

Barro Group

SURFACE WATER MANAGEMENT PLAN

for

Extractive Industry Work Authority WA453

Little River Quarry

June 2023



WA453 – Little River Quarry
250 Drysdale Road
Little River VIC 3211
Access from Sandy Creek Road

BCA Project No. B05_047

Barro Group Pty Ltd
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WA453 – Little River Quarry Surface Water Management Plan

Prepared by:



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Prepared for:



BARRO GROUP
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2 June 2023

Document Control / Authorisation

The preparation of this Surface Water Management Plan has been a collaborative effort between BCA Consulting and Ann-Marie Farr of Barro Group, for implementation at their Little River Quarry, WA453.

Revision history

Revision	Description	Date	Originator	Reviewer	Approver
00	Draft for comment	2 Jun 2022	MDS	AMF	

Distribution

Report Status	No. of copies	Format	Distributed to	Date
Draft for Comment	1	PDF	Barro Group Pty Ltd	2 Jun 2022

Review

As a minimum, this Surface Water Management Plan will be reviewed within 2 years of being approved.

NEXT REVIEW DATE: Aug 2025

1. Introduction

The Surface Water Management Plan is an adaptive tool for managing both the risks posed by water flows and the potential risks posed by the operation to beneficial uses of water.

This document is to be used in conjunction with the Risk Management Plan component of the approved Work Plan for the quarry. It allows for the adaptive application of a range of control measures to manage the risks posed by differing hazards. This Surface Water Management Plan is included as a key control in the Risk Treatment Plans for the following hazards in the Risk Management Plan:

- Surface Water Flows
- Erosion and Sedimentation
- Ground Instability
- Process Water and Storages

The initial Surface Water Management Plan that is provided with a Work Plan application will typically demonstrate water management for the first two or three stages of extraction only, showing both internal water management and the onsite management of surface water flows to minimise offsite impacts. The key water management features for managing offsite impacts of surface water flows will also be shown on Figure 3, Site Layout Plan, and any of these features retained at closure will be shown on Figure 4, Rehabilitation Landform.

As quarry development progresses this Surface Water Management Plan will be adapted and continue to evolve to maintain effective risk management, in accordance with the objectives, compliance standards and acceptance criteria set out in the Risk Treatment Plans. Compliance with the approved Work Plan, including the overarching risk management and control measures, will be maintained throughout the life of the quarry.

The Surface Water Management Plan is designed to be easy-to-follow, non-technical, and can be used by anyone who needs to understand the management of water on the site at any point during the life of the quarry, in respect of both the risks posed by water flows and the potential risks posed by the operation to beneficial uses of water.

2. Components of the Surface Water Management Plan

The main components of the Surface Water Management Plan are:

- **Trigger Action Response Plans (TARPs)** – setting out the trigger events that will initiate adaptive management processes for adverse or unexpected conditions.
- **Surface Water Management Plan drawings** – showing all the current water management features, for both internal water management and onsite water management to minimise offsite impacts.

Trigger Action Response Plans are included for:

- Water Storages / Sediment Dams
- Rainfall / Storm Events

3. Monitoring and Reporting

The monitoring in relation to each hazard is set out in the individual Risk Treatment Plans and will provide the necessary alerts for the triggers identified in the TARPs.

Reporting on the effectiveness of the control measures in the Risk Management Plan, including this Surface Water Management Plan, and any adverse events will be as documented in the individual Risk Treatment Plans.

4. Review

The Surface Water Management Plan will be reviewed regularly against the control measures adopted at the site for water management. The minimum review frequency (2 years) is listed inside the cover page, however other triggers to review the Surface Water Management Plan include:

- an unexpected inrush of water or inundation occurs; or
- surface water diversion causes unintended impacts offsite; or
- turbid water is discharged offsite or could potentially be discharged offsite; or
- excessive erosion due to flows of water, particularly on the upper terminal batters; or
- flow of water leading to unexpected ground instability; or
- an unexpected overflow or instability of water storage / sediment dam; or
- the approved Work Plan is to be varied; or
- if new risk management methods are implemented.

