

MANAGEMENT PLAN

Erosion and Sediment Control

MAC-ENC-PRO-060



Version: 3.0| Released: 30/10/2025

Key Contact: Environment Superintendent

Table of Contents

1	Preface	2
2	Legislation, Standards and Regulations	2
2.1	Relevant Legislation and Regulations	2
2.2	Relevant Standards and Guidelines	2
3	References	3
3.1	External Documents	3
3.2	Mt Arthur Coal Internal Documents	3
4	Purpose and Scope	4
5	Consultation and Communication	4
6	Roles and Responsibilities	4
7	Potential Flooding and Flood Management	5
7.1	Whites Creek Diversion	5
7.2	Hunter River	7
7.3	Site Flood Assessment	7
8	Potential Causes of Soil Erosion and Sediment Generation	8
9	Erosion and Sediment Control Strategy	9
9.1	Water Categories	9
9.2	Operational Control Methods	9
10	Control Design & Implementation	11
10.1	Temporary Sediment Control Methods	11
10.2	Sediment Dams (Facilities)	12
11	Current Erosion and Sediment Containment Structures	13
11.1	Temporary Sediment Control Structures	13
11.2	Sediment Dams (Sediment Facilities)	13
12	Operation and Maintenance	14
12.1	Temporary Sediment Control Structures	14
12.2	Drainage Channels	14
12.3	Sediment Dams (Facilities)	14
13	Response and Reporting Procedures	15
13.1	Incident Reporting	15
13.2	Complaint Handling	15
14	Review and Ongoing Reporting	15
14.1	Review	15
14.2	Reporting	15
	Version Management	16
	Appendix 1 – Catchment Facility Plans	17
	Appendix 2 – Sediment Dam and Mine Water Facilities	21
	Appendix 3 – Approval Conditions Compliance Tables	22
	Appendix 4 – Department Letter of Approval	23

1 Preface

Hunter Valley Energy Coal Pty Ltd (HVEC) operates the Mt Arthur Coal Mine Complex (MAC), which consists of approved open cut mining operation, a rail loop and associated rail loading facilities, in accordance with the Mt Arthur Coal Open Project Approval (09_0062 MOD 3) dated September 2025 (Project Approval), and Environment Protection Licence No. 11457 (EPL). The operations are located in the Upper Hunter Valley, NSW approximately five kilometres south-west of Muswellbrook.

Local hydrology surrounding MAC comprises a number of ephemeral drainage lines and creeks generally flowing north and south-west towards the Hunter River. Ephemeral creeks that surround the site include Quarry Creek, Whites Creek, and Ramrod Creek and Saddlers Creek. With the exception of Saddlers Creek, all creek surface-water flows towards the north / north-west. Saddlers Creek generally flows to the southwest and joins the Hunter River downstream of Denman. On-site, the Whites Creek Diversion directs runoff from undisturbed and rehabilitated on-site areas around the north-eastern areas of the mine and discharges to a small tributary downstream of Denman Road and then to the Hunter River.

Site and localised landform and catchment area have the potential to change due to open cut mining and overburden and tailings emplacement. These activities also have the potential to affect flooding and downstream water quality from potential erosion and sediment run-off.

MAC is committed to minimising the impact of its operations on the local environment and community and has in place controls and processes to minimise, monitor and manage these impacts. This Erosion Sediment Control Plan (ESCP) describes these controls and processes relevant to managing erosion and sediment control.

The locations of vegetation/habitat communities and other critical natural areas relevant to erosion and sediment control at Mt Arthur are presented in Mt Arthur Coal Consolidation Project Environmental Assessment (2009), Appendix J – Ecological Assessment (Hansen Bailey, 2009), Mt Arthur Coal Open Cut Extension Modification Ecological Assessment (Hunter Eco, 2013), and Mt Arthur Modification 2 Biodiversity Development Assessment Report (BDAR) (Resource Strategies, 2023).

A full project description, including baseline data, history of operations, current operating philosophy and mining methods is provided in the Mt Arthur Coal Consolidation Project Environmental Assessment (EA) (Hansen Bailey, 2009), Mt Arthur Coal Open Cut Modification EA (Resource Strategies, 2013), and Mt Arthur Coal Mine Modification 2 Modification Report (HVEC, 2023).

2 Legislation, Standards and Regulations

2.1 Relevant Legislation and Regulations

Key legislation applicable to the management of erosion and sediment control at MAC includes but is not limited to:

- Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act);
- Protection of the Environment Operations Act 1997 (NSW) (PoEO Act);
- Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002;
- Water Act 1912; and
- Water Management Act 2000.

Key statutory approvals associated with this Erosion and Sediment Control Plan are:

- Mt Arthur Coal Mine Open Cut Consolidation Project Modification 3 (PA 09_0062 MOD3) (the Project Approval); and
- Environmental Protection Licence 11457 (EPL).

The Project Approval and subsequent modifications were assessed under the EP&A Act. The PoEO Act is the principal piece of legislation regulating the EPL and pollution emissions in NSW. A list of the relevant conditions of the approval and where they are addressed in this Erosion and Sediment Control Plan (ESCP) is found in Appendix 3.

The EPL was granted under the PoEO Act and prescribes the licensed discharges to water including locations of discharge points, concentration limits, volume limits and monitoring and recording limits. These points and limits are addressed in the MAC Water Management Plan, (MAC-ENC-MTP-034). There are no specific requirements in this ESCP.

2.2 Relevant Standards and Guidelines

MAC has well-established management systems that are aligned with the international environmental and safety management system standards ISO 14001 and ISO 45001. The management systems provide a framework to support the planning, implementation, monitoring and review of MAC's Water Management Systems, facilitating continual improvement in the performance of water management activities. The management systems include internal policies, subordinate plans and technical procedures that are referenced within this ESCP.

3 References

3.1 External Documents

- (a) NSW EPA Environmental Protection Licence 1145
- (b) Mt Arthur Coal Mine Open Cut Consolidation Project Modification 3 (PA 09_0062 MOD 3) (the consent)
- (c) Hansen Bailey (2009), Mt Arthur Coal Consolidation Project Environmental Assessment. Prepared for Hunter Valley Energy Coal Pty Ltd.
- (d) Resource Strategies (2013), Mt Arthur Coal Open Cut Modification – Prepared for Hunter Valley Energy Coal Pty Ltd.
- (e) HVEC (2023) Mt Arthur Coal Mine Modification 2 Modification Report.
- (f) AGE (2009). “Mt Arthur Coal Consolidation Project Environmental Assessment”
- (g) Minerals Council of Australia (1997), “Mine Site Water Management Handbook”
- (h) Protection of Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002
- (i) URS Australia Pty Limited (2000) The Mount Arthur North Coal Project, Environmental Impact Statement. Prepared for Coal Operations Australia Limited.
- (j) Resource Strategies (2013), Mt Arthur Coal Open Cut Modification – Prepared for Hunter Valley Energy Coal Pty Ltd.
- (k) Landcom (2004), The Blue Book, Managing Urban Stormwater: Soils and Construction, Volume 1 and Volume 2E, NSW Government, 4th ed., March.
- (l) ATC Williams Pty Ltd (2023), Mt Arthur Coal Mine Modification 2 Surface Water Assessment. Report 121154-35 R001, Rev 0, prepared for Hunter Valley Energy Coal Pty Ltd, September 2025.

