REPORT

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Executive summary

Tonkin & Taylor Ltd (T+T) has undertaken this technical assessment for Bathurst Resources Limited (Bathurst) to support an application under the Fast Track Approvals Act (FTAA) to reconsent the existing infrastructure and mining operations associated with the Stockton Mine and provide access to additional coal mining areas across the Buller Plateaux (referred to as the Buller Plateaux Continuation Project (BPCP) or the Project). This assessment has been undertaken with respect to the outdoor storage of tyres against the provisions of the National Environmental Standard for Storing Tyres Outdoors (NES-STO).

The BPCP is divided into the following sub areas:

- Stockton, including the aerial ropeway and Ngākawau Rail loadout area.
- Mount Frederick South Project sub area.
- Escarpment Extended Project sub area.
- Upper Waimangaroa Haul Road Project sub area.

Bathurst has a consent for outdoor tyre storage at the Stockton Project sub area until April 2057. This assessment is for new tyre storage areas for the Escarpment Extended Project sub area. Five outdoor stockpiles and two to three 40-foot containers are proposed at the Central Infrastructure and Coal Handling Infrastructure areas to support operations at that location. Outdoor storage areas are not required in the other project sub areas.

The assessment considered the existing environmental conditions, as well as the proposed procedures and controls for managing tyres. The key findings of the assessment are summarised below:

- A restricted discretionary consent is required under the NES-STO as more than 100 m^3 of tyres will be stored outdoors at the Escarpment Extended Project subarea.
- The proposed outdoor storage areas are in a remote setting, with high rainfall, on low permeability soils and groundwater more than 30 metres below ground surface. Surrounding groundwater and surface water have been impacted by historic mining operations and show low pH and elevated dissolved metals, particularly zinc.
- Bathurst proposes to manage potential effects from tyre storage in a manner consistent with the arrangements currently consented at the Stockton mine area, in accordance with STO-ENV-PRO-040 and BPCP-ENV-PLN-015 v2.0.
- Proposed management procedures and controls include:
  - Adequate setbacks and separation from sensitive areas (such as groundwater, streams, buildings, residential areas, dense vegetation).
  - On-site fire-fighting resources.
  - Capturing runoff from the tyre storage areas into the mine water management system, including runoff in the event of a fire, prior to offsite discharge to nearby waterways.
- The above mentioned measures are considered appropriate to meet relevant environmental performance requirements and align with good practice in environmental risk management, specifically in the event of a fire.
- Considering the setting of the Escarpment Extended Project sub area and the proposed management procedures and controls, the likelihood of adverse effects to the environment, including land, freshwater, ecosystems, coastal environment, air quality and communities, under both normal operating conditions and during a fire event, is assessed as very low.

1 Introduction

Tonkin & Taylor Ltd (T+T) has been engaged by Bathurst Resources Limited (Bathurst) to undertake an assessment of the proposed outdoor tyre storage activities within the proposed Escarpment Extended mining area of the Buller Plateaux Continuation Project (BPCP or the Project). The assessment has been undertaken with respect to the Resource Management (National Environmental Standard for Storing Tyres Outdoors) Regulations 2021 (NES-STO).

This report has been prepared in general accordance with T+T proposal dated 31 October 2024.

1.1 Background

Bathurst is seeking approvals under the Fast-track Approvals Act 2024 (FTAA) to retain the existing infrastructure and mining operations associated with the Stockton mine and provide access to additional mining areas including the Mount Frederick South Project sub area and the Escarpment Extended Project sub area across the Buller Plateaux. Bathurst is seeking approvals to continue mining activities at the plateau for a further 20+ years. A detailed project description is summarised in the Assessment of Environmental Effects (AEE).

Heavy machinery and light vehicles are required to support both current and future mining operations on the Buller Plateaux. As a result, storage facilities for new tyres (to be fitted) and used or damaged tyres will be required. As outdoor storage or stockpiling of tyres has the potential to present a risk to human health and the environment, primarily through the leaching of contaminants or the effects of fire, resource consent is required under the NES-STO owing to the volume and manner of tyre storage.

In respect of the NES-STO, where between 20 m^3 and 100 m^3 of tyres are stored (in total across a property), and providing certain permitted activity conditions are met, resource consent is not required. If more than 100 m^3 of tyres are stored or the permitted activity conditions in Regulation 12 of the NES-STO cannot be met, then resource consent as a restricted discretionary activity is required under Regulation 14.

Bathurst currently holds a resource consent (RCT-2022-0028-01) from the West Coast Regional Council to store new, used and scrapped tyres in a number of outdoor storage areas within the Stockton Mine. This consent was granted in 2022 and expires on 21 April 2057.

Bathurst is now seeking additional outdoor tyre storage areas for the proposed Escarpment Extended Project sub area, to be located in the Central Infrastructure Area and the Coal Haulage Infrastructure Area. We understand no further outdoor tyre storage areas will be required at Stockton Mine area and no tyre storage is required at the Mount Frederick South Project sub area nor the existing Ngākawau Rail Loadout.

1.2 Objective and scope

This report has been prepared to provide an assessment of effects from the storage of tyres at Escarpment Extended Project sub area for the purpose of supporting the FTAA resource consent application for the BPCP.

The scope of work comprised the following:

- Review of available environmental (geological, hydrogeological, hydrological and meteorological) information for the project including the following reports:
  - GHD, March 2022, Assessment of Environmental Effects, Resource consent application to store tyres outdoors at Stockton Mine, prepared for BT Mining Limited.
  - GHD, October 2024, Stockton Hydrogeological Desktop Assessment, prepared for Bathurst.

  - Mine Waste Management (MWM), July 2026. Background Water Quality Report, Buller Coal Plateaux Continuation Project, J- NZ0472-001-R-Rev1. (MWM, 2026a).
  - MWM, July 2026. ESE Groundwater Technical Report. J-NZ0433-002-R-Final prepared for Bathurst. (MWM, 2026b).
  - RMA Science, May 2026, Buller Plateaux Continuation Project: Water quality protection guidelines (Ref BRL2401/1).
- Review of the following environmental/emergency management procedures and plans in particular relating to waste management and fire response:
  - Bathurst, May 2025, Stockton Mine Operational Waste Management Procedure (STO-ENV-PRO-028 v2.0).
  - Bathurst, November 2020, Stockton Mine Emergency Principal Control Plan v3 (STO-HST-PCP-002 v3.0).
  - Bathurst, May 2021, Stockton Mine Fire Protection and Prevention Procedure (STO-MPL-PRO-058 v1.0).
  - Bathurst, Jan 2025, Stockton Mine Disposal and Storage of Heavy/Earthmoving, Medium and Light Vehicle Tyres Procedure (STO-ENV-PRO-040).
  - Bathurst, April 2026, Waste Management Plan (BPCP-ENV-PLN-015 v2.0)
- Review of publicly available aerial imagery to assess sensitive environmental and human receptors against existing and new storage areas.
- Undertake a visit to the Project area to gain an understanding of the general environmental setting, including the main tyre storage areas at Stockton Mine.
- Undertaking an assessment against the matters of restricted discretion set out within Regulation 14 of the NES-STO, namely the adverse effects associated with the leaching of contaminants on land, freshwater, ecosystems and the coastal environment and the risk and effects from a tyre fire.
- Preparation of this report documenting our assessment for submission with the FTAA resource consent application.

