

TAILINGS DAM HIF AUDIT - 17/06/2003 03:02:28 PM

1. HAZARD RATING

Point	Standard	Guideline
1.1	A hazard rating has been assigned to the Tailings Storage Facility.	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" Section 3 page 4 which requires assessment using a recognised hazard rating system. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence, interview personnel.
1.2	The hazard rating has been derived by considering the potential environmental impact in the event of either a controlled or uncontrolled escape of material, seepage and/or abrupt failure of the storage embankment at any stage in its life.	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" Section 3 page 4 which requires assessment using a recognised hazard rating system. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence application documentation, interview personnel.
1.3	The hazard rating has been derived by considering the potential impact in terms of safety on any nearby community infrastructure and/or mining developments (including the tailings storage operator) in the event of either controlled or uncontrolled escape of material, seepage and/or abrupt failure of the storage embankment at any stage in its life.	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" Section 3 page 4 which requires assessment using a recognised hazard rating system. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence application documentation, interview personnel.
1.4	The hazard rating has been derived by considering the potential impact in terms of economics on any nearby community infrastructure and/or mining developments (including the tailings storage operator) in the event of either a controlled or uncontrolled escape of material, seepage and/or abrupt failure of the storage embankment at any stage in its life.	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" Section 3 page 4 which requires assessment using a recognised hazard rating system. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence application documentation, interview personnel.
1.5	Changes in the operation of the TSF or the surrounding infrastructure have resulted in a re-evaluation of the TSF hazard rating.	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" Section 5.2 page 6 which requires re-assessment after changes in or around the mining operation. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence application documentation and compare the current infrastructure and operational status with that described, interview personnel.

2. DESIGN AND CONSTRUCTION

Point	Standard	Guideline
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2.1	The TSF has been designed in accordance with the applicable edition of the ' Guidelines on the Safe Design and Operating Standards for Tailings Storages' issued by the Department of Minerals and Energy, Western Australia.	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" design criteria. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View Certificate of Compliance Tailings Storage Facility Design issued by certifying registered engineer, (Ref to ' Guidelines on the Safe Design and Operating Standards for Tailings Storages' Appendix B).
2.2	The TSF has been constructed in accordance with the design.	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" construction criteria. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View Certificate of Compliance Tailings Storage Facility Construction and Operation issued by certifying registered engineer, (Ref to ' Guidelines on the Safe Design and Operating Standards for Tailings Storages' Appendix C)
2.3	Annual operating audits are submitted as required by the ' Guidelines on the safe design and operating standards for tailings storage' .	Intent: To verify compliance with the DME publication "Guidelines on the Safe Design and Operating Standards for Tailings Storage" annual reporting requirement. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View selection of annual reports submitted., (Ref to ' Guidelines on the Safe Design and Operating Standards for Tailings Storages' Appendix F2)
2.4	Changes from the original design were documented during construction.	Intent: To verify that any changes in the original design that were incorporated during construction were documented. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View construction records, inspect the TSF and interview personnel.
2.5	Records of construction quality control checks are available.	Intent: To verify that quality control checks during construction were documented. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View construction records, interview personnel.
2.6	The specified monitoring equipment is installed.	Intent: To verify that the specified monitoring equipment is installed. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence conditions, interview personnel and inspect the installed monitoring equipment.

3. DAM BREAK ASSESSMENT

Point	Standard	Guideline
3.1	Category 1 TSF have a documented ' Dam Break Risk Assessment' .	Intent: To verify that Category 1 TSF has a documented ' Dam Break Risk Assessment' . Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View ' Dam Break Risk Assessment' documentation, interview personnel.

4. OPERATION

Point	Standard	Guideline
4.1	There is a TSF Operating Plan.	Intent: To verify that there is a documented Operating Plan for the TSF to comply with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.2. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel
4.2	The Operating Plan describes the deposition methodology.	Intent: To verify that there is a documented Operating Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 2 page 3. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel.
4.3	The Operating Plan describes the measures for pond control and water management.	Intent: To verify that there is a documented Operating Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 2 page 3. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel.
4.4	The Operating Plan specifies the method of seepage control.	Intent: To verify that there is a documented Operating Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 2 page 3. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel.
4.5	The Operating Plan specifies the pipeline management system.	Intent: To verify that there is a documented Operating Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 2 page 3. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel.
4.6	The Operating Plan describes the TSF geometry at all stages of its life.	Intent: To verify that there is a documented Operating Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 2 page 3. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel.
4.7	The Operating Plan includes provision for dust control.	Intent: To verify that there is provision to control dust emissions from the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel.