3.2 Mt Arthur Coal Internal Documents

- (a) MAC-ENC-REG-001 Environmental Risk Register
- (b) MAC-ENC-MTP-034 Water Management Plan (WMP)
- (c) MAC-ENC-MTP-041 Environmental Management Strategy
- (d) MAC-ENC-MTP-047 MAC Rehabilitation Strategy
- (e) MAC-ENC-MTP-053 Topsoil Management Plan
- (f) MAC-ENC-MTP-055 Rehabilitation Management Plan
- (g) MAC-ENC-MTP-059 Non-Regulated Dams Operations Manual
- (h) MAC-ENC-PRO-042 Community and Environmental Incident Response and Reporting
- (i) MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring
- (j) MAC-ENC-PRO-084 Water Monitoring Procedure
- (k) MAC-HSE-PRO-013 Coal Permit to Disturb Procedure
- (l) MAC-HSE-FRM-004 Coal Permit to Disturb
- (m) MAC-STE-MTP-019 Main Dam Operation and Maintenance Manual
- (n) MAC-STE-MTP-048 Saddlers Ck Sediment Dam Operations and Maintenance Manual
- (o) MAC-STE-REG-013 Mt Arthur Environmental Compliance Register
- (p) NEC-STE-MTP-009 Pollution Incident Management Response Plan

4 Purpose and Scope

This ESCP has been prepared to satisfy the requirements of Schedule 3, Condition 31 of the Mt Arthur Coal Mine Project Approval 09_0062.

The purpose of this ESCP is to set out strategies to control soil erosion and sediment generation close to the source and thereby limit the potential for mine activities to adversely affect downstream water quality. A secondary objective is to ensure that measures are in place to adequately manage flood risks.

The key purposes of this ESCP are to:

- Ensure compliance with operating conditions of all relevant statutory approvals;
- Manage on-site erosion and sediment controls consistently with the requirements of the Blue Book (Managing Urban Stormwater: Soils and Construction Volumes 1 and Volume 2E),
- Identify activities that could cause soil erosion, generate sediment or affect flooding,
- Describe erosion and sediment control management tools that may be employed to mitigate the impact of mining operations on downstream waters and manage flood risk, as required
- Describe long-term sediment control structures and flood management structures
- Ensure measures are implemented to maintain the management structures over time.

In line with Landcoms 2004 Managing Urban Stormwater: Soils and Construction Volume 1 and Volume 2E (the Blue Book), the intent and focus of the ESCP is to control and limit soil deposition into downstream (i.e. off-site) waterways. The controls and management strategies described herein apply to areas where there is realised risk of discharge of sediment laden run-off to off-site water ways. It does not apply to internal site water management systems or other potential contamination / pollution events. These are covered in the site Water Management Plan (MAC-ENC-MTP-034).

5 Consultation and Communication

The original version of the ESCP was prepared in 2011 in consultation with EPA and NSW Office of Water (NOW) and approved by the then Department of Planning and Infrastructure (now Department of Planning, Housing and Infrastructure [DPHI]) in 2012. Subsequent versions are submitted to the DPHI for review and approval.

In addition to formal consultation previously undertaken relating to the WMP, MAC has extensive consultation and communication processes, including:

- A comprehensive community engagement program which includes the establishment of a Community Consultative Committee (CCC);
- Consultation with Muswellbrook Shire Council (MSC);
- Quarterly meetings are held with relevant neighbouring mines to discuss cumulative impacts and how they will be managed (in line the Project Approval). This meeting is held to discuss improvements, recommendations, arising issues and potential cumulative impacts on the community;
- A Community Response Line (1800 882 044) which enables members of the community to consult and communicate with environment and community staff directly to discuss concerns as they arise;
- Project approvals, Management Plans, monitoring results, Annual Reviews and other related documentation (complaints register, CCC minutes etc.) are made publicly available via the BHP website <https://www.bhp.com/environment/regulatory-information>.

6 Roles and Responsibilities

The maintenance and update of this ESCP is the responsibility of the Environment Superintendent. Responsibilities with respect to implementation of operational controls are defined within this plan and referenced in operational control documentation.

All personnel and contractors are responsible for undertaking works in accordance with the objectives and principles of this ESCP including implementation of the Permit to Disturb (PTD) process (where required) and reporting all incidents involving the failure or damage to ESCP or flooding structures to the Environment Team.

7 Potential Flooding and Flood Management

Site and localised landform and catchment area changes occur due to open cut mining and ancillary activities including overburden and tailings emplacement. These changes in land use and landform have the potential to affect localised flooding. The main processes on-site for managing potential risks is the MAC Permit to Disturb Procedure (MAC-HSE-PRO-013) permit system and rehabilitation and final landform design management. Inspections and maintenance of operational area drainageways and culverts are also completed in key operational areas (i.e. CHPP) to minimise potential for inundation of operational areas.

7.1 Whites Creek Diversion

The Whites Creek Diversion is the only active flood management structure installed and managed for the ongoing operation of MAC. The Whites Creek Diversion (Figure 1) is a constructed diversion channel that serves the purpose of diverting non-mine affected surface runoff flows from the catchment to the east of the CHPP Dirty Water Dam and Environmental Dam. The diversion channel drains north for approximately 3.5 km before discharging from MAC via an existing culvert under Denman Road.

Annual monitoring is completed at Whites Creek Diversion consisting of riparian vegetation assessment and channel stability assessment (further detailed in Section 9.2 of the WMP), and, a condition assessment of the rock lined section of the diversion channel. Monitoring is completed at previously determined monitoring sites.

The key objectives of the annual monitoring program are to:

- Monitor riparian vegetation community condition and development;
- Identify potential impacts from mining-related activities on creek bed stability and riparian vegetation health;
- Assess the condition of the rock lined section of Whites Creek Diversion (including rock, bed and banks of the channel); and
- Identify requirements for remedial and/or maintenance works, as required.

