Mineral Waste Management

A Intent

The intent of this standard is to ensure environmentally safe and effective management of mining and process wastes generated or handled by Rio Tinto operations. Waste disposal facilities and sites shall be physically, biologically and chemically safe. Waste production shall be minimised and waste re-use, backfill and recycling maximised.

B Scope

This standard is applicable to all Rio Tinto Business Units and managed Operations and covers the management of mining and process waste generated by their activities, or which are taken by the operations to dispose or manage on behalf of others.

Mineral waste includes: waste rock, tailings from mineral processing, rejects from beneficiation or concentration of coal and other minerals, red mud from alumina production, refinery discards and sludges, smelter and other furnace slags, ashes, and mine-dredging materials.

Other relevant environmental documents are:

- Environmental Management System Standard
- Air Quality Control Standard
- Non-Mineral Waste Management Standard
- Hazardous Materials and Contamination Control Standard
- Rio Tinto Closure Standard (under preparation)
- Acid Rock Drainage Prediction and Control Standard
- Land Use Management Standard
- Water Use and Quality Control Standard
- Mineral Waste Management Guidance Note
- Rio Tinto Guideline for Six-Monthly Social and Environmental Reporting

C Requirements

Rio Tinto Business Units and/or managed Operations are required to:

1.0 *Planning*

1.1 Identify, assess and document the quantities, characteristics and hazards of the wastes that will be generated by mining and processing of each distinct section of the mineral deposit.

1.2 Develop and maintain an inventory of mineral wastes generated, handled and disposed of, whether on or offsite, including descriptions of hazard and other characteristics, volumes and details of location and techniques used for handling and disposal.

1.3 Maintain a procedure for identification of hazards, potential modes of failure and assessment of risks posed by tailings dams and other large waste disposal facilities.

1.4 Maintain, for each waste disposal facility or site, an up to date model of the long-term physical and chemical waste behaviour and impacts on the environment. The model must be validated using data from prediction tests and monitoring.

1.5 Ensure that design and construction of all waste disposal facilities or sites are:

a. Compatible with the waste behaviour, addressing any threats to the environment, particularly those posed by contaminated run-off, seepage, liquefaction and leachate;
b. Engineered to best available technology for stability and safety.

1.6 New developments will not use tailings disposal facilities for water storage functions. Any existing dual storage of wastes and water must undergo a risk assessment and a study of potential alternatives.

1.7 Apply a change management procedure for the approval of any significant modification in waste generation, handling and disposal.

1.8 Avoid any uncontrolled riverine disposal of mineral wastes.

1.9 Develop targets to drive improvements in the aspects of mineral waste management. Progress towards the targets must be supported by a suitable set of actions.

1.10 Establish and maintain a documented Mineral Waste Management Plan that covers all stages of waste management from generation to final use and/or disposal.

2.0 *Implementation and Operation*

2.1 Maintain operational procedures commensurate with the identified hazards of each waste disposal facility for managing:

a. The waste mass and its physical and chemical reactions;
b. The containment structure and its stability issues;
c. Spills, unplanned mixture or segregation of wastes;
d. Waste placement.

2.3 Ensure that the supervision and operation of dams and dumps is commensurate with the environmental and safety hazards posed by the structures.

2.4 Undertake assessments of contractors and facilities used for wastes sent off-site for disposal or treatment, to verify that the wastes have been dealt with appropriately.

3.0 *Performance Measurement*

3.1 Monitor physical stability parameters of waste disposal structures as an early detection and warning mechanism for potential failure.

3.2 Conduct regular monitoring of the geochemical reactions occurring through the profile of the waste, for validation or review of the waste behaviour model and early

profile of the waste, for validation or review of the waste behaviour model and early warning of potential pollution problems.

3.3 Conduct independent and external review by qualified engineering specialist(s) of all major waste storage facilities according to protocols and frequencies adequate to their physical and chemical hazards and level of risks. Frequency of external reviews must not be less than once every 2 years and any significant findings must be reported according to Rio Tinto requirements.

3.4 Maintain an emergency system, including communication with stakeholders, for responding to potential incidents involving waste storage facilities and or transport to disposal facilities.