



**PLAN
TSF3 ENVIRONMENTAL
COMISSIONING**

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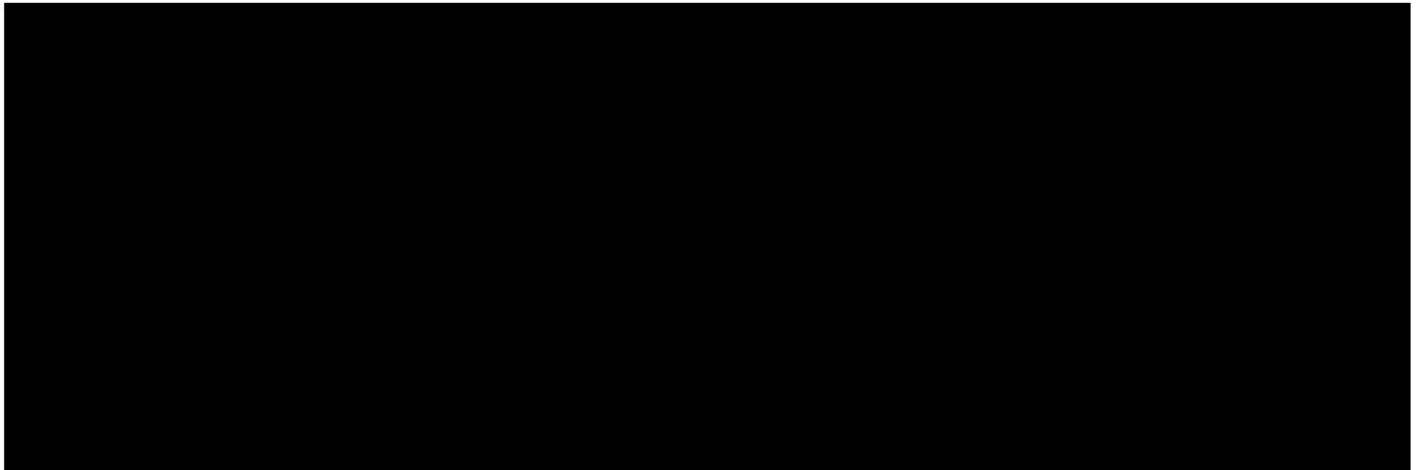




TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	OBJECTIVES.....	1
3.	SCOPE OF COMMISSIONING	1
4.	COMMISSIONING SEQUENCE AND TIMEFRAMES	1
5.	INPUTS AND OUTPUTS	2
6.	EXPECTED EMISSIONS AND DISCHARGES	2
7.	MONITORING AND MEASUREMENT	2
8.	CONTROL MEASURES	2
9.	CONTINGENCY PLANS.....	3
10.	COMPARISON TO STANDARD OPERATIONS	4
11.	RISK ASSESSMENT AND MITIGATION	5
12.	STAKEHOLDER COMMUNICATION	6

LIST OF TABLES

Table 1 – Project Sequence and Timeframes	1
Table 2 – Risk Assessment and Mitigation Summary	5



1. INTRODUCTION

This Environmental Commissioning Plan outlines the approach and procedures for commissioning activities associated with the construction of the Tailings Storage Facility 3 (TSF3) at Cosmos. This plan aims to ensure that environmental and regulatory standards are met during the commissioning phase, minimizing potential environmental impacts, and ensuring the facility's safe operation.

2. OBJECTIVES

The primary objectives of this Environmental Commissioning Plan are to:

- Safely commission the TSF construction activities in compliance with environmental regulations and permits.
- Identify and mitigate potential environmental risks associated with construction.
- Establish a systematic approach to monitor emissions, discharges, and environmental parameters during commissioning.
- Ensure a smooth transition to standard TSF operations once commissioning is complete.

3. SCOPE OF COMMISSIONING

The commissioning activities for the TSF construction will include but are not limited to:

- Construction Inspection and Verification
- Equipment and Systems Installation
- Functional Testing
- Safety Systems Testing
- Control System Integration
- Hydraulic Testing
- Instrumentation Calibration
- Electrical Systems Testing
- Emergency Response Preparedness
- Water Management Testing
- Environmental Controls
- Testing of Containment Structures
- Operational Simulations
- Health and Safety Compliance
- Documentation and Records
- Training and Familiarization
- Regulatory Compliance Check
- Quality Assurance and Quality Control (QA/QC)

4. PROJECT SEQUENCE AND TIMEFRAMES

The project sequence for TSF3 will be conducted in the following sequence, with estimated timeframes for each phase (Table 1).

