

Erosion and Sediment Control Plan for Land-Disturbance Activities

Buller Plateaux Continuation Project

July 2026

BPCP-ENV-PLN-013

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Glossary of Terms and Abbreviations

Term	Definition
AEE	Assessment of Environmental Effects
AMD	Acid Mine Drainage, or Acid and Metalliferous Drainage (used interchangeably for the BPCP)
AEP	Annual Exceedance Probability
ARI	Average Recurrence Interval
BPCP	Buller Plateaux Continuation Project
BRL	Bathurst Resources Limited
DEB	Decanting Earth Bunds
ESC	Erosion and Sediment Control
ESCPLDA	Erosion and Sediment Control Plan for Land Disturbance Activities
ESE	Escarpment Extended, a sub area of the BPCP
FTAA	Fast-track Approvals Act 2024
GD05	Auckland Council's Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region
GPS	Global Positioning System
ha	Hectare
IANZ	International Accreditation New Zealand
µm	Micrometre
Met	Meteorological
MFS	Mount Frederick South, a sub area of the BPCP
MP	Mining Permit
mm	Millimetre
MFG	Modified Fair and Geyer
NAF	Non-Acid Forming
PAM	Poly-acrylamide (related to flocculants)
PAF	Potentially Acid Forming
RL	Reduced Level (metres above sea level)
SQEP-ESC	Suitably Qualified and Experienced Professional in Erosion and Sediment Control which is either a Registered Soil Practitioner – Erosion and Sediment Control or a Certified Practitioner in Erosion and Sediment Control or an equivalent SQEP to the satisfaction of the Approval Authority

SRP	Sediment Retention Ponds
SSE	Senior Site Executive
SSESCP	Site Specific Erosion and Sediment Control Plan
STO	Stockton, a sub area of the BPCP
TSS	Total Suspended Sediment
UWHR	Upper Waimangaroa Haul Road, a sub area of the BPCP
WCRC	West Coast Regional Council

1.0 Introduction

1.1 BPCP Project Description

1.1.1 Project Overview

Bathurst, including its subsidiary companies BT Mining Ltd, Bathurst Coal Ltd, and Buller Coal Ltd are seeking approvals through the Fast-track Approvals Act 2024 (**FTAA**) for the Buller Plateaux Continuation Project (**BPCP**) (also referred to as the '**Project**'). The Project is located on the Stockton Plateau and the Denniston Plateau (collectively referred to as the Buller Plateaux), approximately 15 kilometres (**km**) northeast of Westport on the West Coast of the South Island.

The BPCP includes the continuation and spatial extension of existing operations at the Stockton Mine consenting the existing infrastructure and mining activities associated with the Stockton Mine. It will involve coal extraction across multiple operational areas (referred to as "**sub-areas**") on the Stockton and Denniston Plateau which include Stockton, Mount Frederick South (**MFS**) and Escarpment Extension (**ESE**), all linked by the Upper Waimangaroa Haul Road (**UWHR**). This will enable access to additional coal mining areas across the Buller Plateaux and continuation of current Acid Mine Drainage (**AMD**) management activities (including final landform rehabilitation and AMD treatment) post 2027.

Mining activities include coal extraction, overburden removal, material placement, rehabilitation works, coal transportation and routine maintenance of haul roads and infrastructure. Activities also include treatment of AMD by alkaline dosing and management of AMD sludge.

The overall Project consent boundary is shown in **Figure 1** and will be covered by a single new Mining Permit (MP) once approved under the FTAA with various approvals and Land Access Arrangements to support operations within the MP.

This Erosion and Sediment Control Plan for Land Disturbance Activities (**ESCPLDA**) (BPCP-ENV-PLN-013) outlines the principles and objectives for the earthworks activities associated with the BPCP for both mining and ancillary areas and sets out the methodology for designing water infrastructure specifically for sediment control within the BPCP **where runoff/discharge reports directly to the receiving waterway**. Implementation of this Plan is a requirement under **Condition EMO4**.

1.1.2 Project Site

The BPCP comprises five key sub-areas (**Figure 1**), each with defined project scopes and site-specific geoenvironmental hazards including:

- **Stockton Mining Area (Stockton):** Completion of mining of existing pits and remaining coal resources. Ongoing utilisation of existing infrastructure.
- **Mount Frederick South (MFS):** Mining is a combination of historically underground worked areas and unworked, and new areas. Coal will be transported to Stockton via the Upper Waimangaroa Haul Road (UWHR) and an access road up to the sub-area.

-
- **Escarpment Extended (ESE):** Mining is a combination of an existing pit (Escarpment), areas containing underground workings, and an extension into unworked areas. Coal will be transported to Stockton via the UWHR.
 - **Upper Waimangaroa Haul Road (UWHR):** A road connecting Stockton, the Escarpment Extended operations, and the Mount Frederick South access road, which will be used to transport coal to Stockton. The road is formed by a combination of upgrades to existing roads and the development of a new connecting section through the upper Waimangaroa Valley where there is currently no access road.
 - **Cypress Mining Area (Cypress):** Ongoing mining is authorised under existing consents, the only elements for inclusion in the BPCP are the renewal of Wildlife Act authorities and a variation to the compensation and rehabilitation provisions to integrate with the broader compensation and rehabilitation package across the full BPCP.

Comprehensive information on each sub-area is available in the BPCP FTAA Application Assessment of Environmental Effects (**AEE**).

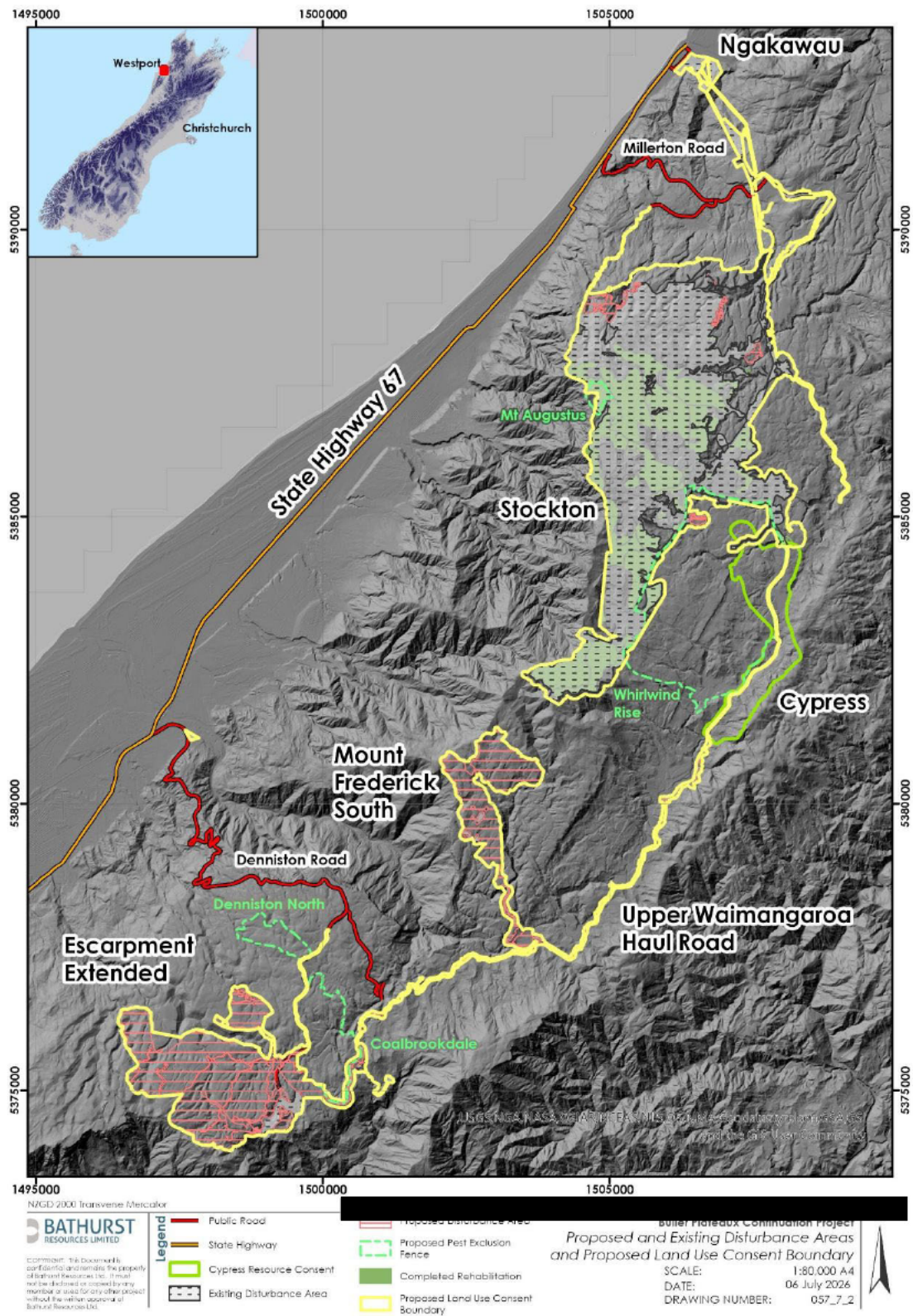


Figure 1: Proposed and Existing Disturbance Areas and Proposed Land Use Consent Boundary for the Project

1.2 Erosion and Sediment Control Plan for Land Disturbance Activities Plan Purpose and Scope

This Erosion and Sediment Control Management Plan for Land Disturbance Activities (ESCPLDA) (BPCP-ENV-PLN-013) outlines the principles and objectives for the earthworks activities associated with the Project (BPCP) for both mining and ancillary areas and sets out the methodology for designing water infrastructure specifically for sediment control within the BPCP **where runoff/discharge reports directly to the receiving waterway**. Alternatively, the Water Infrastructure Design Plan (BPCP-ENV-PLN-012) has been developed as part of the BPCP and sets out the methodology for designing water infrastructure targeted towards infrastructure that is within the operational mining areas where water **does not report directly to the natural catchment** (i.e., where water reports to management infrastructure within the mine).

The Plan is structured in two parts, the construction phase and the operational phase, to distinguish between short term erosion and sediment controls required during the establishment of the long-term erosion and sediment controls.

Each phase has design guidelines, supported by design spreadsheets (as referenced) and monitoring requirements¹ covering the range of earthworks and infrastructural elements required within each phase. This information and guidance further provides the required information for development of site-specific erosion and sediment controls plans (**SSESCP**) and detailed mine plans and to address environmental risks to safety and the environment associated with these activities as well as functionality, constructability and efficiency.

The infrastructure design process uses a risk rating (Low, medium, or high-risk structures) and structure permanence (temporary versus permanent) to determine the appropriate average recurrence interval (ARI) for design adequacy.

Within each phase, construction and operational, there are two distinct works areas. These work areas are differentiated by the level of erosion and sediment control required within the associated phase.

1. Civil/ancillary works – includes access roads and ancillary areas required to support the mining operation.
2. Mining pit works – includes works undertaken within the mining pit shell.

The phases and work areas are set out in **Table 1**.

¹ While these two phases, construction and operational, have identical objectives in terms of erosion and sediment control, the measures and monitoring to achieve these objectives differ slightly between the two.

Table 1: Works phases and areas

Area	Phase	
	Construction	Operations
Civils/ancillary areas	Development of the haul roads, ancillary areas and erosion and sediment controls required for operational use. Runoff reports to the natural catchment.	Operational use of the haul roads and ancillary areas. Runoff reports to the natural catchment.
Mining Pit areas	Development of the initial pit areas. Runoff reports to the natural catchment.	Mining operations where the mining pit can accommodate a 1 in 20 ARI without spilling to the natural environment.

Earthworks plans and schedules for the project areas are included in **Appendix H**.

This ESCPLDA is required to ensure consistency of design and confidence in treatment capability of the proposed erosion and sediment control devices across the BPCP.

The Plan is applicable to STO, ESE, MFS and UWHR sub-areas and all associated employees and contractors working within the BPCP.

1.2.1 Basis of Erosion and Sediment Control Mitigation Practices

Like many regional authorities, the West Coast Regional Council (WCRC) does not have its own dedicated Erosion and Sediment Control (ESC) standard and therefore references Auckland Council's Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region (GD05) (Leersnyder, et al., 2026).

While GD05 provides a robust set of Erosion and Sediment Control principles that are broadly applicable across New Zealand, it was developed specifically for Auckland's climatic and hydrological setting. Consequently, several key design parameters—particularly those related to rainfall intensity and stormwater hydrology—are inherently region-specific and drive markedly different design outcomes when applied elsewhere.

Project sites at the Buller Plateaux and across the wider West Coast experience substantially higher rainfall than Auckland, with annual totals up to five times greater and with significantly more intense storm events. To allow for the difference in received rainfall, the Nelson Tasman Erosion and Sediment Control Guidelines (July, 2019) method to determine design rainfall with associated runoff flows and retention volumes has been selected for use. This basis of design considers the risk, timeframe and rainfall intensity aspects of each erosion and sediment control structure. Also given the large project area (at significantly varying reduced levels (RL)) and the substantial rainfall record collected that can be specifically applied to a representative area, using a design rainfall methodology is considered appropriate. Erosion and sediment control devices that are not designed based on runoff flows or volumes follow the recommendations in GD05. The design guidelines used for each erosion and sediment control device are prescribed in the following sections of the Plan.

Adaptive management approaches will be implemented to observe variance from expected outcomes through ongoing monitoring, ensuring action plans are in place where outcomes deviate from the expected outcomes.

1.2.2 Adaptive Management

The process of adaptive management seeks to enable an environmental management approach that can evolve and adapt in response to measured data or best management practices.

Adaptive management requires a 'plan-do-check-act' approach to be undertaken whereby the ongoing monitoring and reporting that is proposed creates a continuous feedback loop from the effects being created.

This Plan identifies the practices and processes for the monitoring of event related sediment discharges to the receiving environment and the performance of the erosion and control measures adopted throughout the Project's duration.

Performance targets can be used to trigger remedial/adaptive action if a specified limit is exceeded. Performance targets are outlined in **Section 3.2.2 and Section 4.3.2**, and while these targets do not imply a non-compliance, as part of the licence and administrative process, they signal that the control is not functioning as expected and an investigation into the reason is required.

1.3 Alignment with other Plans

This Plan, spreadsheets and appendices referenced, provide the required information and guidance for development of site-specific erosion and sediment controls plans (**SSESCP**) and detailed mine plans. This information and guidance further address environmental risks to safety and the environment associated with these activities as well as functionality, constructability and efficiency.

