be scheduled to occur outside the daily commuter peak periods.

i. Active communication procedures for traffic such as school buses or haulage vehicles from other quarries, or near potential safety hazards.

The CTMP does not provide adequate information in relation to identification of daily commuter peak periods, special events, school bus operations and does not demonstrate what communication procedure will be put in place.

The CTMP is to identify of daily commuter peak periods, special events, school bus operations and other hazards and detail the active communication procedures to provide awareness and mitigate impacts.

j. Scheduling of heavy vehicle movements to minimise convoy or platoon lengths.

The CTMP provides total vehicle movement per day and in relation to heavy vehicle indicates up to 8 per day but more likely 1 per day. It is not clear how the variation will come about and how this will be managed to ensure that peak commuter periods are avoided and convoy or platoon lengths will be minimised.

The CTMP is to clarify the difference between maximum and probably heavy vehicle numbers and demonstrate how haulage vehicle movements will be scheduled to occur outside the daily commuter peak periods and how convoy or platoon lengths will be minimised when vehicle numbers exceed the “probably” one per day.

k. Consideration to minimise the route length for road transport, particularly for OSOM loads.

The provided CTMP provides minimal information on transport routes showing only access points to the land on which the work will be carried out and minimal broad detail on vehicle movements.

The CTMP is to provide the detail of origin, destination, quantity, size and frequency of vehicle movements associated with the development including those accessing and egressing each of the construction sites and demonstrate how the route lengths have been considered and what steps considered or taken to minimise road transport.

l. Any OSOM will be the subject of separate permits through the National Heavy Vehicle Regulator.

The CTMP indicates the largest delivery vehicle will be 19m.

The CTMP is to confirm that no over size or over mass vehicles will be required for the project.

m. Mitigation of local climate conditions that may affect road safety for vehicles used during construction, operation and decommissioning of the facility (e.g. scheduling during daylight hours, or outside of fog, wet weather, ice or snow).

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The CTMP does not demonstrate any consideration of local climate conditions or climate conditions on transport routes. The DCC provides a broad statement on speed being appropriate for the conditions.

The CTMP is to demonstrate consideration of the climatic conditions on the transport routes including staff accessing and leaving the site and demonstrate how risks associated with the climate conditions will be managed to mitigate the risks.

n. Transport of hazardous materials in accordance with the relevant transport codes.

The CTMP does not indicate the transport of any hazardous materials will be required.

The CTMP is to confirm that no hazardous material will be transported as part of the project.

o. Specific mitigation measures along the approved transport routes. Road and intersection improvement works are to be completed prior to the commencement of on-site construction unless specifically approved otherwise in the conditions of consent.

The CTMP does not assess or specify any mitigation works including intersection or road upgrade required (assessed against Austroads road safety and design manuals).

The CTMP is to assess the project traffic impacts on the road network and assess whether upgrading works are required (in accordance with Austroads road safety and design manuals).

p. Consultation and engagement with affected stakeholders, including regulatory authorities, landowners, businesses, bus operators and so forth.

The CTMP does not demonstrate consultation and engagement with affected stakeholders other than TfNSW and Lithgow City Council.

The CMPT is to identify affected stakeholders including regulatory authorities, landowners, businesses, bus operators and so forth and demonstrate consultation with them on traffic impacts and proposed mitigation.

u. Measures to ensure responsible fatigue management and discourage driving under the influence of alcohol and/or drugs, dangers of mobile phone use and driving to the conditions, and adherence to posted speed limits.

The CTMP indicates the DCC will address the issue of drug and alcohol use. The DCC does not appear to address this issue.

The CTMP and DCC are to include measures to ensure responsible fatigue management and discourage driving under the influence of alcohol and/or drugs, dangers of mobile phone use and driving to the conditions, and adherence to posted speed limits and what enforcement measures will be in place in regard to these.

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Appendix B

Intersection Traffic Survey



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : LITGOW Angus Place Colliery
Day/Date : Tuesday / 13th August 2019

Intersection Details

Obtained via satellite

May be incorrect

AM PEAK HOUR
0600 - 0700



Castlereagh Hwy

T	L	
83	5	AM
225	12	PM

R	8	13
	PM	AM
L	4	4



Ian Holt Dr

128	0	PM
258	0	AM

PM PEAK HOUR
1500 - 1600

Weather >>>



Castlereagh Hwy



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : LITGOW Angus Place Colliery
Day/Date : Tuesday / 13th August 2019

Lights	NORTH		EAST		SOUTH				Heavies	NORTH		EAST		SOUTH				Combined	NORTH		EAST		SOUTH				
	Castlereagh		Ian Holt Dr		Castlereagh					Castlereagh		Castlereagh		Ian Holt Dr					Castlereagh								
Time Per	T	L	R	L	R	T	TOT		Time Per	T	L	R	L	R	T	TOT		Time Per	T	L	R	L	R	T	TOT		
0500 - 0515	6	0	0	0	0	5	11		0500 - 0515	2	0	0	0	0	1	3		0500 - 0515	8	0	0	0	0	0	6	14	
0515 - 0530	6	0	0	0	0	10	16		0515 - 0530	1	0	0	0	0	2	3		0515 - 0530	7	0	0	0	0	0	12	19	
0530 - 0545	8	0	0	0	0	18	26		0530 - 0545	0	0	0	0	0	1	1		0530 - 0545	8	0	0	0	0	0	19	27	
0545 - 0600	13	1	1	1	0	30	46		0545 - 0600	0	0	0	0	0	1	1		0545 - 0600	13	1	1	1	0	31	47		
0600 - 0615	14	1	0	0	0	52	67		0600 - 0615	1	0	0	0	0	3	4		0600 - 0615	15	1	0	0	0	55	71		
0615 - 0630	18	0	5	1	0	54	78		0615 - 0630	0	0	0	0	0	2	2		0615 - 0630	18	0	5	1	0	56	80		
0630 - 0645	30	3	5	3	0	100	141		0630 - 0645	3	0	1	0	0	3	7		0630 - 0645	33	3	6	3	0	103	148		
0645 - 0700	17	1	2	0	0	42	62		0645 - 0700	0	0	0	0	0	2	2		0645 - 0700	17	1	2	0	0	44	64		
0700 - 0715	16	2	1	1	0	25	45		0700 - 0715	1	1	1	1	0	4	8		0700 - 0715	17	3	2	2	0	29	53		
0715 - 0730	23	3	1	1	0	24	52		0715 - 0730	1	0	0	0	0	7	8		0715 - 0730	24	3	1	1	0	31	60		
0730 - 0745	16	1	0	0	0	33	50		0730 - 0745	2	1	0	0	0	10	13		0730 - 0745	18	2	0	0	0	43	63		
0745 - 0800	25	3	0	1	1	22	52		0745 - 0800	2	0	0	0	0	2	4		0745 - 0800	27	3	0	1	1	24	56		
0800 - 0815	19	2	1	1	0	33	56		0800 - 0815	5	0	0	0	0	4	9		0800 - 0815	24	2	1	1	0	37	65		
0815 - 0830	41	1	2	1	0	38	83		0815 - 0830	3	0	0	0	0	3	6		0815 - 0830	44	1	2	1	0	41	89		
0830 - 0845	27	1	3	0	0	11	42		0830 - 0845	2	0	0	0	0	3	5		0830 - 0845	29	1	3	0	0	14	47		
0845 - 0900	27	0	0	1	0	18	46		0845 - 0900	2	1	0	0	0	4	7		0845 - 0900	29	1	0	1	0	22	53		
Per End	306	19	21	11	1	515	873		Per End	25	3	2	1	0	52	83		Per End	331	22	23	12	1	567	956		

Lights		NORTH		EAST		SOUTH			Heavies		NORTH		EAST		SOUTH			Combined		NORTH		EAST		SOUTH		
		Castlereagh		Ian Holt Dr		Castlereagh					Castlereagh		Ian Holt Dr		Castlereagh					Castlereagh		Ian Holt Dr		Castlereagh		
Peak Per	T	L	R	L	R	T	TOT		Peak Per	T	L	R	L	R	T	TOT		Peak Per	T	L	R	L	R	T	TOT	
0500 - 0600	33	1	1	1	0	63	99		0500 - 0600	3	0	0	0	0	5	8		0500 - 0600	36	1	1	1	0	68	107	
0515 - 0615	41	2	1	1	0	110	155		0515 - 0615	2	0	0	0	0	7	9		0515 - 0615	43	2	1	1	0	117	164	
0530 - 0630	53	2	6	2	0	154	217		0530 - 0630	1	0	0	0	0	7	8		0530 - 0630	54	2	6	2	0	161	225	
0545 - 0645	75	5	11	5	0	236	332		0545 - 0645	4	0	1	0	0	9	14		0545 - 0645	79	5	12	5	0	245	346	
0600 - 0700	79	5	12	4	0	248	348		0600 - 0700	4	0	1	0	0	10	15		0600 - 0700	83	5	13	4	0	258	363	
0615 - 0715	81	6	13	5	0	221	326		0615 - 0715	4	1	2	1	0	11	19		0615 - 0715	85	7	15	6	0	232	345	
0630 - 0730	86	9	9	5	0	191	300		0630 - 0730	5	1	2	1	0	16	25		0630 - 0730	91	10	11	6	0	207	325	
0645 - 0745	72	7	4	2	0	124	209		0645 - 0745	4	2	1	1	0	23	31		0645 - 0745	76	9	5	3	0	147	240	
0700 - 0800	80	9	2	3	1	104	199		0700 - 0800	6	2	1	1	0	23	33		0700 - 0800	86	11	3	4	1	127	232	
0715 - 0815	83	9	2	3	1	112	210		0715 - 0815	10	1	0	0	0	23	34		0715 - 0815	93	10	2	3	1	135	244	
0730 - 0830	101	7	3	3	1	126	241		0730 - 0830	12	1	0	0	0	19	32		0730 - 0830	113	8	3	3	1	145	273	
0745 - 0845	112	7	6	3	1	104	233		0745 - 0845	12	0	0	0	0	12	24		0745 - 0845	124	7	6	3	1	116	257	
0800 - 0900	114	4	6	3	0	100	227		0800 - 0900	12	1	0	0	0	14	27		0800 - 0900	126	5	6	3	0	114	254	
PEAK HR	79	5	12	4	0	248	348		PEAK HR	4	0	1	0	0	10	15		PEAK HR	83	5	13	4	0	258	363	



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM

Job No/Name : LITGOW Angus Place Colliery

Day/Date : Tuesday / 13th August 2019

AM PEAK HOUR

0600 - 0700

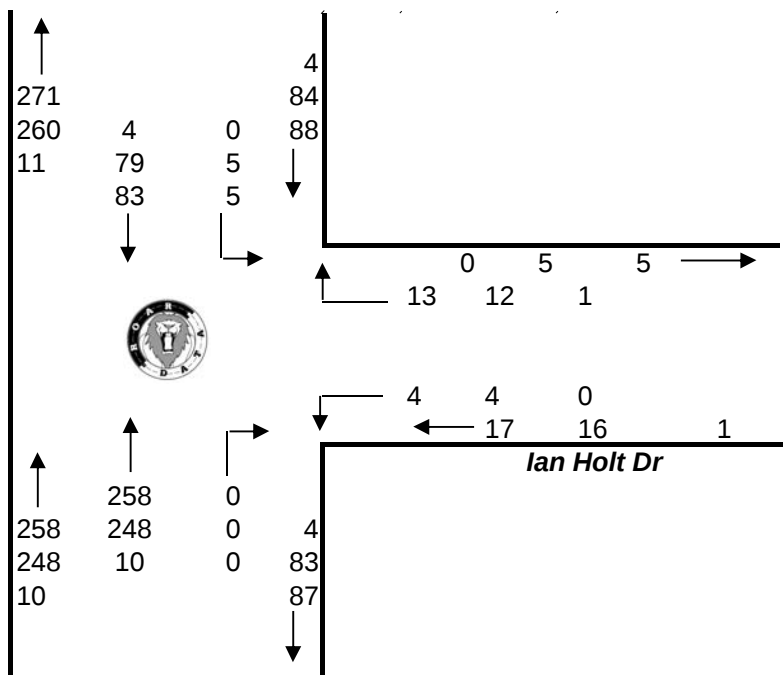
TOTAL VOLUMES

FOR COUNT

PERIOD

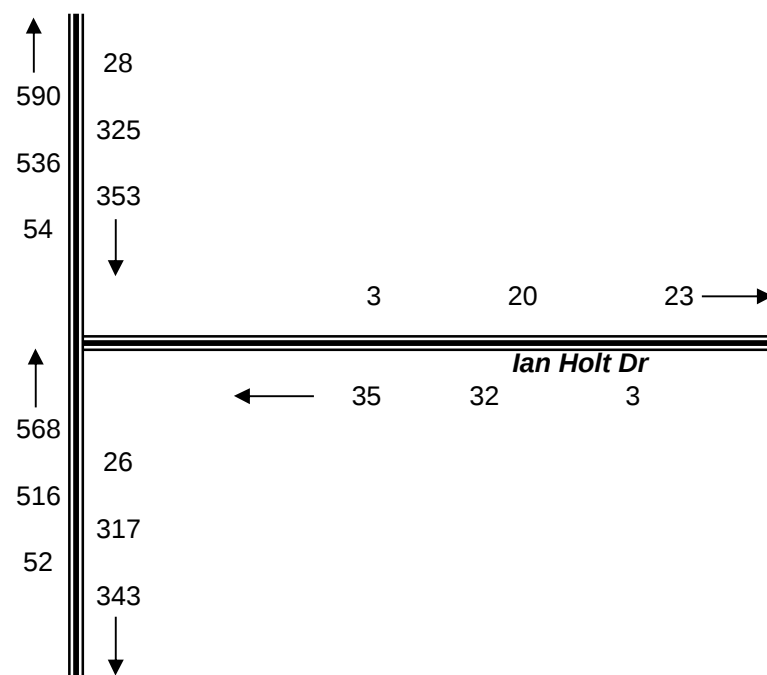


Castlereagh Hwy



Castlereagh Hwy

Castlereagh Hwy



Castlereagh Hwy



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : LITGOW Angus Place Colliery
Day/Date : Tuesday / 13th August 2019