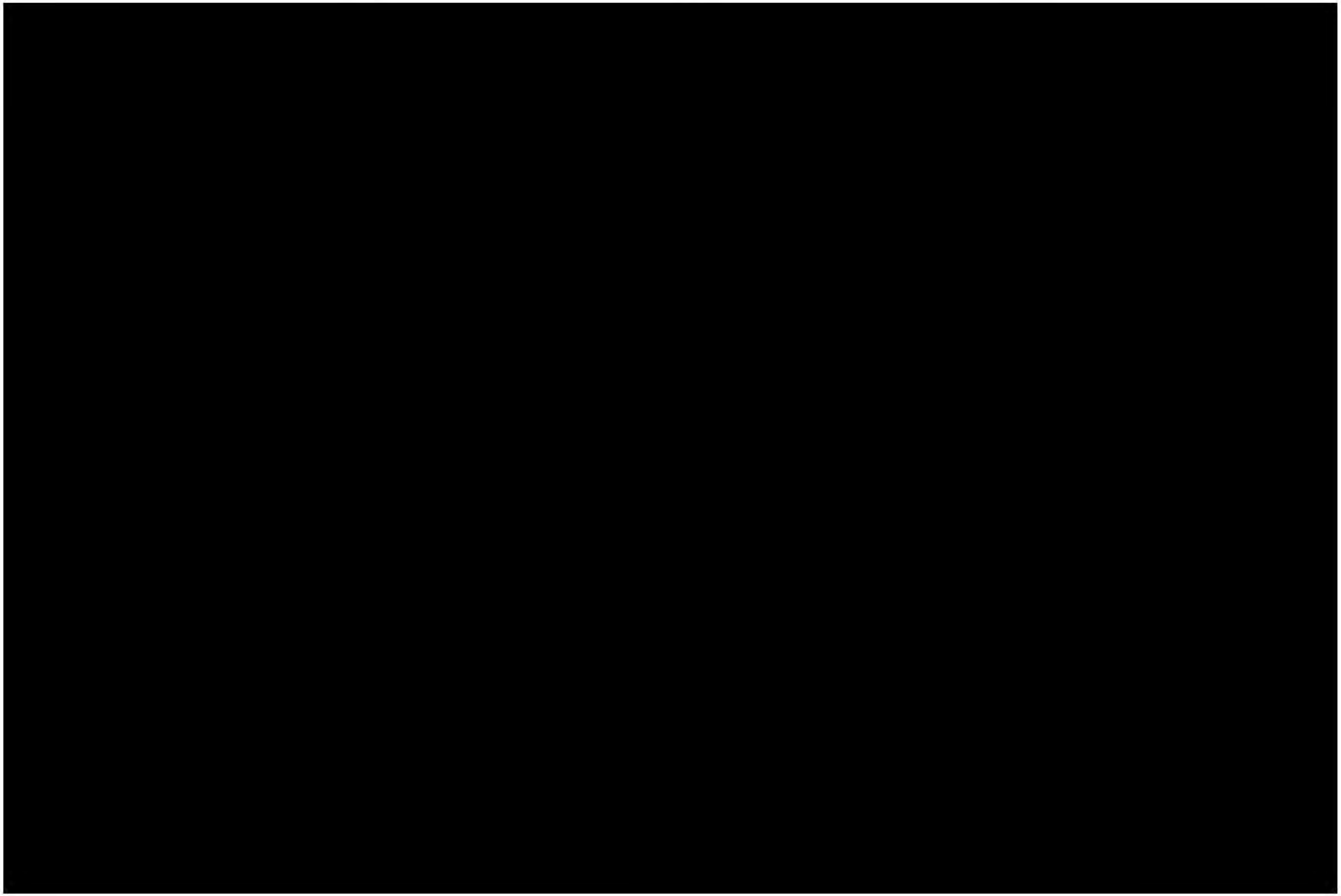
2 Project area description

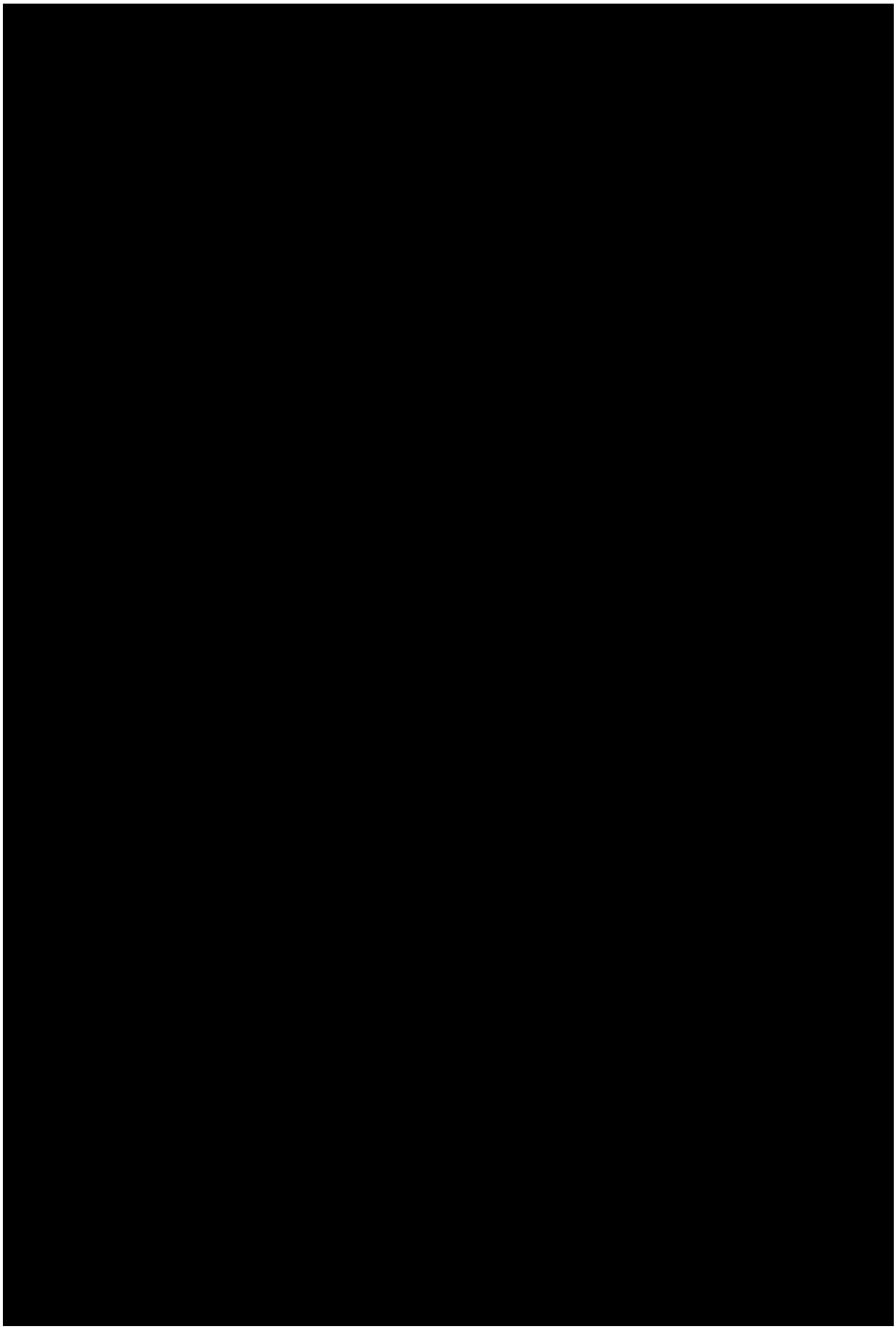
This section of the report provides an overview description of the Project and the Escarpment Extended Project sub area where new outdoor tyre storage areas are proposed.

[redacted]

The BPCP is located between approximately 15 km northeast of Westport [redacted] The Project, [redacted], is divided into the following sub areas [redacted]

- Stockton, including the aerial ropeway and Ngākawau Rail loadout area.
- Mount Frederick South Project sub area.
- Escarpment Extended Project sub area.
- Upper Waimangaroa Haul Road Project sub area.





The Escarpment Extended Mine Project sub area is located on the Denniston Plateaux. It is part of the Mount Rochfort Conservation Area located on Crown land administered by the Department of Conservation (DOC).

[redacted]

[redacted]

The BPCP, including the Escarpment Extended Project sub area, are generally remote in nature. The nearest settlement is Denniston, some 2 km to the north.

2.4 History

Historic mining activities within the Project sub area dates from the late 1800s.

Bathurst commenced opencast mining at the Escarpment mine area on Denniston Plateaux in 2014 and continued for about 2 years. This area has been in care and maintenance since early 2016. Pit 3 was constructed as a water treatment facility for mine impacted water and is now an artificial lake named Lake Brazil.

3 Existing environment

Detailed assessments have previously been undertaken by others to characterise the geological, hydrogeological, hydrological and metrological conditions at and in the vicinity of the Escarpment Extended Project sub area as outlined in Section 1. This section provides a high-level summary of the key environmental conditions which we have considered in our assessment of the actual and potential environmental effects from the outdoor storage of tyres at the Escarpment Extended Project sub area.