This Plan should be read in conjunction with the Water Infrastructure Design Plan (BPCP-ENV-PLN-012) and Mine Water Management (**MWM**) Construction Phase Report (MWM, 2026a), BRL Buller Plateaux FTA Access Roads Coal Transport logistics Road Design Report (June 2026) and all relevant Plans as noted below.

The Water Infrastructure Design Plan (**BPCP-ENV-PLN-012**) has been developed as part of the BPCP and sets out the methodology for designing water infrastructure targeted towards infrastructure that is within the operational mining areas where water does not report directly to the natural catchment (i.e., where water reports to management infrastructure within the mine). It recognises industry best practice with application to site specific aspects. Its purpose is to ensure environmental effects are avoided or minimised over the duration of the BPCP. References to applicable content and spreadsheets within the Water Infrastructure Design Plan are noted throughout this ESCLDA. Implementation of this Plan is a requirement of **Condition ERO3**.

The Water Infrastructure Design Plan (BPCP-ENV-PLN-012) in addition to the Mine Waste Management BPCP Construction Phase Report (MWM, 2026a), are important references as they define the basis of erosion and sediment control parameters through their assessment of the sources of hazards and the environmental effects for the Project. These reports;

- Describe and characterise the environmental setting associated with the geology and catchment(s) of the Project construction works area, including climate, geology, geochemistry, and topography to support the identification and management of potential environmental risks.
- Identify and assess the key environmental effects on water that may occur during the construction, operational and closure phases of the BPCP.
- Define the management practices to be employed during the construction, operational and closure phases to manage the water-related environmental risks.

The erosion and sediment control measures proposed herein are informed by these reports and will manage and minimise adverse effects on the receiving environment to the greatest extent practicable.

This ESCPLDA addresses erosion and sediment controls for non-acid forming (**NAF**) materials that will be disturbed during the Project construction and operations. Runoff from potentially acid forming (**PAF**) material while noted in this Plan, is managed in the following Plans;

- BPCP AMD Water Management Plan (BPCP-ENV-PLN-010)
- BPCP AMD Engineered Landform Management Plan (BPCP-ENV-PLN-011)
- Stockton Mine Environmental Water Management Plan (STO-ENV-PLN-013)
- Stockton Mine AMD Environmental Water Management Plan (STO-ENV-PLN-016)
- The Millerton Block Water and AMD Management Plan (STO-ENV-PLN-027) has been developed specifically for mining activities to be carried out within the Millerton Block, within the Stockton sub-area of the BPCP. The majority of new disturbance / mining activities within the Stockton sub-area of the BPCP are scheduled in the Millerton Block. This Millerton Block specific document describes water and AMD management content, particularly around final landform design and changes in AMD management / treatment through key Millerton Block project phases.

A further consideration related to the construction and operation of the civils and mining areas is dust management. Dust is managed under BPCP-ENV-PLN-017 Dust Management Plan.

1.4 Objectives

The objectives of this Plan are to:

- Ensure that sediment discharges from the land disturbance are minimised to the greatest extent practicable.
- Ensure that all erosion and sediment control measures / methodologies are designed and approved prior to land disturbance.

- Ensure that all erosion and sediment control measures and methodologies are implemented, as far as reasonably practical, prior to commencement of vegetation clearance, bulk earthworks and land disturbing activities.
- Provide details of the design principles and methodologies used to develop the site specific plans.
- Ensure that all contractual and regulatory requirements are met as a minimum standard.

1.5 Stakeholder Consultation

Stakeholder consultation regarding associated technical reports and management plans has been summarised in the Stakeholder Consultation section of the BPCP FTAA main application.

A draft of this Plan will be supplied to relevant regulators, and Te Rūnanga o Ngāi Tahu and Te Rūnanga o Ngāti Waewae, as part of the FTAA process.

Further versions of this Plan will be updated accordingly as part of ongoing stakeholder engagement. Version updates will be recorded in the change register (**see Section 10.0**).

1.6 Relevant Resource Consent Conditions

Proposed consent conditions that are relevant to this Plan are provided in **Attachment B**.

2.0 Management Approach

The purpose of this Plan is to outline general site erosion and sediment control measures, supporting infrastructure and work methodologies that can be implemented during the construction and operation phases across both civil and mine pit work areas where the runoff reports directly to a natural catchment. This Plan aims to ensure that any potential erosion and sediment effects are avoided or minimised over the duration of the Project and are applicable to site conditions and the works being undertaken.

As noted, this Plan is structured in two parts, the construction phase and the operational phase, to distinguish between short term erosion and sediment controls required during the establishment of the long-term erosion and sediment controls. Each phase has design guidelines, supported by design spreadsheets (as referenced) and monitoring requirements covering the range of earthworks and infrastructural elements required within each phase. The description of the construction and operational phases relate solely to this Plan.

Within each phase, construction and operational, there are two distinct work areas. These work areas are differentiated by the level of erosion and sediment control required within the associated phase to achieve the avoidance or minimisation of erosion and sediment effects on waterways. (Refer to **Table 1** for more detail on how the areas and phases are defined).

While noting the above, the principles outlined in **Section 2.1** and matters outlined in **Sections 2.2 Erosion and Sediment Control Measures** and **Section 2.3 Design Rainfall**, are applicable across works

occurring within both construction and operational phases. In addition, aspects of monitoring, maintenance, incident response and reporting are also applicable across works occurring within both construction and operational phases. Refer to **Section 7.0**.

2.1 Erosion and Sediment Control Principles

The management approach of erosion and sediment control, as contained in this Plan, is based around ten fundamental principles, as defined in GD05².

Principles:

1. Minimise exposed areas – wherever possible, minimise the potential for sediment yield from the area of works.
2. Stage construction – stage works to minimise open areas and enable rapid stabilisation.
3. Protect slopes – divert clean water away from exposed slopes and stabilise slopes.
4. Protect receiving environments – identify receiving watercourses and flow paths and implement limits of disturbances.
5. Rapidly stabilise exposed areas – cut and cover to be used where possible. Revegetate completed areas.
6. Install perimeter controls and diversions - separate ‘clean water’ from outside the area of disturbance from ‘dirty water’ that has flowed through the disturbed area. Manage culvert installations and stream diversions to avoid disturbance from upstream catchment flows.
7. Employ sediment retention devices – capture generated runoff on site and allow for sediment to settle out in appropriately selected and designed devices.
8. Get trained and develop experience – use trained and experienced contractors/staff to design, install and maintain erosion and sediment controls.
9. Adjust this Plan (including **SSESCP**) - amend the plan as works progress and consider factors such as weather and staging.
10. Assess and adjust erosion and sediment control measures – inspect, monitor and maintain the effectiveness of controls and amend as required to achieve performance criteria.

2.2 Erosion and Sediment Control Measures

Best practice erosion and sediment control measures, methodologies and management will be implemented throughout the works in general accordance with the West Coast Regional Councils

² Noting that while the principles of GD05 are relevant there will be a need for modification of erosion and sediment control measures during construction and operational phases to recognise for localised Buller Plateaux rainfall conditions.

Regional Land and Water Plan (WCRC, 2026), GD05 (Leersnyder, et al., 2026) and Nelson Tasman Erosion and Sediment Control Guidelines (July, 2019).

Industry best practise erosion and sediment control methods and devices will be implemented on the site over the course of the construction earthworks activities to ensure that potential soil erosion and sediment discharge effects are avoided or minimised.

Areas of focus include the isolation of upstream clean water flows from the construction works areas, and the clean water diversions required for culvert installations.

The finalised details of all erosion and control measures for all phases of the works will be confirmed in the construction of SSES CP documents and specific Dig/Dump Plans for the civils areas and mining pits respectively.

2.2.1 Erosion Control

The most effective erosion and sediment control is to minimise erosion in the first place. For the BPCP, this is managed by keeping disturbed/exposed areas to a minimum via staged construction, reducing volumes of water to be treated by diverting clean water around the work areas, slowing the velocity of runoff water to limit the scouring potential through the use of check dams and promptly stabilising exposed areas with a suitable covering medium.

The erosion control methods outlined in this Plan will be employed diligently across all exposed earthworks catchments across the Project with a particular focus on the large, long slope length, steeper gradient catchments where a higher risk for adverse erosion effects exists.

2.2.2 Sediment Control

Sediment control measures provide for the capture and treatment of earthworks catchment and ancillary infrastructure runoff prior to discharge to downstream receiving environments. These measures need to be formed and maintained throughout the construction and operational phases within both the civils and mining areas to ensure water quality leaving the project area is of the highest quality practicable and meets required standards as a minimum.

The optimal sediment control device to be used in each situation depends predominately upon topography, catchment size and required lifespan of the control. The sediment control devices described in this Plan will be utilised throughout the Project area for optimal sediment management.

The capacity of each erosion and sediment control device must be clearly understood to ensure disturbed or contributing catchments remain aligned with the design allowance for each device. As the disturbance area progressively increases within a devices catchment, associated changes to sediment control must be covered off in the SSES CP and Dig/Dump Plans for each area.

Chemical treatment through the use of polymers is addressed in **Section 5.0** and is applicable to all phases and areas.

Other considerations related to the construction and operation of the civils and mining areas is the prevention and treatment of PAF runoff and dust management. These are addressed in the relevant Stockton and BPCP Management Plans as listed in **Section 1.3**.

Material characterisation has been undertaken for the Project and set out in the Mine Waste Management BPCP Construction Phase Report (MWM, 2026a). This report provides recommendations for NAF vs PAF materials occurring along the road alignment as well as other infrastructure areas. Source for the required materials for each area will be addressed in the SSESCP.

2.3 Design Rainfall

The design rainfall shall be determined and used for the design of sediment control structures where applicable.

Storm duration to be used in this guideline is for 1 hour which is suitable for the size of catchments recommended in GD05. This also aligns with the Nelson Tasman Erosion and Sediment Control Guidelines (July, 2019) and is expected to achieve good water quality outcomes.

The return period for the storm event shall be selected based on risk to the receiving environment and expected time of site disturbance as per **Table 2** - Receiving Environments and Design Storms.

Table 2: Receiving Environments and Design Storms. Sourced from Nelson Tasman Erosion and Sediment Control Guidelines (July, 2019), Table 13-12

Category	Receiving system type	Potential for Adverse Effects from Erosion and Sedimentation	Desired design risk (chance of event occurring during works)		Storm frequency (Average Recurrence Interval) to design for (1-hour duration) (Years)				
			%	chance	Site disturbance Duration				
					up to two weeks	up to one mth	up to three mths	up to six mths	up to 12 mths
A	Estuaries	Highest	<2.5%	1 in 40	2 yr	5 yr	10 yr	20 yr	40 yr
A	Water Conservation Order Areas	Highest	<2.5%	1 in 40	2 yr	5 yr	10 yr	20 yr	40 yr
A	Spring fed streams	Highest	<2.5%	1 in 40	2 yr	5 yr	10 yr	20 yr	40 yr
B	Streams and Rivers	High	<5%	1 in 20	*85% of 2yr	2 yr	5 yr	10 yr	20 yr
B	Wetlands	High	<5%	1 in 20	*85% of 2yr	2 yr	5 yr	10 yr	20 yr
B	Karst	High	<5%	1 in 20	*85% of 2yr	2 yr	5 yr	10 yr	20 yr
B	Lakes	Moderate	<5%	1 in 20	*85% of 2yr	2 yr	5 yr	10 yr	20 yr
C	Open coast	Low	<10%	1 in 10	*85% of 2yr	*85% of 2yr	2 yr	5 yr	10 yr
C	Land	Low	<10%	1 in 10	*85% of 2yr	*85% of 2yr	2 yr	5 yr	10 yr

Design rainfall shall be selected by using data from the most representative meteorological (met) site to the design area based on location and RL (Table 3). Refer to Figure 3 for Met site locations.

Table 3: Design Rainfall Site Parameters

Site/Area	Met Site	Met Site RL
Stockton - Ngakawau	Ngakawau	5
Stockton - Mt Fred; No 2 South	Mt Fred	1056
Stockton – A Drive; Webb; Mangatini	Stockton	795
Stockton -Millerton; Hope Lyons; Rockies	Millerton	569
Mt Frederick South	Mt Fred or MFS*	1056
		725
Escarpment Extended	Lake Brazil	639
Upper Waimangaroa Haul Road North	Cypress	725
Upper Waimangaroa Haul Road South	Lake Brazil	639

*MFS is a new site and will need at least 5 years of record before analysing for use with design storms.

Using the selected Average Recurrence Interval (ARI) from Table 2 above and 1 hour storm duration, the rainfall intensity is selected from data tables developed from collected data at the Met sites in Table 3. Refer to the Water Infrastructure Design Plan (BPCP-ENV-PLN-012) **WID01 – Design flows spreadsheet**.

3.0 Construction Phase

The construction phase is defined as disturbance created during construction of the operational sediment control systems or temporary controls required until stabilisation of disturbed areas has occurred and erosion potential is reduced.

Both civils works and mining pit works follow the same erosion and sediment control procedures during the construction phase. The only variation is with respect to the procedure followed for the approval process for SSECP or Dig/Dump plans. This is outlined below.

- **Civil Works**

Prior to any disturbance works for the civils works area, SSECP will be developed following this Plans guidance. Each plan will be approved by a Suitably Qualified and Experienced Professional in Erosion and Sediment Control (SQEP-ESC) and provided to WCRC prior to any earthworks commencing.

The SSECP will include (where relevant) the following for each specific work area:

- Contact details for the person responsible for implementing the plan;
- Contact details of the approving SQEP-ESC, if different from above;
- Identify the specific construction activity to be undertaken;

- The locations of earthworks and/or streamworks;
 - Catchment areas, boundaries and contour information;
 - The specific erosion and sediment control measures to be implemented, including their locations, dimensions, capacity, operation and maintenance;
 - Supporting calculations and design drawings;
 - Requirements around flora and fauna checks and monitoring;
 - Identify no-go areas of environmental or health and safety significance;
 - The area and volume of earthworks including any streamworks and where the removed material will be disposed of;
 - The expected duration of the earthworks and/or streamworks;
 - Estimates of sediment yield for each work area;
 - The methods to be employed to manage the construction water effects;
 - Chemical treatment plan based on initial batch testing results;
 - The stabilisation sequence and methods to reduce disturbed areas, including specification on what completed stabilisation is for each method is defined as;
 - Inspection and monitoring plan for each erosion and sediment control device;
 - Downstream compliance sites relative to each device; and
 - Any minor deviations from this Plan.
- **Mining Pit Works**

Prior to any disturbance works for the mine pit areas, detailed mine plans referred to as dig/dump plans will be developed. These mine plans will outline the required sequencing of construction and installation of erosion and sediment control measures as prescribed in this Plan. The mine plans will cover all aspects related to environmental, geotechnical and operational considerations such as wildlife searches, water management, erosion control, stability of highwalls, and road width. Mine plans will be entered into the site Global Positioning System (GPS) system. Each machine (e.g. dozer, digger) will be able to view mine plans, showing in real time where that machine is relative to notable aspects such as boundaries, and pipes. In addition, mine plans will be available on request i.e. request from local authority. Each Dig/Dump plan will be approved by a SQEP-ESC and provided to WCRC upon request.

