

MODERN MINING COMPANY

Environmental Performance Standards

Environmental Performance Standards	3
Introduction	3
Environmental Performance Standards.....	3
Definitions.....	4
Roles and Responsibilities	4
Risk Assessment.....	5
Legal Requirements.....	5
Training and Competency	5
Documentation.....	5
Performance	5
Water.....	6
Land and Biodiversity.....	7
Air Emissions	8
Emissions and Resource Efficiency.....	9
Waste Rock and Ore.....	10
Waste and Waste Water	11
Tailings.....	12
Rehabilitation and Closure.....	13

Document Control History

Version	Description	Author(s)	Review	Approved	Date
1	New Document	Katie Hulmes Group Manager Technical Services	Bob Fulker Chief Operating Officer	Andrew Cole Managing Director and CEO	January 2017

Introduction

The Performance Standards are an integral part of the OZ Minerals business. Their implementation and maintenance provides the means to:

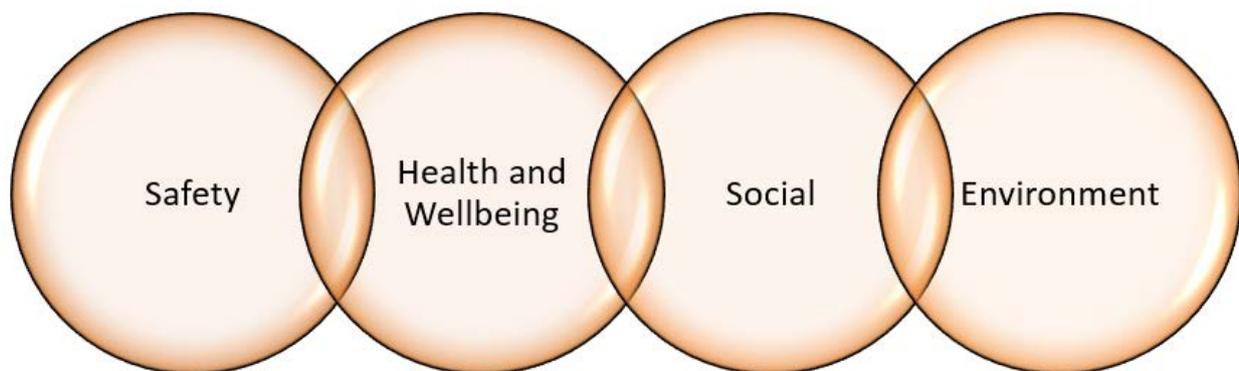
- Manage and minimise threats;
- Identify and realise opportunities;
- Comply with statutory obligations;
- Deliver a framework for continuous improvement;
- Provide a measurement for value-creating business performance.

The Performance Standards apply to all Company-managed Assets, their employees, directors, officers, contractors, consultants, and its subsidiaries and any other party undertaking work at the Asset (**Employees and Contractors**). They also specify the level of performance expected at non-managed Assets. All Company-managed Assets are required to have capability based on the Standards.

New or acquired Assets will undertake a Risk Assessment to determine when the Standards must be fully implemented. This Risk Assessment must be approved by the OZ Minerals CEO.

Environmental Performance Standards

The Environmental Performance Standards are one of four performance areas that together provide the governance and integration to unlock value across our business.



The Environmental Performance Standards describe the minimum requirements of Assets to manage environmental threats and impacts associated with specific activities or tasks, and to identify opportunities that have the potential to drive value creation for both OZ Minerals and the communities in which we operate.

OZ Minerals is committed to providing a high standard of care for the natural environment through effective organisational practices, progressive land rehabilitation and application of impact profiles as low as reasonably practicable, which are central to our continued performance.

Our activities are undertaken within the framework of mining approvals, lease conditions and licences established by environmental regulatory authorities. We actively engage with local communities and other stakeholders during the various stages of a mining project, from environmental approval processes and exploration through to development, production and closure, to ensure the environmental, social and economic impacts of our projects are understood.

OZ Minerals is committed to high standards of environmental performance among its Employees. The Environmental Performance Standards support OZ Minerals' policies by articulating the minimum requirements to which Employees and Contractors must adhere.

Definitions

All commonly-used terms and acronyms used in the Health and Wellbeing Performance Standards are defined in the OZ Minerals Glossary.

Roles and Responsibilities

The OZ Minerals CEO is responsible for approving Standards and subsequent updates.