3.1 Climate

The climate of the Buller Plateaux is greatly dependent on its exposure to weather systems from the Tasman Sea to the west and the Southern Alps to the east. The region receives significant rainfall, with mean annual rainfall ranging from about 4,000 mm near the coast to 6,000 mm near the eastern boundary of the BPCP area.

The Escarpment Extended Project sub area is situated in a sub-alpine environment of an elevated plateau. The area experiences heavy year-round rainfall. Average annual rainfall from 2011 to 2023 recorded at the Lake Brazil meteorology station was approximately 5,500 mm.

The prevailing winds experienced on the Denniston Plateaux is from the north through west to south, although moderate to strong winds are typically from the north-northwest. Winds from the northeast, east and southeast are infrequent reflecting the effect of the local high-altitude terrain.

3.2 Topography

The Escarpment Extended Project sub area lies between approximately 600 and 800 m above mean sea level (ASL) [redacted], with an overall slope to the northwest. It is fringed by peaks of the Mount William Range to the southeast and Mount Rockfort (1,040 m ASL) to the southwest.

3.3 Hydrology

The primary drainage of the Escarpment Extended Project sub area flows northwest towards the Whareatea River and includes Rapid Stream, a tributary [redacted]. There are also watercourses that drain the eastern part of the mine area to the southeast towards Cascade Creek.

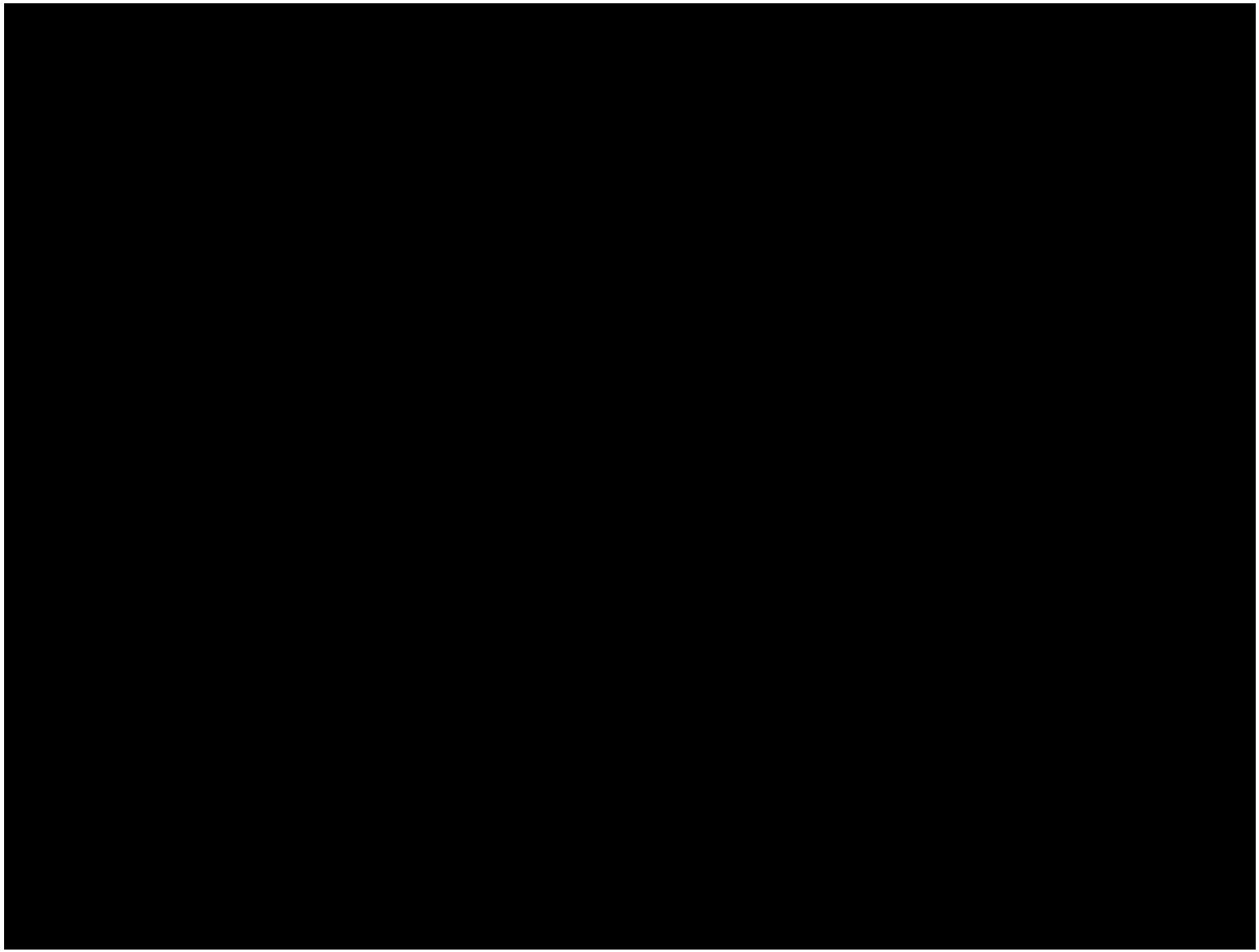
The Whareatea River generally flows in the northwesterly direction and ultimately discharges into the Tasman Sea while Cascade Creek flows in the southwesterly direction before discharging into the Buller River. Buller River flows northwest then north and ultimately discharges into the Tasman Sea west of Westport town.

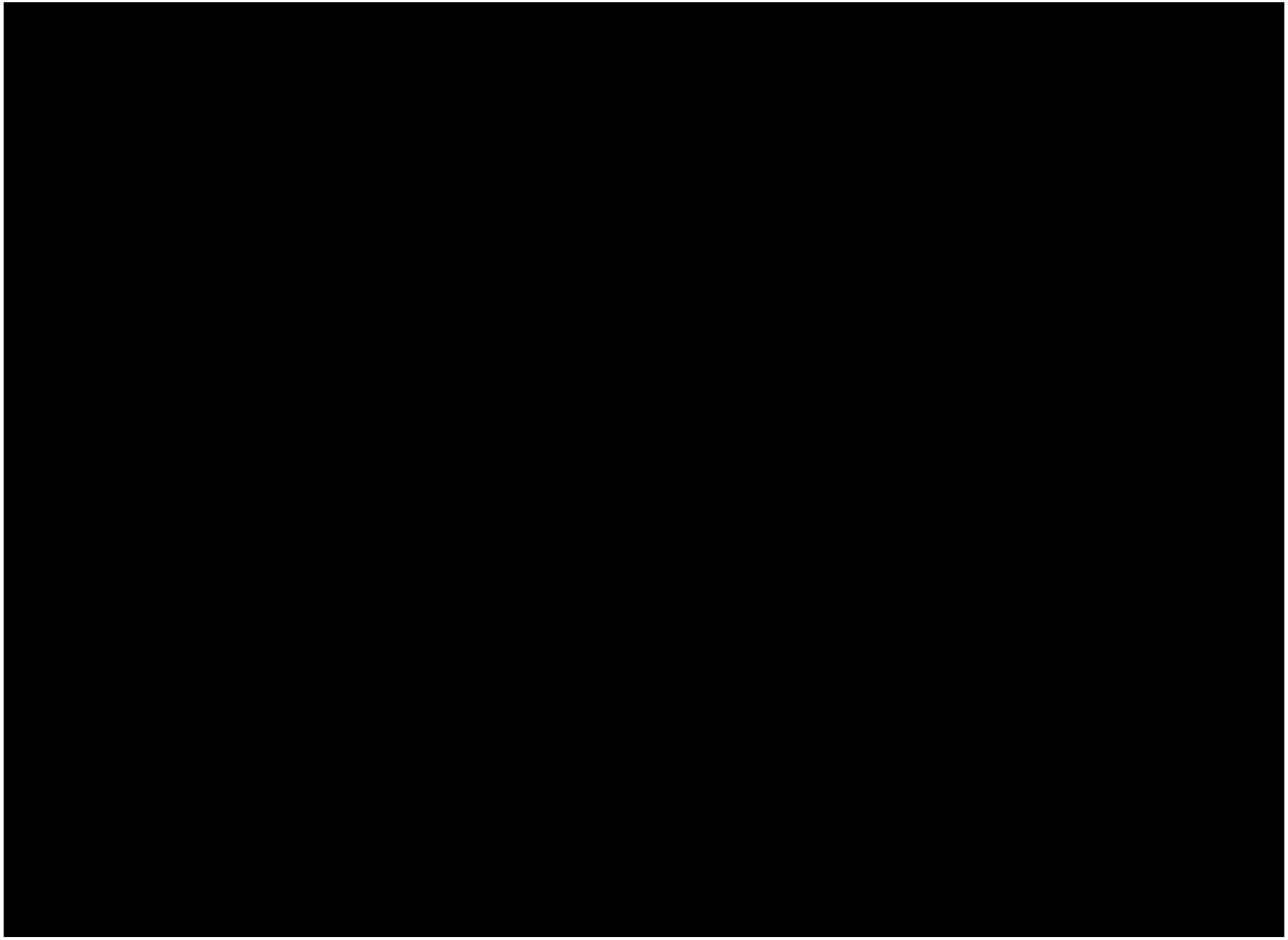
[redacted]