3.1 Construction Phase Erosion and Sediment Control – Design Procedures

Erosion and Sediment Control must be implemented prior to land disturbance works commencing.

The following design procedures are applicable across construction civil and mine pit works.

3.1.1 Erosion Control – Construction Sequencing

To minimise sediment runoff, the cumulative disturbed areas must be kept as small as possible. Construction sequencing will be developed so that multiple areas are not left exposed once work is complete, ensuring the length of time that areas are exposed is as short as possible.

3.1.2 Erosion Control – Topsoil Management

Topsoil stripping will occur across the footprint of the proposed disturbed areas. Where topsoil will be replaced post construction, it shall be stockpiled and stabilised to reduce losses. Topsoil that is not required will be utilised or stockpiled elsewhere within the Project area, for example Stockton or ESE, depending upon which location is closest to the stripping area. **Condition MAT 5** recognises this activity. Runoff from any topsoil stockpile areas will be managed with sediment controls e.g. silt fences or sediment retention ponds (**SRP**). Refer also to BPCP-ENV-PLN-007 Biosecurity Management Plan and BPCP-ENV-PLN-002 Rehabilitation Management Plan regarding stockpile management.

3.1.3 Erosion Control – Clean Water Management

All clean water flows shall be diverted around disturbed areas where practicable. This is to both reduce the quantity of water requiring sediment treatment which subsequently reduces the area required for sediment controls and maintains the existing quality of undisturbed water flows.

Clean water diversion drains will be designed as per **WID03- Channel design spreadsheet** included in the Water Infrastructure Design Plan (BPCP-ENV-PLN-012).

3.1.4 Erosion Control – Check Dams

Check Dams may be constructed in areas of concentrated flow where the velocity is required to be reduced. Check Dams can reduce erosion in channels or concentrated overland flow particularly in situations where a geotextile lining or riprap is not feasible.

Indicative Check Dams from GD05 are shown in **Appendix E**.

3.1.5 Erosion Control – Surface Stabilisation

Stabilisation of exposed surfaces shall take place as soon as practicable. This could include spreading of aggregate, mulching, hydroseeding or use of geotextiles depending on life span and location. Following stabilisation, the sediment control structure within that contributing catchment can be decommissioned and rehabilitated.

Indicative examples of surface stabilisation from GD05 are shown in **Appendix F**.

3.1.6 Sediment Control – Sediment Retention Ponds

A sediment retention pond (SRP) is a pond or small constructed earth dam to form a collection area for runoff containing sediment. A large dam, referred to as a classifiable dam (height of 4 or more metres and stores 20,000 or more cubic metres of water or other fluid) as stated in the New Zealand Dam Safety Guidelines (2024), or a dam constructed of other materials such as concrete, are outside the scope of this Plan and must be undertaken as a specific design by a suitably qualified professional.

SRP's will be the preferred option for sediment control throughout the construction phase. Access must be provided to enable cleaning of the SRP's at or before they have obtained 20 % of volume in sediment accumulation.

The maximum catchment reporting to a SRP during the construction phase is 5 ha.

SRP's are designed to GD05 specifications but using the runoff determined in the design rainfall section (**Section 2.3**) to calculate the volume required. SRP's can be designed using the Auckland Council Erosion and Sediment Control Device Sizing Tool (listed in the references) with the catchment adjusted to achieve the required volume.

Indicative SRP's from GD05 are shown in **Appendix A**.

3.1.7 Sediment Control – Decanting Earth Bunds

Decanting earth bunds (DEB's) are designed for use where the catchment isn't large enough to warrant a SRP but the slope or flow characteristics are not suitable for a silt fence. The catchment should not exceed 0.3 ha for each DEB. Volume calculations for DEB's shall be as per SRP's based on the determined runoff.

DEB's are designed as per GD05 and can be completed using the Auckland Council Erosion and Sediment Control Device Sizing Tool (listed in the references) with the catchment adjusted to achieve the required volume as calculated within the **WID01 – Design flows** spreadsheet referred to in **Section 2.3**.

Indicative DEB's from GD05 are shown in **Appendix B**.

3.1.8 Sediment Control – Silt Fences and Super Silt Fences

As silt fences are limited in the particle size of sediment that can be captured, they shall be used where SRP's are not possible either due to impractical terrain, small catchment size or during the development of other sediment control devices. They are limited to sheet flow conditions where the catchment does not exceed 0.3 ha.

Super silt fences can be installed where the conditions exceed the capability of a standard silt fence. These can be used in up to 0.5 ha.

Silt fences or super silt fences may also be used downstream of the footprint of SRP's or DEB's during construction of each pond.

Silt fences and super silt fences are designed as per GD05 and can be completed using the Auckland Council Erosion and Sediment Control Device Sizing Tool (listed in the references).

Indicative silt fences from GD05 are shown in **Appendix C**.

3.1.9 Sediment Control – Drop-out Pits

Drop-out Pits can assist in preliminary settlement of coarser solids prior to sediment control structures. Drop-out Pits are field fit small ponds within flow paths that are easily cleaned out.

Indicative design for Drop-out Pits is included in **Appendix D**.

3.1.10 Sediment Control - Pumping

Due to the topography and ground conditions, it may not be possible to construct the design size of SRP at the required location without substantial additional disturbance. For these cases, pumping to an established SRP or water treatment system elsewhere in the Project area would be required. The pumping rate will be controlled to ensure the capacity of the receiving SRP is not exceeded and exiting water quality continues to meet requirements. It is expected that the combined collection sump and pumping rate will have the capacity to treat the design rainfall event (Refer **Table 2**). Pumping is managed as described in Water Infrastructure Design Plan (BPCP-ENV-PLN-012). For high-risk areas, water level sensors on the sumps can be installed to monitor water levels and can send alarms at set water levels if required. Back-up pumps will be available to ensure continuity of pumping in the event of a pump failure.

Pumping may also be required during construction of the SRP's due to the immediate catchment collecting rainfall within the SRP. This may be pumped directly to the natural catchment if water quality meets the requirements in **Table 2** otherwise it will be pumped to an existing sediment control system. Pumping must be to a channel reporting to the forebay of the receiving SRP.

Where the pump outflow is to a natural catchment, the discharge point must be protected from erosion.

Pipeline and Pump design is outlined in the Water Infrastructure Design Plan (BPCP-ENV-PLN-012) spreadsheets **WID05 – Pipeline design** and **WID06 - Pump selection** respectively.

3.2 Construction Phase Monitoring and Maintenance

3.2.1 Site Inspections

Routine inspections will be undertaken during construction and post instalment of erosion and sediment control devices. During construction, certain stages are identified for inspection, such as during the installation of anti-seep collars, level spreaders, and T-bars for SRP's. As-built inspections will be undertaken to ensure each erosion and sediment control device has been constructed to the design.

All erosion and sediment control structures that are within the catchment of a current construction area will be inspected daily by the site supervisor as part of the work area checks. All erosion and control devices will be inspected weekly by the Environment and Community Superintendent (or

nominated person) during the course of the works. These weekly inspections will include a check that the contributing catchment of each erosion and sediment control device has not been exceeded. Extra inspections will also be undertaken post rainfall that exceeds the 70% percentile non-exceedance value (Stockton example 49 mm) per day. The 70th percentile non-exceedance value is selected as a more stringent requirement for the first 2 months to ensure the sediment control structures are working as expected. The daily rainfall is considered appropriate during the first 2 months as the hourly 70th percentile non-exceedance value is unlikely to generate sufficient runoff to impact the SRP. Once this has been confirmed with the more frequent inspections and testing throughout the 2-month time frame, the sampling requirement can extend out to the 90th percentile non-exceedance value only and include both hourly and daily rainfall triggers.

Sediment accumulation against the silt fences will be removed when it reaches 20 % of the fabric height.

SRP's and DEB's will be cleaned out prior to the sediment accumulation reaching 20 % of the total pond volume. Forebays shall be kept cleaned of any sediment accumulation before it reaches 50 % of the volume.

Pumping may be required to dewater SRP's prior to sediment removal. Sampling during this activity shall be undertaken as per Table 4 below.

3.2.2 Water Quality Monitoring

To ensure the SRP's are performing as expected, regular sampling and testing must be undertaken for all SRP's that report to the natural environment. Table 4 outlines the testing schedule and performance targets. Compliance with water quality limits will be addressed at BPCP water quality compliance monitoring sites downstream of the work areas.

During the construction phase, pH and clarity are the selected measures of performance which follows GD05 recommendations. Turbidity and Total Suspended Solids (TSS) will also be monitored to develop relationships between the measurements for future monitoring use during the operational phase.

Table 4: Testing schedule and performance targets

Sampling [#]	pH	Clarity	Turbidity	TSS
Weekly during inspections	+ / - 1.5 pH variation from baseline	> / = 100 mm	For project teams internal use to develop a relationship for future use	For project teams internal use to develop a relationship for future use
First 2 months after commissioning – rainfall exceeding the daily 70 th percentile rainfall	+ / - 1.5 pH variation from baseline	> / = 100 mm	For project teams internal use to develop a relationship for future use	For project teams internal use to develop a relationship for future use
Post 2 months of commissioning – rainfall exceeding	+ / - 1.5 pH variation from baseline	> / = 100 mm	For project teams internal use to develop a	For project teams internal use to develop a

the hourly* or daily 90 th percentile rainfall			relationship for future use	relationship for future use
Hourly during dewatering of SRP's to natural catchment	+ / - 1.5 pH variation from baseline	>= 100 mm	N/A	N/A

Sampling is undertaken within standard work hours and when safe to do so.

* Where consecutive hours of rainfall exceed this number, just one sample within exceedance period is required.

3.2.2.1 Sampling Frequency and Methodology

To determine the sampling frequency of sediment controls, the design rainfall shall be based on the 70th and 90th non-exceedance percentiles. These values are also included in spreadsheet **WID01 - Design flows**, of the Water Infrastructure Design Plan (BPCP- ENV-PLN-012).

Hourly and 24-hourly rainfall triggers are considered appropriate given the maximum catchment sizes reporting to each SRP and high rainfall within the project areas.

Example for areas using Stockton Met:

- 70th percentile - 49 mm/day
- 90th percentile - 8 mm/hr or 89 mm/day

Baseline pH shall be determined for each receiving water way prior to construction of erosion and sediment control. A minimum of 10 samples shall be tested over a range of flow conditions to determine the baseline pH value. The pH of some AMD sites can vary considerably depending upon natural AMD concentration and the dilution that occurs during rainfall. For these sites a normalised pH range will be determined. The pH value selected will be outlined in the SSES CP for each area. This is preferred to the GD05 requirement of pH range 5.5 – 8.5 due to the naturally acidic waters in the surrounding environment.

Rainfall events selected are outlined in **Section 2.3** Design Rainfall.

pH shall be measured at the site using a calibrated handheld meter as the preferred method. Lab testing may be undertaken if a handheld meter is not available. Clarity shall be determined using a black disk clarity tube away from direct sunlight. Site procedures and training will be provided for both of these tests to ensure accuracy and repeatability. Turbidity and TSS will be measured by an International Accreditation New Zealand (**IANZ**) accredited laboratory with onsite handheld turbidity measurements also performed as required.

If the above performance targets are not met, investigation into why and adaptive management shall be undertaken.

Initially, outflows from erosion and sediment controls are monitored and tested for a lower rainfall event than design. This is to ensure that they are functioning well and to identify any problem areas before the system is required to operate to its limit.

4.0 Operational Phase

The operational phase is defined as disturbance or sediment created during normal operations from mining areas or road traffic and ex-pit stockpiles within civils works areas. At this point, the earthworks associated with constructing the civils works areas and mining pit areas initial break in has been completed and no further land disturbance is undertaken. These areas will continue to be managed through the water management devices as outlined below. The controls have been consolidated to represent what will remain in place during the operational phase. Redundant controls that were required throughout the construction phase will be decommissioned and the areas rehabilitated.

Civils and ancillary areas: includes operational activities on haul roads, water treatment areas and ex-pit stockpiles where the runoff continues to report to the natural catchment.

Mining pit areas: includes mining pits that have now progressed past break-in point and have enough capacity to accommodate a 1 in 20 ARI.

Operations and maintenance plans will be developed and then approved by a SQEP-ESC to manage the ESC devices throughout the operational life of the project areas.

4.1 Operational Phase Erosion and Sediment Control – Design Procedures for Civil Works

4.1.1 Erosion Control – Clean Water Management

All clean water flows shall continue to be diverted around operational areas where practicable. This is to both reduce the quantity of water requiring sediment treatment which subsequently reduces the area required for sediment controls and maintains the existing quality of undisturbed water flows. Refer to **Section 3.1.3** for design information.

4.1.2 Sediment Control – Sediment Retention Ponds

Contributing catchments to SRP's for the operational phase will be reviewed as the total disturbed catchment that was required for the construction phase changes. Where catchments exceed the recommended maximum 5 ha for SRP's in GD05, the new pond design will be based on the Modified Fair and Geyer (1954) (MFG). This allows for one pond to treat a larger area rather than a greater number of SRP's which may increase the overall disturbance required to achieve this. The MFG method was chosen as it makes allowances for pond sizing and efficiency based on the incoming TSS and required outflowing TSS. The clarity to TSS relationship that was developed during the construction phase allows for accurate pond sizing to ensure the required water quality is still achieved.

Indicative SRP's from GD05 are shown in **Appendix A**. Refer to section above.

Design using the MFG pond is included in the Water Infrastructure Design Plan and associated spreadsheet **WID04 Sump design**.

4.2 Operational Phase Erosion and Sediment Control – Design Procedures for Mining Pit Works

4.2.1 Erosion Control – Clean Water Management

All clean water flows shall continue to be diverted around the mining pits where practicable. This is to both reduce the quantity of water requiring sediment treatment and maintains the existing quality of undisturbed water flows. Refer to Section 3.1.3 for design information.