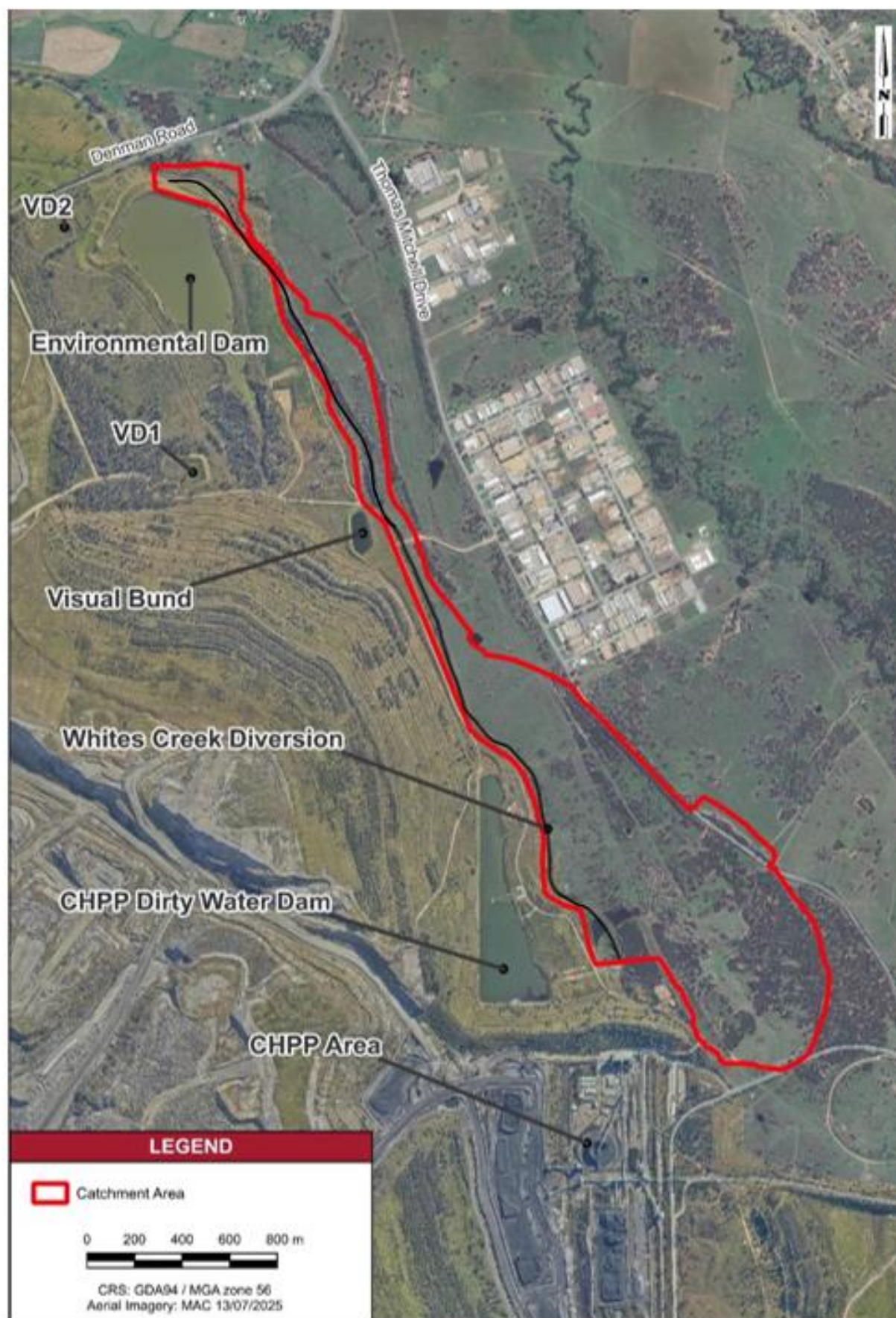


Figure 1: Whites Creek Diversion and Catchment

7.2 Hunter River

Flooding of the Hunter River and associated risk to MAC is detailed in a study undertaken by Golder Associates, 'Mount Arthur Coal Mine Flood Study – Levee Extension Flood Level Assessment', 28 November 2018, Golder Associates (MACMFS). The flood model project scope was defined as requiring the design of the Windmill Pit levee to protect the ingress of flood water from a 0.1% AEP. While it is apparent that historically a flood levee has been constructed along the northern extent of the site adjacent to Denman Rd, the hydraulics model completed by Golder and Associates in 2018 for the 0.1% AEP flood event (Figure 2) indicate that the Hunter River does not inundate any MAC operating areas. As such, while the bund remains in place it is not considered a critical flood structure for the purposes of this ESCP.

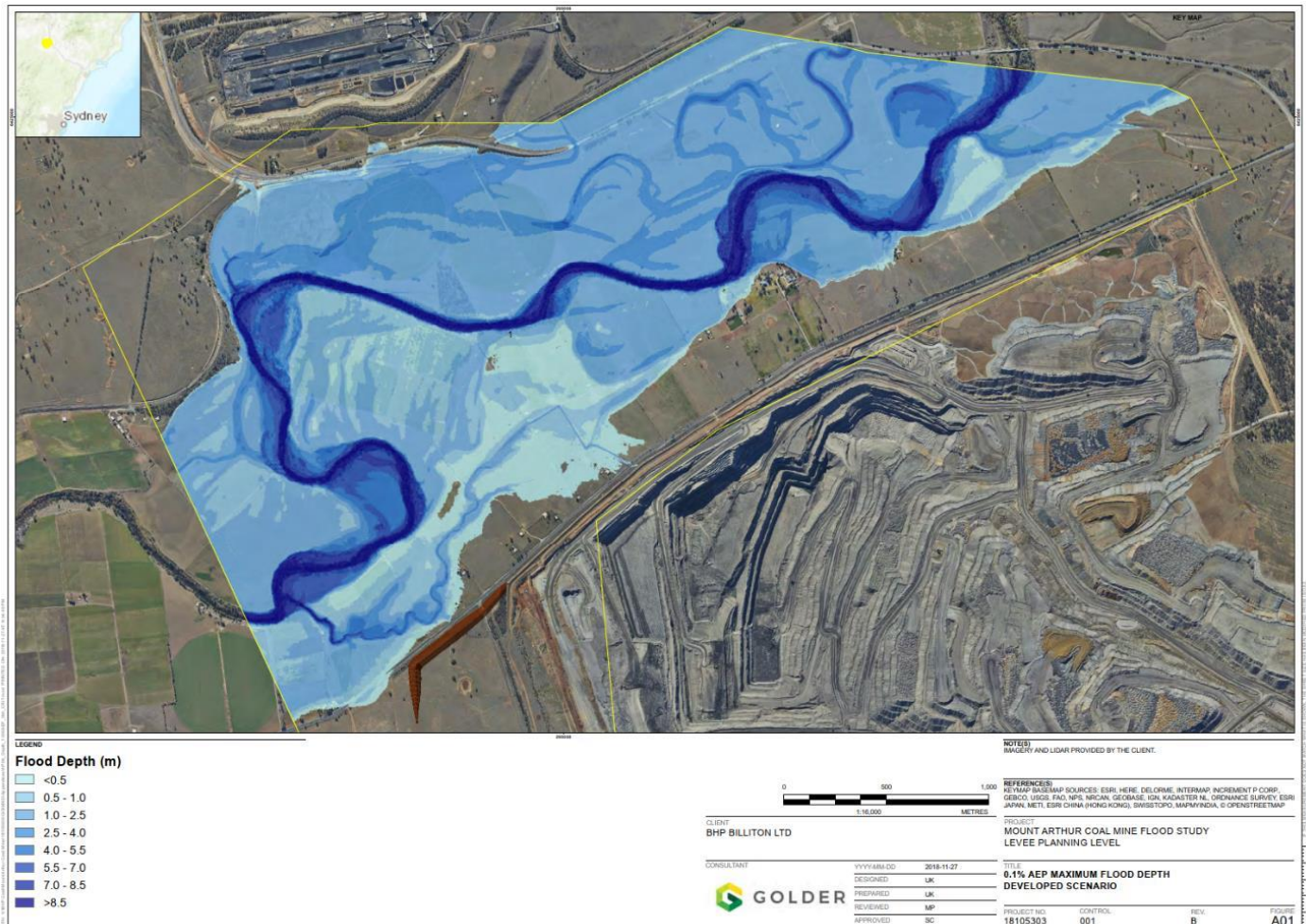


Figure 2: 0.1% AEP Maximum Flood Depth Development Scenario (Hunter River)