Table 1 – Project Sequence and Timeframes



Item	Infrastructure	Stage	Duration
1	TSF3 Starter Embankment, tailings delivery and return pipelines, and spigots.	Commissioning	60 days
		Time Limited Operations	180 days
2	TSF3 Raise, tailings delivery and return pipelines, and spigots.	Commissioning	60 days
		Time Limited Operations	180 days

5. INPUTS AND OUTPUTS

The commissioning process will require the following inputs and outputs:

- **Inputs:** Tailings, Water, Reagents and Chemicals
- **Outputs:** Stored Tailings, Water Discharge

6. EXPECTED EMISSIONS AND DISCHARGES

During the commissioning phase, the following emissions and discharges are anticipated:

- **Dust emissions:** can be generated during the deposition and drying of tailings. Dust emissions may contain particulate matter, which can be a concern for air quality.
- **Groundwater discharges:** Water seepage into the underground system. This can be a concern because of groundwater mounding and/or contamination.
- **Seepage water:** refers to water that may migrate through the TSF embankment due to hydraulic gradients. While some seepage is expected, it is generally managed and monitored to prevent the release of contaminants.

7. MONITORING AND MEASUREMENT

To ensure compliance and environmental performance, the following monitoring and measurement activities will be conducted:

- Groundwater level and quality monitoring of the surrounding bore network and piezometers.
- Groundwater recovery to mitigate mounding and maintain suitable groundwater levels (below 6mbgl).
- Dust deposition monitoring where there are identified sensitive receptors.
- Daily inspections of tailings storage facility, checking for seepage.

8. CONTROL MEASURES

The following control measures and best practices will be implemented during commissioning:

- Commissioning Plan
- Safety Protocols
- Quality Assurance
- Systematic Testing
- Functional Testing
- Environmental Controls
- Monitoring and Data Collection
- Documentation and Records

- Contingency Plans
- Regulatory Compliance
- Personnel Training
- Communication and Reporting
- Independent Reviews

9. CONTINGENCY PLANS

In the event of emissions exceedances or unplanned discharges, the following contingency plan will be executed:

Immediate Response

- Activate the emergency response team and notify all relevant personnel of the situation.
- Ensure the safety of all personnel and evacuate the affected area if necessary.
- Isolate the source of the emissions or discharges to prevent further release.
- Shut down or isolate the affected equipment or systems, if applicable.

Containment and Mitigation

- Implement immediate containment measures to prevent emissions or discharges from spreading.
- Activate emergency controls, such as spill containment kits, barriers, or diversion structures.
- Begin containment and recovery efforts to minimize environmental impact.

Communication

- Notify regulatory authorities and relevant environmental agencies as required by permits and regulations.
- Notify local emergency responders, if necessary, and coordinate with them on response efforts.
- Inform the local community and stakeholders as appropriate, providing clear and accurate information about the situation and any potential risks.

Investigation and Root Cause Analysis

- Conduct a thorough investigation to determine the root cause of the emissions exceedance or unplanned discharge.
- Identify contributing factors, equipment failures, or human errors that led to the incident.
- Document all findings for later analysis and reporting.

Corrective Actions

- Develop a corrective action plan to address the root causes identified during the investigation.
- Implement corrective actions promptly to prevent a recurrence of the incident.
- Ensure that affected equipment or systems are repaired, upgraded, or replaced as needed.

Environmental Remediation

- Develop and implement a plan for the remediation and cleanup of any environmental damage caused by the emissions or discharges.



- Remediate affected soil, water, or air quality in accordance with regulatory requirements and environmental best practices.

Monitoring and Reporting

- Continue monitoring emissions, discharges, and environmental conditions to confirm that the situation is under control and that corrective actions are effective.
- Report all actions taken, monitoring results, and progress on corrective actions to regulatory authorities, environmental agencies, and stakeholders.

Review and Lessons Learned

- Conduct a comprehensive review of the incident, response, and corrective actions taken.
- Identify lessons learned and areas for improvement in the facility's systems, procedures, and training.
- Update the facility's emergency response plan and environmental management practices based on the lessons learned.

Preventive Measures

- Implement preventive measures and enhanced monitoring to reduce the risk of similar incidents in the future.
- Conduct training and drills to ensure that personnel are prepared to respond effectively to emergencies.

Regulatory Compliance

- Ensure that all actions taken during the incident response and recovery process follow environmental regulations, permits, and reporting requirements.

10. COMPARISON TO STANDARD OPERATIONS

Highlight any temporary measures or adjustments that differ from standard TSF operations during the commissioning phase.