LITTLE RIVER QUARRY – TRIGGER ACTION RESPONSE PLAN

WA453 – WATER STORAGEES / SEDIMENT DAMS

Level 1 NORMAL EVENT	Trigger	Action	Response
Level 2 MEDIUM RISK EVENT	<ul style="list-style-type: none"> • Minimum 1m of freeboard in water storages / sediment dams 	<ul style="list-style-type: none"> • Regular monitoring 	Continue with normal operation
Level 3 HIGH RISK EVENT	<ul style="list-style-type: none"> • Between 1m and 0.5m of freeboard in water storages / sediment dams 	<ul style="list-style-type: none"> • Daily review local weather conditions, BOM website • Increased monitoring of water inflows • Check start pumps • Review condition of downstream sediment control fences • if required, increase out flows to plant, dust suppression, quarry sump or irrigation 	<ul style="list-style-type: none"> • Increase monitoring levels till at least 1m freeboard in water storages / sediment dams • Remedial action to overflow drains / control structures as required
	<ul style="list-style-type: none"> • Less than 0.5m of freeboard in water storages / sediment dams 	<ul style="list-style-type: none"> • Start pump(s) and discharge to quarry sump • Check downstream sediment control fences in place and operational in case of over topping • Increase monitoring frequency / site vigilance • As much as possible, divert incoming water directly to the excavation / quarry sump 	<ul style="list-style-type: none"> • Hourly monitoring frequency until satisfied water level is dropping • Hourly check of pumps and diversion structures to ensure water level in water storages / sediment dams is not rising • If water level in water storages / sediment dams is still rising (ie above actions cannot reduce the water level) evaluate potential for the occurrence of site discharge. If necessary, initiate process of emergency discharge of water with EPA

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






LITTLE RIVER QUARRY – TRIGGER ACTION RESPONSE PLAN

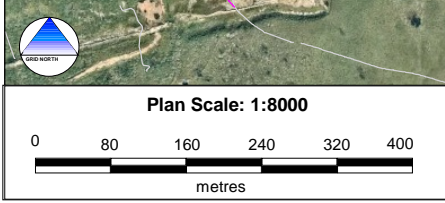
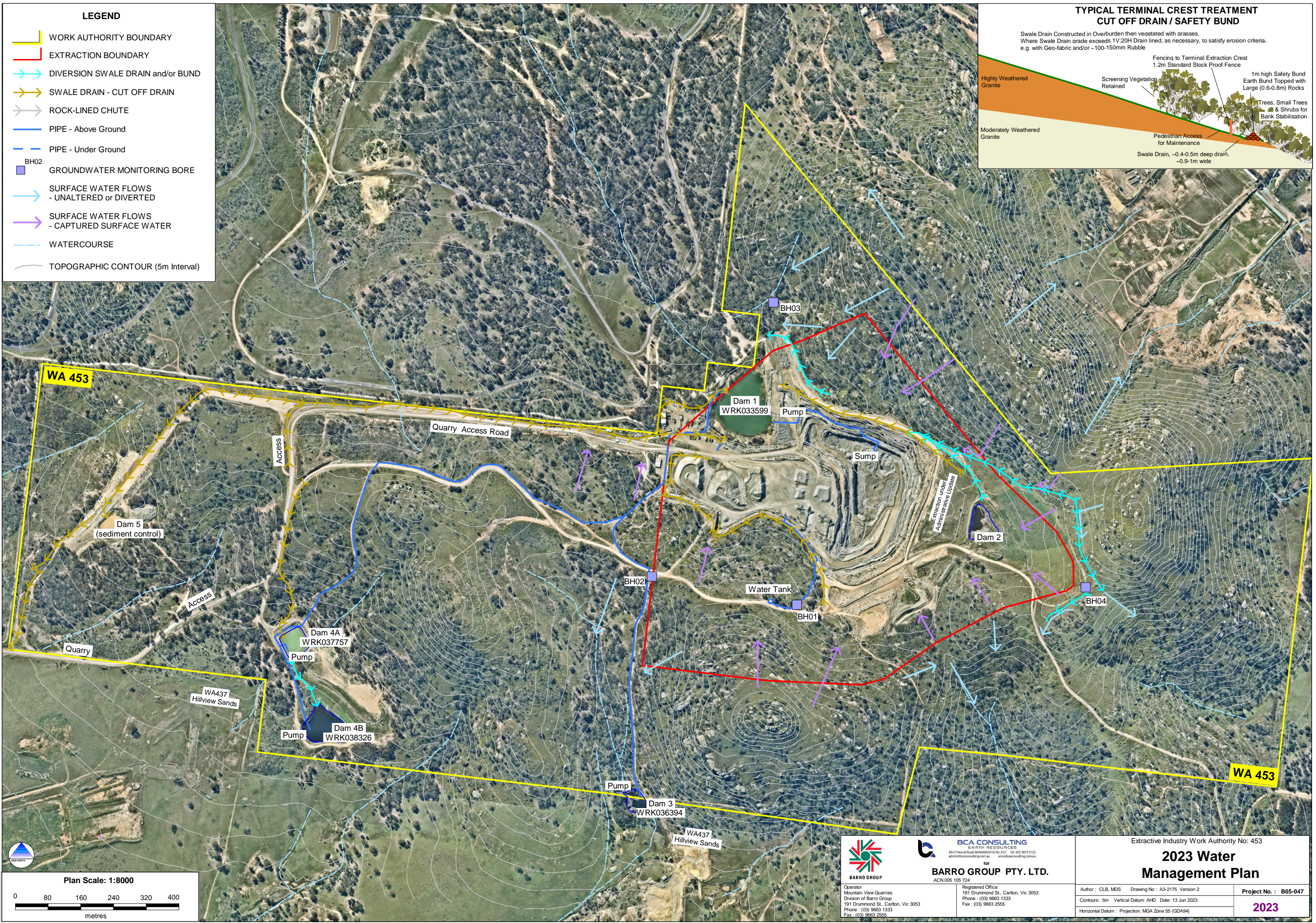
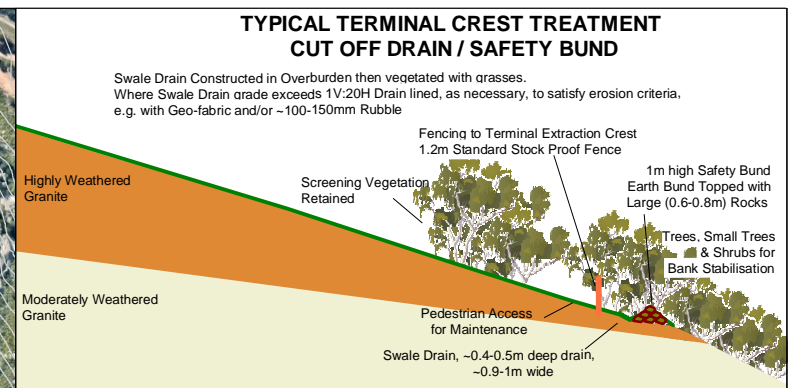
WA453 – RAINFALL / STORM EVENTS