7.3 Site Flood Assessment

A site flood assessment is undertaken every two years. The key objective of the assessment is to ensure potential flood risks are identified and managed in consideration of the progression of mining operations, operational changes and infrastructure construction.

The assessment includes flood modelling and assessments of waterways and catchments surrounding MAC (excluding the Hunter River). This is undertaken in consideration of the Annual Exceedance Probability (AEP) flood event simulations including, 10 percent (%) AEP, 5% AEP, 2% AEP, 1% AEP 0.1% AEP. Catchment studies and modelling are completed for the major local watercourses in the vicinity of MAC and associated property leases including Saddlers Creek, Quarry Creek and Whites Creek Diversion. Flood risk screening is assessed based on the outcomes of the modelling where key flood risks are identified to ensure that minimal risk to the environment and MAC operating areas is maintained.

8 Potential Causes of Soil Erosion and Sediment Generation

Erosion and sediment generation which may result from MAC operations, including ancillary activities, include:

- increased runoff volumes and velocities from:
 - clearing vegetation,
 - the construction of impervious surfaces (i.e. infrastructure);
 - changes to landform (i.e. clearing, dumping, shaping etc.);
- increased potential for sediment generation from:
 - topsoil stripping
 - changes to landform (i.e. clearing, dumping, shaping etc.)
 - land disturbance where disturbance to soils may occur (i.e. construction works, drilling; etc)
 - implementation and maintenance of access roads/tracks

When the above activities have the potential to impact downstream water quality, implementation of erosion and sediment controls and management practices are required. These are further detailed in Sections 9– 12, below.

Examples of activities that would require review of erosion and sediment risk / control include (but are not limited to):

- clearing and topsoil stripping of land for dumping or mining progression;
- construction of operational infrastructure in sensitive areas (i.e. construction of access tracks in undisturbed areas);
- construction and placement of overburden dumps and other emplacement areas, including haul routes, in areas where there is potential for off-site run-off;
- placement of topsoil stockpiles in areas where there is potential for off-site run-off;
- changes to drainage lines and/or catchments, including upslope diversions; and
- changes to established drainage / water control structures.

9 Erosion and Sediment Control Strategy

9.1 Water Categories

MAC categorises water into three types to effectively manage water, and to mitigate any potential for environmental harm to occur. Each type of water requires different management measures to minimise the potential risk of contamination of downstream drainage systems. A description of the water quality and potential sources for the three categories of water are summarised in Table 1, below.

Table 1: Water Categories and Target Design Criteria

Water Category	Description	Target Design Criteria
Clean Water	Runoff from undisturbed or rehabilitated areas where vegetation is fully established and where the water quality is suitable for release/discharge.	Overland flow where practicable, to downstream environment. External infrastructure such as culverts or drains may be part of any assessment to determine what is practical.
Runoff Water	Runoff from disturbed areas that do not have the potential to generate elevated salinity and/or contain pollutants other than suspended solids (i.e. disturbance of land in rehabilitated or undisturbed areas)	Managed in accordance with the guidelines in Landcom (2004) (Managing Urban Stormwater: Soils and Construction Volume 1 and Volume 2E).
Mine Affected Water	Runoff exposed to coal or used in coal processing. Mine water includes water associated with groundwater inflows into open cut pits. This water may be highly saline and/or contain pollutants such as hydrocarbons (i.e. runoff from coal stockpiles)	Contained within the mine water management system, for events up to and including the 1% AEP and 24 hour storm events Contained water is reused within the mine water management system (i.e. coal washing, dust suppression etc). If necessary, releases must be from the licensed discharge point documented within and in accordance with EPL 11457 and the Hunter River Trading Scheme (HRSTS) as detailed in the Water Management Plan (MAC-ENNC-MTP-034).

This ESCP is concerned with the management of 'runoff water' as described in Table 1 where there is realised risk for runoff to adversely affect downstream water quality.

Standard erosion and sediment control techniques and management principles are utilised in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volume 2E (DECC, 2008) (the Blue Book), these are further described in the sections below.

9.2 Operational Control Methods

Management procedures have been established and implemented on-site to ensure considerations for erosion and sediment impacts are considered and, where relevant, appropriate controls are in place. These standard techniques and management principles are achieved at MAC through the following key operational principles:

- Minimising land disturbance:** The MAC Permit to Disturb Procedure (MAC-HSE-PRO-013) describes the permit system used to manage risks associated with land disturbance and land use changes on-site. It is utilised to minimise unnecessary disturbance (particularly in rehabilitated and undisturbed areas). It is also utilised to ensure that, when required, appropriate risks (including erosion and sediment risks and potential flood) are considered and that appropriate controls are applied. Ideally, installation of drainage, erosion and sediment control measures (where required) should be the first step in an approved scope of works. Examples of minimisation of land disturbance implemented at MAC include:
 - Limiting clearing of undisturbed and/or rehabilitated areas to essential areas;
 - Staged disturbance so smaller areas are exposed at a time ;
 - Use of existing tracks and infrastructure areas, where possible