Assigned ExCo members are responsible for maintaining the Standards and authorising supporting documentation. They are also responsible for:

- Assisting management teams and practitioners at OZ Minerals Assets to understand the implementation requirements of the Standards;
- Reviewing the Standards every three years (as a minimum) and updating against relevant external standards, legislation and OZ Minerals public commitments;
- Reviewing any supporting Definitions and Guidelines and updating as required;
- Reporting assurance findings to the OZ Minerals board every three years; and
- Ensuring that definitions and supporting documents are revised and updated as required.

Asset leaders are accountable for:

- Implementing the requirements of the Standards at the relevant Asset;
- Training Employees and Contractors on the requirements of the Standards;
- Ensuring consistency between the Standards and Asset management; and
- Demonstrating compliance with the Standards through OZ Minerals assurance processes as appropriate to context, individual Standards and reporting requirements.

All Employees, Contractors and Partners must be aware of and apply these Performance Standards in their respective work areas consistent with Asset requirements.

Assets must at all times comply with the content of the Standards. Any exemption to compliance with these Standards must be approved by the OZ Minerals CEO.

Risk Assessment

As a part of regular risk management assessments during due diligence and at gate reviews, all Assets, in the context of their Asset, must evaluate risks relevant to these Performance Standards. Asset management must then apply these Standards as appropriate to their Asset and activities.

The risk management cycle must be managed in accordance with the relevant Standards relating to risk management.

Assets must identify the critical controls used to manage Material risks, assess their adequacy, assign Accountability and Responsibilities for their implementation and verify their effectiveness as part of their critical control management.

Legal Requirements

All Assets must track regulatory requirements and legally binding commitments and ensure that required actions are scheduled, actioned, monitored and closed out. Records required to be retained under legislation must be stored in a central location.

At a minimum, all Assets must meet legislative requirements. However, if OZ Minerals' Standards impose additional requirements, then Employees and Contractors must meet both the legislative requirements and the additional requirements of OZ Minerals' Standards.

Training and Competency

All Employees and Contractors must be inducted and trained in the relevant hazards and controls prior to undertaking any work.

Appropriate training and competency assessments must be undertaken. Records relating to training and competency assessments must be documented and maintained. Additional requirements, if applicable, are detailed in the specific Standards.

All Assets must provide their Employees, Contractors and Visitors with a fit-for-purpose induction appropriate to the local sensitivities, risks and expected behaviours.

Induction training in the hazards associated with a particular Asset shall be included for new personnel where there is a potential for exposure to this hazard.

Documentation

Relevant documentation verifying compliance with the Standards must be kept in accordance with the relevant Document Controls Standards and relevant legal requirements.

Performance

All Assets must periodically, as determined by a Risk Assessment, conduct an audit of their compliance to the OZ Minerals Standards to ensure elements are understood and applied at a local level.

The performance of Company-owned Assets will be assessed against the requirements of the OZ Minerals Standards by the Company at a minimum of every three years according to the Assurance Process. Actual performance measures against each element of the Standard will vary according to local context, and guided by supporting guidelines and procedures.

Purpose

The purpose of this Standard is to define the OZ Minerals requirements to ensure that Assets effectively manage water, including process water, stormwater, discharges and dewatering activities.

Performance

Assets must:

Planning and Management

- Comply with all conditions as specified in their water licences;
- Where a site does not have legal discharge requirements, determine Asset-specific risk-based discharge criteria from baseline conditions, potential pathways to receptors, known adverse impacts and seek external input from relevant specialists where necessary;
- Maintain a fit-for-purpose **“Water Management Plan”** which documents the following:
 - Environmental Design Criteria for Water Management;
 - Relevant strategies, controls and management practices throughout the project life cycle;
 - Internal water resources and Asset-specific water balance, to be updated in conjunction with Life-of-Mine plans;
 - How the protection of aquatic (including groundwater-dependent ecosystems), terrestrial and marine environments will be achieved based on defined regulatory standards and licence limits;
 - Water quality and quantity monitoring programs for the lifecycle, evaluating water resources, point source and non-point source discharges, and any receiving waters affected by discharge;
 - Management of process water during the Asset’s closure and rehabilitation phases;
 - Water quality analysis conducted by a laboratory that is externally accredited;
 - Water discharges, water extraction, storm water and mine dewatering activities – to demonstrate they are in compliance with statutory obligations or other requirements such as Codes of Practice.

