Oyu Tolgoi LLC

Health, Safety and Environment Management System Procedures

Element 3. Hazard and Risk Management

Hazard Identification and Risk Management		
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1. PURPOSE

To identify, assess, record and communicate all HSE hazards, aspects and opportunities using a common approach and ensure:

- Their resulting risks to people, property, assets and the environment are evaluated
- Risks are managed in accordance with the recommended hierarchy of controls to achieve levels that are as low as reasonably practical
- Any requirements are implemented ensuring compliance and conformance to mitigate any HSE risks
- The information is retained in a common register

2. SCOPE

This procedure is applicable to employees and contractors at all Oyu Tolgoi LLC (OT) businesses and sites. Oyu Tolgoi LLC businesses and sites must comply with the HSE management system standard and associated procedures.

3. ROLES AND RESPONSIBILITIES

Role	Responsibilities
Risk owners and scenario owners	• Review and approve risk scenarios and monitor implementation of controls
Employees, Contractors and Visitors	• Personnel carrying out work comply with this standard / procedure in full. • Everyone is responsible for identifying hazards with this procedures and controlling the work
Leaders	• Participate in risk assessment workshops and reviews • Implement and monitor the controls required in areas under their control • Discuss hazards and controls with their teams
Training Department	• Conduct the required training courses • Maintain training curriculum and training records of training attendance and refreshers
Health/Safety/Security/ Environment or Community teams	• Facilitate and coordinate risk assessments • Monitoring and reporting risk assessments and action plans • Coordinate periodic reviews of risk register with work teams (min annually)
HSE Risk and Management System team	• Arrange for the development of a HSEC hazard register • P)repare external and senior internal reports • Monitor reviews and action plans

4. PROCEDURE

4.1. Hazard and Risk Management Process and Framework

All activities at OT including planned, new or modified developments or activities shall follow the requirements of the Rio Tinto work cycles: Hazard Identification and Risk Management (WCMS0301) and Hazard identification and reporting (WCMS0302) when conducting HSE Risk Management. The hazards identified will be risk assessed, dependent on the context, nature and scale of the risks. The following assessment methodologies and tools will be utilised

- Level 1 – Pre-task hazard assessment (Task / Activity based)
  - TRACK
  - Job hazard analysis (JHA)

  Pre-task hazard assessments (level 1) are task-based assessments either completed individually or in small teams as part of daily work activities **must** be completed by all personnel prior to all work or tasks being performed.

- Level 2 – Qualitative risk assessment

  Qualitative risk analysis (level 2) use the 5x5 risk matrix (OT-03-COM-0009/10-E-HSE Risk Matrix A4/Wallet card) to evaluate risks against work areas or similar exposure groups (SEGs), must be completed for each area and documented in a centralized risk register. Where the hazard and control is the same these will be grouped together rather than itemized in individual areas.

- Level 3 – Quantitative risk assessment
  - Semi quantitative risk assessment (SQRA)
  - HazOps
  - Process Safety reviews
  - Occupied building assessments

  Level 3 uses advanced assessment tools (including numerical data models) and technical expertise to evaluate risks. These must be completed for risks that have been evaluated as critical (class IV) through qualitative risk analysis (level 2).

For further information refer to Rio Tinto HSEQ MS Element 3. Hazard Identification and Risk Assessment Guidance Note and Rio Tinto Work cycle: Hazard Identification and Risk Management (WCMS0301).

All risks identified through qualitative risk analysis (level 2) and quantitative risk analysis (level 3) **must** be signed off by the risk owner and regularly reviewed and updated, with high (class III) or critical (class IV) risks completed at least annually, all other risks completed at least once every three years.

Information from risk analysis **must** be summarized and communicated to relevant personnel so they are aware of the risks in their work area and/or similar exposure group (SEG) and the controls that are in place to manage them.