Lights	NORTH		EAST		SOUTH		TOT		Heavies	NORTH		EAST		SOUTH		TOT		Combined	NORTH		EAST		SOUTH		TOT
	Castlereagh		Ian Holt Dr		Castlereagh					Castlereagh		Castlereagh		Ian Holt Dr					Castlereagh		Castlereagh		Ian Holt Dr		
Time Per	T	L	R	L	R	T		Time Per	T	L	R	L	R	T		Time Per	T	L	R	L	R	T			
1300 - 1315	33	0	0	0	1	30	64	1300 - 1315	3	0	0	0	0	3	6	1300 - 1315	36	0	0	0	1	33	70		
1315 - 1330	16	1	1	0	0	19	37	1315 - 1330	2	0	0	0	0	5	7	1315 - 1330	18	1	1	0	0	24	44		
1330 - 1345	19	0	1	0	0	21	41	1330 - 1345	5	0	0	0	0	6	11	1330 - 1345	24	0	1	0	0	27	52		
1345 - 1400	34	1	0	0	0	23	58	1345 - 1400	5	0	0	0	0	0	5	1345 - 1400	39	1	0	0	0	23	63		
1400 - 1415	22	5	1	0	0	36	64	1400 - 1415	5	0	0	0	0	1	6	1400 - 1415	27	5	1	0	0	37	70		
1415 - 1430	28	0	2	0	0	27	57	1415 - 1430	4	1	0	0	0	2	7	1415 - 1430	32	1	2	0	0	29	64		
1430 - 1445	29	0	1	1	0	28	59	1430 - 1445	1	0	0	0	0	4	5	1430 - 1445	30	0	1	1	0	32	64		
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1500 - 1515	48	2	1	2	0	37	90	1500 - 1515	5	0	0	0	0	3	8	1500 - 1515	53	2	1	2	0	40	98		
1515 - 1530	62	5	3	0	0	19	89	1515 - 1530	8	0	1	0	0	3	12	1515 - 1530	70	5	4	0	0	22	101		
1530 - 1545	50	2	3	0	0	30	85	1530 - 1545	1	0	0	0	0	2	3	1530 - 1545	51	2	3	0	0	32	88		
1545 - 1600	48	3	0	1	0	31	83	1545 - 1600	3	0	0	1	0	3	7	1545 - 1600	51	3	0	2	0	34	90		
1600 - 1615	35	1	0	0	2	29	67	1600 - 1615	1	0	1	0	0	0	2	1600 - 1615	36	1	1	0	2	29	69		
1615 - 1630	24	1	2	1	0	22	50	1615 - 1630	1	0	0	0	0	1	2	1615 - 1630	25	1	2	1	0	23	52		
1630 - 1645	49	3	0	0	0	23	75	1630 - 1645	2	0	0	0	0	1	3	1630 - 1645	51	3	0	0	0	24	78		
1645 - 1700	33	2	1	0	3	21	60	1645 - 1700	2	0	0	0	0	1	3	1645 - 1700	35	2	1	0	3	22	63		
Per End	544	28	18	6	7	425	1028	Per End	49	1	2	1	0	36	89	Per End	593	29	20	7	7	461	1117		

Lights		NORTH		EAST		SOUTH			Heavies		NORTH		EAST		SOUTH			Combined		NORTH		EAST		SOUTH	
		Castlereagh		Ian Holt Dr		Castlereagh					Castlereagh		Ian Holt Dr		Castlereagh					Castlereagh		Ian Holt Dr		Castlereagh	
Peak Per	T	L	R	L	R	T	TOT	Peak Per	T	L	R	L	R	T	TOT	Peak Per	T	L	R	L	R	T	TOT		
1300 - 1400	102	2	2	0	1	93	200	1300 - 1400	15	0	0	0	0	14	29	1300 - 1400	117	2	2	0	1	107	229		
1315 - 1415	91	7	3	0	0	99	200	1315 - 1415	17	0	0	0	0	12	29	1315 - 1415	108	7	3	0	0	111	229		
1330 - 1430	103	6	4	0	0	107	220	1330 - 1430	19	1	0	0	0	9	29	1330 - 1430	122	7	4	0	0	116	249		
1345 - 1445	113	6	4	1	0	114	238	1345 - 1445	15	1	0	0	0	7	23	1345 - 1445	128	7	4	1	0	121	261		
1400 - 1500	93	7	6	2	1	120	229	1400 - 1500	11	1	0	0	0	8	20	1400 - 1500	104	8	6	2	1	128	249		
1415 - 1515	119	4	6	4	1	121	255	1415 - 1515	11	1	0	0	0	10	22	1415 - 1515	130	5	6	4	1	131	277		
1430 - 1530	153	9	7	4	1	113	287	1430 - 1530	15	0	1	0	0	11	27	1430 - 1530	168	9	8	4	1	124	314		
1445 - 1545	174	11	9	3	1	115	313	1445 - 1545	15	0	1	0	0	9	25	1445 - 1545	189	11	10	3	1	124	338		
1500 - 1600	208	12	7	3	0	117	347	1500 - 1600	17	0	1	1	0	11	30	1500 - 1600	225	12	8	4	0	128	377		
1515 - 1615	195	11	6	1	2	109	324	1515 - 1615	13	0	2	1	0	8	24	1515 - 1615	208	11	8	2	2	117	348		
1530 - 1630	157	7	5	2	2	112	285	1530 - 1630	6	0	1	1	0	6	14	1530 - 1630	163	7	6	3	2	118	299		
1545 - 1645	156	8	2	2	2	105	275	1545 - 1645	7	0	1	1	0	5	14	1545 - 1645	163	8	3	3	2	110	289		
1600 - 1700	141	7	3	1	5	95	252	1600 - 1700	6	0	1	0	0	3	10	1600 - 1700	147	7	4	1	5	98	262		
PEAK HR	208	12	7	3	0	117	347	PEAK HR	17	0	1	1	0	11	30	PEAK HR	225	12	8	4	0	128	377		



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM

Job No/Name : LITGOW Angus Place Colliery

Day/Date : Tuesday / 13th August 2019

PM PEAK HOUR

1500 - 1600

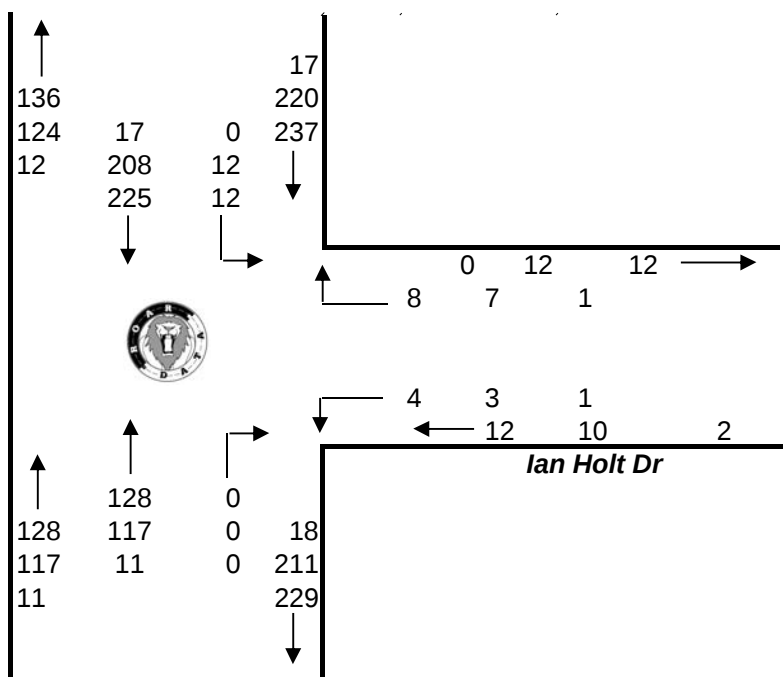
TOTAL VOLUMES

FOR COUNT

PERIOD

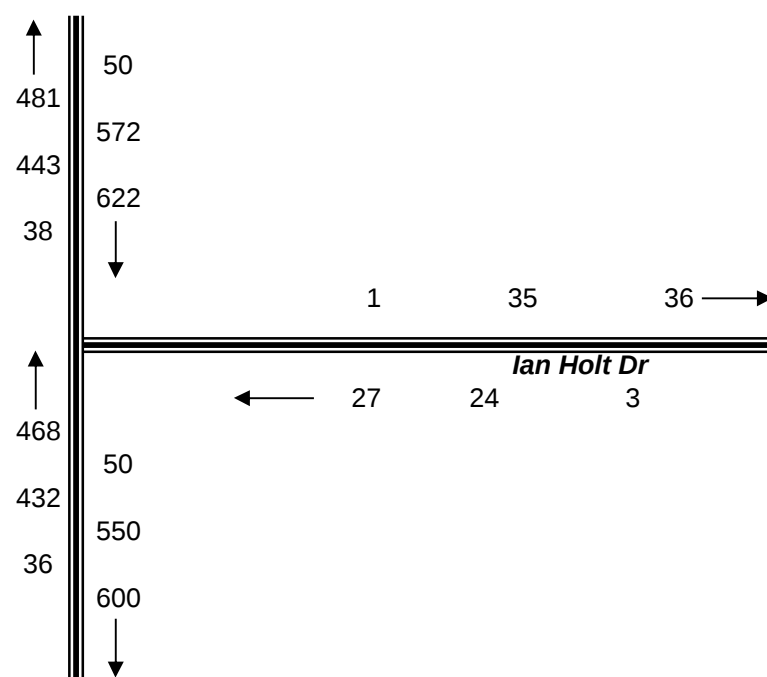


Castlereagh Hwy



Castlereagh Hwy

Castlereagh Hwy



Castlereagh Hwy



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : LITGOW Angus Place Colliery
Day/Date : Tuesday / 13th August 2019

Intersection Details

Obtained via satellite

May be incorrect

AM PEAK HOUR
0600 - 0700



Wolgan Rd

Castlereagh Hwy

R	T	L	
5	11	24	AM
9	29	44	PM

	AM	PM	
L	7	3	
T	67	142	
R	8	29	

	PM	AM	
R	34	35	
T	103	189	
L	39	24	

	L	T	R	
PM	14	22	53	
AM	65	25	15	

Castlereagh Hwy

PM PEAK HOUR
1545 - 1645

Weather >>>



Main St



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : LITGOW Angus Place Colliery
Day/Date : Tuesday / 13th August 2019

Lights

Lights	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0500 - 0515	0	0	0	0	3	0	0	2	3	1	7	0	16
0515 - 0530	2	2	0	0	7	0	1	0	4	0	7	2	25
0530 - 0545	1	1	0	0	4	1	7	2	11	0	10	1	38
0545 - 0600	4	1	0	0	11	2	9	3	7	2	16	4	59
0600 - 0615	1	2	0	0	6	4	8	7	2	3	26	3	62
0615 - 0630	7	4	2	1	14	2	18	6	4	4	48	12	122
0630 - 0645	3	1	1	5	21	1	14	6	4	11	45	10	122
0645 - 0700	10	4	2	1	22	1	25	4	5	6	60	9	149
0700 - 0715	4	2	0	0	14	1	2	0	4	1	23	4	55
0715 - 0730	12	5	2	0	23	3	2	3	5	3	24	6	88
0730 - 0745	2	6	1	0	17	2	7	7	5	4	25	5	81
0745 - 0800	10	8	2	1	18	3	14	11	14	5	21	4	111
0800 - 0815	2	1	1	2	11	4	5	1	1	6	18	7	59
0815 - 0830	7	4	2	2	39	3	5	4	9	15	21	6	117
0830 - 0845	11	7	0	3	28	3	2	3	6	3	23	9	98
0845 - 0900	4	7	2	2	15	9	0	5	2	5	16	4	71
Period End	80	55	15	17	253	39	119	64	86	69	390	86	1273

Heavies

Heavies	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Time Per	L	I	R	L	I	R	L	I	R	L	I	R	TOT
0500 - 0515	0	0	0	0	1	0	0	0	0	0	1	0	2
0515 - 0530	0	0	0	0	2	0	0	0	1	0	2	0	5
0530 - 0545	0	0	0	0	0	0	0	0	0	0	1	1	2
0545 - 0600	0	0	0	0	0	0	0	0	0	1	0	0	1
0600 - 0615	0	0	0	0	0	0	0	0	0	0	4	0	4
0615 - 0630	1	0	0	0	1	0	0	0	0	0	2	1	5
0630 - 0645	1	0	0	0	1	0	0	2	0	0	2	0	6
0645 - 0700	1	0	0	0	2	0	0	0	0	0	2	0	5
0700 - 0715	0	0	0	1	1	0	0	0	1	2	3	0	8
0715 - 0730	1	1	0	0	1	0	0	0	0	0	9	1	13
0730 - 0745	1	1	0	0	0	0	2	0	1	1	1	3	10
0745 - 0800	1	1	0	0	3	0	0	0	1	0	1	1	8
0800 - 0815	2	0	0	0	3	0	0	0	0	1	2	0	8
0815 - 0830	0	0	0	0	1	0	2	0	0	0	2	0	5
0830 - 0845	0	0	0	0	4	0	0	0	1	1	4	0	10
0845 - 0900	0	0	0	0	2	0	0	1	0	2	3	1	9
Period End	8	3	0	1	22	0	4	3	5	8	39	8	101