Level 1 NORMAL EVENT	Trigger	Action	Response
	As measured at the rain gauge at the site office <ul style="list-style-type: none"> • A) Less than 5mm in 24hr • B) More than 5mm but less than 10mm in 24h or Less than 10mm in 8hrs 	A) <ul style="list-style-type: none"> • Increase awareness of local conditions • Review BOM web site for trends in local conditions / weather direction B) <ul style="list-style-type: none"> • Conduct a site inspection of drains and bunds to ensure integrity and levels in water storages / sediment dams to ensure minimum freeboard is maintained • Inspect rehabilitated slopes for signs of erosion and instability. 	<ul style="list-style-type: none"> • Continue with normal operation <p style="text-align: center;">If required, remedial action on rehabilitated slopes, as per Rehabilitation Plan</p>
Level 2 MEDIUM RISK EVENT	Trigger	Action	Response
	As measured at the rain gauge at the site office <ul style="list-style-type: none"> • More than 10mm but less than 30mm in 24hrs or • More than 10mm but less than 20mm in 8hrs 	<ul style="list-style-type: none"> • Frequent visits to BOM web site / news outlets for trends in local conditions • Conduct a site inspection of drains and bunds, to ensure integrity • Conduct inspection of water storages / sediment dams to ensure minimum freeboard maintained • Check of pumps to ensure they start • Inspect and report on operational / terminal batters and rehabilitated slopes for signs of erosion and instability. 	<ul style="list-style-type: none"> • Continue with normal operation • Record inspection of all drains, bunds and water storages / sediment dams • Initiate / undertake any remedial actions as necessary (ie clearing any obstructions in drains, test start / starting pumps to increase freeboard in water storages / sediment dams) • If required, remedial action on rehabilitated slopes, as per Rehabilitation Plan
Level 3 HIGH RISK EVENT	Trigger	Action	Response
	As measured at the rain gauge at the site office <ul style="list-style-type: none"> • More than 30mm in 24hrs or • More than 20mm in 8hrs 	<ul style="list-style-type: none"> • Constant site presence monitoring effectiveness of actions and weather conditions • Immediate on-site inspection and vigilance • Monitoring of freeboard in water storages / sediment dams, integrity of drains and bunds • Start pumps to reduce freeboard in water storages / sediment dams • Move any plant / equipment to higher ground • Inspect and report on operational / terminal batters and rehabilitated slopes for signs of erosion and instability 	<ul style="list-style-type: none"> • Continual monitoring until satisfied water levels are dropping • Conduct hourly or as needed site inspection of all drains, bunds and water storages / sediment dams • Initiate / undertake any remedial actions necessary • If required, contact management to initiate emergency discharge process with EPA. • If required, remedial action on rehabilitated slopes, as per Rehabilitation Plan