4.3 Operational Phase Monitoring and Maintenance

4.3.1 Site Inspections

Inspections shall be based on a risk ranking of each structure where the risk level is determined from the BRL risk matrix in **Appendix G** and from observations on how each device has performed during the construction phase.

Table 5: Operational Phase Monitoring Inspection Frequency

Risk Level	Clean water diversions	Surface stabilised areas	SRP's	MFG Ponds	Drop-out Pits
Low	Quarterly	Quarterly	Monthly	Monthly	Yearly
Medium	Monthly	Monthly	Fortnightly	Fortnightly	Quarterly
High	Fortnightly	Fortnightly	Weekly	Weekly	Monthly

All erosion and sediment control devices will be inspected by the SQEP-ESC (or nominated person). These inspections will include a check that the contributing catchment of each erosion and sediment device has not been exceeded.

SRP's will be cleaned out prior to the sediment accumulation reaching 20 % of the total pond volume. Forebays shall be kept cleaned of any sediment accumulation following rainfall.

Pumping may be required to dewater SRP's prior to sediment removal. Sampling during this activity shall be undertaken as per **Table 6**.

4.3.2 Water Quality Monitoring

To ensure the SRP's are performing as expected, regular sampling and testing must be undertaken for all SRP's constructed as part of the BPCP that report to the natural environment. **Table 6** outlines the testing schedule and performance targets. Compliance with water quality limits will be addressed at BPCP water quality compliance monitoring sites downstream of the work areas.

During the operational phase, pH and turbidity are the selected measures of performance which allows for real time monitoring using telemetered sensors where appropriate. Clarity and TSS will also be monitored to maintain the relationships between the measurements.

Sampling Frequency:

To determine the sampling frequency of sediment controls, the design rainfall shall be based on the 90th non-exceedance percentiles. These values are also included in the **WID01 - Design flows** spreadsheet and reviewed 5-yearly.

24 hourly rainfall targets are considered appropriate for the operational phase as sediment controls have been established and proven during the construction phase.

Example for areas using Stockton Met:

90th percentile - 89 mm/day

Rainfall events selected are outlined in **Section 2.3 Design Rainfall**

Table 6: SRP testing schedule and performance targets

Sampling [#]	pH	Clarity	Turbidity	TSS
During routine inspections	+ / - 1.5 pH variation from baseline*	>/= 100 mm	TBC - As determined by relationship developed during construction	TBC - As determined by relationship developed during construction
Rainfall exceeding the daily 90 th percentile rainfall	+ / - 1.5 pH variation from baseline*	>/= 100 mm	TBC - As determined by relationship developed during construction	TBC - As determined by relationship developed during construction
Hourly during dewatering of SRP's to natural catchment	+ / - 1.5 pH variation from baseline*	>/= 100 mm	N/A	N/A

[#] Sampling is undertaken within standard work hours and when safe to do so.

* Baseline pH as determined during the construction phase

As the SRP's and MFG ponds are now in an operational phase, some water quality measurements may shift to telemetered pH and turbidity sensors. These sensors will be installed at the outlet of the SRP's or ponds and relay pH and turbidity information in real-time back to the data network. This offers both increased scrutiny on performance of selected SRP's or MFG ponds and reduces the frequency of physical sampling. Where these are in use, manual samples for lab testing will still be undertaken during routine inspections to confirm accurate readings. Calibrations of the sensors will be undertaken approximately 3 monthly or when significant drift is observed between the telemetry sensors and manual samples. Samples for TSS will be required to be taken for the MFG if a reliable TSS and turbidity relationship cannot be developed.

Where telemetered sensors are not deployed, pH will be measured at the site using a calibrated handheld meter. Lab testing may be undertaken if a handheld meter is not available. Clarity shall be determined using a black disk clarity tube away from direct sunlight. Site procedures and training will be provided for both of these tests to ensure accuracy and repeatability. When turbidity and/or TSS

are required to be determined, these will be measured by an IANZ accredited laboratory with onsite handheld turbidity measurements also performed as required.

If the above performance targets are not met, investigation into why and adaptive management shall be undertaken.

5.0 Chemical Treatment

Polymer treatment (coagulation and/or flocculation) may be required where greater efficiency of settling needs to be achieved to reach the desired discharge water quality.

Coagulation is typically required for fine colloidal particles that have a negative electrostatic surface charge, preventing particles joining together.

Flocculation is the joining of particles together to form larger and denser ‘flocs’ which settle faster.

Often both coagulation and flocculation are required as shown during initial break in work at Cypress Mine area for example. In this case Crystalfloc L3RC coagulant was first required, followed by flocculant Crystalfloc B610.

Soil sampling and bench testing (laboratory testing of each specific soil response to varying polymers) will be undertaken during construction setup of each material type to ensure optimal polymer treatment systems can be ready to deploy as required. Selection of the preferred polymer will consider both performance and environmental effects (refer to **Conditions TRE3-5**), as well as deployment method which options may include rainfall activated systems, flow operated or batch dosing. Specific chemical treatment plans will be included in the SSESCPs, Dig/Dump Plans and Operations and Maintenance plans where required. These chemical treatment plans will also address the health and safety requirements including transport and storage, associated with the selected polymer.

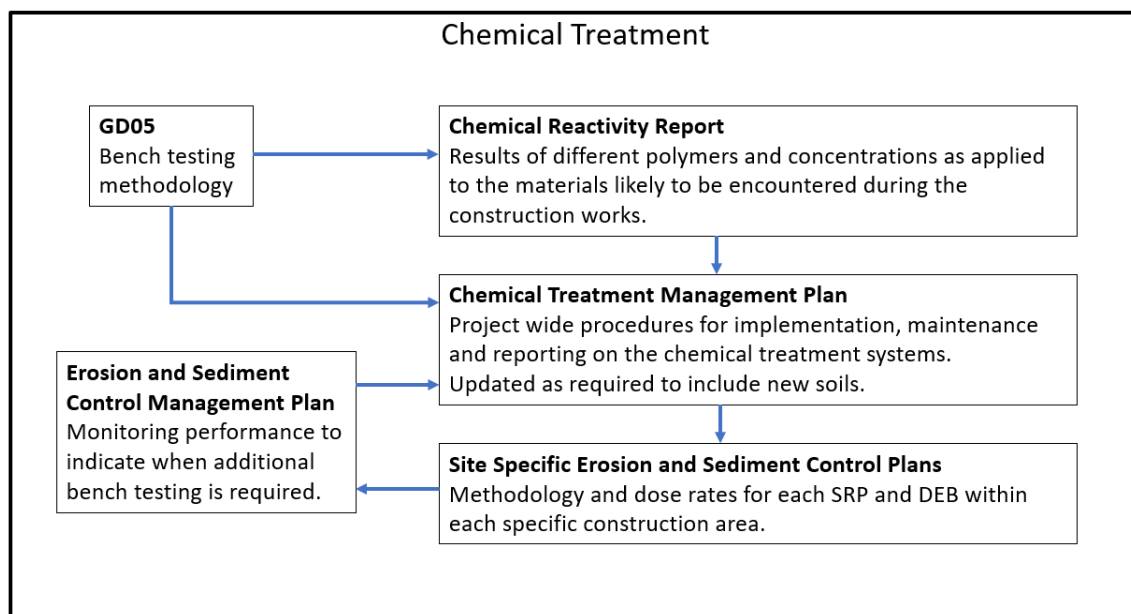


Figure 2: Chemical Treatment Chart, Stockton Internal Design- BT Mining Limited

6.0 Stream Works

The topography surrounding the project areas is generally steep and the optimal location for the main access road connecting all the project areas, the UWHR, is in a gully between 2 ridges. Subsequently there are numerous stream crossings to be navigated. Individual accesses to each mining area from the UWHR also intersect streams. This results in the stream crossings being a critical area to address erosion and sediment controls during construction and operations.

All stream works must be undertaken in dry conditions which can be achieved by the following design options:

- Dam and a cleanwater bypass is constructed to temporarily divert the stream offline through the work area and maintained completely separate from the work area.
- Dam and divert upstream flows through a temporary diversion drain, returning to the original stream path downstream of the work area.
- Dam upstream flows and use a culvert to bypass the work area, discharging downstream with erosion protection at the discharge point.
- Dam upstream flows and pump around the work area. If the pump cannot cope with the design ARI as determined in **Section 2.3, Table 2** then a separate cleanwater diversion channel must be maintained when the work area is unattended or when storm events are predicted.

For all stream works:

- Diversions must cope with the ARI as determined by **Section 2.3, Table 2**.
- Implications, including upstream flood effects from a 1 in 100-year ARI must be considered within the SSECP.
- All construction water must be collected and treated using the appropriate method outlined in the construction phase above.
- Where dams are to be used, construction materials and methodology must be selected that are suitable for the location, stream bed lithology and stream bank integrity to ensure the structure is watertight and structurally stable.
- Surface stabilisation must be undertaken as works progress.
- SSESCP will include details for each crossing.
- Bypass culvert and diversion drain sizing is as outlined in the Water Infrastructure Design Plan in spreadsheets **WID02 Culvert Design** spreadsheet and **WID03 Channel Design** spreadsheet respectively.

7.0 Construction and Operational Phases – Weather Monitoring, Maintenance and Incident Response

The following monitoring, maintenance and incident response activities will occur across works in both the construction and operational phases.

7.1 Weather Monitoring

Rain forecasts relevant to the site will be checked daily using the publicly available resources e.g. MetService / MetVuw online / NIWA and site specific Eco-Connect forecasting tools. Close monitoring of the rain forecast will be necessary to ensure the appropriate site works can be implemented prior to rainfall trigger events.

During working days, daily weather forecast checks will be forwarded to all Project Engineers and recorded in the daily prestart job sheets.

7.1.1 Rain Gauges

Continuous rainfall will be recorded at the existing weather stations listed in **Table 3** and shown in **Figure 3**. These sites are telemetered and the Water Engineer, who has access to “real-time” data, will monitor rainfall recorded at that site.

Rainfall trigger responses will be based on recorded events at the Met site relevant to the work area as outlined in **Table 3**.



Figure 3: Rain Gauges/Meteorological Stations

7.2 Maintenance – regular and emergency

Maintenance activities will continue throughout the construction and operational phases. Any sediment deposits and bulges against the silt fences will be removed when sediment accumulation reaches 20% of the fabric height.

The SRP's will be cleaned out before accumulated sediment volume reaches 20% of the total volume. Forebays shall be kept cleaned of any sediment accumulation before it reaches 50 % of the volume.

Ponds constructed under the Fair and Geyer (1954) method will be cleaned out prior to sediment accumulation reaching 50 % of the total pond volume.

Regular maintenance activities must be planned to ensure required controls are in place such as lifting of decant risers to prevent sediment disturbed during removal from exiting out of the decant.

Material removed from sediment control devices will be disposed of as per each site specific plan. Transport trucks must not be overloaded transportation and any sediment that is lost from the trucks must be immediately cleaned up to prevent tracking of the sediment throughout the access roads.

It is expected that maintenance works are carried out within 72 hours of reporting as being required unless rain is forecast, in which case the works must be carried out as soon as possible. In all cases site procedures around approval of plans and safety of operations must be followed.

Where emergency works are required, these shall be carried out as soon as it is safe to do so with the repair being inspected by the SQEP-ESC (or nominated person) as soon as practicable.

7.3 Incident Emergency Responses

If one of the following occurs:

- A failure of an erosion and/or sediment control (e.g. perimeter control, SRP or DEB) that results in visible discharge of sediment to a stream.
- Slumping / mass movement or erosion associated with construction works, but which is outside the catchment of a sediment control device or has resulted in a device being over-topped by sediment, where that sediment has discharged to a stream.

The responses will be:

- Remedy the failure or event to prevent further uncontrolled discharges where safe to do so or as soon as reasonably practicable after safe access is assured. Supervisors are permitted to carry out emergency remedial work without approval.
- Notify relevant personnel within the project team.
- Inform WCRC.
- Determine if the discharge is an isolated case or is likely to be repeated; and
- Investigate and implement modifications. Modifications could include:

- Raising decants from SRP's or DEB's to minimise turbid water flow until conditions return to a suitable water quality within the pond.
- Make alterations to erosion and sediment control measures and methodologies.
- Consider additional erosion and sediment control.
- Implementation / refinement of chemical treatment systems.
- Progressive stabilisation in sub catchments.
- Increase maintenance of controls.
- Amendments to methodologies and sequencing of works and refinement of controls necessary.

Near misses, which could be accidental damage for example and is required to be reported as per site procedures, shall be internally recorded with the remedial work documented and approved by SQEP-ESC or delegate.

7.4 Record Keeping

Detailed records shall be kept of all inspections, sampling and maintenance activities.

Expected details would be date, time, operator, results, reason for sampling, inspection observations, photos, maintenance required/completed etc.

Maps will be kept updated with the names and current locations of the erosion and sediment control devices. Each individual erosion and sediment control will have a map with the design contributing catchment to enable quick checks that the catchment has not been exceeded.

8.0 Reporting Requirements

8.1 Internal Reporting

Following a rainfall trigger event a Rainfall Trigger Event Report summary report of the performance of SRPs, and overall erosion and sediment control system observed during the rainfall event will be documented with the following information:

- A summary of the rainfall (total, duration and intensity).
- A summary of the manual monitoring undertaken and comparison of manual monitoring results to previously recorded results.
- A comparison of the site performance against the performance targets.
- A record of any other matters which may have compromised the overall erosion and sediment control performance during the rain event and the identified mitigation, maintenance, and management response.

- A summary of turbidity monitoring at the downstream compliance monitoring location(s) during the rainfall event, including comparison with applicable turbidity compliance limit(s).

8.2 External Reporting

The Rainfall Trigger Event Report will be available to WCRC upon request.

Other Ad-hoc external reporting includes:

- Notification of any breach of consent conditions that may occur.
- Provision of datasets to a wider group of external contractors and consultants to support technical studies and assessment of environmental effects. This data sharing is generally a response to a specific request for information (RFI) from the third party.

9.0 Roles, Responsibilities, and Training

BT Mining is committed to continual training and awareness of all staff, employees, and contractors at the Mine. Training and awareness procedures are an integral part of ensuring the full implementation of this Plan across all aspects of the Project. Effective and regular communication at all levels reinforces the message that erosion and sediment control is taken seriously and that the Plan has the active support of all employees and contractors and is factored into mine planning.

9.1 Roles and Responsibilities

Implicit in the effective management of this Plan is the allocation of responsibilities to key individuals. Details of roles and responsibilities associated with this Plan are provided in **Table 7** below.

