PHU BIA MINING

GISTM Disclosure Report

Phu Kham Tailings Storage Facility

1. Introduction

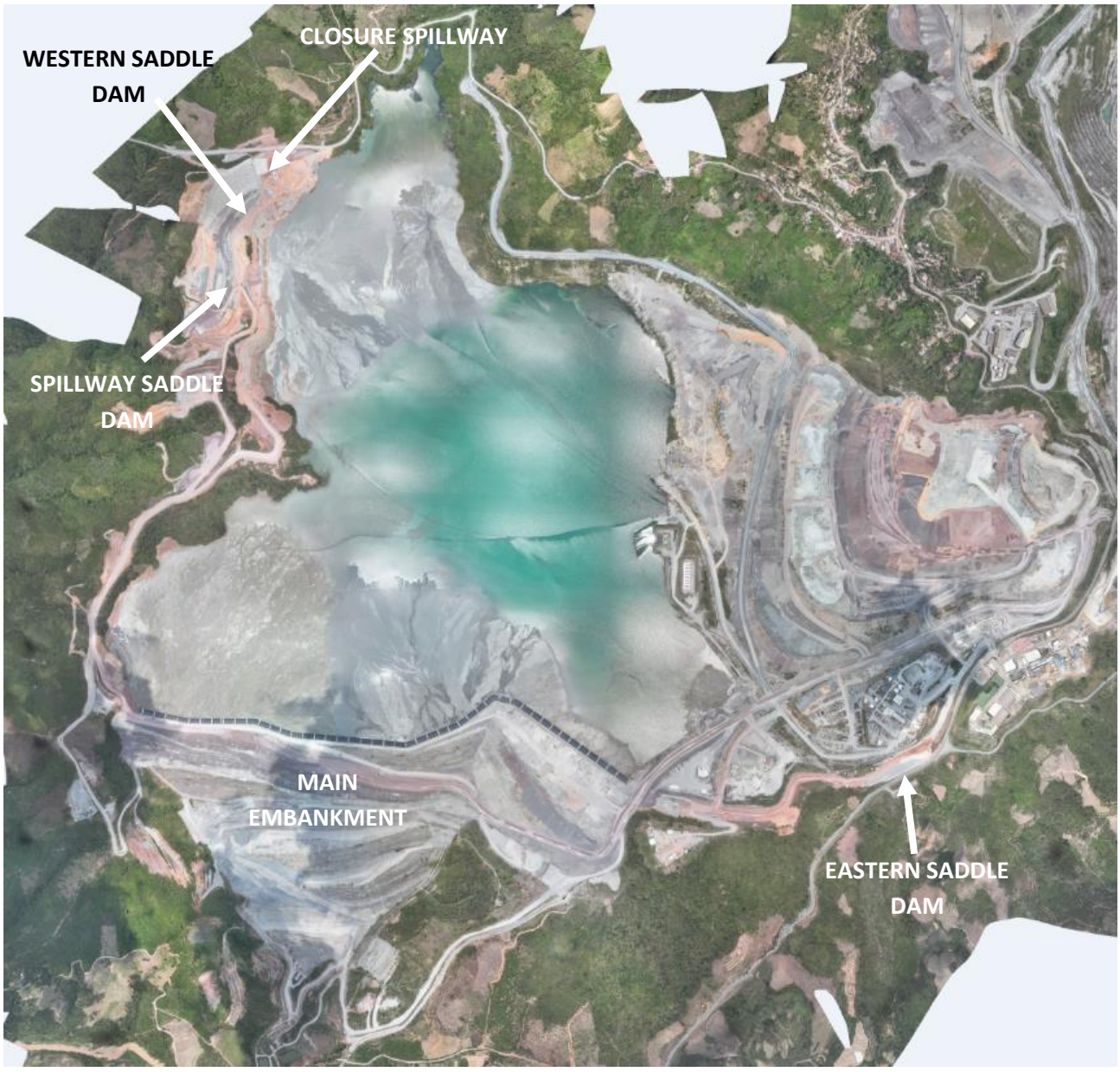
The purpose of this GISTM Disclosure Report is to provide a summary of information for the Phu Kham (PKM) Tailings Storage Facility (TSF), support public accountability and provide information required under Requirement 15.1 B of the Global Industry Standard on Tailings Management (GISTM).