Based on information provided by Bathurst and described in the RMA Science July 2026 report, runoff from the Central Infrastructure area, including mining operations impacted water and runoff from long-term potentially acid forming engineered landform (ELF) will be directed to the ex-pit seal, which serves as a surge pond. Water from the surge pond is then directed to the Water Treatment Plant (WTP) and then a polishing pond for either:

a Discharge to the Whareatea River [redacted] or

b pumped across to the Cascade Creek catchment [redacted]





Treatment at the WTP will comprise pH adjustment, flocculation to provide remove suspended solids and addition of chelating chemicals to remove dissolved metals.

However, during high rainfall events, spill and bypass water from the surge pond may be discharged into [redacted] Creek [redacted] According to RMA Science (2026), flow monitoring and hydrological analysis indicate that the high-flow events associated with these conditions are generally short-lived, lasting approximately 8–12 hours, and are characterised by rapidly rising and falling hydrographs. Given that bypass is expected only when inflows exceed available storage capacity, actual bypass events are expected to be infrequent and short in duration.

The nearest potable surface water take is for a community supply from the adjacent Waimangaroa River catchment (RC01281/1) more than 2 km to the northwest of the mine area [redacted]

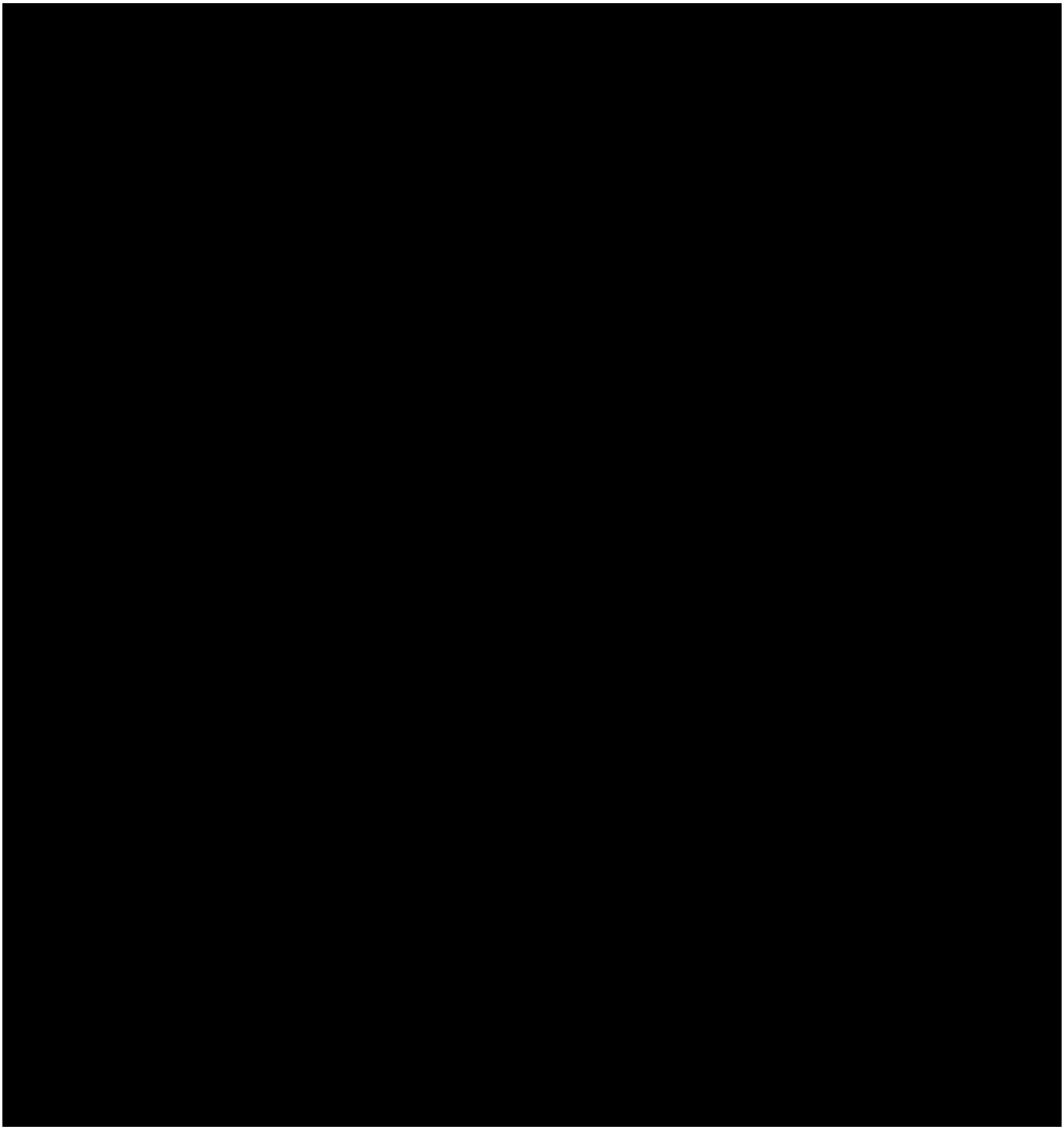
3.4 Geology and hydrogeology

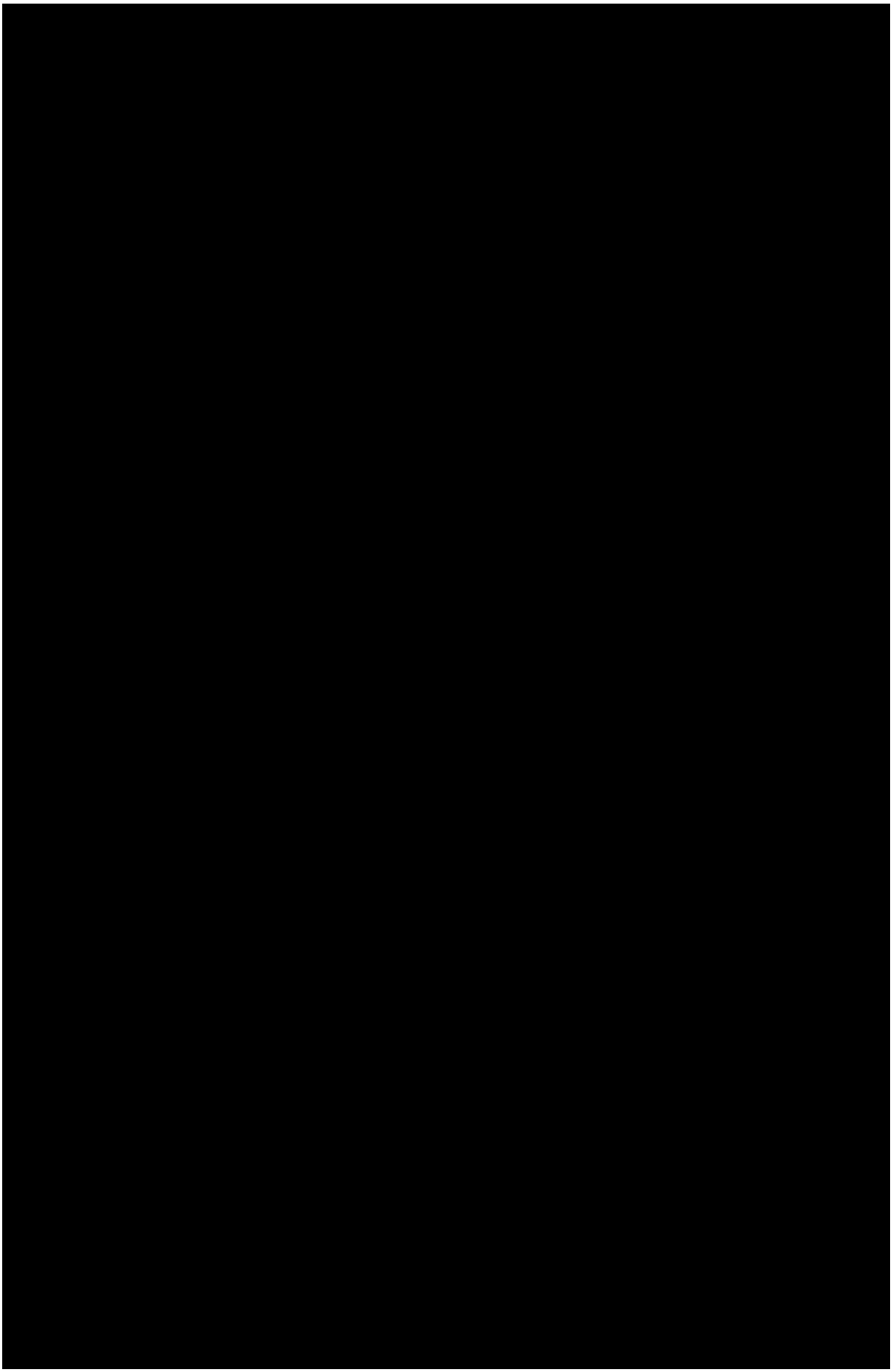
[redacted]