Table 7: Responsible Personnel and Tasks

Position	Accountable Task
Senior Site Executive (SSE)	• Ensuring that achieving the objectives of this Plan is a core operating imperative. • Maintains oversight of operational performance. • Endorses significant erosion and sediment control management responses (as part of the adaptive management process) where required. • Managing risk when site standards cannot be met due to operational or technical constraints.
Environment and Community Manager	• Development and maintenance of this Plan. • Ensure adequate resources are sought and provided by the business to achieve the objectives of this Plan. • Educating the workforce on the importance of erosion and sediment control management. • Ensuring that erosion and sediment control monitoring requirements are fulfilled. • Manages internal and external reporting obligations in accordance with this Plan.

	- Facilitate Broad Brush Risk Assessments covering critical management and infrastructure design aspects for the business. - Lead investigations into erosion and sediment control management responses (as part of the adaptive management process) where required.
Environment and Community Superintendent	- Identify and respond to operational activities that may contribute to environmental effects. - Report any exceedances, incidents, or complaints to the Environmental Manager. - Implement corrective actions as directed. - Responsible for ensuring the instruction of workers, implementation and overseeing of the requirements of this Plan, including monitoring the effectiveness. - Maintain a documented record of any audits or inspections completed. - Ensure that staff and/or contractors that they supervise are suitably trained to follow processes outlined in this Plan and other documents as referenced. This includes a regular review of training requirements to ensure that each staff member/contractor is appropriately trained to carry out their duties. - Contribute to investigations into management responses (as part of the adaptive management process) where required.
Suitably Qualified and Experienced Professional in Erosion and Sediment Control	- Ensure day-to-day operations are undertaken in accordance with the mitigation and management measures set out in this Plan. - Review and authorise site specific erosion and sediment control plans for civils works areas and dig/dump plans for the mining pit areas. - Liaise with site engineers to approve final erosion and sediment controls. - Contribute to investigations into management responses (as part of the adaptive management process) where required. - Maintain a documented record of any audits or inspections completed.
Water Engineer	Carry out water infrastructure designs to support the designs required as part of this Plan.
Environmental Advisor/Contract Task Supervisor	- Supporting the Environmental and Community Manager and Environment and Community Superintendent with erosion and sediment control management. - Coordinating and managing erosion and sediment control measures data collection. - Interpreting datasets and erosion and sediment control management systems/procedures. - Auditing of erosion and sediment control management implementation in the field. - Contribute to investigations into erosion and sediment control management responses (as part of the adaptive management process) where required.
Contractors	- Contributing to achievement of the objectives of this Plan. - Ensure all their employees are fully trained and aware of relevant requirements of this Plan and associated procedures. - Reporting any erosion and sediment control related issue that they perceive presents a risk to site performance and/or reputation. - Ensure compliance with all site regulations and engage in safe work practices.

All Personnel	- Contributing to achievement of the objectives of this Plan in whatever way that relates to their role. - Reporting any erosion and sediment control related issue that they perceive presents a risk to site performance and/or reputation. - Participate in inductions and toolbox talks relevant to the requirements of this Plan.
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9.2 Training and Inductions

Environmental issues are included within the Mine Induction Package and induction process and regular environmental awareness training through toolbox talks is planned.

Feedback from inspections and monitoring outcomes will be communicated to site personnel through toolbox talks or other appropriate forums as required to reinforce good practice and inform staff behaviour. Where required, additional inspections will be undertaken to verify the effectiveness of revised controls. Adaptive management processes will be considered, where required, to ensure appropriate management responses.

10.0 Management Plan Approval and Revision

10.1 Document Management

Review and revision of this Plan should be undertaken on a 3 yearly basis with any changes to the Plan to be externally approved by a SQEP-ESC as agreed between the WCRC and the Project team. Subsequent site-specific plans will be updated to align with the changes.

10.2 Change Register

This Plan is issued, revised, and amended under authorisation of the SSE.

A copy will be stored electronically with access available to all workers. The signed hard copy will be maintained in the site document library.

Reasons for making changes will be documented and recorded in the document management table, refer to **Table 8**. A copy of the original document and subsequent versions will be kept for records and marked as obsolete. Each new/updated version will be issued with a version number and date to eliminate obsolete documentation being used.

Table 8: Document Management

Document Management:			
Regulatory Approvals Authorities:			
Document Owner:	Stockton Environmental and Community Manager		
Document Owner Name:	[REDACTED]		
GM HSEC Approval Signature:			
Date:			
Document Approver:			
CEO Name:	[REDACTED]		
CEO Signature:			
Date Approved:			
Revision History:			
Date	Version No.	Lead Author	Contributing Authors
July 2026	1.0	[REDACTED]	[REDACTED]
Version No.:		Detail / Changes:	
Next Planned Review:			

11.0 References

- BPCP-ENV-PLN-002. Rehabilitation Management Plan
- BPCP-ENV-PLN-007. Biosecurity Management Plan
- BPCP-ENV-PLN-010. AMD Water Management Plan.
- BPCP-ENV-PLN-011. AMD Engineered Landform Management Plan.
- BPCP-ENV-PLN-017. Dust Management Plan.
- BPCP-ENV-PLN-012. Water Infrastructure Design Plan.
- BRL Buller Plateaux FTA Access Roads Coal Transport logistics Road Design Report (June 2026)
- Leersnyder, H., Bunting, K., Parsonson, M. & Stewart, C., 2026. Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region. Auckland Council Guideline Document GD2026/005. Version 2., s.l.: Beca Ltd and Southern Skies Environmental for Auckland Council.
- MWM, 2026a. Construction Phase Report - Buller Plateaux Continuation Project, s.l.: Mine Water Management.
- Nelson Tasman Erosion and Sediment Control Guidelines, July 2019 [Land disturbance, erosion and sediment control | Tasman District Council](#)
- [New Zealand Dam Safety Guidelines \(2024\) – New Zealand Society on Large Dams](#)
- New Zealand West Coast Coal and Mining Operations - A Technical Reference v7-5.1
- STO-ENV-PLN-013. Stockton Mine Water Environmental Management Plan.
- STO-ENV-PLN-027. Millerton Block Water and AMD Management Plan.
- Terrestrial Ecological Impact Assessment Report – Buller Plateaux Continuation Project v14
- <https://tools.aucklandcouncil.govt.nz/erosion-sediment-control-device-sizing-tool/calculator>

Attachment A – Summary of Commitments

Record	Commitment	Section Reference

Attachment B - Summary of Relevant Conditions

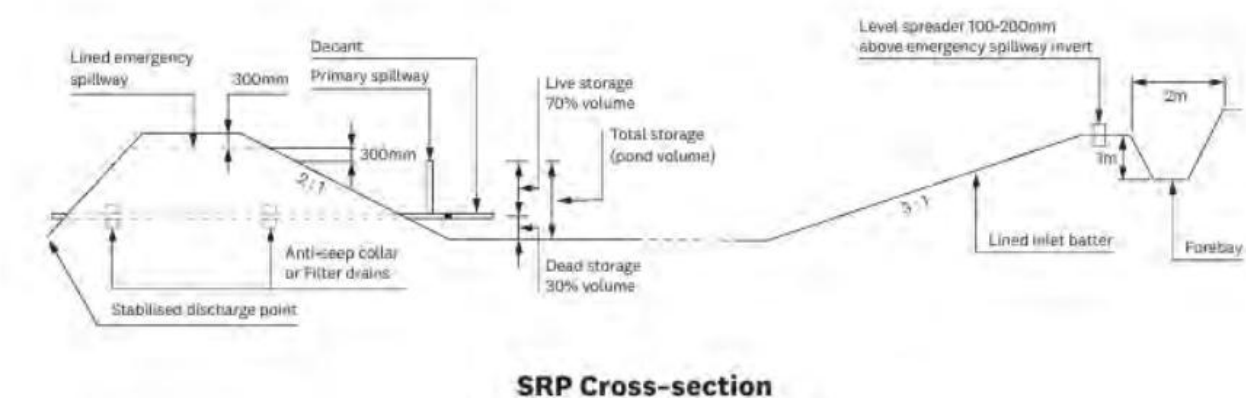
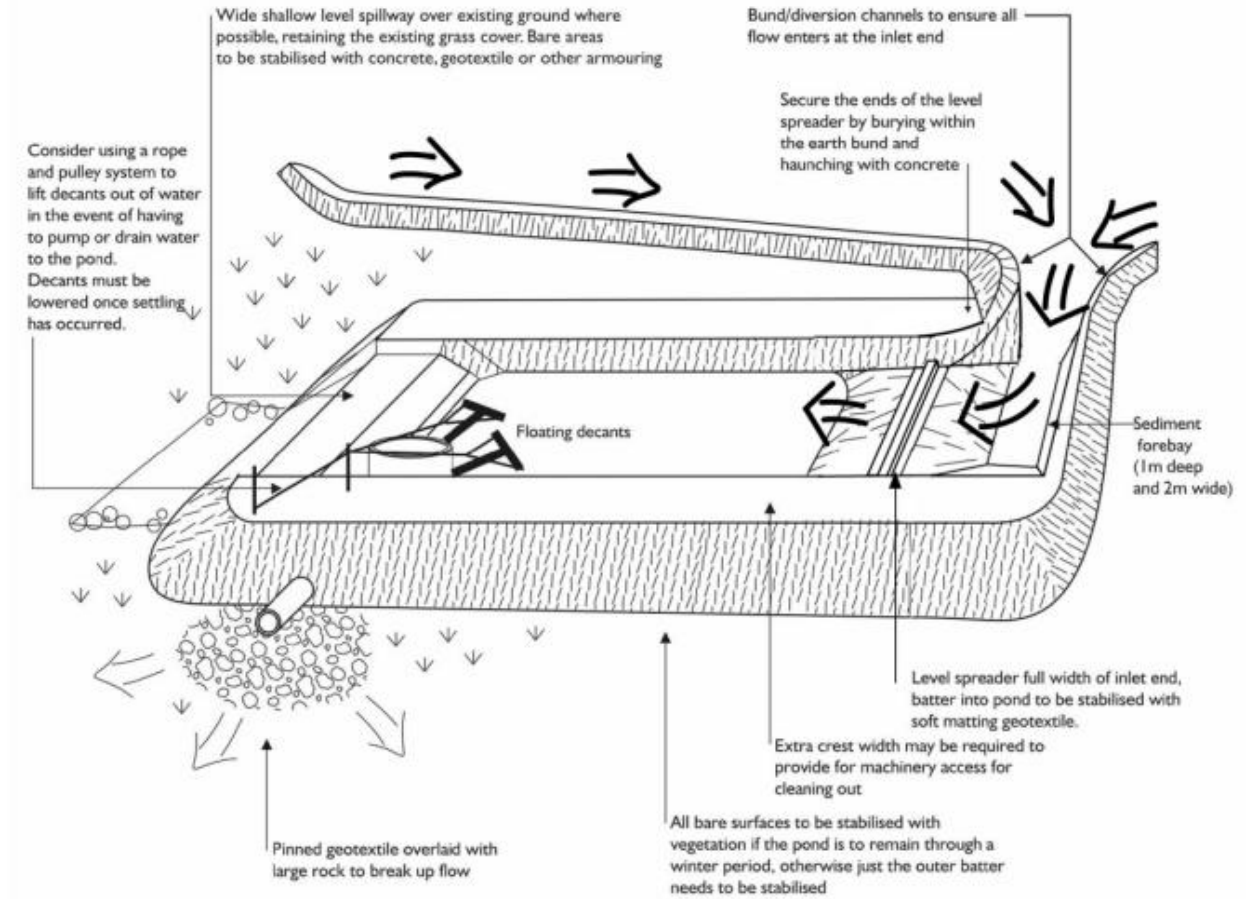
Conditions to be inserted upon issue of the final decision.

Appendix A – Sediment Retention Ponds

Key Design Criteria:

Aspect	Requirement	Comments
Size	Volume is determined by Section 2.3.	
Length to width ratio	Between 3:1 and 5:1	Length is defined as level spreader to decant system. Width is measured at primary spillway level.
Depth	Between 1-2 m	Depth is measured from invert to top of primary spillway.
Dead storage	Retained as 30 % of the total SRP storage.	Controlled by lowest decanting level.
Forebay	Minimum of 1 m deep and 2 m wide with length extending the width of SRP.	
Level spreader	Batter slope to SRP well compacted and smooth, no steeper than 1:3. Must be level and extend width of the SRP.	Critical design to control velocity into the SRP and allow hydraulic design of the SRP to function.
Decant flow rate	Decant rate of 3 l/s of contributing catchment. T-bars can float to top of primary spillway.	Extra flow can be achieved by adding more T-bars or drilling more holes.
Decant outlet pipe size	For contributing catchments: - Up to 3 ha – min 150 mm pipe. - Between 3 and 5 ha – min 300 mm pipe.	Anti-seep collar or filter drain to be fitted.
Primary spillway	For contributing catchments: - Up to 3 ha – 150 mm upstand pipe. - Between 3 and 5 ha – 1050 mm concrete manhole riser.	Primary spillways are piped structures not channels.
Spillway systems levels	Primary spillway min. 600 mm below SRP embankment and min. 300 mm below emergency spillway.	
Emergency spillway	Capacity to cope with 1 % AEP event without eroding. Min. base width of 6 m or width of pond floor, whichever is the greatest.	