Risk control measures **must** be regularly monitored, inspected and maintained to ensure the expected level of protection is provided. The hierarchy of control is used to allocate control measures with elimination being the first control considered. Risk controls identified during the risk assessment and their effectiveness shall be monitored. Risk control monitoring shall be managed using the action management system in the Rio Tinto Business Solution (RTBS).

4.2. Conducting Risk Assessments

4.2.1. Level 1 Pre-task hazard assessment

TRACK: All employees shall utilise TRACK (pre-task hazard assessments) prior to the start of each task or activity to check for hazards and suitable controls. Where hazards, aspects or opportunities are identified without a control, a team based risk assessment will be conducted. (Refer OT-03-PRC-0003-E-Pre-task hazard assessment TRACK procedure).

JHA: formal, structured, pre-task hazard assessment shall be completed by a workgroup or small team. The JHA involves the systematic examination of steps within an activity, the identification of hazards for each task step, evaluation of potential impact and the identification and assignment of controls to mitigate the risk. The Job hazard analysis (JHA) template (OT-03-TMP-0013-E) shall be completed for each JHA conducted. (Refer Pre-task hazard assessment JHA procedure (OT-03-PRC-0005-E). If a SWP exists then a JHA is not required.

4.2.2. Level 2 Qualitative Risk Assessment

Hazards shall be identified, risk assessed, appropriately controlled and reviewed for the following areas:

- All tasks
- Processes
- Process and document changes (refer OT-11-PRC-0001-E-Management of Change Procedure).
- Changes in procedures or work methods
- Changes in legislation or other commitments
- Logistic and contractor activities
- Projects

The risk assessment (facilitated by trained personnel) shall consider all HSE social and environmental consequence categories, listed on the HSE Qualitative (5x5) matrix, and detailed as follows:

- Health impact
- Personal safety
- Environment impact
- Community impact
- Compliance impact
- Reputation

Current risk levels of low, moderate or high are acceptable for OT activities. OT shall not undertake activities which have a critical level of current risk – where these are identified approval from GM and COO to proceed with work area required.

The Level 2 Risk Register Template (OT-03-TMP-0015-E-Level 2 Risk Assessment Template) will be used for recording purposes,

- a cross section of personnel, including people exposed to the hazard will be used to participate in the risk register development,
- risk reduction measures will be discussed and an action plan developed,
- the hierarchy of control will be used to determine control measure

4.2.2.1. Health Assessments and Similar Exposure Groups (SEG's)

The OT Health team will arrange for the development of similar exposure groups (SEGs) for occupational health hazards.

Similar exposure groups (SEGs) have been defined for occupational health hazards that may occur. The primary factors that determine the composition of a SEG may include but are not limited to:

- Job task(s)/ work process(es)
- Task/process frequency and/or duration
- Environmental stressor(s)
- Job classification (description)

The SEG's applicable to the activities currently undertaken are stored in the OT health risk register with completed assessment and identified controls

Where there is exposure to known and suspected carcinogens and reproductive toxicants the OT Health team will arrange for an annual assessment to ensure that the risk is as low as reasonably practicable (ALARP).

4.2.3. Level 3 Quantitative Risk Assessment

Level 3 assessments are facilitated by trained personnel.

Risks classified in Level 2 qualitative analysis as 'critical' will be escalated to a Level 3 risk assessment. Level 3 assessments (including SQRA's) may also be initiated based on, but not limited to, any of the following reasons:

- if a high degree of uncertainty remains after the qualitative risk assessment is completed,
- required by regulations,
- risks with classifications of 'high' with consequence categories of 'major' and 'catastrophic',
- recommendation from an audit or management review,
- major projects or engineering study,
- significant stakeholder concerns, or
- change management for complex changes.