The hydrogeological conditions at the Escarpment Extended Project sub area are discussed in the [redacted] July 2026 *Escarpment Extended Sub-Area Groundwater Technical Report* and is generally summarised as follows:

- Groundwater flows through the rock and is largely driven by the degree of fracturing.
- Permeability in the Brunner Coal Measures vary by 3 orders of magnitude, ranging between approximately 10^{-8} and 10^{-5} m/s.
- Groundwater recharge via land surface infiltration is likely to be low due to the low permeability of the Brunner Coal Measures.
- The area in the vicinity of the proposed tyre storage locations at the Extended Escarpment Project sub area is currently drained by an extensive network of historic underground workings.
- Based on discussions with [redacted] the depth to groundwater beneath the Central Infrastructure area (currently and during operations) is approximately between 30 and 40 m below ground level.
- Groundwater flow beneath the Central Infrastructure area is currently to the east towards Cascade Creek [redacted] During operations, groundwater from beneath the proposed tyre storage areas is expected to flow towards the open pit and will be captured by the mine water treatment system.
- There are no groundwater takes for potable use within the Escarpment Extended Project sub area. [redacted]

[1] Information obtained from https://gis.westcoast.govt.nz/WestMapsViewer/?map=f00edc0d875f4508b76c89e321c64f1a on 14 August 2025.





3.5 Baseline groundwater and surface water quality conditions

Surface water quality monitoring information has been collected from the Cascade Creek, Whareatea River and Rapid Stream catchments from 2002 to 2024. [redacted] No groundwater quality monitoring information is available for the Escarpment Extended Project sub area.

In general, the surface water quality monitoring data shows that the waterways for all three streams have been impacted by historical mining activities. Given the mining history and hydrogeological setting, groundwater quality is also likely to be influenced by historical mining activities.

Key surface water quality results, based on monitoring information provided by Bathurst and [redacted] July 2026, *Background Water Quality Report*, are summarised below:

- pH ranged between 2.8 and 8 at Cascade Creek and Whareatea River monitoring locations. At Rapid Stream monitoring locations, the pH ranged between approximately 2.6 and 5.3.
- Dissolved metals were elevated particularly:
  - Aluminium, iron, nickel and zinc at the Cascade Creek monitoring locations.
  - Thallium and zinc at selected Whareatea River monitoring locations.
  - Aluminium, copper, iron + manganese, nickel and zinc at the Rapid Stream monitoring locations.

4 Waste tyre generation, management and storage

4.1 Generation

As discussed in Section 1.1, heavy machinery and light vehicles will be used extensively throughout the operational phases of the BPCP. All heavy/earthmoving tyre tracking for the BPCP will be managed by [redacted] as is currently the case for the current Stockton mining operations.

In accordance with Bathurst's operational waste management procedure (STO-ENV-PRO-028 v2.0), while Bathurst reuses and recycles all vehicle tyres as much as possible, its operations require the storage of new tyres for fitting along with worn out tyres that are no longer fit for use. Bathurst estimates that mine production heavy maintenance equipment fleet will generate approximately 220 large used tyres per annum and coal haulage operations will generate approximately 500 smaller tyres per annum.

Similar to Stockton and in accordance with STO-ENV-PRO-028, Bathurst will reuse and repurpose some of the used tyres as structures to barrier off operational activities or support operational activities e.g. ramp walls, haul road barriers, barriers around fuel tanks or standpipe supports [redacted] These tyres will be used in a manner that would meet the "active use" exemption under the NES-STO.

Bathurst will also use the Tyre Wise scheme[2] to regularly remove end of life tyres from the BPCP area to minimise onsite stockpiling and storage requirements.

[2] Turning Waste Into Opportunity – Tyrewise, Aotearoa New Zealand

[redacted]

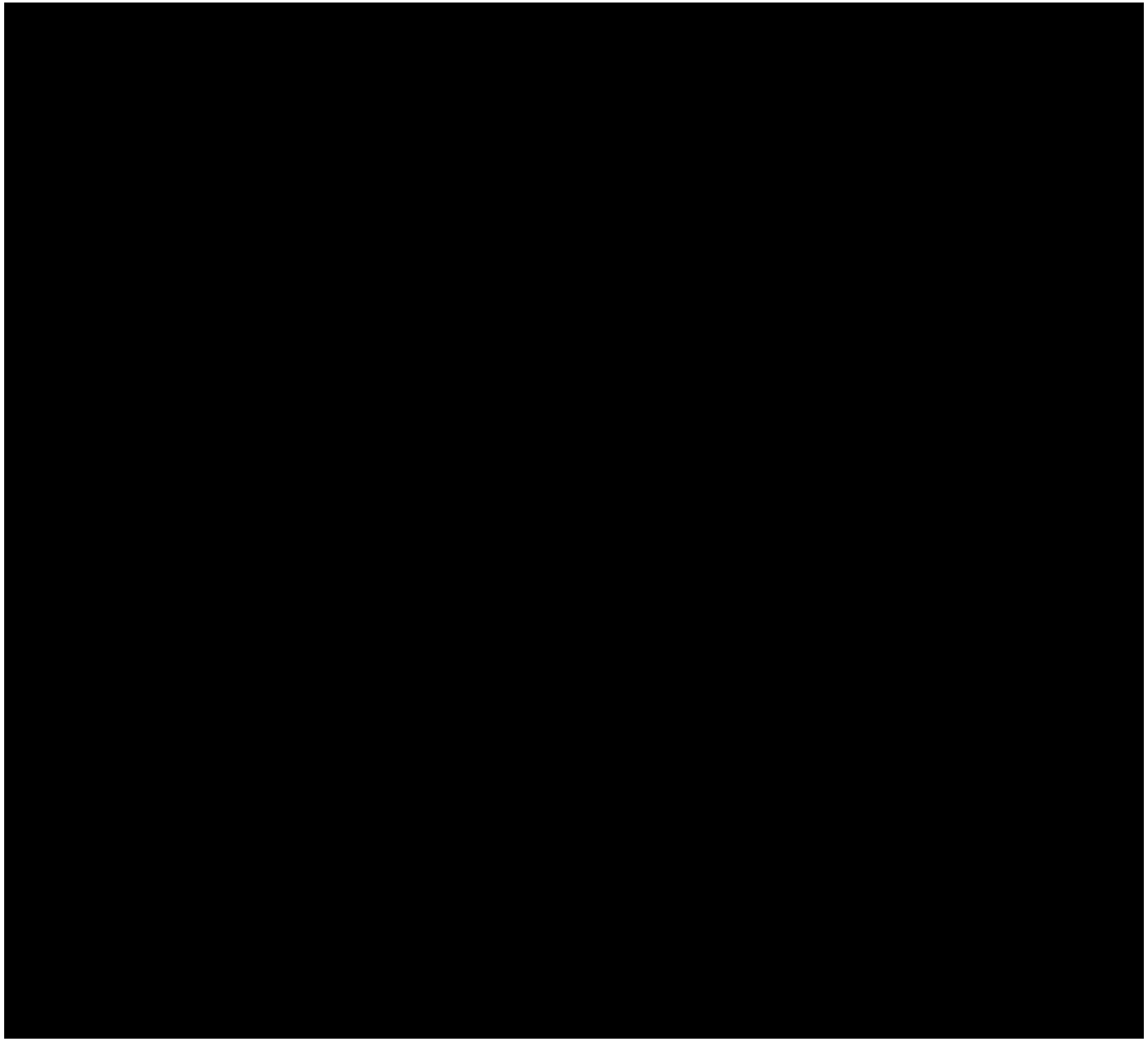
[redacted]