4.8	Modifications to the Operating Plan are documented when they occur.	Intent: To verify that changes to the TSF Operating Plan are documented when they occur. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, interview personnel.
4.9	The actual operating characteristics of the TSF have been assessed against the original design assumptions.	Intent: To verify that the actual operating characteristics of the TSF have been assessed against the original design assumptions. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Operating Plan documentation, Annual Reports etc, interview personnel.
4.10	Annual geotechnical and engineering reports are submitted as outlined in the ' Guidelines on the safe design and operating standards for tailings storage' .	Intent: To verify compliance with "Guidelines on the Safe Design and Operating Standards for Tailings Storage" reporting criteria. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View Annual Geotechnical and Engineering Reports, (Ref to ' Guidelines on the Safe Design and Operating Standards for Tailings Storages' Table 2 page 7).
4.11	The recommendations included in the annual geotechnical and engineering reports have been acted upon.	Intent: To verify compliance with "Guidelines on the Safe Design and Operating Standards for Tailings Storage" reporting criteria. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View a selection of the Annual Geotechnical and Engineering Reports, (Ref to ' Guidelines on the Safe Design and Operating Standards for Tailings Storages' Table 2 page 7). Interview personnel.
4.12	The TSF site is secured against access by unauthorised personnel.	Intent: To verify that there is provision to control access to the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the TSF, interview personnel.
4.13	Roads on and around the TSF are designed for the equipment using them.	Intent: To verify that the roads on the TSF are suitable for the equipment using them. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the TSF and equipment used there, interview personnel.
4.14	The TSF roads are demarcated by windrows, railings or other such indicators of safe travel limits.	Intent: To verify that there is provision to control traffic on the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the TSF, interview personnel.
4.15	The TSF roads are controlled by suitable signage indicating speed limits, direction etc.	Intent: To verify that there is provision to control traffic on the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the TSF, interview personnel.

4.16	Traffic control measures on the TSF are effective at night.	Intent: To verify that there is provision to control traffic at night on the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the TSF, interview personnel.
4.17	Where there is deep water in a TSF, rescue equipment is provided.	Intent: To verify that there is provision life saving equipment where the TSF has deep water in it. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the TSF, interview personnel.

5. MANAGEMENT

Point	Standard	Guideline
5.1	A responsible person has been appointed in writing to manage the TSF.	Intent: To verify that a responsible person has been appointed under MSIA Section 44 to manage the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the MSIA Section 44 appointment, interview personnel.
5.2	Individual roles and responsibilities have been documented for operators working on the TSF.	Intent: To verify that operators on the TSF have full job descriptions. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF, and operators. Method: View a selection of Position Descriptions and work procedures for TSF operators, interview personnel.
5.3	The TSF Operating Plan is available to the operators.	Intent: To verify that there the documented Operating Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 2 page 3 is available to persons working on the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF, and operators. Method: Establish that the TSF Operating Plan is available, interview personnel.
5.4	There is a training program in place for TSF operators.	Intent: To verify that there is a documented Training Program for TSF operators. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF operator Training Program documentation, interview personnel.
5.5	There is an incident reporting procedure for the TSF.	Intent: To verify that there is an incident reporting system in place for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.6 page 5. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF incident reporting documentation, interview personnel.

6. MONITORING AND AUDITING

Point	Standard	Guideline
6.1	Routine inspections of the TSF are carried out on each shift.	Intent: To verify that there is a routine inspection schedule for the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF inspection records/ shift logs etc, interview personnel.
6.2	The findings of the routine inspections are recorded.	Intent: To verify that the findings of the routine inspections of the TSF are recorded. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF inspection records/ shift logs etc, interview personnel.
6.3	Operating audits are conducted every year for Category 1 TSFs and every 2 years for Category 2 TSFs.	Intent: To verify that Operating Audits are conducted for the TSF in compliance with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 3 page 4. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View a selection of TSF Annual Operating Audit documentation, interview personnel.
6.4	Groundwater monitoring is carried out as per the DEP licence for the TSF.	Intent: To verify that groundwater monitoring is carried out as per the DEP licence for the TSF in compliance with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Table 3 page 4. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence and a selection of groundwater monitoring reports, interview personnel.
6.5	The monitoring equipment is kept in calibration.	Intent: To verify that the monitoring equipment is kept in calibration. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View calibration reports for the monitoring equipment, interview personnel.
6.6	The monitoring frequency complies with licence conditions.	Intent: To verify that the monitoring regime complies with DEP licence. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View DEP Licence conditions and monitoring schedule, interview personnel.
6.7	The monitoring results are documented.	Intent: To verify that the monitoring results are documented. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View monitoring reports, interview personnel.