Water Infrastructure

- Design and manage facilities to preclude releases to the environment;
- Ensure that where engineering design constraints and climatic conditions create a requirement for process water discharge from tailings and process facilities, the quality of the discharge water meets applicable standards or site-specific discharge criteria;
- Ensure that where a threat to groundwater exists, groundwater wells around facilities must be installed up-gradient and down-gradient to monitor for change, based on the hydrogeology of the area and hydraulic potential;
- Ensure that the design of temporary stormwater structures is based on the level of risk of failure;
- Ensure that permanent stormwater structures are, at a minimum, designed and operated to withstand the 100-year, 24-hour storm event;
- In areas with sensitive receptors, ensure that impoundment design is risk-based;
- Ensure that all process plant storage tanks and transfer systems have secondary containment which is designed and sized to contain a potential pipeline leak or failure;
- Ensure that secondary containment of storage tanks has a typical water permeability equivalent to untreated concrete;
- Have a mechanism to detect leaks where it is necessary to install underground piping;
- Ensure generated runoff is diverted away from facilities. Any ponds used to impound process or contaminated water must be suitably lined depending on the characteristics of the water to be contained and must consider a suitable Leak Collection and Recovery System.

Purpose

The purpose of this Standard is to define the OZ Minerals requirements to ensure that effective measures are taken to protect and manage land and biodiversity conservation and to minimise any adverse acute or cumulative impacts.

Performance

Assets must:

Planning and Design

- Obtain all relevant approvals, licences and permits to access and disturb land for exploration or mining purposes in accordance with statutory or other requirements;
- Implement control measures for minimising access, disturbance to land and clearing of vegetation to prevent unnecessary ground disturbance and to protect areas of known high biodiversity conservation;
- Document erosion and sediment control;
- Develop and implement controls prior to construction of an Asset and through the lifecycle of the Asset to manage stormwater, minimise erosion caused by uncontrolled surface water runoff, and to treat impacted water generated from disturbed areas and areas undergoing rehabilitation;
- Design water storage facilities, diversion structures and containment facilities to limit and reduce fauna access and provide easy egress;
- Design water crossing or diversion structures to minimise adverse impacts on the aquatic ecosystems;
- Identify and maintain wildlife crossings on access and haul roads based on survey data;
- Control fauna access to containment facilities.

Management

- Maintain a fit-for-purpose “**Biodiversity Management Plan**” which documents the following:
 - Specialist knowledge sourced and utilised in the management and protection of endangered or listed species, and in defining the scale of monitoring and the indicators monitored;
 - Engagement with members of the local community and indigenous personnel for assistance with biodiversity monitoring;
 - Key objectives that address biodiversity risks, and the controls implemented by the Asset to protect flora and fauna, and specifically how rare and endangered species and priority conservation status species are protected;
 - Key objectives for how pests and weeds are controlled;
 - Where a potential or actual adverse impact on an endangered or listed species has been identified, the rationale for the creation of the impact must be described and consideration for biodiversity and/or offset areas provided.
- Ensure that environmental monitoring programs include any adverse biodiversity impacts and the effectiveness of implemented control measures;
- Report any unauthorised land clearances and stock and wildlife mortalities in accordance with incident reporting standards and statutory requirements;
- Where mining townships or accommodation villages are located in the vicinity of the mine, implement Asset procedures to:
 - Prohibit the unauthorised collection of native species by employees;
 - Prohibit unauthorised hunting or trapping of native species;
 - Minimise access to designated areas.

Purpose

The purpose of this Standard is to define OZ Minerals' requirements to manage point and non-point source air emissions and ambient air quality to be protective of both human health and the environment.

Performance

Assets must:

Planning and Design

- If a source of air emissions, be designed, constructed and operated with appropriate air pollution controls in place in order to comply with the host country's statutory requirements;
- Ensure that their air pollution control equipment complies with defined regulatory standards and license limits;
- At a minimum, comply with legislative requirements. However, if the Australian National ambient air quality guideline(s) impose additional requirements, then Employees and Contractors must meet the requirements of both the legislation and the guidelines to determine any potential broader community or environmental impact;
- Formally identify all major point source and non-point source forms of air emissions for all phases of the mine lifecycle and at any major modifications to the Asset;
- Where hazardous air pollutants are potentially emitted from an Asset and need to be controlled, risk-based, cost-effective control technologies must be implemented and maintained.