- Avoiding or minimising disturbance to sensitive areas (i.e. near site boundaries), and where disturbance is required, implementation of control measures to reduce risks (i.e. completion of disturbance works in dry weather); and
 - Timely rehabilitation / re-instatement / stabilisation of disturbance.
- **Stockpile management:** Preferably level or gently sloping areas are to be used as stockpile sites, where required, to limit erosion and potential soil loss where possible. Where possible stockpiling of material should occur in catchment areas where surface water run-off reports to in-pit (i.e. little to no change for off-site discharge). Stockpiling of topsoil must be completed in line with the Topsoil Management Plan (MAC-ENC-MTP-053) which includes seeding with approved species to reduce the potential for weed contamination and erosion; and, where possible, locating stockpiled material away from concentrated water flows;
 - **Progressive Rehabilitation:** Rehabilitation management on-site is completed in line with MAC Rehabilitation Strategy (MAC-ENC-MTP-047) and Rehabilitation Management Plan (MAC-ENC-MTP-055) and is completed in accordance with the rehabilitation sequence contained in the approved forward plan. Progressive rehabilitation minimises soil erosion and sediment risk by progressively stabilising the land, reducing exposure time of bare soil surfaces, improves water flows through landform design including drainage installation, and establishment of vegetation. Rehabilitated areas are restricted (i.e. fencing and/or signposting where practical) and undergo continual management practices such as weed control and reseeded of areas that fail to establish as soon as practicable. Rehabilitation and final landform consider erosion risk at the design stage with additional controls implemented throughout execution, as required.
 - **Diversion and collection drains:** Diversion or collection drains capture runoff from selected areas and re-direct runoff to a desired receiving area (i.e. sediment dam) and are to be designed to ensure effective segregation of runoff water categories (as described in Table 1). Construction of diversion drains generally occurs upslope of disturbed areas (actual or planned) and aim to direct clean runoff away from disturbed areas where they significantly reduce the catchment reporting to/through disturbed areas. Diversion drains should allow clean water to return to natural watercourses, where possible. Collection drains work in the same principal but are located downslope to catch impacted water flows and divert them to a desired control area (i.e. site sediment dam).
 - **Sediment dams:** Sediment dams retain runoff volume from a rainfall event such that suspended solids can settle to the base of the dam. Existing sediment dams, farm dams and non-operational open cut voids are to be preferentially utilised for this purpose, where possible.
 - **Sediment Sumps:** Similar to sediment dams, sediment sumps are utilised to capture run-off from a rainfall event where sediment / suspended solids can settle to the base of the sump. They are generally smaller and are utilised in smaller sub-catchment areas or disturbance areas, where required. Sumps may be long term or temporary in nature.
 - **Disturbance/construction design:** Where possible, construction of road and earthworks cut and fill batters at slopes of 1V:3H (vertical: horizontal) or flatter to enhance long term stability.
 - **Temporary erosion and sediment controls:** Temporary controls or structures that may be implemented on-site where long-term controls may not be feasible and/or may be used in conjunction with long term, or, as an interim control while long term solutions are being implemented. Temporary controls that may be utilised on-site include, but are not limited to:
 - Sediment fences / traps to collect sediment and slow down flow velocities;
 - Rock check dams (generally installed along drains or sediment fences) minimise flow velocity and act as a filter for sediment, material used can vary including rock, logs, sandbags, coir logs and straw bales. Rock material may be implemented as a longer-term control
 - Bunding of disturbed areas to prevent uncontrolled run-off and minimise erosion
 - Temporary sump, implemented inside of a controlled disturbance area (i.e. bunded area) to catch run-off from within the disturbance area during disturbance works are in place.

10 Control Design & Implementation

Table 2: Design Criteria for Sediment Control Structures

Sediment Control structure	Function	Design Capacity
Upslope diversion drains	Reduce runoff from undisturbed areas onto disturbed areas	Peak flow calculated for 10% AEP critical duration rainfall event (Landcom (2004), Section 5.4.3(b)-(d))
Downslope collection drains	Intercept and convey disturbed area runoff water to sediment dams/sumps	Peak flow calculated for 10% AEP critical duration rainfall event (Landcom (2004), Section 5.4.3(b)-(d))
Sediment dams (Facilities)	Containment of sediment-laden runoff from disturbed areas with more than 150m ³ /yr estimated soil loss (Landcom (2004), Section 6.3.2(d))	Settling Zone: Capacity to store the runoff produced from the 80th percentile, 5-day rainfall event (Landcom (2004), Section 6.3.4(f) and (i)) Sediment Zone: Two months calculated soil loss estimated using RUSLE* or 50% of the settling zone capacity (Landcom (2004), Section 6.3.4 (i))
Sediment fences and/or straw bale filters	Retention/filtration of suspended sediments	Limit flow to less than 50 L/s in the design 10% AEP critical duration rainfall event (Landcom (2004), Section 6.3.7(e))

*Revised Universal Soil Loss Equation (RUSLE)

10.1 Temporary Sediment Control Methods

Where there is risk of run-off from planned disturbance to leave site or enter into clean water systems, sediment controls must be implemented. Sediment fences, sediment traps, rock check dams and other temporary erosion and sediment control measures from the Blue Book (Landcom (2004)) are to be installed in advance of, or in conjunction with, earthworks to control sediment laden runoff (Table 1). These temporary controls are intended to be used for short periods whilst more permanent erosion and sediment control measures are being implemented (i.e. sediment dams or re-establishment of vegetation etc.). Temporary controls are also suitable for use during emergency scenarios where permanent or large-scale control measures may not be feasible or appropriate.

Sediment filter fences or other temporary controls are to be constructed immediately downslope of areas to be disturbed to minimise the potential for sediment transport into receiving waterways. Temporary sediment controls are to be constructed in line with Best Practice Erosion and Sediment Control Guidelines, (Landcom, 2004).

10.2 Sediment Dams (Facilities)

Sediment dams are installed as required in order to capture and treat sediment laden runoff water (Table 1) from disturbed areas prior to release off-site.

Sediment dams are designed based on the methodology and parameters contained in Landcom (2004), the settling zone capacity and sediment storage zone capacity and hence required dam capacity are calculated using Equations 1, 2 and 3 below respectively:

$$\text{Settling Zone Capacity (cubic metres [m}^3\text{])} = V_{\text{settling}} = 82.25 \times A \quad (1)$$

$$\text{*Sediment Zone Capacity (m}^3\text{)} = V_{\text{sediment}} = 27.16 \times A \quad (2)$$

$$\text{Required Dam Capacity (m}^3\text{)} = V_{\text{total}} = V_{\text{settling}} + V_{\text{sediment}} \quad (3)$$

Where; V_{settling} = settling volume

V_{sediment} = sediment volume

V_{total} = total volume

A = catchment area of the sediment dam (ha)

*Alternatively Sediment Zone capacity may be calculated at 50% of the settling zone capacity (Landcom (2004), Section 6.3.4 (i))

The 90th percentile 5-day rainfall event, used in determining the sediment dam settling zone capacity, is calculated at 39.35 mm from the average of values for Scone and Cessnock as per Table 6.3a in Landcom (2004). Appropriate volumetric runoff coefficient should be adopted from Table F3 of Landcom (2004). The adopted design standard does not provide 100% containment for runoff from disturbed areas. Hence, it is possible and expected that overflows will occur from sediment dams if rainfall exceeds the design standard, these designed overflows are not considered a reportable event.

Sediment dam batters should be covered with topsoil and/or seeded with a cover crop to assist with limiting the potential for erosion of the dam batters. The final design locations, functions and capacities of major sediment dams are described in the relevant sediment dam operation and maintenance manual/s. Sediment dam locations are added to the permit to disturb GIS mapping layers.

Where necessary, sediment dams will be constructed prior to any land disturbance activities occurring and will be maintained during the duration of catchment disturbance. Sediment dams will be maintained in a drawn down state as far as practicable by transferring water to the mine water storages, with water to be used for dust suppression or other mine related purposes, or by pumping water onto grassed and or rehabilitated areas for irrigation purposes.