Example of typical SRP:

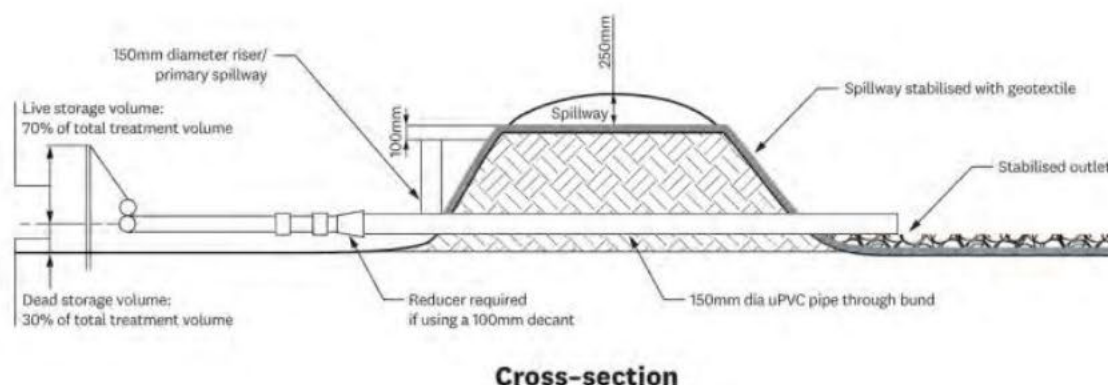


Sourced from GD05 Figures 71 and 72, Page 89

Appendix B – Decanting Earth Bunds

Key Design Criteria:

Aspect	Requirement	Comments
Size	Volume is determined by Section 2.3.	
Contributing catchment	Max. of 0.3 ha	
Length to width ratio	Optimal is 3:1 but not mandatory. Requires at least 5 m between the inlet and T-bar decant.	Ensure water enters from a single direction.
Depth	Max. of 1 m of embankment height.	Depth can be deeper if excavated below the embankment toe.
Dead storage	Retained as 30 % of the total SRP storage.	Controlled by lowest decanting level which is positioned 0.3-0.4m above the invert of the DEB.
Decant flow rate	Decant rate of 3 l/s of contributing catchment. T-bar can float to top of primary spillway.	
Decant outlet pipe size	100 or 150 mm T-bar device can be used.	Anti-seep collar or filter drain to be fitted.
Primary spillway	150 mm upstand pipe.	Primary spillways are piped structures not channels.
Spillway systems levels	Primary spillway min. 350 mm below DEB embankment and min. 100 mm below emergency spillway.	
Emergency spillway	Capacity to cope with 1 % AEP event without eroding. Min. base width of 1.5 m unless specific design has been completed.	



Sourced from GD05 Figure 90, Page 105

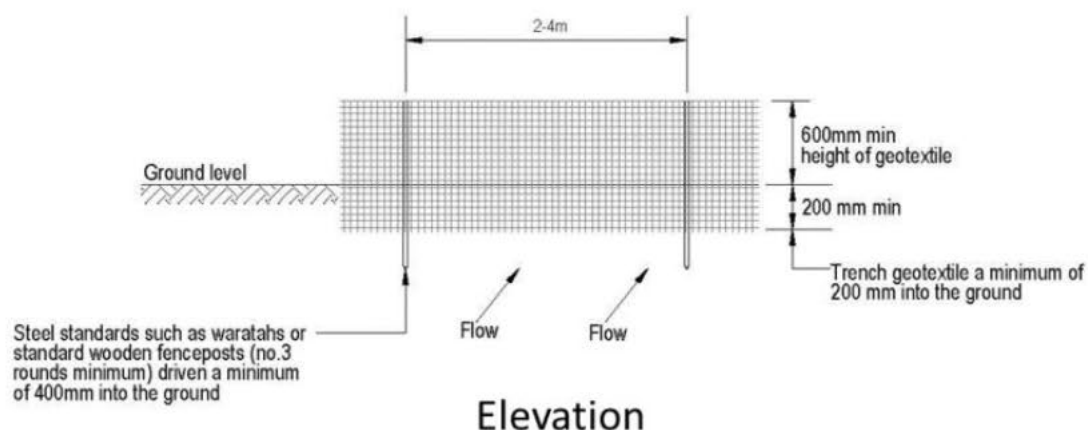
Appendix C – Silt Fences and Super Silt Fences

Silt Fence

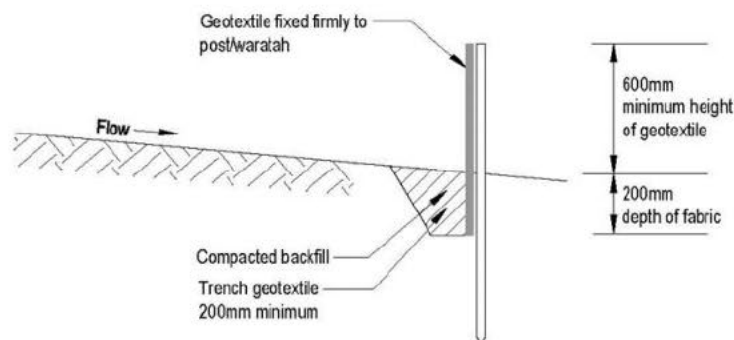
Key Design Criteria:

Aspect	Requirement	Comments
Contributing catchment	Max. of 0.3 ha	Larger catchments require consideration.
Length	As per table below.	
Height	600 mm above ground level and 200 mm below ground level.	
Supporting waratahs	Min. 400 mm into the ground. Spaced at 2-4 m depending on the support provided to the silt fence. Waratah length at least 1.5 m.	
Returns	Min. 2 m in length. Spaced as per table... below and at the ends of each fence.	To reduce velocity along the fence.
Grade	Max. of 5 % grade along 15 m of fence.	For where water flows along a silt fence.

Slope steepness %	Slope length (m) (maximum)	Spacing of returns (m)	Silt fence length (m) (maximum)
Flatter than 2%	Unlimited	N/A	Unlimited
2 – 10%	40	60	300
10 – 20%	30	50	230
20 – 33%	20	40	150
33 – 50%	15	30	75
> 50%	6	20	40



Sourced from GD05 Figure 98, Page 117



Cross-section

Sourced from GD05 Figure 99, Page 118

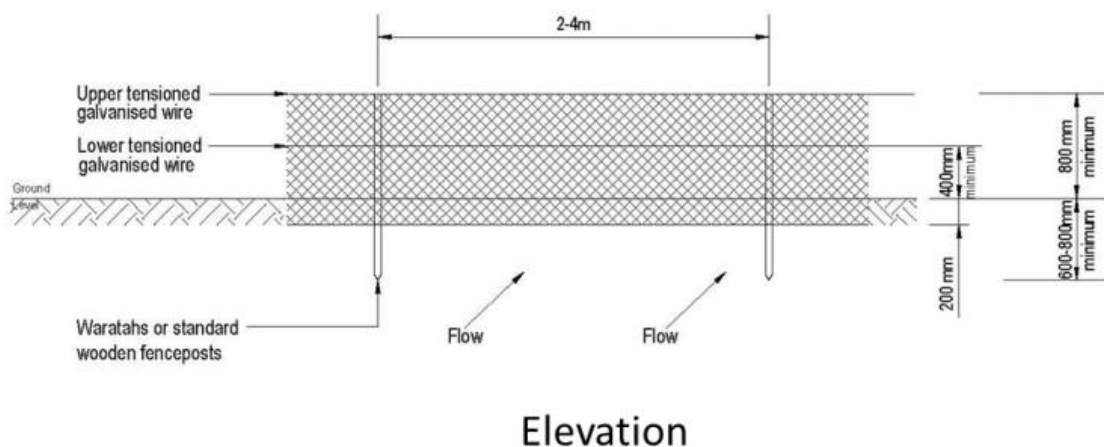
Super Silt Fence

Key Design Criteria:

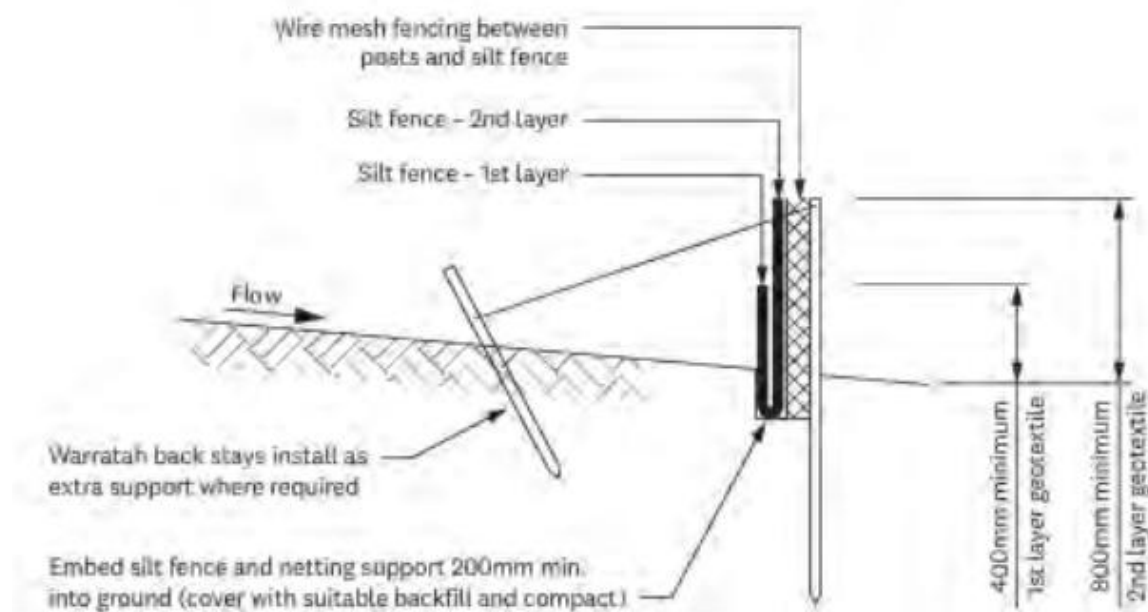
Aspect	Requirement	Comments
Contributing catchment	Max. of 0.5 ha	Larger catchments require consideration.
Length	As per table below.	
Height	First layer min. 400 mm above ground and second layer 800 mm above ground level and 200 mm below ground level.	
Supporting waratahs	Min. 800 mm into the ground. Spaced at 2-4 m depending on the support provided to the silt fence. Waratah length at least 1.8 m.	
Returns	Min. 2 m in length. Spaced as per table... below and at the ends of each fence.	To reduce velocity along the fence.
Grade	Max. of 5 % grade along 15 m of fence.	For where water flows along a silt fence

Slope steepness %	Slope length (m) (maximum)	Spacing of returns (m)	Super silt fence length (m) (maximum)
0 – 10%	Unlimited	60	Unlimited
10 – 20%	60	50	450
20 – 33%	30	40	300
33 – 50%	30	30	150
> 50%	15	20	75

Sourced from GD05 Table 16, Page 123



Sourced from GD05 Figure 105, Page 124



Sourced from GD05 Figure 106, Page 124

Appendix D – Drop-out Pits

Typically, 0.5 – 1.0 m deep and a minimum of 1.0 m wide. For larger drains, the width will be the base width of the channel. Length will be a minimum of 1.0 m.

Any linings required for erosion protection will be determined by the design velocity of the channel flow and the material the drop out pit is constructed in.

Drop-out Pit example:



Sourced from GD05 Figure 95, Page 113

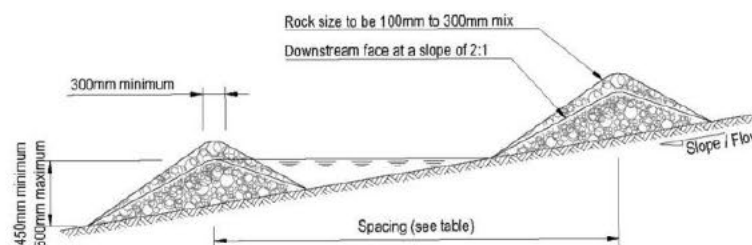
Appendix E – Check Dams

Key Design Criteria:

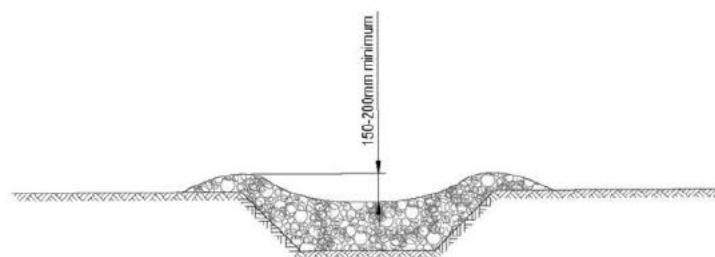
Aspect	Requirement	Comments
Contributing catchment	< 1 ha	Specific engineering design required outside of this.
Height	Typically either 450 mm or 600 mm at spillway height.	
Spillway	150 – 200 mm lower than sides of dam. Same RL as the toe of the upstream check dam.	To ensure there is always water held between the check dams.
Grade	<10 %	Otherwise spacing becomes too close.

Slope of site (%)	Spacing (m) between dams with a 450 mm centre height	Spacing (m) between dams with a 600 mm centre height
Less than 2%	24	30
2 - 4%	12	15
4 - 7%	8	11
7 - 10%	5	6
>10%	Unsuitable - use stabilised channel or specific engineered design	Unsuitable - use stabilised channel or specific engineered design

Sourced from GD05 Table 6, Page 51



Elevation



Cross-section

Sourced from GD05 Figure 31, Page 51

Appendix F – Surface Stabilisation

Key Design Criteria:

Aspect	Long (>12 months) or short term	Comments
Aggregate spreading	Both	100 % cover must be achieved for stabilisation.
Grassing – take into account existing environment and what will grow	Both	80 % vegetative cover constitutes stabilisation achieved.
Mulch	Short	Weeds can be an issue. 100 % cover must be achieved for stabilisation.
Geotextiles	Both	Consult manufacturers product information. 100 % cover must be achieved for stabilisation.
Hydro seeding	Long	80 % vegetative cover constitutes stabilisation achieved.