Management and Monitoring

- Maintain a fit-for-purpose "**Air Quality Management Plan**" that defines all relevant strategies, operational controls and management practices for all phases, and includes:
 - Suitable monitoring and inspection programs to verify that air emission controls are effective and emissions are not having an adverse effect on human health or the environment, inclusive of visual impacts;
 - Dispersion modelling where any potential risk of impacting human health or the environment exists;
 - Process to identify and control point source and fugitive dust emissions where any potential impact to Employees and Contractors, the local community and/or the environment exists;
 - Details of periodic air quality monitoring that determine if any potential hazardous air pollutants are being emitted from an Asset;
 - Where hazardous air emissions pose a significant risk to human health and the environment, a quantification of the pollutant emissions using calibrated testing equipment, mass balancing or other approved methods;
 - Air quality objectives for air emission sources and ambient air quality, utilising local legislation, relevant Australian and/or International Standards and/or Guideline(s).
- Demonstrate that they have controlled fugitive dust emissions in accordance with site risk assessments;
- Develop, implement and maintain a planned calibration and maintenance schedule for any emissions control and monitoring equipment;
- Control dust and significant odours based on proximity to identified sensitive receptors.

Purpose

The purpose of this Standard is to define the OZ Minerals' requirements for energy, accounting and resource efficiency to meet statutory obligations, minimise greenhouse gas emissions and drive continuous improvement.

Performance

Assets must:

Greenhouse Gas Emissions

- Identify and assess risks related to greenhouse gas emissions;
- Measure greenhouse gas emissions in metric tonnes of CO₂-equivalent for direct and indirect sources;
- If a source of greenhouse gas emissions, be designed, constructed and operated in order to comply with applicable laws and regulations and incorporate efficient use of energy resources;
- Develop, implement and maintain a fit-for-purpose **"Energy and Greenhouse Gas Management Plan"** that documents the following:
 - Current and future sources of greenhouse gas emissions, relevant emission factors and an inventory of greenhouse gas emissions, including all sources of Scope 1 and Scope 2 emissions;
 - Commercial considerations associated with greenhouse gas emission issues (including costs associated with carbon trading schemes or emission regulations);
 - Energy saving and greenhouse gas emission abatement projects, supported by performance targets, that have been implemented to drive improvements in emissions control and reduction. Implementation must be linked to the business planning and decision making process and any Corporate targets;
 - Systems and processes used for meeting regulatory and voluntary obligations, including reporting, managing risks, continually improving energy efficiency and reducing greenhouse gas emissions;
 - Operational controls for each phase of the mine lifecycle, and where determined under legislation, the operational controls that also apply to contractors and suppliers.
- Consider greenhouse gas commercial considerations in relevant business plans and valuations, new project proposals, due diligence evaluations and capital expenditure.

Energy and Natural Resource Efficiency

- Ensure that appropriate measures are in place for metering and estimating energy and water use and production and greenhouse gas emissions, on at least a monthly frequency;
- Ensure that all measures meet applicable regulatory requirements or are otherwise consistent with relevant International Standards;
- Develop and implement programs to:
 - Verify identified energy saving and greenhouse gas emissions abatement projects are effective;
 - Ensure ongoing identification of energy and resource efficiency improvement projects;
 - Use emissions abatement cost curves, assess emissions trading and offset opportunities, and consider available renewable energy technologies;
 - Consider changes as a result of National or International policies and measures;
 - Document, review and optimise the water distribution network to maximise efficiencies;
 - Ensure water management systems and processes are fully functional and operating properly;
 - Analyse water quality and usage/consumption trends and utilise a corrective action system.

Purpose

This purpose of this Standard is to define the OZ Minerals' requirements for the management of waste rock and ore to prevent adverse environmental impacts, and reduce post mining rehabilitation and closure liability.