Runoff from rehabilitated areas is diverted to sediment dams for treatment until the area is rehabilitated (i.e. established vegetation where surface runoff is considered suitable for release from the site, at which time the sediment dams may be decommissioned or active management (by dewatering and periodic de-silting) ceases. In the latter case, the sediment dams may remain in place in the longer term and become an asset for future land use. Catchments that are fully rehabilitated and/or do not have risk for potential offsite do not require a capacity than aligns with Landcom (2004).

11 Current Erosion and Sediment Containment Structures

11.1 Temporary Sediment Control Structures

Due to the temporary nature of these structures, the specific location and individual construction of these are not detailed in the ESCP. Where required, these will be designed, implemented and managed in accordance with this ESC plan and the Best Practice Erosion and Sediment Control Guidelines, (Landcom, 2004)

11.2 Sediment Dams (Sediment Facilities)

Sediment dams are the primary long-term erosion and sediment control structures implemented onsite. The need for a purpose-built sediment facility is determined by a catchment assessment undertaken during the planning phase.

Where a facility serves a dual purpose as a mine affected water facility and sediment control it will not be operated in accordance with Best Practice Erosion and Sediment Control Guidelines, (Landcom, 2004), rather the more stringent controls of a mine affected water facility will be implemented. Mine affected water facilities are designed and operated to ensure, as a minimum, containment of a 1% AEP (1 in 100 year) event.

Where sediment dams are located in areas where there is risk for off-site discharge (i.e. risk to impact downstream water quality), post rainfall inspections will be undertaken as soon as practicable following significant storm event (rain events of 25 mm, or greater, in a 24 hour period, midnight to midnight). The inspection must identify if management (i.e. pump out) or maintenance (i.e. desilting, bund repair etc) of the sediment dam is required after the significant storm event.

The current sediment facilities managed under this ESCP that are required to have post rainfall inspections are identified in Table 3, below. Catchment boundaries, and associated water storages and pits are shown in Appendix 1. A full list of in-pit dams/voids and mine affected water storages is presented in Appendix 2.

The operational design and function of the major site sediment dams are documented within the relevant facility Operation and Maintenance Manual/Plan.

Table 3: Sediment Dams Requiring Post Rainfall Inspection

Facility Identification	Facility Type	Post rainfall inspection required?
Belmont West B	Sediment (topsoil stockpile)	Yes
Sed Dam A	Sediment (rehabilitation)	Yes
Sed Dam B	Sediment (rehabilitation)	Yes
Sed Dam C	Sediment (rehabilitation)	Yes
Saddlers Creek Sed Dam	Sediment	Yes
Ayredale South Bund Sed Dam	Sediment Facility	Yes
VD 1	Sediment (rehabilitation)	Yes
Export Coal Stockpile Dam	Sediment and mine affected water	Yes

12 Operation and Maintenance

12.1 Temporary Sediment Control Structures

Where temporary control methods are utilised, routine inspections of control structures are to be established until they are no longer required (i.e. disturbance stabilised or rehabilitated or long-term sediment controls have been established). Inspections should also be completed following significant rainfall events.

Where installed, temporary silt fences and straw bale filters should be inspected and maintenance completed as required, this may include removing trapped sediment or replacing straw bales. Removed sediment is to be placed within the mine footprint. Temporary structures are removed when no longer required.

12.2 Drainage Channels

Signs of erosion along the length of diversion or catchment drains are to be noted and remedial works undertaken, as required. Where significant erosion is observed, additional erosion controls should be constructed. This could include a combination of the re-establishment of vegetative cover and/or installation of an erosion control blanket or rock armouring. Temporary controls may be required to manage flow velocities while longer term maintenance items are established.

Inspections of drainage channels should also include condition of vegetation (where present) to ensure flow velocities and capacity of drains are not adversely impacted. Where vegetation is overgrown, and/or where sediment has settled on top of vegetation, maintenance works is to be undertaken as soon as practicable. This may include removal of built-up sediment, removal of vegetation and/or trimming of vegetation, as required.

12.3 Sediment Dams (Facilities)

MAC implements the following sediment dam management measures at sites with high risk for offsite discharge:

- Within 5 days following a rainfall event, if the available freeboard volume in sediment dams is approaching the required design capacity, sediment dams are dewatered to the mine water management system or to well-grassed areas where sufficient grassed buffer exists to control the migration of sediments to watercourses. Water may be released outside the mine water management system only if the total suspended sediment (TSS) content meets the recommended criterion of 50 mg/L (Landcom, 2004). Flocculant addition can be used, if required, to meet the recommended Landcom (2004) criterion.
- Sediment dams are maintained in between rainfall events to ensure sufficient capacity is available to capture the designed 5-day rainfall event., where feasible
- Environmental and sediment dam batters are appropriately stabilised to assist with limiting the potential for erosion of dam batters.
- Post Rainfall Inspection - Sediment dams that have a catchment with sediment generating potential and the potential to spill to the environment are inspected as soon as practicable after rainfall events with more than 25 mm in 24 hours. Dams are inspected to assess
 - capacity,
 - structural integrity; and
 - effectiveness.
- Where inspections indicate substantial accumulation of sediment in a sediment dam, clean-out will be undertaken as soon as practicable so as to reinstate the minimum required volumes.

Table 3, Section 11.2 identifies the facilities that require post rainfall inspection as per the ESCP. Timing of inspections and any required maintenance work are subject to safe access of the sediment dams and completed during daylight hours

Inspections are documented with a summary of the identified maintenance requirements for each inspected dam as detailed in the sites Water Monitoring Procedure (MAC-ENC-PRO-084).

13 Response and Reporting Procedures

13.1 Incident Reporting

Incidents associated with erosion and sediment control at MAC will be determined and reported in line with the Surface Water Response Plan procedure detailed in the WMP or Section 5.5 and Appendix 2 of the Environmental Management Strategy (MAC-ENC-MTP-041).

Emergencies associated with the operation and management of the environment at MAC will be responded to in accordance with NEC-STE-MTP-009 Pollution Incident Response Management Plan (PIRMP). This plan ensures immediate and effective response to environmental emergency situations that occur on-site, the comprehensive and timely communication about a pollution incident to staff at the premises, the relevant authorities specified in the Protection of the Environment Operations Act 1997 and people outside the facility who may be affected by the impacts of the pollution incident.

The MAC Community Response Line (1800 882 044) can be used 24 hours a day, 7 days a week by external stakeholders to contact MAC in the event of an environmental emergency to report concerns or request additional information.

13.2 Complaint Handling

Upon receipt of a complaint preliminary investigations will commence as soon as practicable to determine the likely cause/s of the complaint using information such as rainfall data, location of erosion or sediment generation and recent water quality monitoring results. A response will be provided as soon as practicable, which may include the provision of relevant monitoring data and corrective actions if appropriate. Every effort will be made to ensure that concerns are addressed in a manner that facilitates a mutually acceptable outcome for both the complainant and MAC. MAC records all community complaints in the site event management database and publishes these on the BHP website - <https://www.bhp.com/environment/regulatory-information>.