- **Tailings Deposition Rate:** During commissioning, the rate of tailings deposition may be adjusted to allow for systematic testing and monitoring of the facility's infrastructure and systems. This rate may be lower than the planned operational rate to ensure that tailings can be managed effectively during testing.
- **Water Management:** Temporary adjustments to the water management system may be made to control the inflow and outflow of water within the TSF. This may involve modifying the operation of decant systems, water diversion structures, or underdrains to optimize their performance during commissioning.
- **Seepage Control:** Special attention may be given to monitoring and controlling seepage water during commissioning. Seepage collection systems and monitoring wells may be actively used to assess seepage rates and water quality.
- **Emissions Control:** Dust emissions control measures may be enhanced during commissioning to minimize environmental impacts. This could include increased dust suppression efforts and stricter adherence to emission control protocols.
- **Environmental Monitoring:** Environmental monitoring activities may be more intensive during commissioning to assess the impact of operations on air and water quality, wildlife, and the surrounding environment. Monitoring parameters and frequency may differ from standard operations.
- **Tailings Density and Consistency:** Tailings density and consistency may be adjusted and closely monitored to assess their impact on embankment stability and

overall TSF performance. This may involve periodic adjustments to tailings deposition methods.

- **Systematic Testing:** Extensive testing and verification of control systems, instrumentation, and equipment may occur during commissioning. Testing protocols may be more rigorous and involve simulated scenarios to ensure system reliability.
- **Emergency Response Drills:** Conducting emergency response drills and exercises may be part of commissioning activities to ensure that all personnel are familiar with response procedures in case of incidents or unplanned discharges.
- **Personnel Training:** Training programs for TSF personnel may be intensified during commissioning to ensure that all staff are proficient in the operation, monitoring, and response procedures specific to the facility.
- **Regulatory Compliance:** Strict adherence to regulatory permits and reporting requirements is critical during commissioning. Temporary adjustments to operations may be made to ensure compliance with regulatory limits.
- **Data Collection and Documentation:** Robust data collection and documentation practices are emphasized during commissioning. Comprehensive records are maintained to track all commissioning activities, test results, and any deviations from design specifications.
- **Adaptive Management:** Commissioning often involves a higher degree of adaptive management, where temporary measures and adjustments are made based on real-time monitoring and feedback to optimize TSF performance.

11. RISK ASSESSMENT AND MITIGATION

Environmental risks associated with commissioning activities of the TSF are detailed in Table 1.

Table 2 – Risk Assessment and Mitigation Summary

Risk	Impact	Mitigation
Dust emissions	Commissioning activities can generate dust, which may contain particulate matter and potential contaminants, affecting air quality and nearby communities.	Apply dust suppression measures, such as water spraying or dust control chemicals, and monitor air quality. Conduct dust impact assessments and implement dust control plans.
Seepage and Groundwater Contamination	Seepage water from the TSF may contain contaminants or elevated levels of chemicals, posing a risk of groundwater contamination.	Install monitoring wells and seepage collection systems to assess seepage rates and water quality. Implement groundwater monitoring and sampling programs. Use liners or barrier materials to prevent seepage where necessary.
Wildlife Disturbance	Construction and commissioning activities can disrupt local wildlife habitats, leading to potential disturbances or displacement of wildlife species.	Conduct pre-construction wildlife assessments and implement habitat protection measures, such as exclusion zones and relocation of sensitive species. Develop and adhere to environmental management plans that include wildlife protection measures.



Risk	Impact	Mitigation
Spill or Leak Incidents	Accidental spills or leaks of hazardous materials, such as chemicals or fuels, can occur during commissioning.	Develop spill response plans, provide spill containment equipment and training, and conduct regular equipment inspections. Implement spill prevention measures and emergency response procedures.
Regulatory Compliance	Non-compliance with environmental permits and regulations can lead to legal and reputational risks.	Ensure strict adherence to all environmental permits, regulations, and reporting requirements. Regularly review and update compliance plans and maintain records of compliance activities.

12. STAKEHOLDER COMMUNICATION

The communication plan for the commissioning phase of the TSF is designed to engage and inform stakeholders effectively. It begins with stakeholder identification and analysis to understand their concerns and interests. The plan sets clear communication objectives and messages tailored to each group, utilizing diverse channels like community meetings, regulatory reports, intranet, and social media. It establishes a robust engagement process, encourages open dialogue with regulatory agencies, and defines reporting mechanisms for incidents. Regular updates, transparency, cultural sensitivity, training, and a crisis communication plan are key components of this plan. Continuous evaluation ensures adaptability and effectiveness in addressing stakeholder concerns, fostering trust, and creating an informed and collaborative environment throughout the commissioning phase.