Performance

Assets must:

Engineering and Operations

- Design, construct and rehabilitate waste rock disposal facilities according to relevant licence and statutory obligations. These facilities must:
 - Be geotechnically stable with a minimum factor of safety of 1.3 static and 1.0 pseudo-static condition;
 - Provide for both trial and progressive rehabilitation;
 - Incorporate measures to control the generation of acid;
 - Include retention basins sufficiently sized to contain the runoff resulting from a 25-year, 24-hour storm event, or greater, depending upon the risk posed;
 - Control surface water run on and run off during construction, rehabilitation and closure/post-closure to ensure slope stability and minimise low-quality seepage, erosion and sedimentation;
 - Be monitored to verify they are being constructed to the design criteria and to detect any possible abnormal conditions, such as subsidence, run on or run off control requirements;
 - Be inspected following heavy rainfall to observe for ponding on the surface, slumping on slopes, discoloration or seepage from the toe, effectiveness of the diversion and sediment control.

Planning and Management

- Implement a waste rock and ore tracking system and demonstrate that waste rock has been properly characterised and routed to the appropriate facility;
- Retain a log of material types and disposal locations;
- Ensure that disposal of any solid or hazardous waste in the waste rock disposal facility is accompanied by a scientifically defensible study that demonstrates that the waste is compatible with disposal in the waste rock disposal facility, complies with laws and permits, and will not compromise rehabilitation and closure success;
- Conduct stabilisation and progressive rehabilitation activities as soon as practicable;
- Establish and monitor rehabilitation success criteria and objectives to validate agreed closure completion criteria.

Material Classification

- Ensure that waste rock is physically and geochemically characterised at all stages in the mine lifecycle;
- Determine acid rock drainage (ARD) potential of waste rock using a reliable acid-base accounting methodology;
- Conduct ongoing periodic characterisation in the form of kinetic tests to confirm ARD predictions are based on static test results;
- Ensure that Assets with known net acid-generating ore and waste rock maintain a fit-for-purpose Waste Rock Management Plan. Potentially acid-generating material must:
 - Be managed to prevent the release of pollutants to the receiving environment;
 - Not be used for construction purposes outside of a controlled waste management system;
 - Be used in a balance, updated for adequacy at closure, with non-acid generating material to evaluate and design controls to isolate acid-generating material.

Purpose

The purpose of this Standard is to define the OZ Minerals requirements for minimising waste generation, optimising recycling, and managing hazardous wastes, non-hazardous wastes and waste water.

Performance

Assets must:

- Maintain a fit for purpose “**Waste Management Plan**”. The plan must describe controls and processes for:
 - Identifying potential waste streams and their sources for all phases of the project;
 - Segregating and disposing of hazardous wastes and non-hazardous wastes in compliance with statutory obligations;
 - Ensuring records for the storage, transportation and disposal of all waste streams are maintained, including types and quantities of waste and waste tracking certificates;
 - Ensuring that key objectives that address identified waste management threats are periodically reviewed and describe the controls implemented by the Asset.

Landfill, Onsite and Offsite Disposal

- Audit offsite treatment and disposal facilities prior to their selection and periodically during use to verify that the facility is engineered and operated in accordance with licence conditions;
- Ensure that on-site engineered disposal options are supported by scientific studies that demonstrate compliance with laws and permits;
- Ensure that burial of wastes in dedicated locations is compliant with statutory obligations;
- Ensure that medical wastes are disposed of offsite or burned in a high temperature incinerator onsite;
- Establish bespoke facilities for on-site storage of hazardous wastes;
- Ensure that landfills are designed, constructed and operated to ensure geotechnical stability of slopes or trenches;
- Ensure that the potential for and volumes of contaminated leachate generation and the estimated leachate impact from landfills are evaluated and managed and any discharges meet any applicable standards;
- Ensure that wastes disposed of in the landfill are routinely covered;
- Only burn waste at landfills where permitted in writing by the relevant authority;

Sewage Wastewater

- Treat wastewater using sewage treatment plants or septic systems that meet statutory requirements;
- Design and construct sewage treatment plants according to the current and foreseeable future volumes to be treated;
- Demonstrate the adequate discharge take-up capacity of the receiving environment using percolation tests prior to locating and installing septic infiltration trenches;
- Manage sediment/sludge from sewage treatment plants in accordance with statutory requirements;
- Verify that no waste streams other than waste water are connected to on-Asset sewage systems;
- Ensure that sewage treatment plant effluent parameters are monitored in accordance with licence conditions and use the results to optimise plant performance;
- Either monitor groundwater down gradient of septic infiltration trenches or demonstrate that no effect to groundwater resources is expected.

Purpose

The purpose of this Standard is to define the OZ Minerals' requirements for the long-term safe impoundment of mine tailings and residues to prevent uncontrolled releases into the environment.