All complaints received in relation to erosion and sediment generation will be responded to in accordance with the Community and Environmental Incident Response and Reporting Procedure (MAC-ENC-PRO-042). This procedure details MAC's obligations regarding receiving, handling, responding to, and recording details of all community complaints. MAC records all community complaints in the site event management database.

14 Review and Ongoing Reporting

14.1 Review

This ESCP will be reviewed and evaluated to assess its adequacy and effectiveness, to the satisfaction of the Planning Secretary (in consultation with relevant government agencies) in accordance Schedule 5 Condition 4 of the Project Approval which requires this be done within 3 months of:

- The submission of the Annual Review;
- The submission of an incident report;
- The submission of an audit; and
- Any modifications to the conditions of the consent.

If necessary, this ESCP will be revised to incorporate any recommended measures to improve the environmental performance of MAC resulting from audits, community complaints and incident investigation findings. In addition, the review process will include ongoing evaluation of operational modifications, alternative methodologies and new technologies that become available.

14.2 Reporting

MAC will report on the effectiveness of the ESCP annually in the MAC Annual Review, which will be undertaken in accordance with Schedule 5, Condition 3 of the Project Approval and include:

- Environmental performance including outcomes of site management measures
- Erosion and or Sediment related complaints and management/mitigation measures undertaken;
- Management/mitigation measures undertaken in the event of any confirmed exceedance of the WMP impact assessment criteria, in relation to erosion and sediment control.

Published reports are publicly available on the BHP website <https://www.bhp.com/environment/regulatory-information>.