This document will be updated on an annual basis. This latest revision is dated April 2025.

2. TSF Description

The Phu Kham (PKM) Tailings Storage Facility (TSF) is located in the province of Xaysomboun, approximately 110 km north of the capital of Vientiane in Laos PDR. The TSF is owned and operated by Phu Bia Mining, a subsidiary of PanAust Limited. It consists of an earth/rockfill cross-valley main embankment and three smaller saddle dams, all constructed using the downstream method.

The TSF embankment (and saddle dam embankments) have been designed as multi-zoned earth/rock fill dam structures, which include an upstream low-permeability core (Zone A) to reduce seepage through the embankment, inclined filters (Zone F1) and chimney drains (Zone F2) constructed downstream of the low permeability zone. Zone F1 and F2 capture any seepage through the low permeability zone and promote drainage of the embankment. The embankment then has downstream structural fill (Zone C) to provide structural support to the filter and the low-permeability zone. The initial construction began in 2006 and the facility has been raised almost annually in line with mine production. Construction generally occurs between October and May each during the dry season in Laos.



A summary of key characteristics for the PKM TSF is presented in the table below:

Characteristic	PKM TSF
Status	Active
Years in Operation	17 (2008)
Height: Current / Final	Main Embankment: 187.5 m / 190 m Western Saddle Dam: 22.5 m / 25 m Spillway Saddle Dam: 36.5 m / 39 m Eastern Saddle Dam: 15 m / 15 m
Design Storage	273.8 Mt
Tailings Production Rate	10 Mtpa

The PKM TSF Life of Mine (LoM) has recently been extended. It is now constructed to an elevation of 584.5 mRL and will be raised again to the LoM elevation of 587 mRL through the 2025-2026 build season. The existing embankments have been designed to meet closure criteria.

The TSF water management includes a curved riprap chute spillway in the northwest of the facility, which is designed to pass the probable maximum precipitation (PMP) event into a tributary downstream of the western saddle dam. A diversion channel (Houay Kham Diversion) intercepts runoff from the northern catchment and diverts it to the same tributary to prevent rainfall runoff filling the TSF. Closure surface water drains are constructed on the main embankment to control runoff from the embankment and abutments. During operations a decant system returns water from the TSF pond to the processing plant and excess water in the TSF pond during the wet season is discharged to the Nam Mo River, following permit conditions.

3. Consequence Classification

A dam breach inundation study has been completed for the 582mRL facility and it determined that the PKM TSF has a consequence classification of “Extreme” under the ANCOLD (2019) classification. It is important to note the classification is only related to consequence and does not consider likelihood or denote risk. The TSF has been designed to more stringent design criteria due to the classification and meets or exceeds guideline factors of safety.

4. Risk Management

PBM regularly undertake and review detailed risk assessments using the PanAust cooperate risk assessment criteria. Potential risks are identified and controls are adopted to mitigate / minimise these risks. Risk levels are then determined using a matrix based on consequence and likelihood scales. The risk-level matrix from the PanAust Risk Standard is presented below.

Likelihood Scale	Consequence Scale								
	Slight (1)	Low (2)	Medium (3)	High (4)	Extreme (5)	Extreme (6)	Extreme (7)	Extreme (8)	Extreme (9)
Almost Certain (5)	5 (M)	10 (M)	15 (H)	20 (H)	25 (H)	30 (VH)	35 (VH)	40 (VH)	45 (VH)
Likely (4)	4 (L)	8 (M)	12 (M)	16 (H)	20 (H)	24 (H)	28 (VH)	32 (VH)	36 (VH)
Possible (3)	3 (L)	6 (M)	9 (M)	12 (M)	15 (H)	18 (H)	21 (H)	24 (H)	27 (VH)
Unlikely (2)	2 (L)	4 (L)	6 (M)	8 (M)	10 (M)	12 (M)	14 (M)	16 (H)	18 (H)
Rare (1)	1 (L)	2 (L)	3 (L)	4 (L)	5 (M)	6 (M)	7 (M)	8 (M)	9 (M)