Performance

Assets must:

- Ensure that all Tailings Storage Facilities (TSF) designs analyse seepage rates, seepage water quality and the resulting impact on the beneficial use of groundwater and surface water, over both the short- and long-term (post closure) impacts and liabilities;
- Ensure that the supernatant pond size is minimised to prevent seepage to groundwater and be located away from the walls of the TSF;
- Where a liner system has been installed, ensure that the footprint of the supernatant pond remains within the boundary of the liner to prevent a direct hydraulic pathway to the groundwater;
- Ensure that tailings are physically and geochemically characterised and data is utilised in the design of the TSF;
- Determine the acid rock drainage (ARD) potential of tailings using a reliable acid-base accounting methodology, and conduct ongoing periodic tailings characterisation in the form of kinetic tests to confirm ARD predictions based on static test results;
- Ensure that the TSF is designed, constructed, operated, closed and rehabilitated to:
 - Comply with regulatory and licence requirements;
 - Maintain minimum freeboard, as specified by design, statutory requirements or water balance;
 - Maintain piezo metric head in the embankment and tailings within design specifications;
 - Be geotechnically stable, even in high seismic areas, in accordance with relevant engineering standards;
 - Be protective of avian and terrestrial wildlife;
 - Prevent contamination of groundwater and surface water;
 - Prevent uncontrolled releases of supernatant material resulting from a 25-year, 24-hour storm event;
 - Withstand the run-off from a 100-year, 24-hour storm event.
- Develop a "**TSF Operations Management Plan**" to ensure safe practices are conducted in accordance with statutory obligations and design and to minimise short- and long-term threats associated with the TSF;
- Maintain final as-built documentation with associated independent QA/QC reports over the life of the project until lease relinquishment is achieved;
- Audit the TSF for geotechnical stability by a qualified engineer on an annual basis;
- Develop and implement a detailed monitoring plan for the TSF and continue monitoring through the post-closure period until closure and rehabilitation is approved by the governing agency.

Purpose

The purpose of this Standard is to define the OZ Minerals' requirements for rehabilitation and closure planning and the management of long-term liabilities associated with OZ Minerals' Assets.

Performance

Mine Closure Plan

Assets must:

- Maintain a fit for purpose "**Mine Closure Plan**" which is reviewed annually until the completion of decommissioning and closure. The plan must:
 - Include:
 - Rehabilitation and closure objectives and criteria;
 - Methods used for rehabilitation and closure of various aspects of the Assets;
 - As-built surveys for structures;
 - Asset liquidation;
 - Actual versus estimated costs.
 - Be completed to avoid the need for "in perpetuity" water treatment;
 - Be completed to meet rehabilitation and closure completion criteria, achieve the post-mining, designated land use and to minimise environmental liability;
 - Include drawdown predictions, water quality and quantity issues and erosion control;
 - Provide technical and financial evaluation of any modification to an Asset;
 - Detail bond release requirements, permit/licence requirements and monitoring programs;
 - Define preliminary or proposed post-mining land use(s) as defined by any relevant legal obligations or agreements with external stakeholders;
 - Utilise suitable predictive models to evaluate rehabilitation and closure design options for the cover design for waste rock disposal facilities containing acid-forming materials;
 - Describe the final landforms and the visual amenity objectives in relation to the pre-mining landform;
 - Provide the biodiversity requirements inclusive of rehabilitation success criteria that have been developed in formal agreement with relevant stakeholders;
 - Detail the decommissioning of Asset-based waste facilities and wastes generated during decommissioning;
 - Describe how the rehabilitated tailings storage facility landform will provide positive external drainage;
 - Describe how the waste rock facilities will be geotechnically and geochemically stable and minimise erosion;
 - Describe how the physical and geochemical characteristics of the waste rock have been considered in the design to control infiltration and seepage through the base of the disposal facility;
 - Define the monitoring and post-closure management, inclusive of associated cost estimates, that will continue until the Asset is officially relinquished.
- Post closure, review the Mine Closure Plan every three to five-years;
- Submit comprehensive records for rehabilitation and closure activities to OZ Minerals Corporate, which must be subsequently maintained for at least 10 years after lease relinquishment;
- Ensure that rehabilitation and closure liability cost estimates for Life of Mine and for existing disturbance are reviewed and updated annually in conjunction with the Asset budget process.