Lights

Lights	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Peak Per	L	I	R	L	I	R	L	I	R	L	I	R	TOT
0500 - 0600	7	4	0	0	25	3	17	7	25	3	40	7	138
0515 - 0615	8	6	0	0	28	7	25	12	24	5	59	10	184
0530 - 0630	13	8	2	1	35	9	42	18	24	9	100	20	281
0545 - 0645	15	8	3	6	52	9	49	22	17	20	135	29	365
0600 - 0700	21	11	5	7	63	8	65	23	15	24	179	34	455
0615 - 0715	24	11	5	7	71	5	59	16	17	22	176	35	448
0630 - 0730	29	12	5	6	80	6	43	13	18	21	152	29	414
0645 - 0745	28	17	5	1	76	7	36	14	19	14	132	24	373
0700 - 0800	28	21	5	1	72	9	25	21	28	13	93	19	335
0715 - 0815	26	20	6	3	69	12	28	22	25	18	88	22	339
0730 - 0830	21	19	6	5	85	12	31	23	29	30	85	22	368
0745 - 0845	30	20	5	8	96	13	26	19	30	29	83	26	385
0800 - 0900	24	19	5	9	93	19	12	13	18	29	78	26	345

PEAK HOUR	21	11	5	7	63	8	65	23	15	24	179	34	455
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Heavies

Heavies	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Peak Per	L	I	R	L	I	R	L	I	R	L	I	R	TOT
0500 - 0600	0	0	0	0	3	0	0	0	1	1	4	1	10
0515 - 0615	0	0	0	0	2	0	0	0	1	1	7	1	12
0530 - 0630	1	0	0	0	1	0	0	0	0	1	7	2	12
0545 - 0645	2	0	0	0	2	0	0	2	0	1	8	1	16
0600 - 0700	3	0	0	0	4	0	0	2	0	0	10	1	20
0615 - 0715	3	0	0	1	5	0	0	2	1	2	9	1	24
0630 - 0730	3	1	0	1	5	0	0	2	1	2	16	1	32
0645 - 0745	3	2	0	1	4	0	2	0	2	3	15	4	36
0700 - 0800	3	3	0	1	5	0	2	0	3	3	14	5	39
0715 - 0815	5	3	0	0	7	0	2	0	2	2	13	5	39
0730 - 0830	4	2	0	0	7	0	4	0	2	2	6	4	31
0745 - 0845	3	1	0	0	11	0	2	0	2	2	9	1	31
0800 - 0900	2	0	0	0	10	0	2	1	1	4	11	1	32

PEAK HOUR	3	0	0	0	4	0	0	2	0	0	10	1	20
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R.O.A.R. DATA

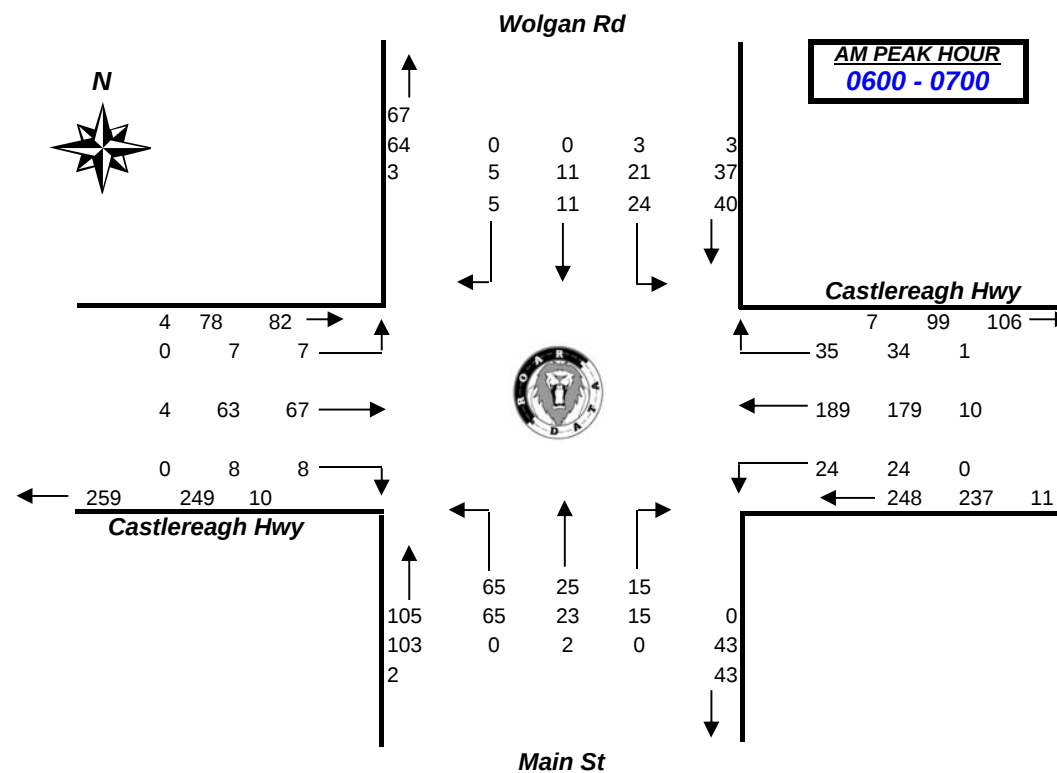
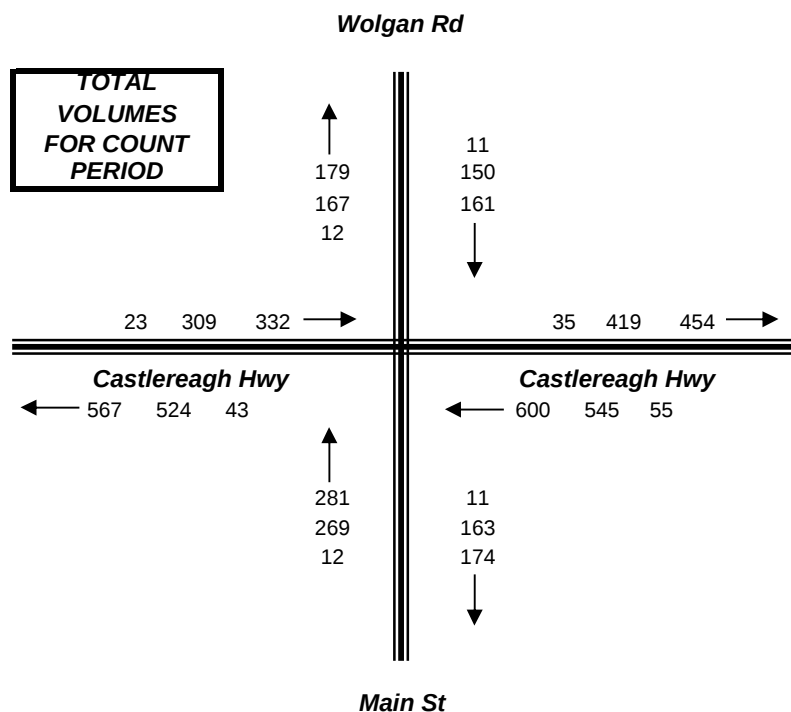
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : LITGOW Angus Place Colliery
Day/Date : Tuesday / 13th August 2019

COMBINED	NORTH			WEST			SOUTH			EAST			TOT
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Time Per	<u>L</u>	<u>T</u>	<u>R</u>	<u>L</u>	<u>T</u>	<u>R</u>	<u>L</u>	<u>T</u>	<u>R</u>	<u>L</u>	<u>T</u>	<u>R</u>	
0500 - 0515	0	0	0	0	4	0	0	2	3	1	8	0	18
0515 - 0530	2	2	0	0	9	0	1	0	5	0	9	2	30
0530 - 0545	1	1	0	0	4	1	7	2	11	0	11	2	40
0545 - 0600	4	1	0	0	11	2	9	3	7	3	16	4	60
0600 - 0615	1	2	0	0	6	4	8	7	2	3	30	3	66
0615 - 0630	8	4	2	1	15	2	18	6	4	4	50	13	127
0630 - 0645	4	1	1	5	22	1	14	8	4	11	47	10	128
0645 - 0700	11	4	2	1	24	1	25	4	5	6	62	9	154
0700 - 0715	4	2	0	1	15	1	2	0	5	3	26	4	63
0715 - 0730	13	6	2	0	24	3	2	3	5	3	33	7	101
0730 - 0745	3	7	1	0	17	2	9	7	6	5	26	8	91
0745 - 0800	11	9	2	1	21	3	14	11	15	5	22	5	119
0800 - 0815	4	1	1	2	14	4	5	1	1	7	20	7	67
0815 - 0830	7	4	2	2	40	3	7	4	9	15	23	6	122
0830 - 0845	11	7	0	3	32	3	2	3	7	4	27	9	108
0845 - 0900	4	7	2	2	17	9	0	6	2	7	19	5	80
Period End	88	58	15	18	275	39	123	67	91	77	429	94	1374

COMBINED	NORTH			WEST			SOUTH			EAST			TOT
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	
0500 - 0600	7	4	0	0	28	3	17	7	26	4	44	8	148
0515 - 0615	8	6	0	0	30	7	25	12	25	6	66	11	196
0530 - 0630	14	8	2	1	36	9	42	18	24	10	107	22	293
0545 - 0645	17	8	3	6	54	9	49	24	17	21	143	30	381
0600 - 0700	24	11	5	7	67	8	65	25	15	24	189	35	475
0615 - 0715	27	11	5	8	76	5	59	18	18	24	185	36	472
0630 - 0730	32	13	5	7	85	6	43	15	19	23	168	30	446
0645 - 0745	31	19	5	2	80	7	38	14	21	17	147	28	409
0700 - 0800	31	24	5	2	77	9	27	21	31	16	107	24	374
0715 - 0815	31	23	6	3	76	12	30	22	27	20	101	27	378
0730 - 0830	25	21	6	5	92	12	35	23	31	32	91	26	399
0745 - 0845	33	21	5	8	107	13	28	19	32	31	92	27	416
0800 - 0900	26	19	5	9	103	19	14	14	19	33	89	27	377
PEAK HOUR	24	11	5	7	67	8	65	25	15	24	189	35	475





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM

Job No/Name : LITGOW Angus Place Colliery

Day/Date : Tuesday / 13th August 2019

Lights

Lights	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1300 - 1315	2	1	3	1	25	5	2	3	7	6	29	5	89
1315 - 1330	6	4	1	2	24	4	6	3	5	12	18	5	90
1330 - 1345	6	2	0	3	17	3	6	2	8	9	20	12	88
1345 - 1400	6	7	1	0	32	3	4	3	15	8	23	6	108
1400 - 1415	4	5	5	3	28	6	7	4	6	15	27	11	121
1415 - 1430	6	4	2	2	14	1	3	4	7	6	21	9	79
1430 - 1445	9	9	2	2	31	4	4	7	8	13	28	8	125
1445 - 1500	5	3	2	1	12	4	3	5	11	10	16	9	81
1500 - 1515	8	10	1	2	35	11	4	6	12	15	38	8	150
1515 - 1530	8	8	0	1	50	7	2	6	4	14	17	2	119
1530 - 1545	6	8	0	2	39	5	2	4	3	9	24	8	110
1545 - 1600	3	3	2	0	35	4	2	2	6	7	29	10	103
1600 - 1615	13	6	3	0	40	6	3	5	12	10	23	7	128
1615 - 1630	17	9	4	2	24	7	8	11	24	15	21	8	150
1630 - 1645	11	11	0	1	37	11	1	4	9	6	26	8	125
1645 - 1700	6	1	1	5	25	5	1	7	5	16	15	5	92
Period End	116	91	27	27	468	86	58	76	142	171	375	121	1758

Heavies

Heavies	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Time Per	L	I	R	L	I	R	L	I	R	L	I	R	TOT
1300 - 1315	0	0	0	0	4	0	0	0	0	1	2	0	7
1315 - 1330	2	0	0	0	2	0	0	0	0	0	2	0	6
1330 - 1345	1	0	0	0	1	0	1	0	0	0	2	2	7
1345 - 1400	0	0	0	0	5	0	0	0	0	1	3	0	9
1400 - 1415	1	0	0	0	5	0	0	0	0	0	1	0	7
1415 - 1430	0	0	0	0	6	0	0	0	1	1	1	0	9
1430 - 1445	0	0	0	0	2	0	0	0	0	0	5	2	9
1445 - 1500	0	0	0	0	1	0	0	0	0	0	1	0	2
1500 - 1515	0	0	1	0	2	0	0	0	0	0	1	0	4
1515 - 1530	0	0	0	1	3	0	0	1	0	1	0	0	6
1530 - 1545	0	0	0	0	0	0	0	0	0	1	2	0	3
1545 - 1600	0	0	0	0	3	0	0	0	0	1	3	0	7
1600 - 1615	0	0	0	0	1	1	0	0	0	0	0	1	3
1615 - 1630	0	0	0	0	1	0	0	0	1	0	1	0	3
1630 - 1645	0	0	0	0	1	0	0	0	1	0	0	0	2
1645 - 1700	0	0	0	0	1	0	0	0	0	0	0	1	2
Period End	4	0	1	1	38	1	1	1	3	6	24	6	86