Material risks for the PKM TSF relate to main embankment failure modes. A number of controls are in place that have reduced the likelihood of these risks to the lowest level (rare). These controls include the following:

- Appointment of a reputable design engineer (Knight Piésold).
- Internal engineering reviews by the PBM technical team (TSF and Geotech Manager, TSF Superintendent, TSF Construction Superintendent, QAQC and Monitoring Superintendent and Senior Engineers).
- External Reviews by the Engineer of Record (EoR), Tailings Independent Review Panel (TIRP) and a Comprehensive Dam Safety Assessment.
- Extensive array of instrumentation with alert systems, which include deformation, pore water pressure, and flow monitoring.
- Daily inspections of the TSF and regular performance monitoring by the EoR and PBM technical team.
- Skilled experienced workforce and construction contractor.
- High level of quality control and quality assurance of materials before and after placement.
- Good quality monthly reporting and annual construction reports with as-built drawings.

Risk assessments are reviewed by the EoR and TIRP on an annual basis or when there are design changes to the TSF.

5. Impact Assessment

An assessment of impacts was completed as part of the PKM TSF Dam Breach Study (2023) that produced inundation maps for fair weather and flood induced scenarios. The assessment confirmed the consequence classification and is used to support the PKM TSF Emergency Response Plan (ERP). The assessments identified the population at risk from a theoretical embankment failure and that it has potential to impact local infrastructure, economy and environment. The impact assessments aides in implementing mitigation measures and developing the ERP. Detailed information is presented in the PKM ERP.

6. Design for all Phases of the TSF

The development of the TSF phases at PKM can be summarised as follows:

- Stage 1A of the TSF was constructed between September 2006 and May 2007. This stage of development allowed for the harvesting of water prior to the commissioning of the plant and had a maximum embankment height of approximately 37.0m.
- Construction of Stage 1B of the TSF commenced in September 2007, with the crest being brought to design level in January 2009. The maximum Stage 1B embankment height was approximately 82.0m.
- Commissioning of the mill and processing plant occurred in April 2008, with tailings deposited into the facility during the construction of Stage 1B.
- Construction of the Stage 2 embankment commenced in September 2008, with the Stage 2 embankment completed in November 2009. The maximum Stage 2 embankment height was approximately 90.0m.
- Construction of the Stage 3 embankment commenced in May 2009 with the Stage 3 embankment constructed to an elevation of 520.0 mRL by the end of August 2010. The Stage 3 embankment height was approximately 100.0m.
- Construction of the Stage 4 embankment commenced in September 2010 and was scheduled to be completed by May 2011. However, due to the lack of production of filter materials it was decided that the Stage 4 construction should be completed in June 2011, with all additional work after this date being part of the Stage 5 construction.

- Construction of Stage 5 commenced in July 2011 and the crest had been brought up to the Stage 5 design level by June 2012.
- Stage 6 construction commenced in July 2012, with the downstream raise completed in March 2014 to elevation of 542.8 mRL.
- Construction of Stage 7 downstream raise was commenced in November 2013 and had been completed up to an elevation of 530 mRL prior to onset of 2015 wet season. At the end of 2016, the crest elevation was approximately 554.5 mRL with the maximum embankment height being approximately 155.0 m.
- Construction of Stage 8 commenced in September 2016 and during the 2016-2017 build season, took the embankment crest to an elevation of 560.4 mRL and the downstream raise to 551.5 mRL.
- Construction of Stage 9 commenced in August 2017 and during the 2017-2018 build season, has taken the crest up to 567.0 mRL and the downstream raise to 541.0 mRL.
- Construction in 2018-2019 build took the embankment crest elevation up to 569.0 mRL
- The construction during the 2019-2020 build took the embankment crest up to an elevation of 573.3 mRL. The raise also includes the construction of a saddle dam at the northwest of the facility, which was also be constructed to 573.3 mRL. The spillway was raised to an invert of 569.6mRL
- The 2020-2021 construction took the Main Embankment to a level of 577mRL, the Western Saddle Dam and Spillway were not raised.
- The 2021-2022 construction took the Main Embankment up to an elevation of 579.5 mRL, the Western Saddle Dam to 577.3 mRL and the spillway to an invert of 573.0 mRL.
- The 2022-2023 construction raised the Main Embankment up to an elevation of 582.0 mRL with no raises to the Western Saddle Dam and Spillway.
- The 2023-2024 construction took the Western Saddle Dam to 582.0 mRL. The Spillway was converted to a saddle dam (Spillway Saddle Dam) to 582.0 mRL. A curved riprap chute Closure Spillway was constructed to the north of the Western Saddle Dam with an invert elevation at 578.1 mRL. The structure has been designed to safely pass the Probable Maximum Flood (PMF) without exceeding the 1 m dry freeboard plus the 0.5 m settlement criteria.
- The 2024-2025 build season raised the Main Embankment, Spillway Saddle Dam and Western Saddle Dam to 584.5 mRL and Eastern Saddle Dam to 587 mRL. The Closure Spillway was raised with the invert now at 581.3 mRL.