Bathurst is proposing to have five 20 m by 6m tyre stockpile areas at two designated outdoor locations within the Central Infrastructure Area of the Escarpment Extended Project sub area. [redacted]

- [redacted]
- [redacted]

The five stockpiles gives a total estimated outdoor tyre storage volume of approximately 1,800 m^3 including the void space between tyres. This volume exceeds the permitted activity requirements under the NES-STO and a restricted discretionary consent is required under Regulation 14.

Bathurst is also proposing to provide two to three 40-foot containers for new and used tyre storage generally at the Coal stockpiling and load out area within the Escarpment Extended Project sub area. As the tyres will be stored inside containers, the NES-STO does not apply to this storage area.



[redacted]

4.3 Management

When works commence within the Escarpment Extended Project sub area, outdoor tyre storage will be managed in a similar manner as it currently is at Stockton. [redacted]

[redacted]

Key requirements are summarised below:

- Heavy/Earthmoving, Light and Medium Vehicle Tyres shall only be stored on low permeability compacted fill areas with easy access to the area maintained for firefighting vehicles and machinery.
- All runoff from the outdoor tyre storage areas will be captured and directed to the mine water management and treatment system [redacted] together with mine impacted water. The treatment system is designed to neutralise acid mine drainage through pH adjustment and to remove both suspended solids and dissolved metals. As indicated in Section 3.3, during heavy rainfall and high-flow events, spill and bypass water from the management and treatment system surge pond may be discharged directly into the receiving environment V8 Creek. Based on flow hydrographs for streams in the vicinity of the ESE, these events are expected to be short duration[3] .
- Tyre stockpiles will be placed more than 20 metres from dense vegetation to help prevent bushfires from reaching storage areas or igniting stockpiles.
- Tyre stockpiles will be located more than 20 m from buildings, except vehicle maintenance workshops, to reduce potential damage and risk to people inside the buildings.
- Tyre stockpile heights shall not be more than three (3) metres high to maintain stability. In addition, heavy/earthmoving vehicle tyres will be restricted to stacking 3x high or approximately two (2) metres high.

The following measures are provided for fire management and mitigation:

- Limiting the size of the tyre stockpiles to reduce the risk of tyre fires as per Fire and Emergency NZ recommended dimensions: twenty (20) metres long and six (6) metres wide.
- No tyre storage area shall be within (20) metres of any other tyre storage area or any other waste storage area to reduce the spread of a tyre fire and provide adequate access for firefighting purposes.

[3] RMA Science, May 2026, Buller Plateaux Continuation Project: Water quality protection guidelines (Ref BRL2401/1).

- Water/firefighting foam shall be provided within the Central Infrastructure area at all times to ensure a tyre fire can be appropriately dealt with. The minimum storage volumes shall comprise:
  - At least two 70,000 litre (L) water carts that are fitted with foam units. Each water cart will carry 100 L of fire foam [redacted]
  - One fire truck with 1800 L of water carrying 80 L of foam.
- The Material Safety Data Sheet for [redacted] indicates the product is Class 6.3A (irritating to the skin) and Class 8.3A (corrosive to ocular tissue), and not ecotoxic (Class 9). It is fluorine free (does not contain per- and polyfluoroalkyl substances (PFAS)) and is biodegradable and non-persistent.
- Water runoff resulting from firefighting will be contained and directed towards the mine water treatment system and retained until it has been assessed prior to discharge.
- If necessary, heavy earth moving equipment could be deployed to move earth for extinguishing a fire.

Requirements for the proposed outdoor tyre storage areas are provided in STO-ENV-PRO-040 and BPCP-ENV-PLN-015 v2.0.

4.4 Setback distances

Setback distances to potentially sensitive features and receptors based on the proposed outdoor storage locations are presented in Table 4.3 and show that they meet the setback requirements in the NES-STO Users Guide.

Table 4.3: Setback and separation distances

Features	NES-STO requirements[5]	Setback distance
Transmission line	50 m	[redacted]
Bores used for drinking water or bore that connect to the aquifer	50 m	[redacted]

[redacted]

[5] Ministry for Environment, 2021, National Environmental Standards for Storing Tyres Outdoors Users' Guide.

Features	NES-STO requirements[5]	Setback distance
Surface water bodies	20 m	[redacted]
Groundwater table	1 m	[redacted]
Coastal marine area	50 m	[redacted]
Between stockpiles	20 m	[redacted]
Buildings	20 m	[redacted]
Dense bush	N/A	[redacted]
Flammable and hazardous materials	N/A	[redacted]
Residential properties and schools	N/A	[redacted]

5 Tyre storage effects assessment

As discussed in Section 4.2, a restricted discretionary consent is required for the outdoor storage of approximately 1,800 m^3 of tyres within the Extended Escarpment Project sub area. This section of the report provides an assessment of the matters of discretion under Regulation 14 of the NES-STO and discusses the potential effects and proposed mitigation measures with respect to:

- Discharges (from leachate) from the outdoor tyre storage areas to/onto land, freshwater, ecosystems and the coastal environment;
- Discharges into air, freshwater and ecosystems associated with a tyre fire at the outdoor storage areas; and
- Economic and environmental benefits of the proposed activity.

5.1 Contaminant discharges from tyre storage facilities

5.1.1 Sources and contaminants of concern

Tyres are manufactured with a chemical mixture of rubber polymers, fillers, protective agents and vulcanisation agents (hardening agents) and other contaminants including polycyclic aromatic hydrocarbons (PAHs), amines, heavy metals (predominantly arsenic, zinc, lead, cadmium, iron and manganese), p-phenylenediamines (PPDs) and benzothiazole.

Leachate is produced when the stockpiled tyres are exposed to rainfall events. Once leachate is generated it can contaminate underlying soils and continue to migrate in groundwater or surface water. Contaminant concentrations in leachate are affected by several factors including tyre size, condition, chemical environment, permeability of soil and/or rock etc. The longer the tyre remains in the outdoors the greater the probability of material contamination underneath and surrounding the

pile. The key contaminants of concern from leaching of whole tyres (no steel) are metals and PAHs. Zinc is the main metal of concern[6]. Untreated mine operations water have a similar contaminant profile and include heavy metals, particularly zinc.

There is limited information on likely leachate concentrations from outdoor storage of intact tyres and most studies are based on shredded tyres and/or worst case scenario conditions (e.g. stagnant conditions, aggressive extractions). While some studies found concentrations higher than the US drinking water standards, most leaching studies have found metal concentrations below the toxicity characteristic leaching procedure (TCLP) laboratory reporting limit, as well as United States Environment Protection Authority (USEPA) toxicity limits and relevant environmental standards.[7]

5.1.2 Potential effects and mitigation measures

In general, contaminants leached from tyre piles are expected to be largely retained in near surface soils and limited to **land** within the footprint of the tyre stockpile, especially since a low permeability base is proposed as provided in the Tyre Management Plan (STO-ENV -PRO-040 and BPCP-ENV-PLN-015 v2.0). In T+T's experience, concentrations of contaminants on the land beneath tyre stockpiles can exceed regional background levels for select heavy metals (typically zinc, and potentially arsenic, cadmium, lead, nickel, copper and chromium) and PAH analytes (pyrene, phenanthrene, fluoranthene and components of benzo-pyrenes). However, the concentrations are not expected to reach levels associated with risks to mine workers or the environment in the proposed setting.

There is also potential for stormwater runoff to contain low level contaminated leachate from tyre piles. This runoff is proposed to be captured, drained to the surge pond together with other mine impacted water. As discussed in Section 3.3 and 4.3, the majority of the runoff will be treated at the mine water treatment plant prior to off-site discharge into the Whareatea River or Cascade Creek (refer Section 3.3). Treatment is proposed to comprise pH adjustment to neutralise acid mine drainage and removal of suspended solids and dissolved metals. While there is potential for untreated impacted water to spill from the surge pond directly to the receiving environment, these should occur infrequently and for short periods during heavy rainfall events (RMA Science, 2026). The receiving environment will be monitored for impacts. The volume of contaminated leachate generated from the proposed five stockpiles is likely to be very small compared to the volume of runoff from other mine related operations. It is likely that the effects of contaminant discharges from tyre stockpile generated leachate to be indistinguishable from the untreated mine operations water within the surge pond, so that potential for adverse effects on adjacent **freshwater** bodies that are already impacted by historic mining activities (refer Section 3.5) and their **ecosystems** is likely to be very low.

The potential for leachate from the tyre piles to affect **groundwater** is considered to be low. The contaminants, such as metals and PAHs, typically have low mobility and tend to bind to soil. Additionally, as indicated in Section 3.4 and 4.4, the underlying ground is of low permeability, and there is a significant depth to the groundwater table [redacted] and distance to the nearest groundwater bore [redacted] There is also negligible potential for groundwater to affect human health as groundwater in the vicinity of the tyre stockpiles is not used for potable purposes, with the nearest potable groundwater supply some 4 km away.

The tyre stockpiles are located approximately 8 km from the coast. The primary pathway for effects on the **coastal environment** would be discharge of leachate to the river systems surrounding the Project sub area. As discussed above, adverse effects on nearby waterways and the coastal

[6] MfE, 2021 National Environmental Standards for Storing Tyres Outdoors – Users' Guide.

[7] Banasiak et al, 2019, ESR/University of Canterbury, Recycling of end-of-life tyres in civil engineering applications: Environmental implications (https://ir.canterbury.ac.nz/server/api/core/bitstreams/a9f94e5b-c056-4194-b402-984ed6137c98/content).

environment are expected to be very low, as most leachate-contaminated runoff from the tyre stockpiles will be treated before discharge.

5.2 Contaminant discharges from tyre fire

5.2.1 Fire risk

Tyres are made of material that can rapidly combust and once ignited can be difficult to extinguish. Up to seven litres of oily discharge can be created per tyre during tyre fires and can discharge directly to the ground, groundwater and/or to surface water bodies. If water is used during firefighting, this can increase the mobility of contaminants. The extent of leachate contamination from both the fire itself and fire-fighting water is dependent upon the volume of tyres burnt, duration of fire, duration of firefighting, volume of water applied, local subsurface conditions, and distance to the nearest potential receiving environment.

A number of mitigation measures are proposed (refer Section 4.3 and requirements in STO-ENV-PRO-040 and BPCP-ENV-PLN-015 v2.0**)** to reduce fire risk and to control magnitude of tyre fires. These include the following:

- Providing the stockpiles with formed access for fire fighting vehicles, with a minimum separation distance of 20 m between tyre stockpiles.
- Stacking tyres in accordance with the NES-STO guidance[7], either barrelled or laced method to reduce air space and hence the surface area that could be exposed to fire.
- Limiting the size of stockpiles and longer and narrower configurations (eg 20 m long x 6 m wide), instead of square stockpiles to provide better accessibility in the event of a fire.
- Providing readily accessible (water carts with foam) and sufficient volume of water to fight fires as indicated in Section 4.3.
- Isolating the tyre stockpiles from potential sources of ignition, e.g. hazardous substances storage areas and fuel tanks, maintaining the required setbacks outlined in Table 4.3.
- Having a fire and emergency response plan, specifically in relation to the storage of tyres (refer Section 3.5 of STO-ENV-PRO-040). This has been developed in consultation with Fire and Emergency New Zealand as indicated in Section 6.2 of STO-HCT-PCP-002.

5.2.2 Potential effects on land, freshwater, ecosystems and coastal environment

The risk of contaminants being released to water from a tyre fire would be greater than under normal (i.e. non fire) storage conditions. However, given the site setting (location with very high rainfall, low permeability soils, depth to groundwater), procedures and controls (setbacks and separation, runoff management and treatment) and appropriate on-site firefighting resources, the potential for any significant adverse effect on **land**, **surface** and **groundwater** including **ecosystems** and the **coastal environment** associated with a tyre fire is likely to be very low. Although runoff during high-flow events may bypass treatment, the likelihood of a tyre fire coinciding with such conditions is low, as high rainfall resulting in high-flow events would generally reduce the potential for ignition and limit fire development.

5.2.3 Potential effects on air quality, health and safety, and community

A wide range of contaminants can be discharged to air during a fire, along with particulate matter, as chemicals contained in the tyres break down during burning. Tyre fires can also have significant amenity effects such as odour concerns and visual concerns such as dense black clouds. The smoke and plume, and associated odour, from tyre fires can spread significantly into the surrounding area.

Depending on various factors such as wind speed, direction and duration the effects can be observed at a significant distance away from the source.

The tyre stockpiles are centrally located and are not in publicly accessible areas (refer Section 2.2). The stockpiles are also located away from sensitive receptors such as buildings, dense bush, residential properties etc (refer Section 4.4).

As described in Section 3.1, the Escarpment Extended Project sub area experiences moderate to strong wind speeds, with the prevailing wind in a westerly direction. As the sensitive receptors are significantly distant (3 km), located up or cross wind of the outdoor tyre storage areas, the potential for any fires to adversely affect nearby residents is considered very low.

5.3 Economic and environmental benefits

The ability to store tyres within the Escarpment Extended Project sub area will support mining activities that, in turn, provide the region with ongoing economic benefits such as employment, local procurement and contributions to the wider supply chain.

Having ready access to tyres on site ensures that essential machinery and equipment can be maintained without unnecessary delays, which in turn helps sustain production efficiency. Outdoor storage also allows old tyres to be repurposed for other practical and engineering uses such as retaining structures, traffic control. This reduces the need for new materials and associated costs, lowering operational costs and minimising the environmental footprint. It also allows tyres to be staged for responsible end-of-life processing through initiatives such as the TyreWise scheme, ensuring that final disposal or recycling occurs in a controlled manner.

Any potential environmental risks from outdoor storage, such as leaching or fire risk, can be effectively mitigated through appropriate site management measures, including designated storage areas with appropriate setbacks and separations, appropriate fire fighting equipment and regular inspections. When managed appropriately, it provides an environmental benefit by diverting tyres from landfill and avoiding unnecessary transport for disposal.

5.4 Qualitative risk assessment

The qualitative risk assessment, summarised in Table 5.1, indicates that the potential for adverse environmental effects, under both normal operating conditions and during a fire event, is very low.

Table 5.1: Qualitative risk assessment

Impact to	Potential receptors	Risk category	Comment
Normal operations			
Soil/Land	On-site workers	Low	While contaminants leached from tyre piles are expected to be largely retained in near surface soils, the impact is likely to be limited to around the tyre storage area and the concentrations are unlikely to be at levels that would pose a risk to mine workers.

Impact to	Potential receptors	Risk category	Comment
Surface water runoff	Offsite ecological receptors, potable and recreational users of adjacent stream catchment	Very low	Most runoff from the tyre storage areas will be captured and treated before discharge into the receiving envrionment. Some runoff could bypass treatment during high rainfall/flow events. The volume would be small relative to other mine water flows. The discharge is to streams already affected by historic mining and subject to ongoing water quality monitoring.
Groundwater	Ecological receptors of adjacent stream catchment Potable groundwater users	Very low	Likelihood of contamination for the waste tyre storage areas reaching groundwater is very low due to low permeability ground conditions and the significant depth to groundwater. In addition, groundwater beneath the tyre storage areas is anticipated to flow towards the mine pit and be directed towards the mine water management/treatment system. There are also no nearby potable groundwater users; the nearest is at least 4 km away.
Coastal environment	Coastal ecological receptors	Very low	Leachate contaminated water from the tyre piles will be mostly treated prior to discharge. Additionally, the coast is located a significant distance away (some 8 km).
In the event of a fire			
Soil/Land	On-site workers	Low	Engineering / management measures are proposed to reduce likelihood of fire event (refer Sections 4.3 and 5.2.1). It is anticipated that, soils/land impacted by a fire will be cleaned up (most likely excavated and removed) and the area reinstated.
Surface water runoff	Offsite ecological receptors, potable and recreational users of adjacent stream catchment	Very low	According to the MSDS, the firefighting foam is not Class 9 (ecotoxic). All firefighting water is expected to be collected and channelled to the mine's water management system. It is anticipated that the water will be treated and an assessment completed before the water in the pond will be allowed to discharge to nearby waterways. Additionally, high rainfall events would generally reduce the fire ignition potential and limit fire development, such that the likelihood of a tyre fire coinciding with an untreated spill discharge from the surge pond directly to the receiving environment is low.