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LEGEND

-  WORK AUTHORITY BOUNDARY
-  EXTRACTION BOUNDARY
-  DIVERSION SWALE DRAIN and/or BUND
-  SWALE DRAIN - CUT OFF DRAIN
-  ROCK-LINED CHUTE
-  PIPE - Above Ground
-  PIPE - Under Ground
-  BH02 GROUNDWATER MONITORING BORE
-  SURFACE WATER FLOWS - UNALTERED or DIVERTED
-  SURFACE WATER FLOWS - CAPTURED SURFACE WATER
-  WATERCOURSE
-  TOPOGRAPHIC CONTOUR (5m Interval)



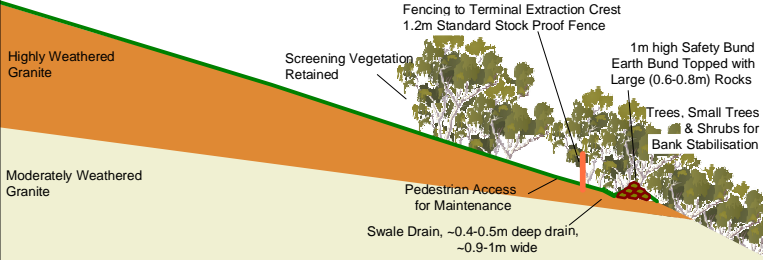
 <p>BARRO GROUP</p> <p>Operator Mountain View Quarries Division of Barro Group 191 Drummond St., Carlton, Vic 3063 Phone : (03) 9663 1333 Fax : (03) 9663 2555</p>	 <p>BCA CONSULTING EARTH RESOURCES 29/11 Neval Road, Melbourne Vic 3111 Tel: 03 9673 5133 admin@bcaconsulting.com.au www.bcaconsulting.com.au</p> <p>or BARRO GROUP PTY. LTD. ACN 005 105 724</p> <p>Registered Office 191 Drummond St., Carlton, Vic 3063 Phone : (03) 9663 1333 Fax : (03) 9663 2555</p>	<p>Extractive Industry Work Authority No: 453</p> <p>2023 Water Management Plan</p> <p>Author : CLB, MDS Drawing No : A3-2175 Version 2 Contours: 5m Vertical Datum: AHD Date: 13 Jun 2023 Horizontal Datum : Projection: MGA Zone 55 (GDA94)</p>	
		<p>Project No. : B05-047</p> <p>2023</p>	

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TYPICAL TERMINAL CREST TREATMENT CUT OFF DRAIN / SAFETY BUND

Swale Drain Constructed in Overburden then vegetated with grasses. Where Swale Drain grade exceeds 1V:20H Drain lined, as necessary, to satisfy erosion criteria, e.g. with Geo-fabric and/or -100-150mm Rubble