7. External Review and Environmental and Social Monitoring Programmes Findings

An Engineer of Record (EoR) with suitable expertise and experience is engaged and an annual inspection is completed by a Tailings Independent Review Panel (TIRP). The EoR performs three inspections annually, including an Annual Dam Safety Review (ADSR). An independent Comprehensive Dam Safety Review (CDSR) is completed once every 3 to 5 years.

Dates of the most recent and the next reviews are presented in the following table:

Review	Most Recent	Next
EoR Inspection 1	January 2025	January 2026
EoR Inspection 2	May 2024	May 2025
EoR ADSR	October 2024	October 2025
TIRP	May 2024	May 2025
CDSR	May 2024	May 2027-2029

The most recent inspections have resulted in no material findings. The EoR inspection concludes the TSF is constructed in accordance with the design and the changes to the design implemented during construction are in line with the design intent, and performing and being operated in accordance with the design intent, performance objectives and indicators, applicable guidelines, standards and regulatory requirements. The TIRP concurred with this statement.

The PBM Environmental and Social Management Monitoring Programme (ESMMP) includes weekly monitoring of surface and groundwater quality. The surface water is monitored upstream of the TSF to obtain ambient readings, at the TSF pond, outfall drains, treatment pond and the downstream compliance location. Groundwater monitoring is undertaken around the TSF perimeter. Noise, air quality and biodiversity are also included in the environmental monitoring. No exceedances have been identified in the environmental monitoring for PKM TSF. Social monitoring is performed following Community Management Plans that have been developed for community relations, community development and community health and safety.

8. Emergency Response Plan

The ERP is updated annually at the end of each construction season and drills / training are completed annually so personnel are aware of their roles and responsibilities. The ERP is based on the impacts identified in the Dam Breach Assessment.

PBM have a site based Significant Incident Management Team (SIMT) that manage incidents that affect the regional business or operation, there is also a Field Response Team who manage the emergency response. A Crisis Management Team at PanAust Ltd in Brisbane is initiated if the incident affects PanAust Ltd.

Meetings have been held with community leaders to discuss procedures during an emergency. Following productive feedback from the community the ERP was updated to reflect comments and suggestions. Further meetings are proposed, and community leaders will attend ERP drills.

The ERP includes the following information:

- Roles and responsibilities of key personnel and their contact details.
- Regulatory and training requirements.
- Information on warning systems and procedures for the local community population at risk.
- Communication procedures and contact details of relevant external bodies.
- Resources available in the event of an emergency.
- The emergency response plan protocol and hazard levels.
- Early planning considerations for imminent emergency for each department.
- Flow charts to identify the procedure for each incident and details on the main threats and emergency response considerations.
- Site maps with access routes, muster points and inundation zones.
- Information on breach wave arrival times and inundation depths at key locations.

9. Closure Financial Capacity

PanAust confirm it has the financial capacity to cover the costs of closure and post-closure of the PKM TSF.