Appendix G – BRL Risk Matrix

BRL-HST-STD-001.04	<i>Bathurst Resources Limited</i> Risk Matrix Tool	
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Consequence Criteria

RATING	Primary Consideration				Secondary Consideration Note: will have been triggered by Health & Safety or Environmental considerations first	
	Financial Impact (\$)	Health & Safety	Environment	Community / Reputation	Legal & Compliance	Management Impact
1	>\$20M loss or gain	Multiple fatalities; or Significant irreversible effects to 10's of people	An incident that has caused disastrous environmental impact with long term effect requiring major remediation	Prominent negative international media coverage over several days Significant negative impact on share price for months	Major litigation or prosecution with damages of \$10M+ significant costs Custodial sentence for company executive Prolonged closure of operations by authorities	Critical event or disaster with significant impact on a business unit that requires considerable senior executive time to handle over several months Full implementation of a business unit crisis management plan
2	\$5M - \$20M loss or gain	Single fatality; and/or Permanent disability to one or more persons	An incident that has caused serious environmental impact with medium term effect requiring significant remediation	National media coverage over several days Significant negative impact on share price for weeks Community / NGO legal actions Impact on local economy	Major litigation costing \$5M+ Investigation by regulatory body resulting in long term interruption to operations Possibility of custodial sentence	Major event that requires the implementation of crisis contingency plans at a site level
3	\$1M - \$5M loss or gain	Extensive injuries or temporary impairment to one or more persons Lost time	An incident that has caused moderate reversible environment impact with short term effect requiring moderate remediation	Local media coverage over several days Negative impact on local economy Persistent community complaints	Major breach of regulation with punitive fine Significant litigation involving many weeks of senior management time	Significant event that can be managed with careful attention – will take some site-level management time over several days
4	\$100k - \$1M loss or gain	Medical treatment	An incident that has caused minor reversible environmental impact requiring minor remediation	Local media coverage Complaint to site and/or regulator	Breach of regulation with investigation or report to authority with and moderate fine possible	Local operation of contingency plan Will require some local management attention over several days
5	<\$100K loss or gain	First aid treatment	An incident that has caused negligible reversible environmental impact requiring very minor or no remediation	No media coverage No community complaints	Minor legal issues, non-compliances and breaches of regulation where the effects are contained on site	No real action outside reporting and local investigation required

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BRL-HST-STD-001.04	Bathurst Resources Limited Risk Matrix Tool	 BATHURST RESOURCES LIMITED
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Likelihood Category and Related Criteria

Category	Criteria
A	99% probability; or - Impact is occurring now; or - Could occur within "days to weeks"
B	>50% and <99% probability; or - Balance of probability will occur; or - Could occur within "weeks to months"
C	>20% and <50% probability; or - May occur shortly but a distinct probability it won't; or - Could occur in "months to years"
D	>1% and <20% probability; or - May occur but not anticipated; or - Could occur in "years to decades"
E	<1% probability; or - Occurrence requires exceptional circumstances; or - Exceptionally unlikely, even in the long term future; or - Only occur as a "100 year event"

Risk Rating Matrix

Likelihood Rating	A	15	10	6	3	1
	B	19	14	9	5	2
	C	22	18	13	8	4
	D	24	21	17	12	7
	E	25	23	20	16	11
		5	4	3	2	1
Consequence Rating						

Classification	
High Risk	
Medium Risk	
Low Risk	

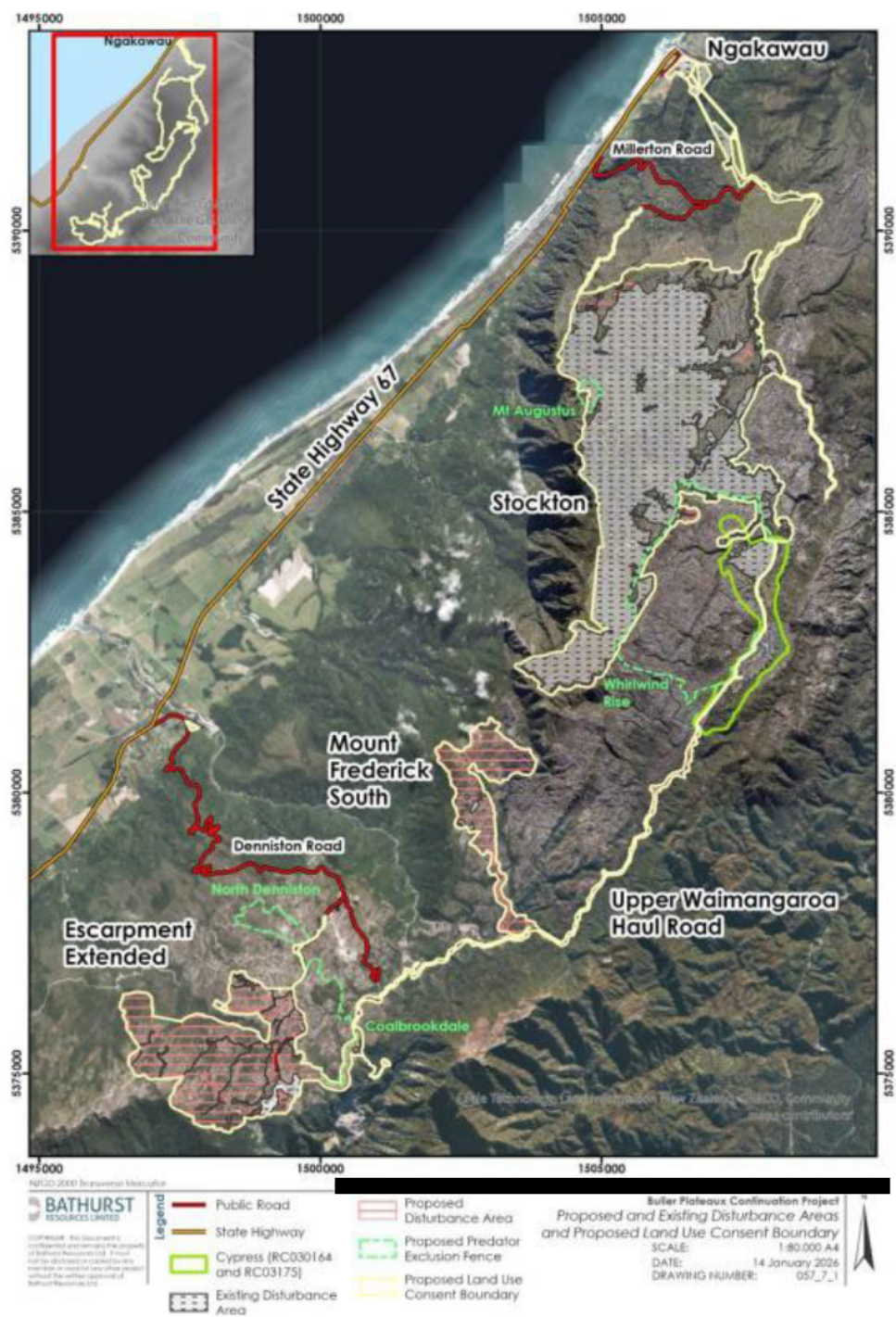
BRL-HST-STD-001.04 | June 2025

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Appendix H – Earthworks Plans and Schedule



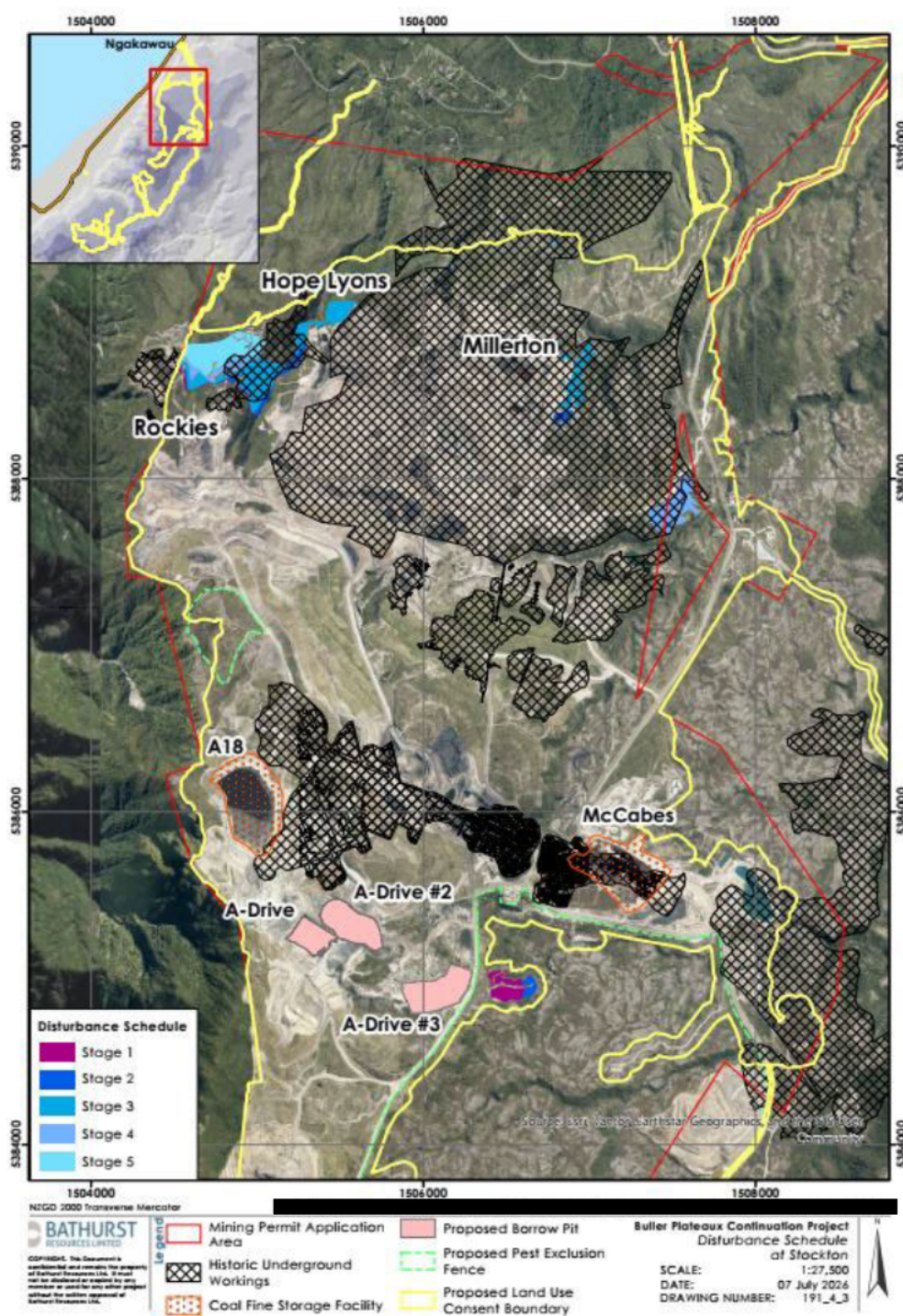
Source: BPCP Disturbance areas. Figure 1 from BPCP Project Description Version 4 January 2026 Page 3

Accompanying reports (as referenced) to provide more information on the project:

- New Zealand West Coast Coal and Mining Operations – A Technical Reference
- Construction Phase Report – Buller Plateaux Continuation Project
- Terrestrial Ecological Impact Assessment Report – Buller Plateaux Continuation Project

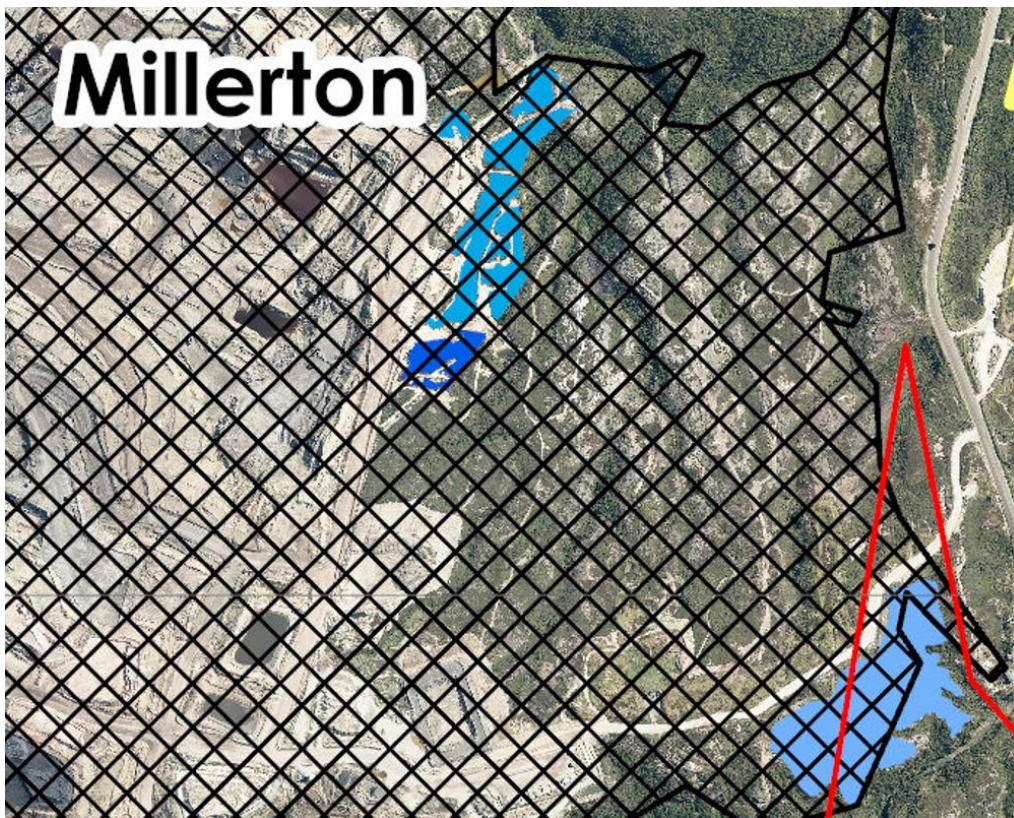
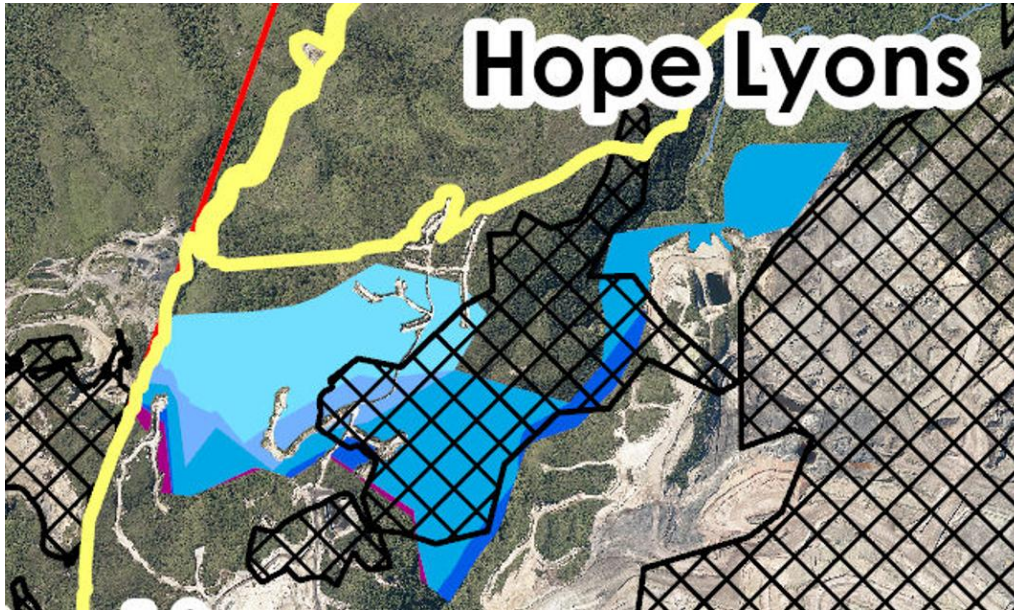
Stockton

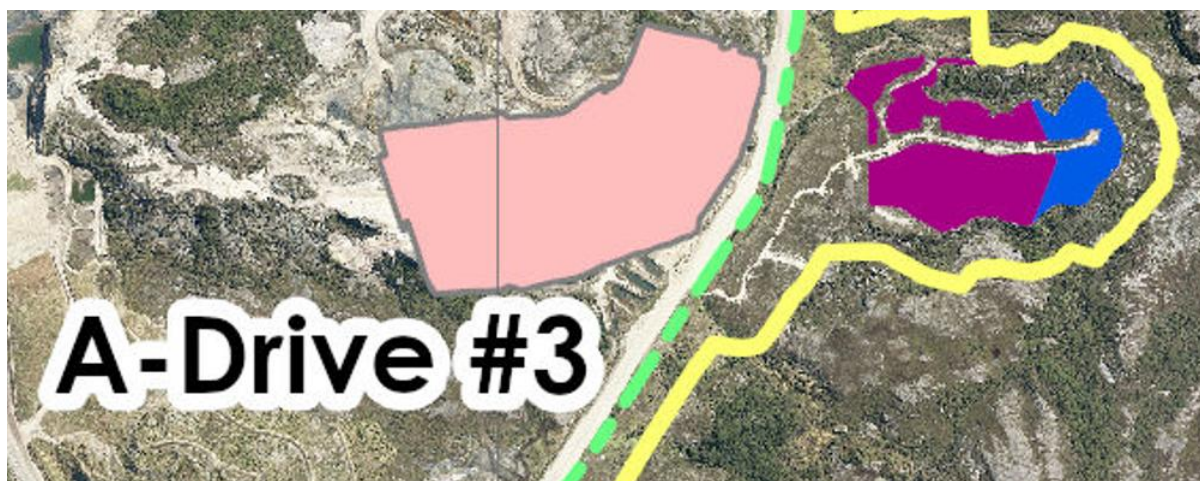
	Year 1	Year 2	Year 3	Year 4	Year 5
Disturbance area	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Disturbance by year (ha)	2.80	1.80	10.60	6.60	6.70
Total disturbance (ha)	2.80	4.60	15.20	21.80	28.50



Source: TBC

Close up of disturbance areas from figure above.