Highly Weathered Granite
Moderately Weathered Granite

Fencing to Terminal Extraction Crest
1.2m Standard Stock Proof Fence

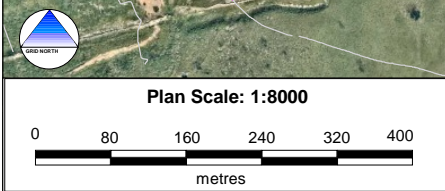
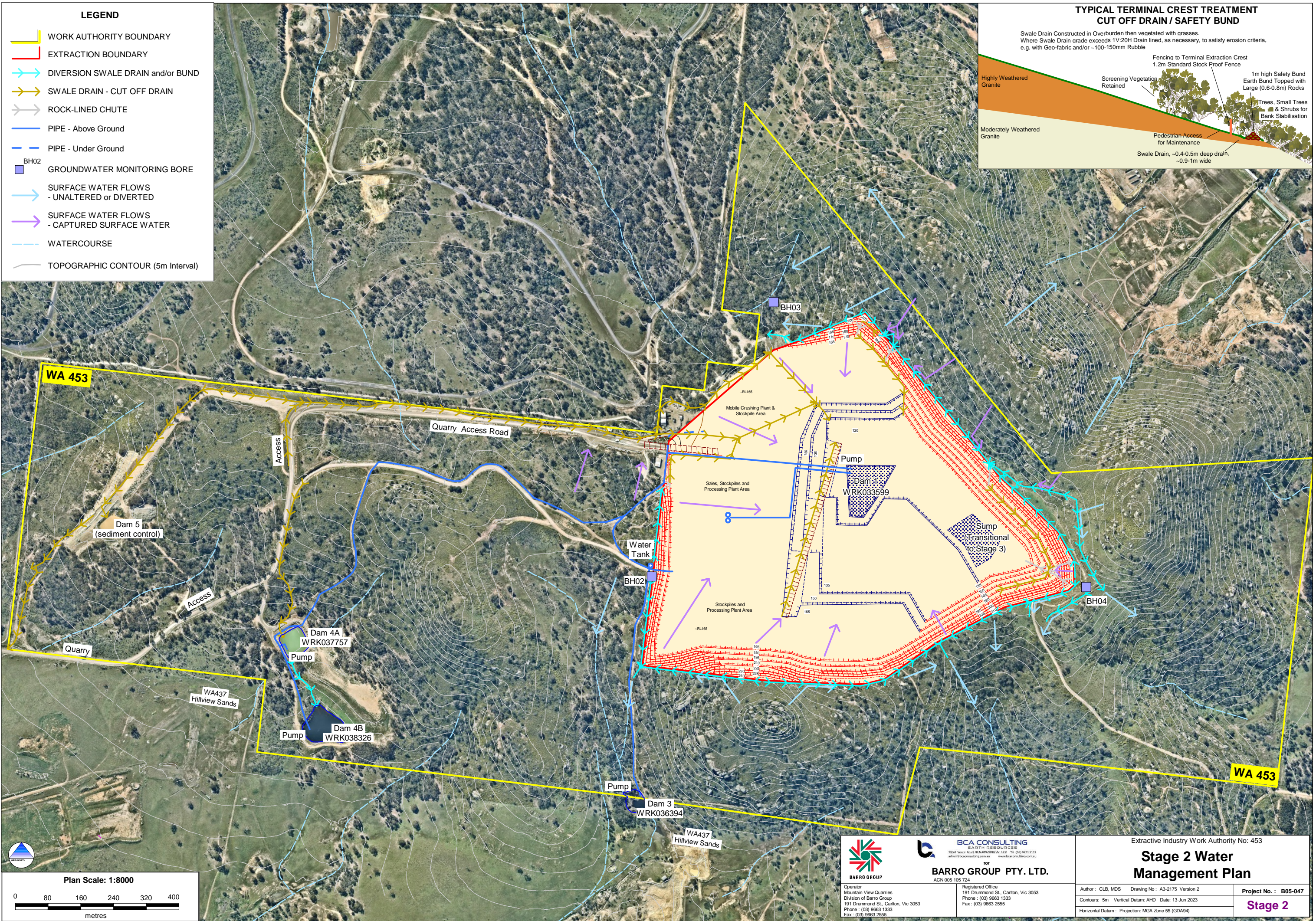
Screening Vegetation Retained


1m high Safety Bund Earth Bund Topped with Large (0.6-0.8m) Rocks

Trees, Small Trees & Shrubs for Bank Stabilisation

Pedestrian Access for Maintenance

Swale Drain, -0.4-0.5m deep drain, -0.9-1m wide



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	FOR BARRO GROUP PTY. LTD. <small>ACN 005 105 724</small>		Stage 2 Water Management Plan
<small>Operator</small> Mountain View Quarries <small>Division of Barro Group</small> 191 Drummond St., Carlton, Vic 3053 <small>Phone : (03) 9663 1333</small> <small>Fax : (03) 9663 2555</small>	<small>Registered Office</small> 191 Drummond St., Carlton, Vic 3053 <small>Phone : (03) 9663 1333</small> <small>Fax : (03) 9663 2555</small>	<small>Author : CLB, MDS</small> <small>Drawing No : A3-2175 Version 2</small> <small>Contours: 5m</small> <small>Vertical Datum: AHD</small> <small>Date: 13 Jun 2023</small> <small>Horizontal Datum : Projection: MGA Zone 55 (GDA94)</small>	<small>Project No. : B05-047</small> Stage 2