Lights

Lights	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1300 - 1400	20	14	5	6	98	15	18	11	35	35	90	28	375
1315 - 1415	22	18	7	8	101	16	23	12	34	44	88	34	407
1330 - 1430	22	18	8	8	91	13	20	13	36	38	91	38	396
1345 - 1445	25	25	10	7	105	14	18	18	36	42	99	34	433
1400 - 1500	24	21	11	8	85	15	17	20	32	44	92	37	406
1415 - 1515	28	26	7	7	92	20	14	22	38	44	103	34	435
1430 - 1530	30	30	5	6	128	26	13	24	35	52	99	27	475
1445 - 1545	27	29	3	6	136	27	11	21	30	48	95	27	460
1500 - 1600	25	29	3	5	159	27	10	18	25	45	108	28	482
1515 - 1615	30	25	5	3	164	22	9	17	25	40	93	27	460
1530 - 1630	39	26	9	4	138	22	15	22	45	41	97	33	491
1545 - 1645	44	29	9	3	136	28	14	22	51	38	99	33	506
1600 - 1700	47	27	8	8	126	29	13	27	50	47	85	28	495

PEAK HOUR	44	29	9	3	136	28	14	22	51	38	99	33	506
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Heavies

Heavies	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Peak Per	L	I	R	L	I	R	L	I	R	L	I	R	TOT
1300 - 1400	3	0	0	0	12	0	1	0	0	2	9	2	29
1315 - 1415	4	0	0	0	13	0	1	0	0	1	8	2	29
1330 - 1430	2	0	0	0	17	0	1	0	1	2	7	2	32
1345 - 1445	1	0	0	0	18	0	0	0	1	2	10	2	34
1400 - 1500	1	0	0	0	14	0	0	0	1	1	8	2	27
1415 - 1515	0	0	1	0	11	0	0	0	1	1	8	2	24
1430 - 1530	0	0	1	1	8	0	0	1	0	1	7	2	21
1445 - 1545	0	0	1	1	6	0	0	1	0	2	4	0	15
1500 - 1600	0	0	1	1	8	0	0	1	0	3	6	0	20
1515 - 1615	0	0	0	1	7	1	0	1	0	3	5	1	19
1530 - 1630	0	0	0	0	5	1	0	0	1	2	6	1	16
1545 - 1645	0	0	0	0	6	1	0	0	2	1	4	1	15
1600 - 1700	0	0	0	0	4	1	0	0	2	0	1	2	10

PEAK HOUR	0	0	0	0	6	1	0	0	2	1	4	1	15
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R.O.A.R. DATA

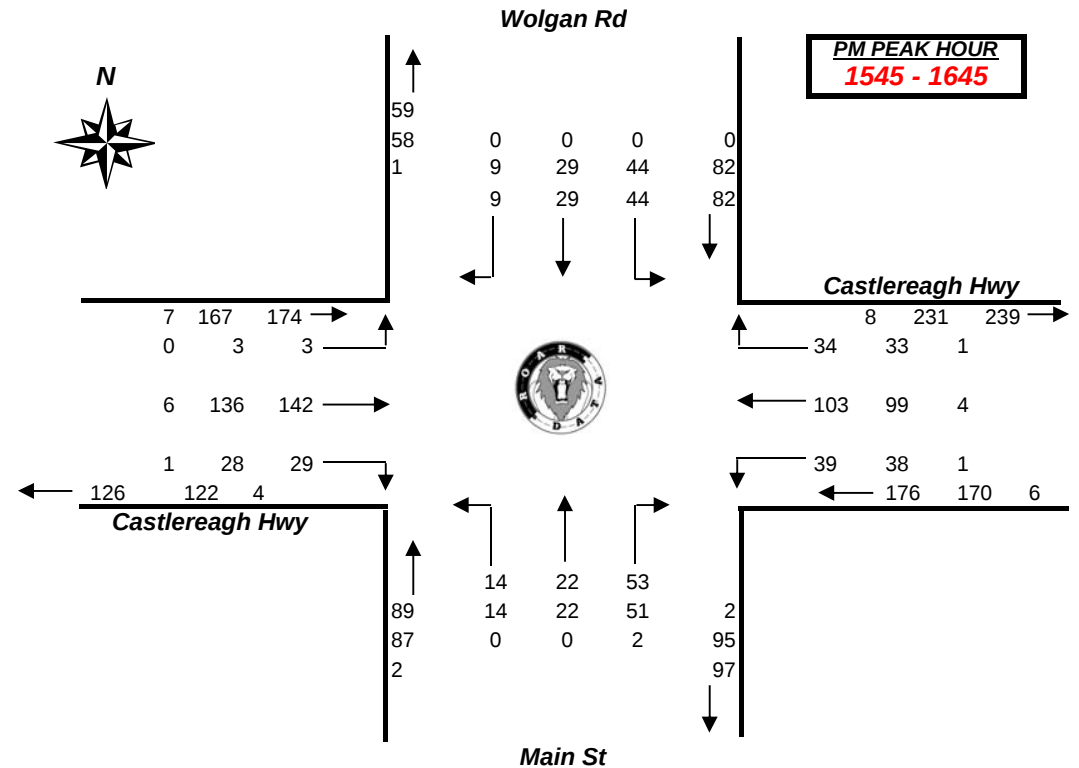
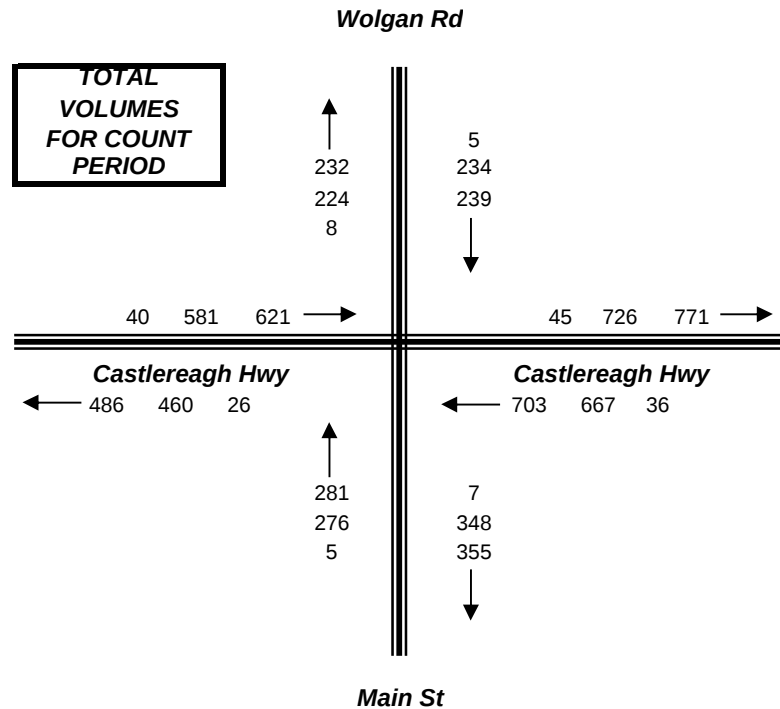
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : EMM
Job No/Name : LITGOW Angus Place Colliery
Day/Date : Tuesday / 13th August 2019

COMBINED	NORTH			WEST			SOUTH			EAST			
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1300 - 1315	2	1	3	1	29	5	2	3	7	7	31	5	96
1315 - 1330	8	4	1	2	26	4	6	3	5	12	20	5	96
1330 - 1345	7	2	0	3	18	3	7	2	8	9	22	14	95
1345 - 1400	6	7	1	0	37	3	4	3	15	9	26	6	117
1400 - 1415	5	5	5	3	33	6	7	4	6	15	28	11	128
1415 - 1430	6	4	2	2	20	1	3	4	8	7	22	9	88
1430 - 1445	9	9	2	2	33	4	4	7	8	13	33	10	134
1445 - 1500	5	3	2	1	13	4	3	5	11	10	17	9	83
1500 - 1515	8	10	2	2	37	11	4	6	12	15	39	8	154
1515 - 1530	8	8	0	2	53	7	2	7	4	15	17	2	125
1530 - 1545	6	8	0	2	39	5	2	4	3	10	26	8	113
1545 - 1600	3	3	2	0	38	4	2	2	6	8	32	10	110
1600 - 1615	13	6	3	0	41	7	3	5	12	10	23	8	131
1615 - 1630	17	9	4	2	25	7	8	11	25	15	22	8	153
1630 - 1645	11	11	0	1	38	11	1	4	10	6	26	8	127
1645 - 1700	6	1	1	5	26	5	1	7	5	16	15	6	94
Period End	120	91	28	28	506	87	59	77	145	177	399	127	1844

COMBINED	NORTH			WEST			SOUTH			EAST			TOT
	Wolgan Rd			Castlereagh Hwy			Main St			Castlereagh Hwy			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	
1300 - 1400	23	14	5	6	110	15	19	11	35	37	99	30	404
1315 - 1415	26	18	7	8	114	16	24	12	34	45	96	36	436
1330 - 1430	24	18	8	8	108	13	21	13	37	40	98	40	428
1345 - 1445	26	25	10	7	123	14	18	18	37	44	109	36	467
1400 - 1500	25	21	11	8	99	15	17	20	33	45	100	39	433
1415 - 1515	28	26	8	7	103	20	14	22	39	45	111	36	459
1430 - 1530	30	30	6	7	136	26	13	25	35	53	106	29	496
1445 - 1545	27	29	4	7	142	27	11	22	30	50	99	27	475
1500 - 1600	25	29	4	6	167	27	10	19	25	48	114	28	502
1515 - 1615	30	25	5	4	171	23	9	18	25	43	98	28	479
1530 - 1630	39	26	9	4	143	23	15	22	46	43	103	34	507
1545 - 1645	44	29	9	3	142	29	14	22	53	39	103	34	521
1600 - 1700	47	27	8	8	130	30	13	27	52	47	86	30	505
PEAK HOUR	44	29	9	3	142	29	14	22	53	39	103	34	521



Appendix C

Intersection Sight Distance Photographs

Appendix C Sight Distance Intersection Visibility Photos

Summary:

Castlereagh Highway at Brays Lane looking left

Castlereagh Highway at Brays Lane looking right

Castlereagh Highway at Wolgan Road looking left

Castlereagh Highway at Wolgan Road looking right

Wolgan Road at proposed access looking north

Wolgan Road at proposed access looking south

Brays Lane at proposed access looking east

Brays Lane at proposed access looking west

Castlereagh Highway at Wallerawang Access looking east

Castlereagh Highway at Wallerawang Access looking west



Castlereagh Highway at Brays Lane looking left



Castlereagh Highway at Brays Lane looking right



Castlereagh Highway at Wolgan Road looking left



Castlereagh Highway at Wolgan Road looking right



Wolgan Road at proposed access looking north



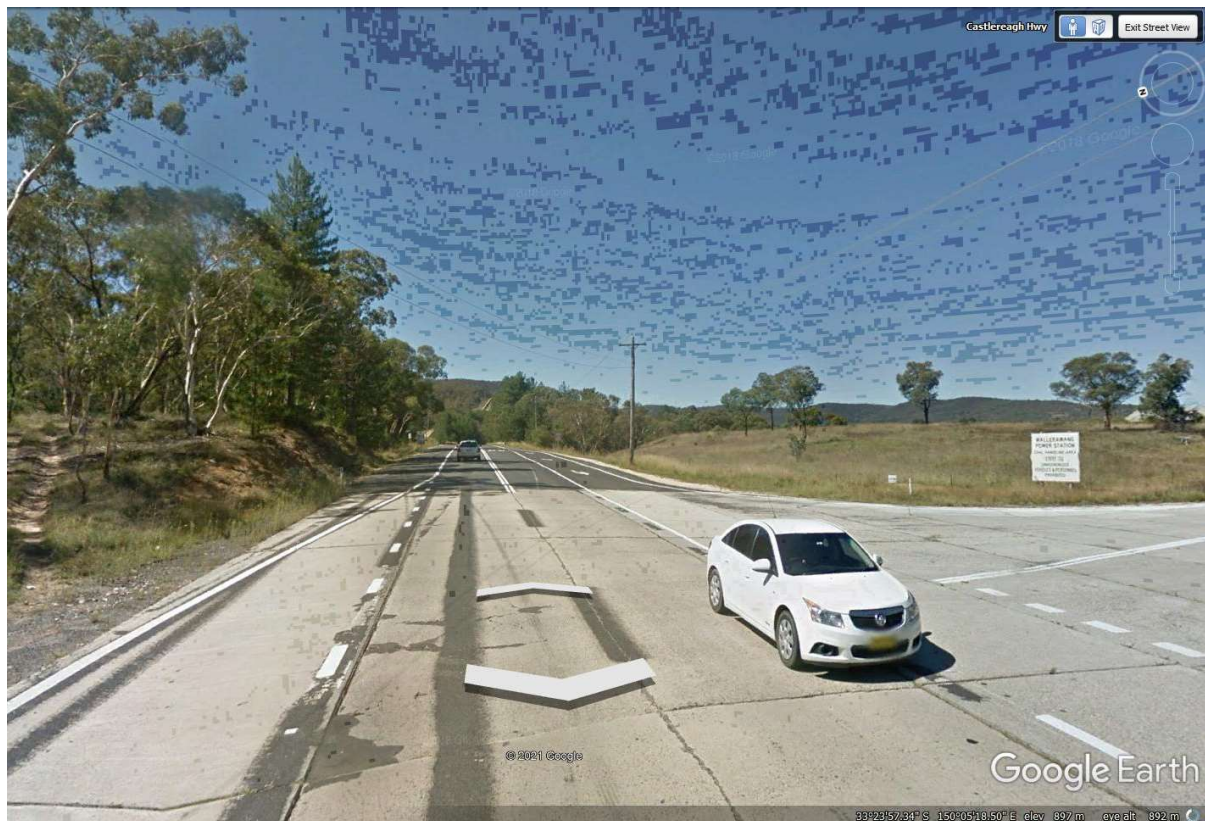
Wolgan Road at proposed access looking south