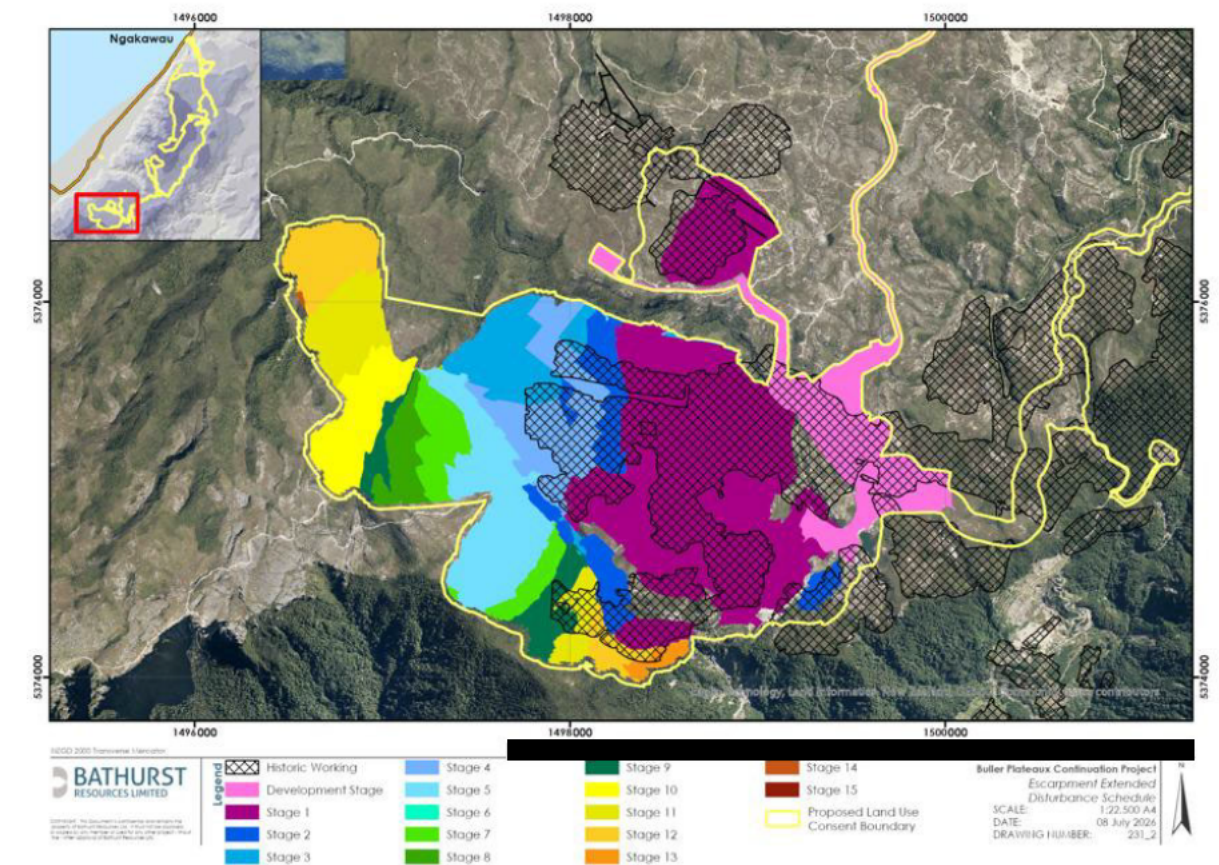




Note: the proposed borrow pit areas are previously disturbed.

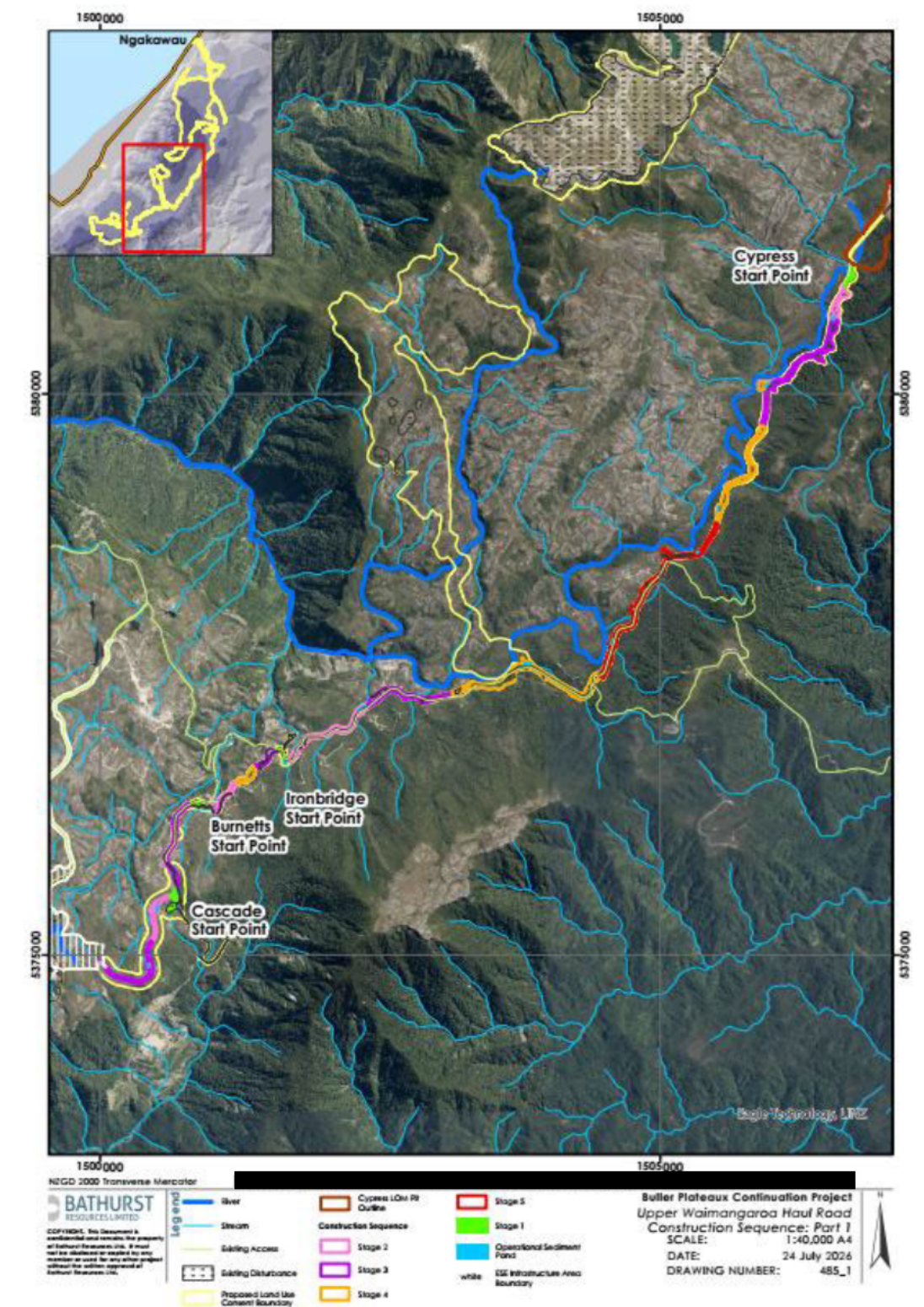
ESE

Disturbance area	1/3 dev + Stage 1	1/3 dev + Stage 2	1/3 dev + Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	Stage 9	Stage 10	Stage 11	Stage 12	Stage 13
Disturbance by stage (ha)	114.65	77.07	126.55	20.80	37.30	-	28.96	-	14.62	27.14	32.38	5.20	3.24
Total disturbance (ha)	114.65	191.72	318.28	339.08	376.38	376.38	405.34	405.34	419.96	447.10	479.48	484.68	487.92



Appendix I – UWHR Development

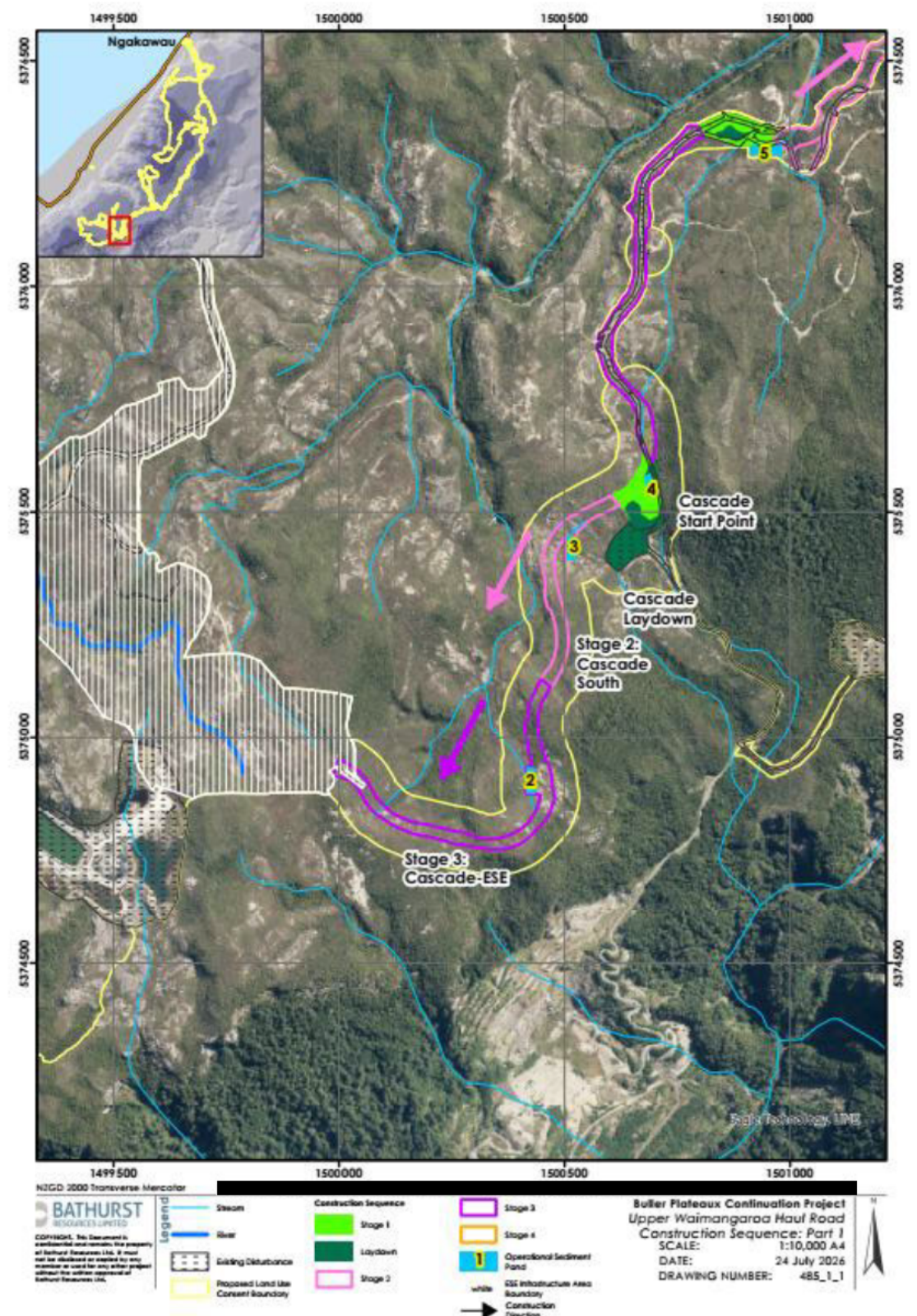
Overview of UWHR:



Disturbance schedule:

			Month																			
		Max potential dist footprint	Timing	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		(Ha)	(mths)																			
Construction Stage 1	Cascade	1.8	3																			
	Burnetts	1.1	3																			
	Iron Bridge	0.9	3																			
	Cypress Sth	0.9	3																			
Construction Stage 2	Cascade	1.5	3																			
	Burnetts	1.4	3																			
	Iron Bridge	3.8	3																			
	Cypress Sth	1.4	1																			
Construction Stage 3	Cascade	2.5	3																			
	Burnetts	1.1	3																			
	Iron Bridge	3.3	3																			
	Cypress Sth	5.9	6																			
Construction Stage 4	Burnetts	0.9	1																			
	Bridge	7.2	4																			
	Cypress Sth	3.7	3																			
Construction Stage 5	Mid Connect	2.4	4																			

Example of construction sequence including operational SRP's:



Alignment along existing tracks and new disturbance:

