

DESIGN AND AMENITY

The proposed area within Whitehorse Gully for the new TSF has now been fenced to prevent public access and protect the community from existing hazards, future construction and operations. However, the Tinworth Ave walking track will be retained and we are currently looking at opportunities to improve the positive recreational uses while managing the rubbish dumpers and other less desirable activities.

We have been working with AECOM to ensure the design of the Whitehorse Gully TSF includes buffers and offset requirements from residential housing to minimise the visual impacts to our neighbours.

To reduce the visual impact, the final height of the embankment has been reduced to below the height of the existing pines. Hancock Victoria Plantations has harvested their pines within the proposed TSF site. Ballarat Gold Mine has purchased around 5 hectares of pines to create a visual buffer for residents.

Photomontage: Views from Tinworth Ave Mt Clear and Darling St Sebastopol of proposed Whitehorse Gully tailings storage facility at closure.



The proposed concept design prescribes no impact to the native vegetation on the eastern side along Tinworth Ave. We are also considering complementary indigenous plantings to enhance the visual screening.

Ballarat Gold Mine will continue its Compliance Monitoring Program during the construction phase to reduce any impact from dust, water and noise impacts on the community and the environment.

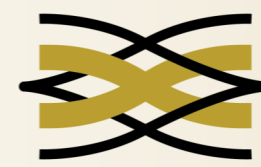
LISTENING TO OUR COMMUNITY

Our new website ballaratgoldmine.com.au is a useful tool for information, education and receiving feedback from the community.

We are currently undertaking an online survey of our community and hope you can take part in by going to <https://www.surveymonkey.com/r/ballaratgoldmine>.

24/7 Contact

If you have any concerns or enquires relating to our mining operations we encourage you to contact us on 5327 2555 | info@ballaratgoldmine.com.au | ballaratgoldmine.com.au



**BALLARAT
GOLD MINE**

Proposed Tailings Storage Facility Information sheet

Ballarat Gold Mine is owned and operated by Castlemaine Goldfields Pty Ltd (CGT) from their facility in Mt Clear. Our primary focus is the high-grade underground gold mine in Ballarat, which started producing gold in September 2011.

Ballarat Gold Mine currently operates the Terrible Gully Tailings Storage Facility (TSF) as its sole tailings storage facility. The TSF built in 2005 is a gully infill design located immediately south of the mine and to the east of the Central Highlands Water Ballarat Sewage Treatment Plant.

PROPOSED WHITEHORSE GULLY TSF

It is anticipated that the Terrible Gully TSF will be filled to capacity by end 2021. Ballarat Gold Mine is currently undertaking investigations and design work for a new tailings dam in the adjoining Whitehorse Gully.

The image (right) shows the proposed site, north of Whitehorse Rd and south of the current tailings dam. This is in the recently burnt area and the adjacent pine plantation.

The concept design is for a facility about the same size and with similar construction methods as the existing facility.

Just as important as complying with our various licence conditions is communicating to our neighbours about what we are doing, and what we can do to reduce our impacts to you. We now have sufficient information about the project to talk specifically about what our plans are for the new TSF. This fact sheet is an overview and we encourage you to read it and get in touch with us if you need any further information.



ENVIRONMENT AND COMMUNITY

Potential impacts to the environment, our neighbours and the broader community are a key consideration during the design and implementation of the new TSF. Ballarat Gold Mine has been undertaking a wide range of investigations to assist in preparing engineering designs and a conceptual work plan for the project.



There are currently over a 100 specific licence conditions that we have to comply with at Ballarat Gold Mine from EPA Victoria, Earth Resources Regulation and the City of Ballarat, including Noise, Water, Traffic, Vibration, Dust and Land Management.

We are in regular contact with our regulators during operations and in the development of new projects such as the Whitehorse Gully TSF to ensure they are aware of what we are doing.

The recent investigation work into the Conceptual Design for the TSF has informed a risk-based Work Plan which has been submitted to Earth Resources Regulation (ERR). Once ERR is satisfied with the detail in the Work Plan it will be sent to other regulatory authorities as part of a referral process. Once the regulators are satisfied the risks are adequately addressed, the Work Plan can be formerly endorsed by ERR and submitted to the City of Ballarat for a Planning Permit. The Planning Permit stage has the same statutory requirements for advertising and public submission as other similar sized projects.

WHAT GUIDELINES ARE FOLLOWED FOR BUILDING A LARGE TAILINGS STORAGE FACILITY?

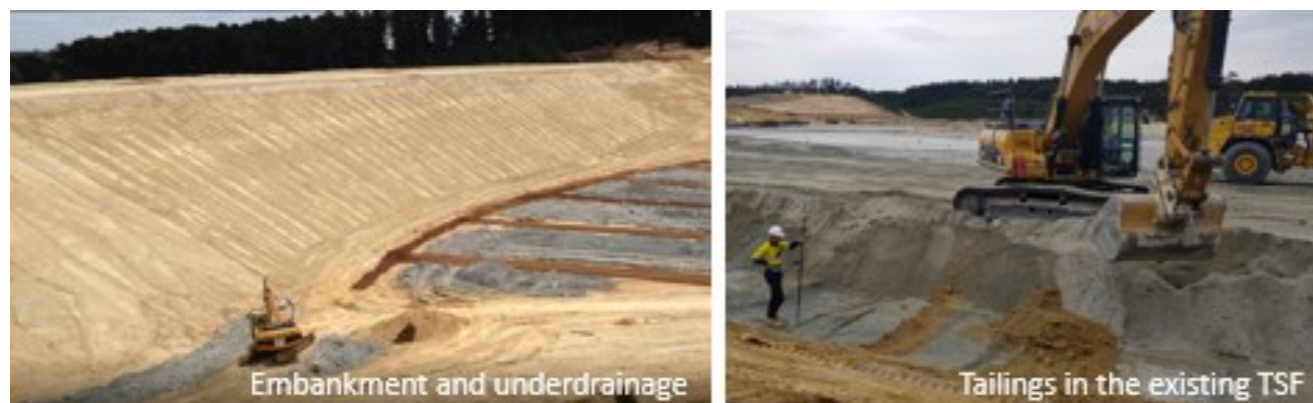
Ballarat Gold Mine has been working with infrastructure firm AECOM to investigate the development of a new tailings storage facility in Whitehorse Gully.

AECOM has been assisting Ballarat Gold Mine with the conceptual design, development of the work plan, and site investigations. AECOM's team of specialists will ensure that the design and construction, throughout its operational life and after closure, complies with the *Guideline for the Design and Management of Tailings Storage Facilities* from Earth Resources Regulation (ERR 2017), and the Australian National Committee on Large Dams' *Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure (ANCOLD 2012)*. We have also engaged Golders and Associates to peer review the AECOM design against the guidelines.

These guidelines ensure that the management of the tailings storage facility is undertaken in a manner that is safe, structurally stable and protects the environment; minimises impacts on public safety, public infrastructure; and is rehabilitated to minimise social impact, adverse visual amenity and long-term risks to the environment. It also ensures we adopt best industry standards and practice, and achieve continual improvement in tailings management.

KEY DESIGN FEATURES

The safety of our community is important to Ballarat Gold Mine so we have taken extra measures to design the TSF. We are undertaking site investigations to ensure the geology and historic mine shafts are thoroughly identified and managed. The TSF is designed to withstand extreme flood and earthquake scenarios. For example, earthquake modelling is calculated using the worst case scenario of 1 in 10,000 years and shows that the dam will not fail. Similarly for flood events, design modelling shows the TSF will withstand the worst case scenario of 1 in 1,000,000 years.



While our TSF is designed to the same standards as a water reservoir it actually contains crushed rock (tailings) and is operated to be as dry as possible. Excess water in the TSF is pumped back to the processing plant for recycling, thus ensuring a 'closed system' where no materials escape from the designated TSF system.

The TSF will have a thick compacted clay liner over the full extent of the floor and embankment which will minimise the leakage to an extremely low permeability of less than 1×10^{-8} m/sec. A network of slotted pipes are placed on the clay liner to act as underdrainage collection points. The water in the underdrainage system is pumped back to the processing plant. This is part of keeping the tailings as dry as possible to assist with dam stability, minimising leakage to the environment and ultimately the final closure of the TSF.

A 15 m wide vegetation corridor adjacent to Whitehorse Road will provide a visual buffer, space for surface drainage, and retain some recreational space for the community. Visual impacts will also be reduced using existing vegetation by limiting the maximum elevation for the embankment crest to less than RL451 m.

During the operational phase of the TSF, the existing TSF Operational Plan will extend to include the Whitehorse Gully facility. This plan includes specific dam surveillance requirements to ensure the detection of problems and their development and/or unsafe trends in dam performance; movement of groundwater; seepage monitoring; dam embankment stability; procedures for day to day operations and an emergency plan. This plan and monitoring includes online instrumentation and daily checks, monthly and quarterly data review as well as formal external audits by independent TSF experts. These checks and balances are put in place to ensure compliance to the Work Plan and ANCOLD guidelines.

TIMELINE for PHASE 1

	2019	2020		2021	
	End	Jan — Jun	Jul — Dec	Jan — Jun	Jul — Dec
Final Concept Design and Work Plan					
Planning permit to City of Ballarat					
Community consultation					
Construction Phase 1					
Operations begin					

TRAFFIC

There will be some changed traffic conditions during mobilisation and demobilisation of the construction fleet similar to those experienced previously. On occasions, VicRoads requires some of the larger earthmoving equipment to turn left into Tinworth Avenue from Whitehorse Road, rather than off Geelong Road.

In line with the City of Ballarat curfew times, these activities will only occur **Mon-Fri 7:00am-6:00pm** to ensure minimal disturbance to the surrounding community. Loads will be fully escorted and will have traffic management in place.

CONSTRUCTION

The Whitehorse Gully tailings storage facility has been designed to allow for construction to occur in phases. Phase 1 is the initial construction of the embankment into the underlying rock foundation and then pipework, underdrainage and the pumping system. This phase needs to be ready to receive mine tailings by early 2022. It is expected that this stage will meet the mine's needs for approximately 3 years. Subsequent phases will 'lift' the embankment to provide additional capacity for an additional 9 years of tailings storage.



Phase 1 construction should be ready to commence in 2020 with site preparation potentially in early spring. The major works should take place in summer 2020 to the end of 2021. Construction activities will be similar to previous works at the mine such as the recent 'lift' to the Terrible Gully facility. It will include excavators, dozers, scrapers, compactors, haulage and water trucks.

As with previous construction projects, Ballarat Gold Mine will select and closely monitor a contractor capable of complying to all the Environmental and Community policies including the site's strict compliance limits for noise, dust, water, heritage and curfew times for the duration of the project.