Impact to	Potential receptors	Risk category	Comment
Groundwater	Ecological receptors of adjacent stream catchment Potable groundwater users	Very low	Likelihood of contamination for the waste tyre storage areas reaching groundwater is low due to the depth to groundwater. Groundwater beneath the tyre storage areas is anticipated to flow towards the mine pit and be directed towards the mine water management/treatment system. In addition, there are no nearby potable groundwater users; the nearest is at least 4 km away.
Coastal environment	Coastal ecological receptors	Very low	Leachate contaminated water and firefighting water from the tyre piles will be assessed and treated prior to discharge. Additionally, the coast is located a significant distance away (some 8 km).
Air quality	Nearby residents/communities	Very low	Receptors are significantly distant (3 km), located up or cross wind of the outdoor tyre storage areas

6 Conclusions and recommendations

T+T has undertaken this technical assessment for Bathurst to support an application under the FTAA for the BPCP which will, amongst other things, provide access to additional mining areas including the Mount Frederick South Project sub area and the Escarpment Extended Project sub area across the Buller Plateaux. This assessment has been undertaken with respect to the outdoor storage of tyres against the provisions of the NES-STO at the Escarpment Extended Project sub area.

Key findings of the assessment are:

- New outdoor tyre storage areas will be required at the Escarpment Extended Project sub area to support mining operations across the BPCP. Five outdoor stockpiles and two to three 40-foot containers are proposed at the Central Infrastructure and Coal Handling Infrastructure areas.
- A restricted discretionary consent is required under the NES-STO as more than 100 m^3 of tyres will be stored outside.
- Bathurst proposes to manage the new tyre storage areas at Escarpment Extended Project sub area in a similar manner to that which currently exists at the Stockton mine in accordance with STO-ENV-PRO-040 and BPCP-ENV-PLN-015 v2.0. The proposed tyre storage measures are considered to meet relevant environmental performance requirements and are consistent with good practice for environmental risk management.
- Considering the site conditions (remote location, low-permeability soils, deep groundwater), and the proposed management procedures and controls, the likelihood of adverse effects to the environment (land, freshwater, ecosystems, coastal environment, air quality and communities), under both normal operating conditions and during a fire event, is assessed as very low.

7 Applicability

This report has been prepared for the exclusive use of our client Bathurst Resources Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application under the Fast-track Approvals Act 2024 and that an Expert Panel as the consenting authority will use this report for the purpose of assessing that application.

We understand and agree that this report will be used by the Expert Panel in undertaking its regulatory functions in connection with Buller Plateaux Continuation Project.

8 Compliance with the Environment Court Practice Note 2023

I confirm that, in my capacity as author of this outdoor tyre storage assessment, I have read and abided by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses contained in the Practice Note 2023.

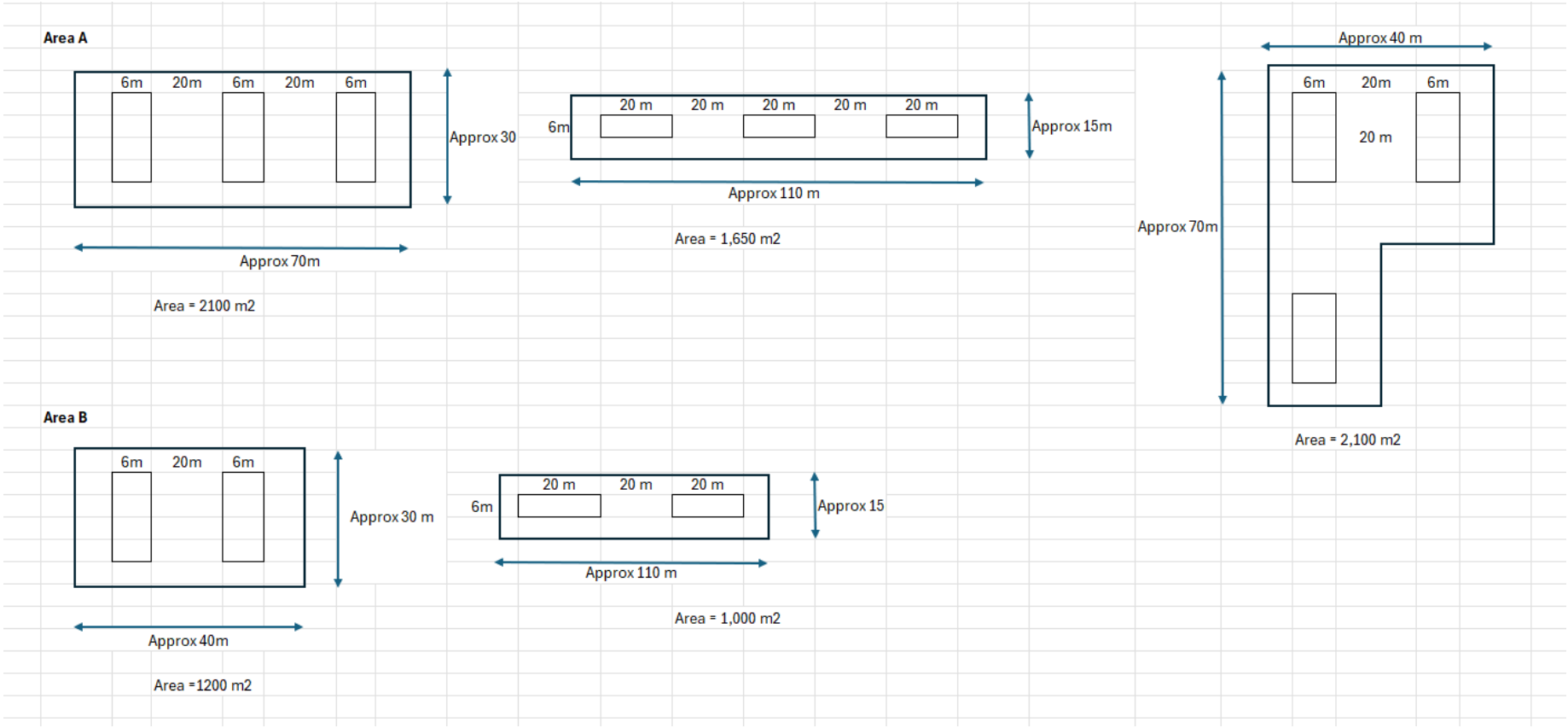
I am employed by Tonkin & Taylor Limited. I hold the degree of Bachelor of Engineering from the University of Canterbury. I am a Chartered Professional Engineer (CPEng, IntPE (NZ)) and a Site Contamination Chartered Environmental Practitioner (CEnvP(SC)). I have over 30 years post-graduate experience in environmental consulting.

I am the technical lead for the preparation of numerous technical assessments to support resource consents in relation to potential discharges to the land and water for a range of proposed developments including the Auckland downtown carpark, Te Ararata Flood Resilience Project and Herne Bay collector tunnel project.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

[redacted]

Appendix A Conceptual plans for tyre storage area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6m
20m
6m
Approx 30
Approx 70m
Area = 2100 m2
6m
20 m
20 m
20 m
20 m
20 m
Approx 15m
Approx 110 m
Area = 1,650 m2
Approx 40 m
6m
20m
6m
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Approx 70m
Area = 2,100 m2
Area B
6m
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6m
Approx 30 m
Approx 40m
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6m
20 m
20 m
20 m
Approx 15
Approx 110 m
Area = 1,000 m2

Not to scale

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