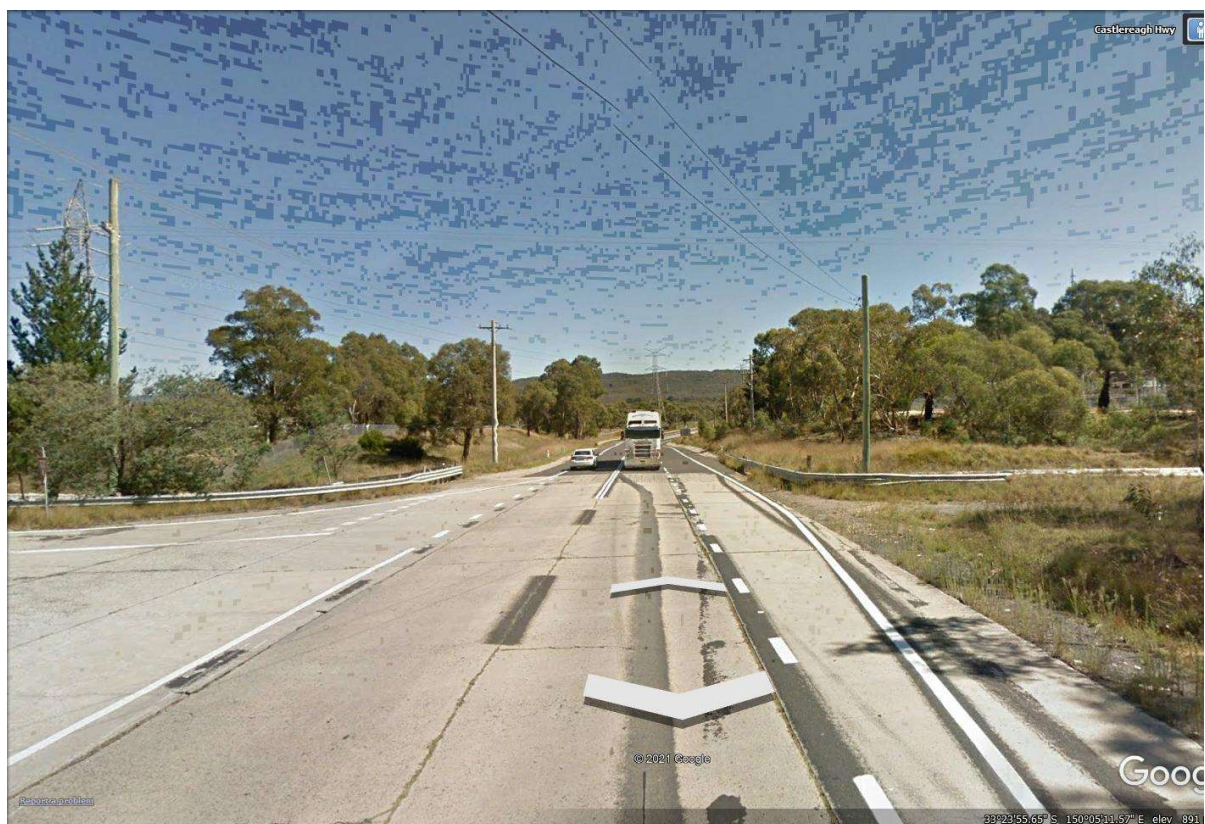
Brays Lane at proposed access looking east



Brays Lane at proposed access looking west



Castlereagh Highway at Wallerawang Access looking east



Castlereagh Highway at Wallerawang Access looking west

Appendix D

Drivers Code of Conduct

D.1 Vehicle driver requirements

Centennial will implement all reasonable and feasible measures to minimise the impact of traffic generated by construction traffic from the Angus Place water transfer pipeline project on the efficient and safe operation of the local area road network, in particular Wogan Road and Brays Lane.

As detailed in the noise section of the Modification report, access to the pipeline route in the vicinity of Lidsdale would be along the Castlereagh Highway. At the commencement of the project, all staff and contractors will be advised that they must use the Castlereagh Highway in preference to back roads when commuting to and from site. This will also be raised regularly during toolbox talks for the duration of the project.

As part of site induction, all drivers of heavy vehicles associated with pipeline construction worksite deliveries will be notified that queuing or parking on Wogan Road and Brays Lane is to be avoided.

All heavy vehicles hauling construction materials to and from the pipeline construction worksites must:

- have undertaken a site induction;
- have comprehension of the relevant requirements of the TfNSW Heavy Vehicle Driver Handbook;
- hold a valid driver's licence for the class of vehicle that they operate;
- operate the vehicle in a safe manner within and external to the construction worksites, including adherence to Centennial Coals drug and alcohol and mobile phone use policies. Drug and alcohol testing will be in accordance with Centennial Coal policies. Failure to comply can result in removal from site; and
- comply with all directions of authorised site personnel when within the site.

A single page document detailing the Site Access Traffic Routes and summarising other key aspects of light and heavy vehicle related compliance will be issued to contractors prior to commencement of works. This document is to be read and signed by all contractors. Where there is a failure to comply with this document (or associated contractor or Centennial Coal policies), disciplinary action may be considered.

D.2 Heavy vehicle speed

Increased speed means not only an increased risk of collision but also increased severity if an accident does occur. A study undertaken for the Australian Transport Safety Bureau found that travelling 10 km/h faster than the average traffic speed can more than double the risk of involvement in a casualty or fatality accident (TfNSW).

There are two (2) types of speeding:

- Where a heavy vehicle travels faster than the posted speed limit; and
- Where a driver travels within the speed limit but due to road conditions (e.g. fog or rain) this speed is inappropriate (TfNSW).

Drivers and truck operators are to be aware of the 'Three Strikes Scheme' introduced by TfNSW, which applies to all vehicles over 4.5 tonnes. When a heavy vehicle is detected travelling at 15 km/h or more over the posted or relevant heavy vehicle speed limit by a mobile Police unit or fixed speed camera, TfNSW will record a strike against that vehicle. If three strikes are recorded within a three (3) year period, TfNSW will act to suspend the registration of that vehicle (up to three months). More information is available from TfNSW.

Vehicle speeds on public roads in NSW are enforced by the NSW Police Service. The speed limit within the pipeline construction worksites is 10 km/h which is to be strictly maintained.

All heavy vehicle drivers associated with the pipeline construction worksite are to observe the posted speed limits, with speed adjusted appropriately to suit the road environment and prevailing weather conditions and comply with other Australian road rules. The vehicle speed must also be appropriate to ensure the safe movement of the vehicle based on the vehicle configuration.

D.3 Heavy vehicle driver fatigue

Fatigue is one of the biggest causes of accidents for heavy vehicle drivers. The Heavy Vehicle Driver Fatigue Reform was developed by the National Transport Commission (NTC) and approved by Ministers from all States and Territories in February 2007.

The Heavy Vehicle (Fatigue management) National Regulation 2013 (NSW) commenced in NSW on 12 February 2014 and applies to trucks and truck combinations over 12 tonnes GVM (however there are Ministerial Exemption Notices that can apply).

Under the law, an industry has the choice of operating under three (3) fatigue management schemes:

- Standard Hours of Operation;
- Basic Fatigue Management (BFM);
- Advanced Fatigue Management (AFM).

All heavy vehicle drivers associated with the pipeline construction are to be aware of their adopted fatigue management scheme and operate within its requirements.

D.4 Heavy vehicle noise and compression braking

The transportation of materials to and from worksites can be undertaken during the following hours:

- 7.00 am to 5.00 pm, Monday to Friday; and
- 8.00 am to 1.00 pm, Saturday.

There will be no deliveries on Sundays or public holidays.

There are three bus routes that service the Lidsdale area in the mornings and afternoons with times varying between 7.30 am to 9 am and 4 pm to 6 pm. Bus routes are limited to the Castlereagh Highway and Wolgan Road. Where possible, deliveries will be timed to avoid school bus hours and peak periods.

Work may be undertaken outside of the above hours in the following circumstances:

- works that are inaudible to the nearest sensitive receptors;
- works agreed to in writing by the Secretary;
- for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or
- where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

Compression braking by heavy vehicles is a source of irritation to the community, generating many complaints especially at night when residents are especially sensitive to noise.

In some instances, compression braking is required for safety reasons however when passing through or adjacent to residential areas a reduction in the speed of the vehicle is recommended to reduce the instances and severity of compression braking.

D.5 Vehicle site entry and exit checking

Signage will be provided at each construction worksite entry or exit gate advising the following:

- no truck queuing or parking on public roads;
- cover heavy vehicle loads at all times except during loading and unloading;
- remove loose debris from vehicle body and wheels before leaving the site;
- ensure tailgate is locked before leaving site;
- observe all local and site speed limits;
- driving to the road conditions;
- responsible fatigue management;
- dangers of mobile phone use while driving; and
- minimise noise from driving or braking.

All traffic entering and existing Skelly Road at the Castlereagh Highway will be left turn only.

Loose material on the road surface has the potential to cause road crashes and vehicle damage.

All construction heavy vehicles arriving at or departing from the construction site that are carrying loads of potentially dust generating material must have their loads covered at all times, except during loading and unloading.

All care is to be taken to ensure that all loose debris from the vehicle body and wheels is removed prior to leaving the site. Drivers must ensure that following tipping, the vehicle tailgate is locked before leaving the site.

Heavy vehicles travelling together in close proximity on a single lane each way public road can be a concern to light vehicle drivers as well as increasing potential noise effects on adjacent residential areas.

D.6 Incident reporting

To assist in the orderly resolution of complaints and monitoring the effectiveness of this plan, site management will keep a register itemising all reported incidents or complaints regarding heavy vehicle driver conduct external to the site.

Information to be logged for each incident shall include (as a minimum):

- date and time;
- location/s;

- driver/heavy vehicle details;
- contact details of person lodging the complaint;
- what/when actions were taken to resolve the issue; and
- any response made to a complaint.

Refer to the Construction Environmental Management Plan (CEMP) for further details.

Appendix C – Erosion and sediment control plan

C1 Introduction

The following suite of control measures aim to manage erosion and sedimentation by minimising soil detachment and transportation, controlling runoff volume and velocity, and maximising sediment deposition and retention on site. These controls will be implemented in addition to those described in Chapter 6 of this document. The sediment and erosion controls described will apply to the access track and areas where installation of the water transfer pipeline is occurring.

This Sediment and Erosion Control Plan has been prepared using industry best practise principles for the region and the specific requirements of the following documents:

- Managing Urban Stormwater; Soils and Construction (The Blue Book) Volume 1; Landcom, Sydney, 2006;
- Managing Urban Stormwater; Soils and Construction Volume 2A, Installation of Services; Department of Environment and Climate Change NSW, Sydney 2008;
- Managing Urban Stormwater; Soils and Construction Volume 2C, Unsealed Roads; Department of Environment and Climate Change NSW, Sydney 2008;
- Managing Urban Stormwater; Soils and Construction Volume 2E, Mines and Quarries; Department of Environment and Climate Change NSW, Sydney 2008;
- Soil Landscapes of the Wallerawang 1:100,000 Sheet, King 1993; NSW Department of Land and Water Conservation, Sydney; and
- Report for Centennial and Energy Australia Angus Place Coal Project (MP 06_0021) and Springvale Water Treatment Project (SSD 7592 Modification 6 – Modification Report; GHD, November 2020.

C2 Site constraints

C2.1 Soils

A desktop assessment was undertaken using existing information on soil environments for the project sourced from:

- NSW soil and land information system (SALIS) (DPIE 2021); and
- Soil landscape mapping of NSW (ESPADE 2.1) online database (DPIE 2021).

Natural soils have been previously disturbed by construction and operation of infrastructure in the vicinity of the site. The insitu subsoils may be disturbed during some construction activities therefore an understanding of their properties is required.

Soil landscapes along the pipeline route include the Cullen Bullen, Hassans Walls, Pipers Flat and Lithgow Soil Landscape which provide some indication of the likely properties of the underlying subsoils within the project area. A description of the soil landscapes and their properties are provided in Table C1.

Table C1 Soil landscapes adjacent to the project areas

Soil Landscape	Description	Properties
Cullen Bullen	Shallow to moderately deep Yellow Podzolic Soils and Yellow Earths on crests; moderately deep Yellow Podzolic Soils, Soloths and Yellow Leached Earths on upper and mid-slopes. Moderately deep to deep yellow Solodic Soils and Yellow Podzolic Soils on lower slopes near and along narrow drainage lines. Shallow Yellow Earths and Lithosols associated with low scarps	Low fertility topsoils High water erosion hazard due to dispersion (strongly sodic subsoils) Strong to extreme acidity with associated aluminium toxicity
Hassans Walls	Shallow discontinuous Lithosols/Silicious Sands on small rocky ledges on cliffs; moderately deep stony Lithosols/Silicious Sands on upper slopes and recently deposited talus; moderately deep Yellow Podzolic Soils and Brown Podzolic Soils on lower slopes; shallow Sands/Lithosols along narrow steep deeply incised drainage lines and moderately deep Sands/Lithosols along narrow drainage flats	Low fertility topsoils High water erosion hazard due to dispersion (strongly sodic subsoils) Very strong acidity with associated aluminium toxicity
Pipers Flat	Moderately deep to deep Grey-brown Alluvial Soils, Leached Loams, Soloths and Gleyed Podzolic Soils	Very low fertility topsoils High water erosion hazard due to dispersion (strongly sodic subsoils) Moderate to very strong acidity with associated aluminium toxicity
Lithgow	Moderately deep Red Podzolic Soils and Yellow Podzolic Soil and Yellow Leached Earths on upper slopes and well-drained areas. Moderately deep to deep, Solods/yellow Solodic Soils on lower slopes and in areas of poor drainage.	Low fertility topsoils High water erosion hazard due to dispersion (strongly sodic subsoils) Strong acidity with associated aluminium toxicity

The modelled K-Factors range of 0.05–0.07 t ha h ha⁻¹ MJ⁻¹ mm⁻¹ was determined from the eSpade 2.1 database (DPIE 2020), which indicates that the project soils have a high erosion potential. The modelled K-Factors apply to a maximum depth of 100 mm (Yang *et al.* 2017).

C2.2 Rainfall

Rainfall Erosivity (R-Factor) is a measure of the ability of rainfall to cause erosion and is calculated based on total energy and maximum 30-minute storm intensity (Landcom 2004). The rainfall erosivity (R-Factor) is calculated using the formula:

$$R = 164.74 (1.1177)^S S^{0.6444}$$

where, S is the 2-year ARI, 6-hour rainfall event (0.5EY, 6-hour event) in mm/h (Rosewell & Turner 1992). For the project S equals 6.93 mm/h (BoM 2020). The calculated R-Factor for the project is 1,240 MJmmha⁻¹h⁻¹.

Rainfall information was obtained from the Bureau of Meteorology Lidsdale (Maddox Lane) AWS (Site number 63132). The area experiences slight summer dominant rainfall, with January being the wettest month with an average of 85.1 mm which generally comes from summer storms. The annual average rainfall is 765.6mm (BoM 2021).

Monthly rainfall averages are shown in Figure C1.

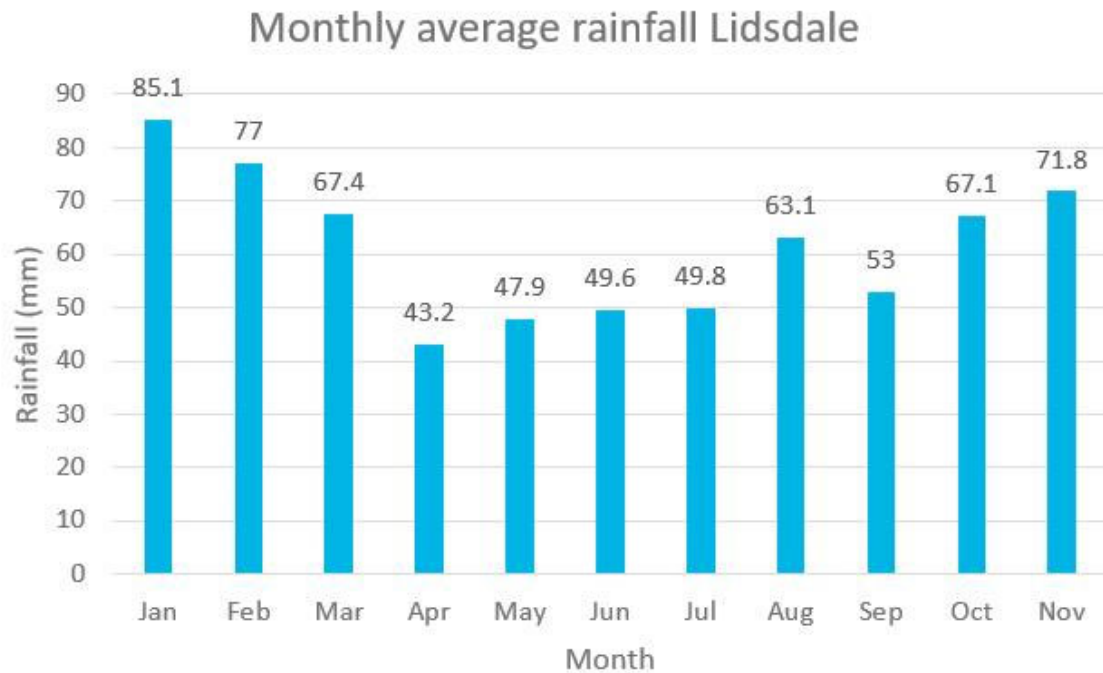


Figure C1 Monthly average rainfall

C2.3 Slope

The topography in the area includes flat to gently inclined rises on broad valley floors away from steep drainage lines. There are broad rolling hills and rises with rounded crests and moderately inclined side slopes. Local relief is 20 to 30 m and slope gradients are typically <10%.

C3 Erosion hazard assessment

The process for the assessment of erosion hazard in NSW is detailed in section 4.4.1 of Landcom (2004). It is a two-step process that considers overall project erosion hazard via consideration of slope and rainfall erosivity (R-Factor). A more detailed assessment of land soil loss classes (SLC) are then determined using annual soil loss calculated using the revised universal soil loss equation (RUSLE). Site specific slopes have been used with a nominal slope length of 80m. The SLC dictates specific erosion management and mitigation measures as detailed in Landcom (2004).

An assessment of the erodibility of the soil itself is important as the presence or absence of a highly erodible dispersive soil will significantly influence the project drainage, erosion and sediment control requirements.

When a sodic soil (exchangeable sodium percentage (ESP) >6%), or a magnesian soil (exchangeable magnesium percentage (EMP) >20%) comes into contact with non-saline water, water molecules are drawn in-between the clay platelets causing the clay to swell to such an extent that individual clay platelets are separated from the aggregate. This process is known as dispersion. Dispersive soils have an extreme rill, gully and tunnel erosion risk and can erode irrespective of surface treatments (eg rock lining) applied to the soil surface.

C3.1 Soil erosion hazard analysis

The erosion potential of a soil is determined by its physical and chemical properties and is expressed as its K-Factor ($\text{t ha h ha}^{-1} \text{MJ}^{-1} \text{mm}^{-1}$). Table C2 provides a soil erodibility ranking for K-Factor from Rosewell (1993).

Table C2 Rosewell (1993) soil erosion ranking

K-Factor ($\text{t ha h ha}^{-1} \text{MJ}^{-1} \text{mm}^{-1}$)	Erosion potential
<0.02	Low
>0.02 to <0.04	Moderate
>0.04	High

As discussed previously, a modelled K-Factor range of 0.05 to 0.07 $\text{t ha h ha}^{-1} \text{MJ}^{-1} \text{mm}^{-1}$ is found in the area. The key areas where soil may be exposed during construction are the access tracks, and the existing culvert crossing at Skelly Road. At this stage there is no plan to excavate any part of the pipeline by utilising existing tie in points on existing pipelines.

C3.2 Slope and rainfall erosivity erosion hazard analysis

The overall project water erosion hazard is determined using the process described in Section 4.4.1 of Landcom (2004); however, as it does not consider the K-Factor, the erosion hazard can be considerably underestimated. If a low erosion hazard is determined, no further delineation of erosion hazard is required. If a high erosion hazard is determined, then further assessment to determine the SLC is required.

SLC's are determined by calculating the annual average soil loss using the RUSLE with a nominal 80 m slope length and soil surface cover factor (C-Factor); RUSLE calculates the annual average erosion in tonnes per hectare (t/ha) from rill and inter-rill (sheet) erosion. It does not consider gully or tunnel erosion and does not calculate peak erosion. Landcom (2004)¹ nominates additional requirements for land of SLC 4 and higher.

The first step in the hazard assessment uses a nomograph from Figure 4.6 of Landcom (2004) (reproduced as Figure C2) that considers slope of the land and the Rainfall Erosivity (R-Factor) to provide a low or high erosion hazard.

As detailed previously, the calculated R-Factor is approximately 1,240 $\text{MJmmha}^{-1} \text{h}^{-1}$ with slopes of up to 10%. Applying these parameters to the erosion hazard nomograph results in a low erosion hazard due to slope and rainfall erosivity. On this basis, no further analysis of SLCs is required.

¹ Landcom (2004), section 4.4.2(c)

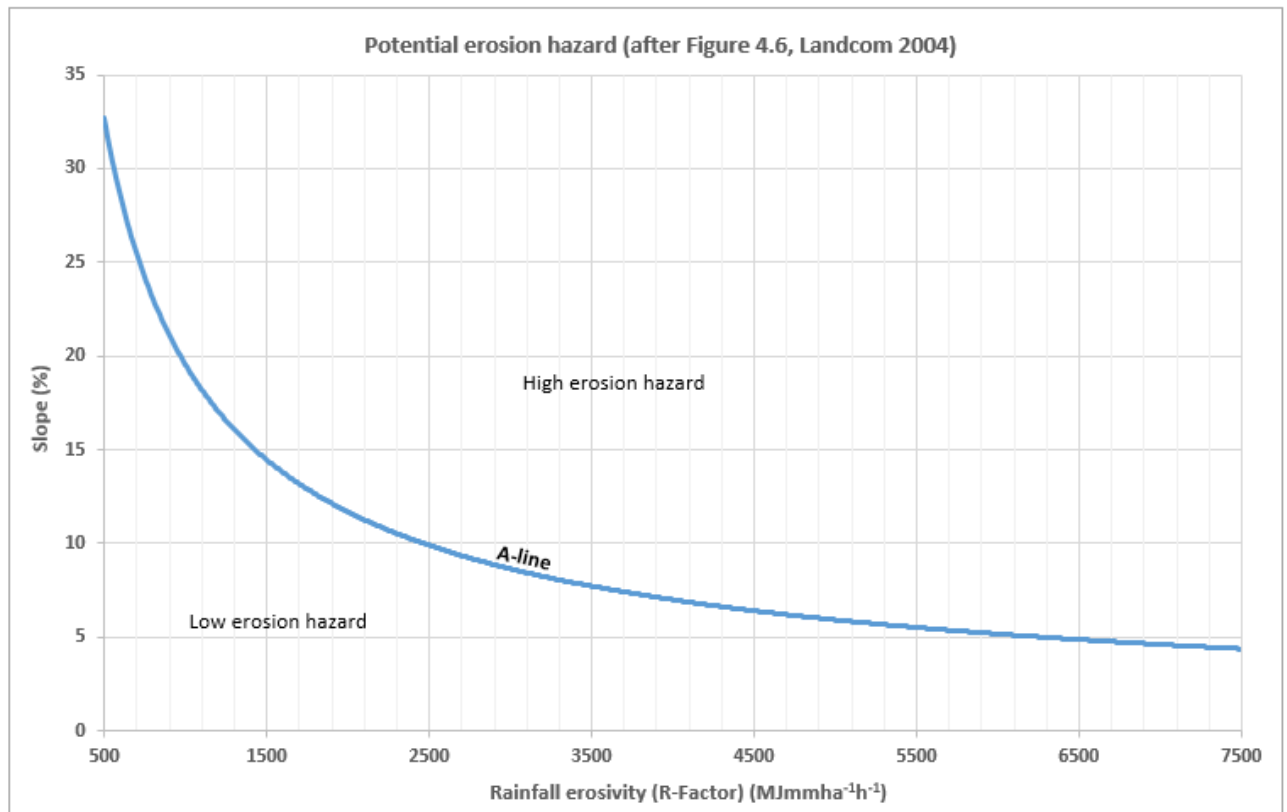


Figure C2 Assessment of potential erosion hazard (Landcom 2004)

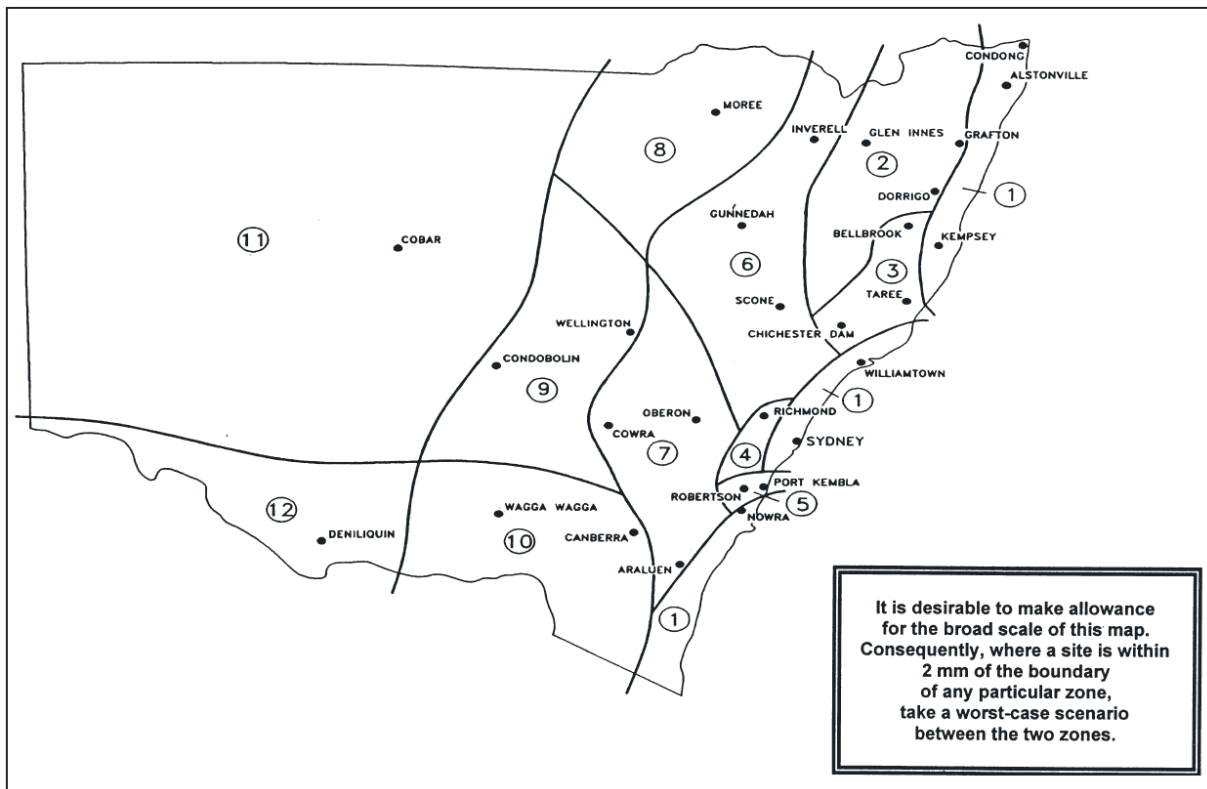
Landcom (2004) states that waterfront lands should always be regarded as SLC 6 lands. In the context of this project Landcom (2004) defines waterfront land as *'the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to, and the prescribed distance (40m) inland of, the highest bank of the river.'*

All works in the vicinity of the Coxs River are planned to be undertaken on a conveyor gantry. Disturbance to lands within 40 m of the high bank of Coxs River would be avoided where possible with works scheduled to be completed prior to the high rainfall erosivity period of October through to March.

