

Annexure No. 5

Tailings Storage Facility Management Plan

The key document that incorporates and unifies all of the data, action items, responsibility matrix, and management reviews is the Tailings Storage Facility (TSF) Management Plan. The plan should include:

- Monitoring Requirements (Routine Inspections Daily, weekly, monthly, quarterly, annual)
- Sampling (Daily, weekly, monthly, quarterly, annual)
- Measurements (Daily, weekly, monthly, quarterly, annual)
- Record Keeping
- Management Reviews (monthly, quarterly, and annually)
- Responsibilities Matrix (who is responsible for which task)
- Reporting
- Emergency Responses

The plan should include forms which, can be customised, as well as serve as a repository for relevant TSF information. The TSF Management Plan will typically be updated after every raise so it will contain accurate information related to management of the TSF. An example Table of Contents for a Tailings Management Plan is presented below.

Typical Table of Contents for Tailings Management Plan

1.0 INTRODUCTION

- 1.1 BACKGROUND AND BRIEF DESCRIPTION OF THE PROJECT AND TAILING FACILITY
- 1.2 ORGANIZATION STRUCTURE FOR TAILING DAM OMS
- 1.3 ROLES AND RESPONSIBILITY
- 1.4 COMPETENCE AND CAPABILITY REQUIREMENT
- 1.5 MANAGEMENT OF CHANGE

2.0 DESIGN OBJECTIVES, DESIGN CRITERIA AND BASELINE CONDITIONS

- 2.1 DESIGN OBJECTIVES
- 2.2 GEOTECHNICAL INVESTIGATION
- 2.3 DESIGN CRITERIA
- 2.3 DESIGN DETAILS AND DRAWINGS FOR DAM DEVELOPMENT OVER LIFE OF MINE

3.0 CONSTRUCTION QA / QC PROCEDURE AND RECORD KEEPING

4.0 TAILINGS SYSTEM COMPONENTS, OPERATIONS AND MAINTENANCE

- 4.1 PROCESS PLANT TAILINGS TANK
- 4.2 TAILING STORAGE CAPACITY AND PRODUCTION CURVE
- 4.3 TRANSFER PUMPS AND TAILINGS DELIVERY PIPELINE DESIGN
- 4.4 SPIGOTS AND TAILING DEPOSITION DESIGN.
- 4.5 DECANT WATER SYSTEM AND RETURN WATER SYSTEM DESIGN
- 4.6 GROUNDWATER MONITORING WELLS
- 4.7 PIEZOMETERS
- 4.8 UNDER-DRAINAGE COLLECTION SYSTEM
- 4.9 UNDER-DRAINAGE COLLECTION SUMP
- 4.10 LEACHATE COLLECTION RECOVERY SYSTEM (LCRS)
- 4.11 BASIN LINER
- 4.12 STANDARD OPERATING AND MAINTENANCE PROCEDURE DURING NORMAL AND EMERGENCY SCENARIOS

5.0 MONITORING / SURVEILLANCE REQUIREMENTS AND RECORDS

- 5.1 MANAGEMENT STRUCTURE
- 5.2 INSPECTION
 - 5.2.1 Daily
 - 5.2.2 Weekly
 - 5.2.3 Monthly
 - 5.2.4 Quarterly
 - 5.2.5 Annual
- 5.3 SAMPLING
 - 5.3.1 Daily
 - 5.3.2 Monthly
 - 5.3.3 Quarterly
- 5.4 MEASUREMENTS
 - 5.4.1 Daily
 - 5.4.2 Weekly
 - 5.4.3 Monthly
- 5.5 RECORD KEEPING
 - MANAGEMENT REVIEW
 - 5.5.1 Monthly Surveillance Report
 - 5.5.2 Quarterly Meeting
 - 5.5.3 Annual Management Review
 - 5.5.4 Annual Audits
- 5.6 SPECIFIC FEATURES REQUIRING INSPECTION AND MEASUREMENT
 - 5.6.1 Beach Slope
 - 5.6.2 Achieved In-Situ Dry Density
 - 5.6.3 Prolonged Dry Periods
 - 5.6.4 Performance Parameter Measurement
 - 5.6.5 Embankment Movement
 - 5.6.6 Seepage flow (as applicable to design)
 - 5.6.7 Environmental
- 6.0 REPORTING, NON-CONFORMANCE AND EMERGENCY PROCEDURES**
 - 6.1 REPORTING
 - 6.2 NON-CONFORMANCE
 - 6.3 REPORTING OF NON-CONFORMANCE TO THE REGULATORS
 - 6.4 NON-CONFORMANCE RESPONSE OF EMERGENCY PROCEDURES – RAPID RESPONSE SYSTEM
 - 6.4.1 Emergency levels
 - 6.4.2 Emergency Conditions
 - 6.4.3 Emergency Actions
- 7.0 REMEDIAL/ CORRECTIVE ACTIONS AND INCIDENT TRACKING**
- 8.0 CLOSURE AND RECLAMATION**
 - 8.1 EMBANKMENT PROFILE
 - 8.2 CLOSURE
 - 8.2.1 Tailing cover and closure
 - 8.2.2 Slope Stability
 - 8.2.3 Water balance and water management.
 - 8.2.4 Maintenance and monitoring requirement.

TABLES

Table 1: Acronyms

Table 2: Contact Details

Table 3: Relationships between storm intensity and return period

Table 4: Emergency Situations – Monumental survey / Pin Monitoring

Table 6: Water Balance and Quality monitoring

Table 7: Emergency Situations

Table 8: Emergency Actions

FIGURES

Figure 1: Management Structure for Mine

APPENDICES

Reference Documents

APPENDIX A Site Plan

APPENDIX B Construction Drawings & Lift Schedule

APPENDIX C Structural Stability