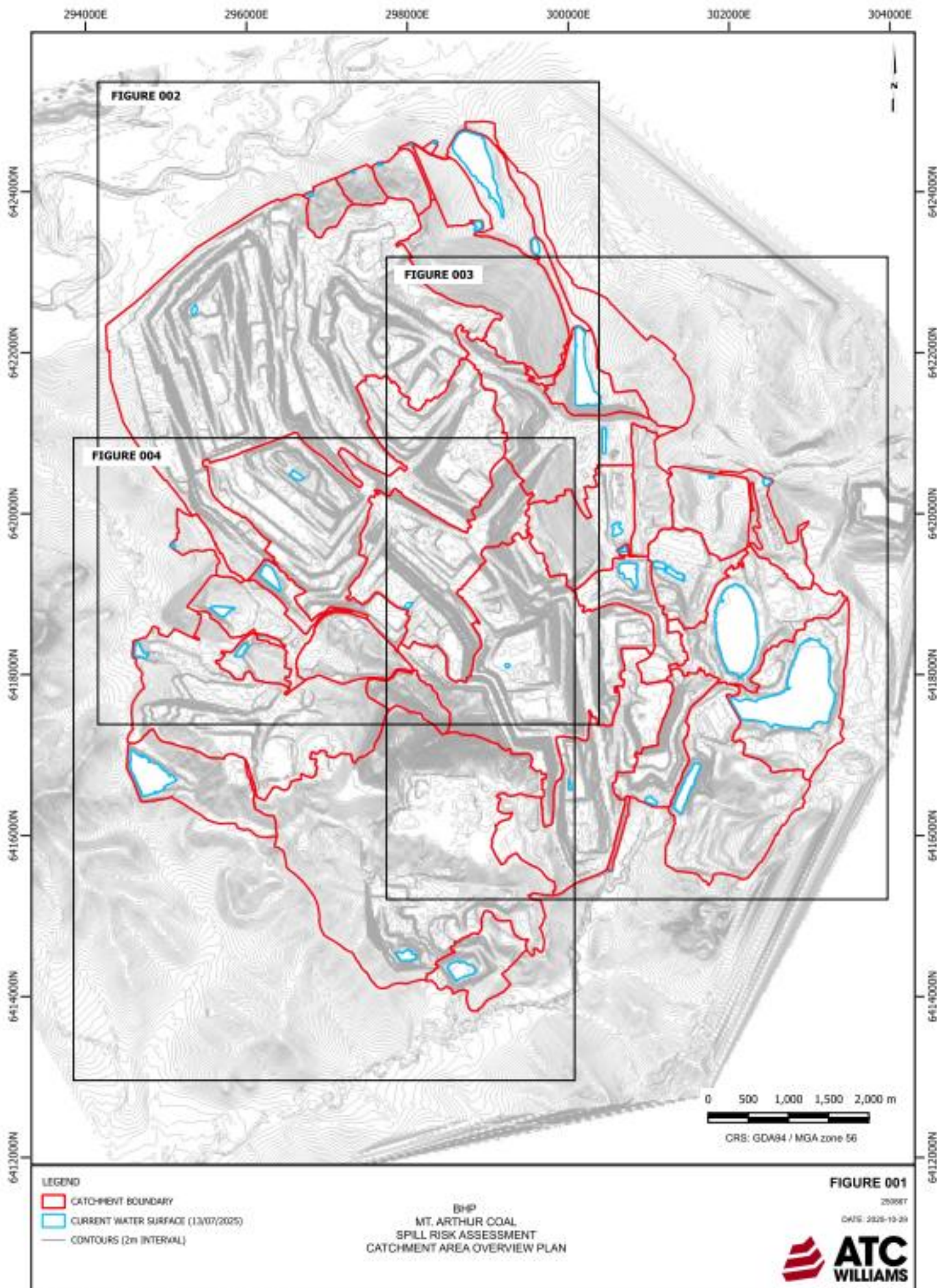
Version Management

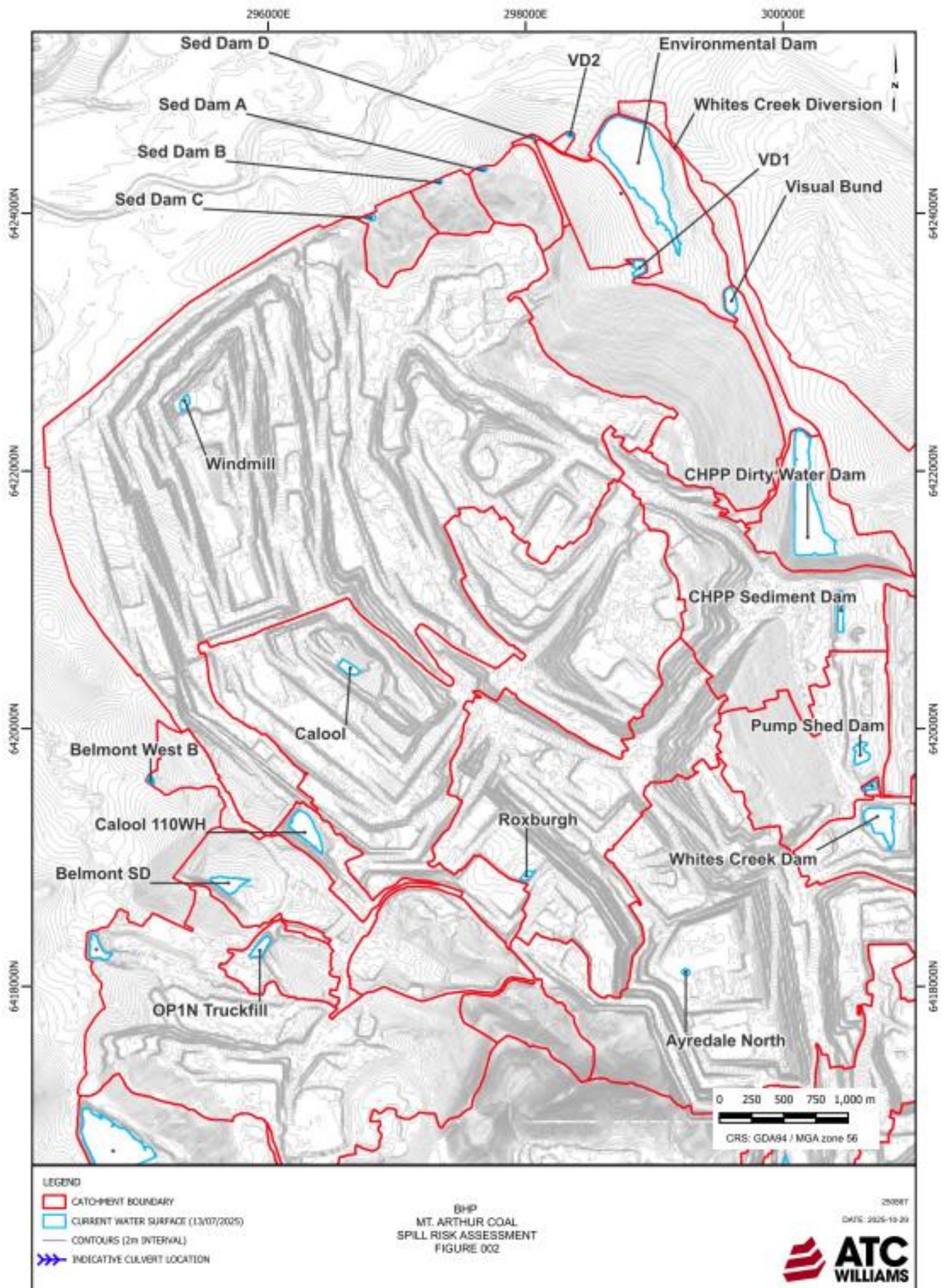
Note:

- **Major** versions (1.0, 2.0 etc.) are for changes after a significant event / incident or for a periodic review of the document.
- **Minor** versions (1.1, 1.2 etc.) are for small changes to a page or pages within a document.

Date	Version Control		Page(s)	Details
	Major	Minor		
30/06/2011	1.0		All	Draft Submitted to DPI for comment
15/08/2012		1.1	All	Draft Submitted to DPI for comment
20/08/2012		1.2	All	Approved by the Department of Planning & Infrastructure on 20/08/2012
14/09/2021	2.0		All	Submitted to DPIE for approval
12/11/21		2.1		Updated following feedback from DPIE
30/10/2025	3.0		All	Updated following MOD2 & MOD3 approvals and submitted to DPHI for approval

Appendix 1 – Catchment Facility Plans







Appendix 2 – Sediment Dam and Mine Water Facilities

Facility Identification	Facility Type	Dam / Pit /Void	Post rainfall inspection required?
Belmont West B	Sediment	Dam	Yes
VD 1	Sediment	Dam	Yes
Sed Dam A	Sediment	Dam	Yes
Sed Dam B	Sediment	Dam	Yes
Sed Dam C	Sediment	Dam	Yes
Sed Dam D	Sediment	Dam	No, spills to Env Dam
Export Coal Stockpile Dam	Sediment and mine affected water	Dam	Yes
Saddlers Creek Sed Dam	Sediment	Dam	Yes
Ayredale South Bund Sed Dam	Sediment	Dam	Yes
Windmill Highwall Sed Dam	Former Sediment	Dam	No – decommissioned, spills to pit.
Environmental Dam	Sediment and mine affected water	Dam	No
CHPP Dirty Water Dam	Sediment and mine affected water	Dam	No
Visual Bund	Sediment	Dam	No
Whites Creek Dam	Sediment and mine affected water	Dam	No
CHPP Sediment Dam	Sediment and mine affected water	Dam	No
Industrial Area Dam	Sediment and mine affected water	Dam	No
Pump Shed Dam	Sediment and mine affected water	Dam	No
Paradise Truck Fill Dam	Sediment and mine affected water	Dam	No
OP1N Truckfill Dam	Sediment and mine affected water	Dam	No
Bayswater Main Dam	Sediment and mine affected water	Dam	No
Drayton Void	Sediment and mine affected water	Pit/Void	No
Belmont Dam	Sediment and mine affected water	Dam	No
Belmont (West) Sed Dam	Sediment	Dam	No
McDonalds Pit	Sediment and mine affected water	Pit/Void	No
McDonalds Dam	Historic Sediment and Mine Water	Dam	No, spills to pit
Saddlers Pits	Sediment and mine affected water	Pit/Void	No
West Cut TSF	Tailings	Dam	No
South West Valley TSF	Tailings	Dam	No
North Cut TSF	Tailings	Dam	No
VD 2	Historic Sediment	Dam	No, catchment vegetated
Saddlers Rehab Dams 1 - 4	Historic Sediment	Dam	No
D11 Dam 1 & 2	Historic Sediment	Dam	No

Appendix 3 – Approval Conditions Compliance Tables

Table 4: Project Approval (09_0062) relevant conditions

Condition Number	Environmental Performance Condition	Addressed within
Development Consent (09_0062)		
Schedule 3 Condition 31	The Erosion and Sediment Control Plan must:	
	a) be consistent with the requirements of Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition, 2004 (Landcom), or its latest version;	Throughout this ESCP Section 3.1 Section 4
	b) identify activities that could cause soil erosion, generate sediment or affect flooding;	Flooding - Section 7 Error! Reference source not found. Erosion & sediment - Section 8
	c) describe measures to minimise soil erosion and the potential for the transport of sediment to downstream waters, and manage flood risk;	Section 7 Section 9
	d) describe the location, function, and capacity of erosion and sediment control structures and flood management structures; and	Section 7 Section 10 Section 11
	e) describe what measures would be implemented to maintain the structures over time	Section 0
Schedule 5 Condition 3	Annual Review	Section 14
Schedule 5 Condition 4	Revision of Strategies, Plans and Programs	Section 14
Schedule 5 Condition 6	Management of Cumulative Impacts	Section 5
Schedule 5 Condition 7	Incident Reporting	Section 13.1

Appendix 4 – Department Letter of Approval

Page left intentionally blank. Letter to be inserted following approval from the Department.