The project area is in rainfall zone 7 (Figure C3). Landcom (2004) requires that where possible, disturbance to SLC 6 lands be scheduled for periods when rainfall erosivity is low as detailed in Table C3 below.

Table C3 Zone 7 high (H) and low (L) rainfall erosivity periods

SLC	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1-4	L	L	L	L	L	L	L	L	L	L	L	L
5	H	H	H	H	L	L	L	L	L	L	L	L
6	H	H	H	H	H	L	L	L	L	L	L	L
7	H	H	H	H	H	H	H	H	H	H	H	H



Source: Landcom (2004)

Figure C3 Rainfall zones

C4 General management and mitigation measures

Project specific management and mitigation measures will include:

- Minimising the extent and duration of soil disturbance;
- Controlling water movement through the site;
- Minimising soil erosion;
- Promptly stabilising disturbed areas;
- Maximising sediment and contaminated water retention on site;
- Maintaining all drainage, erosion and sediment control measures in proper working order at all times; and
- Monitoring the project and adjusting drainage and erosion and sediment control practices to maintain the required performance standards.

C5 Project element specific control measures

Best practice site management aims to schedule and conduct site activities so as to minimise both the extent and the duration of disturbance. Accordingly, the following site management practices will be adopted on this project:

- The maximum limits of clearing will be clearly marked out prior to clearing activities commencing;
- Ground disturbance will be avoided outside of the areas identified;

- Vehicle movements will be restricted to designated tracks, and existing clearings will be utilised as turnaround areas and laydown sites;
- Where site access permits, erosion and sediment control structures will be installed/constructed prior to commencement of site clearing/ground disturbing activities;
- In situations where some preliminary clearing is required to gain access, the required erosion and sediment control structures will be installed/constructed as a matter of priority;
- Disturbance along the corridor will be confined to those areas involved in current construction activities. Where possible, any forward clearing and construction activities will be limited to a maximum of 50 m ahead of active pipe laying activities;
- The Bureau of Meteorology (BoM) five-day weather forecast will be used as a trigger to minimise forward clearing activities, expedite rehabilitation activities, and schedule additional erosion control measures along the corridor when inclement weather is predicted;
- Works will also be scheduled so that an absolute minimum area of disturbance is left open over any weekend;
- Rehabilitation of the corridor and access tracks (where required) will commence immediately following completion of pipelaying;
- All site earthworks activities (including refuelling and servicing of plant and equipment) will cease during periods of heavy and/or prolonged rainfall (i.e. >20 mm in 24 hours) and
- All these areas will be monitored on a daily basis as part of the site management protocol.

Appendix D – Unexpected finds procedure

D1 Identification of previously unknown Aboriginal cultural heritage sites

As identified in the modification report (GHD 2020), a due diligence level Aboriginal heritage assessment concluded the proposed works had low risk of harm to Aboriginal objects, with no artefacts or areas of potential archaeological deposit identified in the heavily disturbed area.

In the event any Aboriginal object/s are uncovered during the course of construction, the following actions will be undertaken:

- Works will stop immediately in the vicinity of the site and the area will be cordoned off as appropriate with high-visibility flagging tape;
- The Construction Project Manager will inform the Centennial Environment & Community Coordinator of the location of the site, the condition of the site (i.e. any harm caused to the site as a result of construction) in addition to any other relevant information;
- The site will be assessed by a qualified archaeologist with the Registered Aboriginal Parties (RAPs);
- The Centennial Environment & Community Coordinator will contact Heritage NSW about the incident and/or newly identified site in addition to any monitoring or management strategies that are to be instigated;
- Work will only recommence once the Environment & Community Coordinator advises that the site can be avoided or statutory approval for impact has been obtained; and
- If a site is identified, an Aboriginal Heritage Information Management System (AHIMS) site card will be completed and submitted in compliance with Section 89A of the National Parks and Wildlife Act 1974 within 21 days of discovering the site.

D2 Discovery of human skeletal remains

If any skeletal remains are identified:

- Work will stop in the immediate vicinity of the remains and the site secured to prevent any further harm to the remains;
- The Construction Project Manager will inform the Centennial Environment & Community Coordinator of the location of the site, the condition of the site (i.e. any harm caused to the site as a result of construction) in addition to any other relevant information;
- The Centennial Environment & Community Coordinator will contact the NSW Police immediately;
- If the skeletal remains are identified as Aboriginal ancestral remains, Centennial will contact Heritage NSW;
- The site will be assessed by a qualified archaeologist with the Registered Aboriginal Parties (RAPs); and
- Works will not recommence until Centennial receive written approval from the relevant consent authority; either NSW Police or Heritage NSW (if determined to be Aboriginal ancestral remains) including a plan of management if required.

D3 Care and control

In any instance where Aboriginal artefacts are salvaged, Aboriginal cultural heritage items salvaged on site will be stored in a locked Centennial building during the short term. A care and control application will be lodged with Heritage NSW in order to arrange for the long term storage of artefacts. Care and control arrangements will be made in consultation with the RAPs and Heritage NSW.

D4 Culturally sensitive information

The purpose of undergoing the consultation process with the Aboriginal community is to gather cultural knowledge relevant to the area so that Aboriginal cultural heritage sites and objects can be appropriately managed. During the process of consultation, some information may be culturally sensitive. For example, gender restrictions (men or women's business) may be one form of culturally sensitive information in addition to ceremonial and ritualistic information associated to an Aboriginal place. It is therefore paramount that cultural sensitivities associated with the landscape are treated as important information that must be handled with care in a respectful manner.

D5 Summary of Aboriginal identification, monitoring and management process

Figure D1 summarises the process for identifying, assessing, monitoring and managing Aboriginal cultural heritage for surface disturbance activities associated with Centennial's operations within the western region.

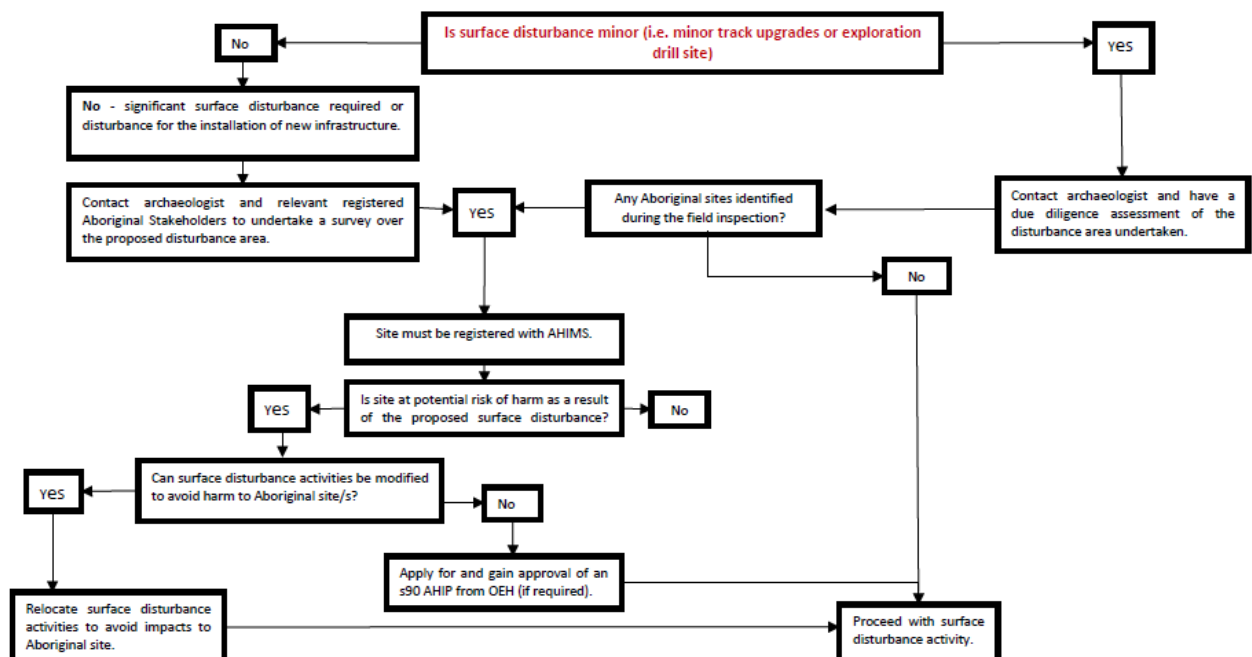


Figure D1 Monitoring and management flowchart for surface disturbance activities

D6 Aboriginal community cooperation

In the event that culturally sensitive information is associated to a particular area within Centennial's western operations, it is the responsibility of the Aboriginal community to clearly inform either Centennial and/or the contracted heritage consultant of this matter so that appropriate management protocols can be formulated to minimise the risk of mining-related impact to the area. Should the Aboriginal community provide detailed information about the sensitive information for the purpose of documentation, but the information has been requested to remain private from public access; the protocols detailed in Figure D2 will be adopted unless another protocol is agreed upon by the Aboriginal community.

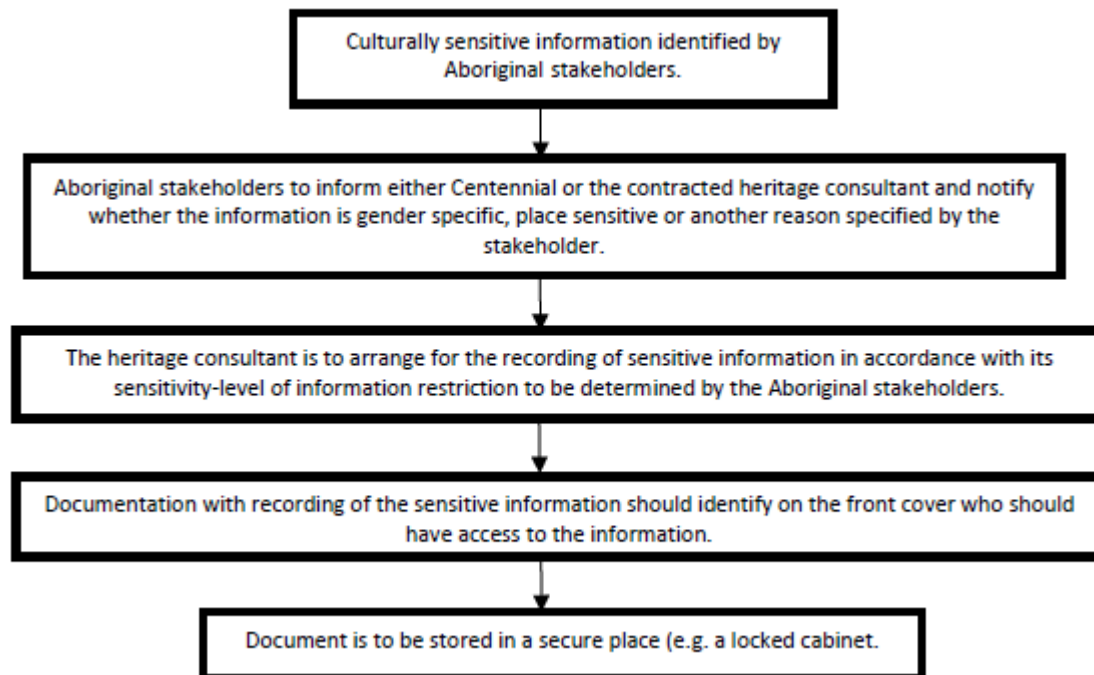
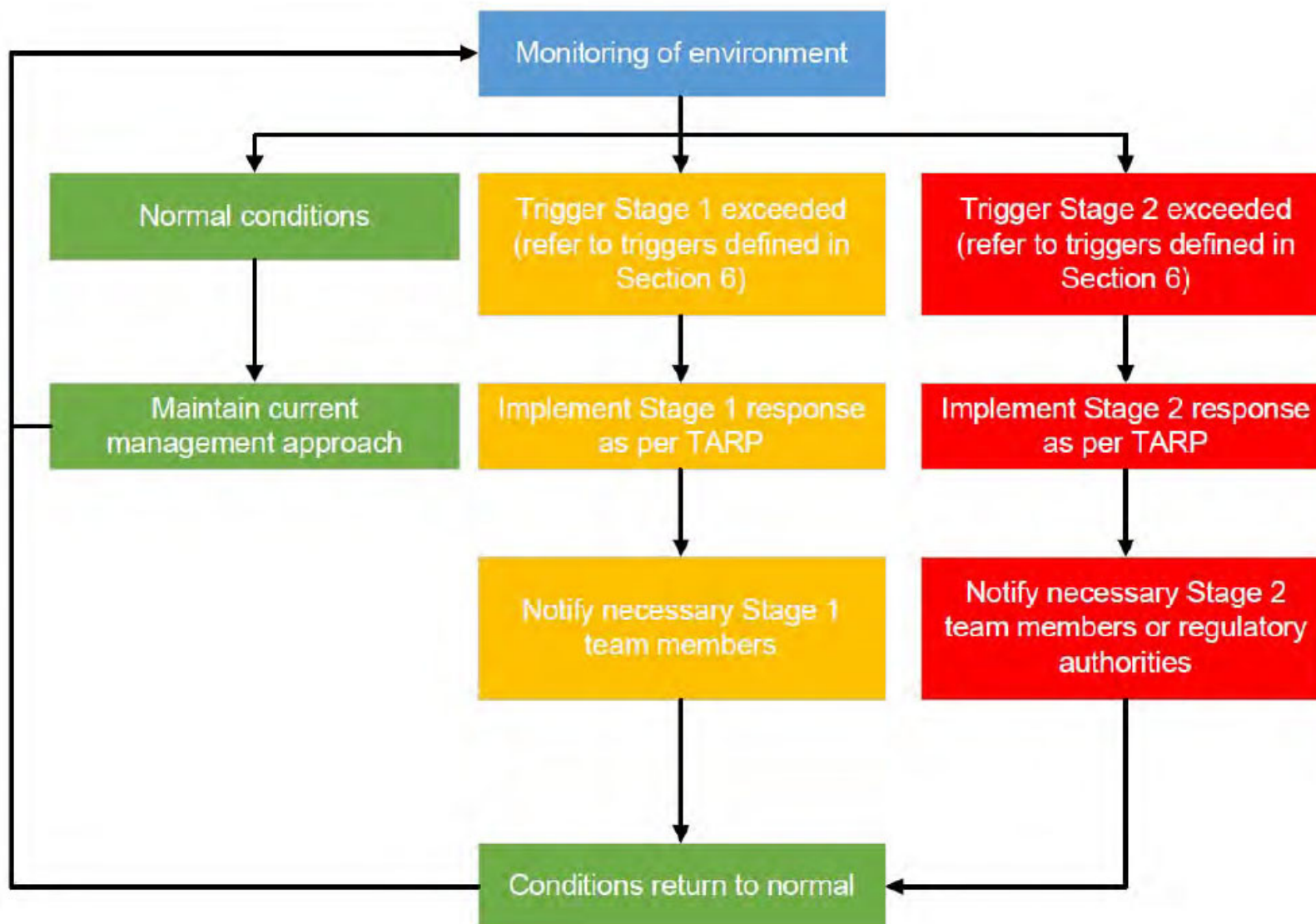