6.8	The action to be taken when monitoring results fall outside the expected range is specified.	Intent: To verify that the action to be taken when monitoring results fall outside those expected is documented. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View the monitoring documentation, interview personnel.
6.9	A permanent survey monitoring grid is in place for the TSF.	Intent: To verify that a permanent survey grid is in place for the TSF. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and surveyor. Method: Inspect the TSF and survey plans, interview personnel.
6.10	There is a dam stability monitoring program in place.	Intent: To verify that a dam stability monitoring program is in place. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and surveyor. Method: View dam stability monitoring reports, interview personnel.
6.11	The results of the dam stability monitoring program are documented.	Intent: To verify that a dam stability monitoring program is documented. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and surveyor. Method: View dam stability monitoring reports, interview personnel.
6.12	The action to be taken is specified should the dam stability monitoring results fall outside the expected range.	Intent: To verify that the action to be taken when monitoring results fall outside those expected is documented. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and surveyor. Method: View the monitoring documentation, interview personnel.

7. EMERGENCY PLAN

Point	Standard	Guideline
7.1	There is a specific Emergency Plan for incidents that may occur at the TSF.	Intent: To verify that there is a documented Emergency Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.5 page 5. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF Emergency Plan documentation, interview personnel.
7.2	The TSF Emergency Plan contains details of any evacuation procedure that may be required in the event of failure, or impending failure of the TSF.	Intent: To verify that there is a documented Emergency Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.5 page 5. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF Emergency Plan documentation, interview personnel.
7.3	The TSF Emergency Plan contains a diagram indicating the whereabouts of a muster point.	Intent: To verify that there is a documented Emergency Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.5 page 5. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF Emergency Plan documentation, interview personnel.

7.4	The TSF Emergency Plan contains a list of names and residential addresses of all nominated emergency response personnel and their home/emergency contact telephone numbers.	Intent: To verify that there is a documented Emergency Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.5 page 5. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Emergency Plan documentation, interview personnel.
7.5	The TSF Emergency Plan contains a list of the telephone numbers of the local/regional emergency services (fire, ambulance, police etc.)	Intent: To verify that there is a documented Emergency Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.5 page 5. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Emergency Plan documentation, interview personnel.
7.6	The TSF Emergency Plan contains a list of all personnel that are associated with operation of the TSF and evidence that they have attended and understood all relevant induction/safety procedures.	Intent: To verify that there is a documented Emergency Plan for the TSF that complies with the requirements of DME publication "Guidelines on the Development of an Operating Manual for Tailings Storage" Section 2.2.5 page 5. Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF and operators. Method: View TSF Emergency Plan training documentation and records, interview personnel.

8. DECOMMISSIONING

Point	Standard	Guideline
8.1	A Decommissioning Plan has been drawn up for the TSF.	Intent: To verify that there is a documented Decommissioning Plan for the TSF Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Decommissioning Plan documentation, interview personnel.
8.2	Roles and responsibilities have been documented for key personnel involved in the decommissioning process.	Intent: To verify that there are documented roles and responsibilities for key personnel involved in the decommissioning of the TSF Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Decommissioning Plan documentation, interview personnel.
8.3	A hazard analysis has been conducted for the long term stability of the TSF structure post decommissioning.	Intent: To verify that there is a documented hazard analysis for the long term stability of the TSF after decommissioning . Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Decommissioning Plan documentation, interview personnel.
8.4	A risk assessment has been conducted for the long term stability of the TSF structure post decommissioning.	Intent: To verify that there is a documented risk assessment for the long term stability of the TSF after decommissioning . Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF. Method: View TSF Decommissioning Plan documentation, interview personnel.

8.5	A rehabilitation plan is in place for the decommissioned TSF structure.	<p>Intent: To verify that there is a rehabilitation plan for the TSF after decommissioning .</p> <p>Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF.</p> <p>Method: View TSF Decommissioning Plan documentation, interview personnel.</p>
8.6	Where operational changes have occurred the Decommissioning Plan has been revised to take the changes into account.	<p>Intent: To verify that where there has been any operational changes the Decommissioning Plan has been revised to take the changes into account.</p> <p>Personnel: Registered Manager, Senior Metallurgist or person appointed to manage the TSF.</p> <p>Method: View TSF Decommissioning Plan documentation, interview personnel.</p>