Figure D2 Protocol for handling culturally sensitive information

Appendix E - TARPs



Soil and water

Site surface operations

Aspect	Normal	Stage 1	Stage 2	Notifications
Surface water storage volume	Storage captures events up to and including the design criteria.	Trigger: Storage is not dewatered appropriately following storm event in accordance with design criteria. Action: Investigate storage operation and dewatering options. Increase inspection frequency as required. Education of staff.	Trigger: Storage is discharging as a result of a storm event less than the design criteria. Action: Increase inspection frequency as required. Undertake water quality sampling of discharge and add flocculant as necessary. Undertake water quality sampling of downstream locations on Kangaroo Creek and Cocks River.	Stage 1: Notify Environment and Community Coordinator/Mine Manager immediately. Stage 2: Notify relevant agencies in accordance with Pollution Incident Response Management Plan (PIRMP) requirements or if material harm has occurred.

Aspect	Normal	Stage 1	Stage 2	Notifications
Clean water diversions	Clean water diverted around dirty water areas.	Trigger: Clean water bypass through dirty water areas. Action: Review catchment plan. Review design capacity of clean water system. Appropriately treat and manage dirty water.	Trigger: Clean water creates flooding problems through site. Action: Evacuate site if danger exists. Establish temporary bunding around clean water source. Utilise earthworks machinery to cut appropriate channel to manage clean water. Protect equipment and infrastructure. Utilise portable pumps to dewater flooded areas into storages.	Stage 1: Notify Environment and Community Coordinator/Mine Manager immediately. Stage 2: Notify relevant agencies in accordance with PIRMP requirements or if material harm has occurred. Notify DP&E if exceedance of limit occurs.

Aspect	Normal	Stage 1	Stage 2	Notifications
Erosion and sediment control	All controls are appropriately in place and well maintained. No disturbance areas or migration of sediment away from designated development areas.	Trigger: One or more areas of surface erosion in the form of rilling, bank erosion or other movement of sediment from an area of disturbance. Controls are not maintained or are inappropriately installed. Action: Seek to stabilise the area to stop the erosion process. This can include the use of groundcover or other temporary measures. Investigate works undertaken prior to the disturbance activities.	Trigger: Controls are not in place. Rainfall event has led to sediment migrating off site. Action: Isolate the area through diverting contributing surface flows to another appropriate control structure.	Stage 1: Notify Environment and Community Coordinator/Mine Manager immediately. Stage 2: Notify relevant agencies in accordance with PIRMP requirements or if material harm has occurred. Notify DP&E if exceedance of limit occurs.
Hydrocarbon management	All hydrocarbon materials are stored appropriately.	Trigger: Minor spill occurs on site with limited risk of offsite migration. Action: Implement procedures in the PIRMP. Utilise spill kit.	Trigger: Major spill occurs on site with risk of offsite migration. Action: Isolate area and divert contributing surface flows. Engage waste contractor to clean spill. Investigate potential for contamination of waterways.	Stage 1: Notify Environment and Community Coordinator/Mine Manager. Stage 2: Notify relevant agencies in accordance with PIRMP requirements or if material harm has occurred. Notify DP&E if exceedance of limit occurs.

Watercourses

Aspect	Normal	Stage 1	Stage 2	Notifications
Water quality	Water quality at downstream monitoring locations within or below the SSGVs specified in (for Coks River) or consistent with upstream monitoring location (for Wolgan River).	Trigger: Water quality is outside or above the values specified in Table 6-1 (for Coks River) or statistically significantly different to upstream monitoring location (for Wolgan River) for at least one parameter for two consecutive sampling events. Action: Review recent monitoring results for adjacent sites and any relevant operational data (e.g. mining activities, clearing activities, meteorological data). Investigate the source of the exceedance and develop corrective/preventative actions based on outcomes (refer Appendix I).	Trigger: Investigation into Stage 1 trigger identifies that trigger exceedance is due to an operational activity. Community complaint to Centennial regarding surface water quality. Action: Determine if an incident has potentially occurred and investigate the source of the exceedance. Increase monitoring frequency and undertake additional monitoring (e.g. water quality, aquatic ecology) where relevant. Implement corrective/preventative actions, in consultation with relevant agencies, based on the outcomes of the investigation and/or additional monitoring (refer Appendix I). Prioritise actions based on the risk to the environment and likelihood of further impact. Review the WMP and related procedures to prevent reoccurrence. Loss of water supply to any adjacent landholder due to mining-related activities will need to be replaced by Centennial.	Stage 1: Notify Environment and Community Coordinator/Mine Manager immediately. Stage 2: Notify relevant agencies in accordance with PIRMP requirements or if material harm has occurred. Notify DIW as soon as practicable.

Aspect	Normal	Stage 1	Stage 2	Notifications
Water flow	Creek flow rates and relationships with rainfall are consistent with historical baseline results.	Trigger: Reduction in flow compared to historical baseline results. Action: Review recent monitoring results for adjacent sites and any relevant operational data (e.g. mining activities, clearing activities, meteorological data). Investigation the source of the reduction in flow and develop corrective/preventative actions based on outcomes (refer Appendix I).	Trigger: Loss of flow compared to historical baseline results is attributable to site operations. Community complaint to Centennial regarding surface water flow. Action: Review recent monitoring results for adjacent sites and any relevant operational data (e.g. mining activities, clearing activities, meteorological data). Determine if an incident has potentially occurred and investigate the source of the loss of flow. Implement corrective/preventative actions, in consultation with relevant agencies, based on the outcomes of the investigation (refer Appendix I). Prioritise actions based on the risk to the environment and likelihood of further impact. Review the WMP and related procedures to prevent reoccurrence. Loss of water supply to any adjacent landholder due to mining-related activities will need to be replaced by Centennial.	Stage 1: Notify Environment and Community Coordinator/Mine Manager immediately. Stage 2: Notify DIW and WaterNSW (if within Cocks River catchment) as soon as practicable.

Aspect	Normal	Stage 1	Stage 2	Notifications
Unlicensed emergency discharges	No discharges from emergency locations.	Trigger: Discharge from a non-EPL defined emergency discharge location. Action: Undertake investigation. Increase monitoring frequency downstream and undertake additional monitoring where relevant.	Trigger: Continued discharge from a non-EPL defined, emergency discharge location. Action: Undertake review of water management on site. Undertake incident investigation, including ecotoxicology and aquatic ecology monitoring if appropriate.	Stage 1: Notify Environment and Community Coordinator/Mine Manager immediately. Notify relevant agencies in accordance with PIRMP requirements or if material harm has occurred. Notify DP&E and WaterNSW (if within Cops River catchment) as soon as practicable.

Stream health

Aspect	Normal	Stage 1	Stage 2	Notifications
Watercourse instabilities (all other watercourses)	Subsidence levels are within predictions.	Trigger: Subsidence levels 1.5 times greater than predicted values. Action: Undertake visual monitoring of watercourses to identify any instabilities that may have formed.	Trigger: Investigation into Stage 1 trigger indicates watercourse instabilities. Action: Investigate the factors contributing to the instability, which may include advice from technical specialists. Undertake additional monitoring (e.g. watercourse stability, water quality, aquatic ecology) where relevant. Implement corrective actions as required as soon as practicable to stabilise the surface and/or watercourses based on the outcomes of the investigation (refer Appendix I). Prioritise actions based on the risk to the environment and likelihood of further impact. Review WMP and related procedures to prevent reoccurrence.	Stage 1: Notify Environment and Community Coordinator/Mine Manager immediately. Stage 2: Notify relevant agencies in accordance with PIRMP requirements or if material harm has occurred.

Noise

Aspect	Condition Green	Condition Orange	Condition Red
Noise	Trigger	Trigger	Trigger
	Monitoring results within criteria.	Real time monitoring indicates noise levels approaching noise criteria level (within 2 dB(A)).	Monitoring indicates an exceedance of the noise criteria.
	Action	Action	Action
	No response required. Continue monitoring program.	Review operations to reduce noise emissions. Modify operations where possible.	Complete incident investigation to determine the cause of the exceedance. Review effectiveness of mitigation measures. Modify operations where possible. Notify relevant government agencies and impacted landowners in accordance with the procedure in the Noise Management Plan. Review the Noise Management Plan in accordance with CoA. .

Air Quality

Aspect	Condition Green	Condition Orange	Condition Red
PM ₁₀	Trigger	Trigger	Trigger
	Monitoring results within criteria. PM ₁₀ trigger level not exceeded.	Real time monitoring indicates PM₁₀ level exceeds trigger level of 50 µg/m³ over a 1 hour period. (note once tripped, alarms will not reset until back under trigger level) OR HVAS Monitoring data exceeds 80% of the PM₁₀ 24-hour air quality criteria (40 µg/m³). OR HVAS Annual average exceeds 80% of the PM₁₀ Annual Average air quality criteria (24 µg/m³).	HVAS or Real Time monitoring indicates an exceedance of the PM₁₀ 24-hour air quality criteria of 50 µg/m³. OR HVAS Monitoring indicates an exceedance of the PM₁₀ Annual Average criteria of 30 µg/m³.
	Action	Action	Action
	No response required. Continue monitoring programme	Review operations to reduce dust emissions. Implement any additional mitigation measures as required. Modify operations if applicable.	Complete incident investigation to determine the cause of the exceedance. Review effectiveness of mitigation measures. Modify operations if applicable. Notify relevant government agencies and impacted landowners in accordance with the procedure

Aspect	Condition Green	Condition Orange	Condition Red
			in the Management Plan. Consider review of Management Plan if required.
TSP	Trigger	Trigger	Trigger
	Monitoring results within criteria	Monitoring result exceeds a TSP value of $90 \mu\text{g}/\text{m}^3$. OR Monitoring indicates annual average TSP level exceeds 80% of criteria level. ($72 \mu\text{g}/\text{m}^3$).	Monitoring results indicates an exceedance of the TSP Annual Average criteria of $90 \mu\text{g}/\text{m}^3$.
	Action	Action	Action
	No response required. Continue monitoring programme	Review operations to reduce dust emissions. Implement any additional mitigation measures as required. Modify operations if applicable.	Complete incident investigation to determine the cause of the exceedance. Review effectiveness of mitigation measures. Modify operations if applicable. Notify relevant government agencies and impacted landowners in accordance with the procedure in the Management Plan. Consider review of Management Plan if required.
Depositional Dust	Trigger	Trigger	Trigger
	Monitoring results within criteria	Monitoring indicates monthly depositional dust level exceeds 4	Monitoring indicates annual average exceeds $4 \text{ g}/\text{m}^2/\text{month}$

Aspect	Condition Green	Condition Orange	Condition Red
		g/m ² /month. OR Monitoring indicates annual average Dust Depositional level exceeds 80% of criteria level (3.2 g/m ² /month).	
	Action	Action	Action
	No response required. Continue monitoring programme	Analyse data to determine source of dust. Review operations to reduce dust emissions. Implement any additional mitigation measures as required. Modify operations if applicable.	Complete incident investigation to determine the cause of the exceedance. Review effectiveness of mitigation measures. Modify operations if applicable. Notify relevant government agencies and impacted landowners in accordance with the procedure in the Management Plan. Consider review of Management Plan if required.
Odour	Trigger	Trigger	Trigger
	No complaints or odour reports from site personnel.	On site identification of odour source reported.	External complaint of odour emissions received.
	Action	Action	Action
	No response required.	Analyse information to determine source of odour emissions. Review operations to reduce odour emissions if	Analyse information to determine source of odour emissions. Review operations to reduce odour emissions if source of odour emissions

Aspect	Condition Green	Condition Orange	Condition Red
		source of odour emissions determined to be from site.	determined to be from site. Notify relevant government agencies and report complaint and actions implemented in the Annual Review.