4.3. Management of Controls and Actions

A completed risk assessment includes identification of hazards and significant risks, identifying existing controls and action plans where additional controls are required. The risk response for the control of risks that shall be applied is detailed through the risk classifications in the following table:

Rating		Risk management response HSE focus	Action Implementation Time Frame
Critical	***Class IV***	Risks that significantly exceed the risk acceptance threshold and need urgent and immediate attention.	Immediate action required.
High	***Class III***	Risks that exceed the risk acceptance threshold and require proactive management. Includes risks for which proactive actions have been taken, but further risk reduction is impracticable. However active monitoring is required and the latter requires the sign-off from Business Unit senior management.	Short term action required. Improvement items shall be included in the Annual Improvement Plan to reduce risk level.
Moderate	***Class II***	Risks that lie on the risk acceptance threshold and require active monitoring. The implementation of additional measures could be used to reduce the risk further.	Medium term action required. Improvement items should be included in the Annual Improvement Plan to reduce risk level.
Low	***Class I***	Risks that are below the risk acceptance threshold and do not require active management. Certain risks could require additional monitoring.	Manage by routine processes.

All existing controls shall have a control owner – HSE activities (such as area inspections, Critical Control Monitoring plans) will monitor these controls. Planned controls or actions are assigned a responsible person for implementation. Actions are entered into the Rio Tinto Business Solution and managed in accordance with the Action Management procedure (OT-14-PRC-00009-E).

SWPs and other work instructions relating to activities with high HSE risk ratings shall be documented and accessible to work teams to support understanding of hazards and controls.

4.4. Monitoring and Review

The senior HSE person for the area will coordinate the risk register review on a regular basis. Risk assessments that identify a HSE risk with rating 'high' or 'critical' shall be reviewed at least annually. Other risk assessments should be reviewed at least every three years based on priority and the types of controls implemented. e.g. medium hazards may need to be reviewed more often. Leaders will arrange for other risk assessments to be reviewed at the frequency defined during the risk evaluation step and based on their risk level. In addition to reviewing 'high' and 'critical' HSE risks, OT shall periodically, after an incident, upon identification of hazard or when processes change, undertake reviews of the hazards related to the Rio Tinto HSE Performance Standards and hazards

Risk assessments that have actions that shall be implemented in order to lower the current risk shall be monitored until completion of all actions. Monitoring of the actions progress should occur through Site HSE Committee and management meetings. When all actions associated with a risk assessment are completed, the risk assessment shall be reviewed with the current controls in

place and a current risk noted. Persons involved in the review should include the persons originally involved in the risk assessment, HSE personnel and subject matter experts.

4.5. Communication and Reporting

All significant hazards and their controls are identified and communicated to all persons potentially exposed to the risk.

The outputs from risk analysis and management are communicated to relevant stakeholders to enhance the visibility of risks. Mechanisms include (refer OT-09-PRC-0001-Communication and Consultation procedure):

- Pre-start meetings
- Posters and communication campaigns
- Committees
- The centralised qualitative (level 2) risk register should be readily accessible to all risk owners and relevant internal stakeholders.
- Critical risks after completing quantitative risk analysis (level 3) to be reported to the Group as per Rio Tinto Social and environmental reporting work cycle (WCMS1401).

4.6. Documentation and Records

Level 1 Assessments TRACK's and JHA's shall be documented and retained in the relevant work area.

Level 2 risk assessments shall be recorded on the level 2 risk register templates. Where they are site wide and/or on-going hazards these will then be entered into the Rio Tinto Business Solution risk register. Original copies of Level 2 risk assessments shall be retained by under document control.

Level 3 risk assessments:

- SQRA's are recorded and summary risk score and action plans will then be entered into the Rio Tinto Business Solution risk register.
- Other: a record in RTBS (as an 'audit') will be created to attach the document and track actions in a centralised mechanism.

4.7. Training

All employees and contractors complete training in the TRACK and JHA risk assessment process. Identified personnel will be trained as Level 2 and Level 3 risk facilitators. Refer to HSE Training, Competency and Awareness procedure (OT-06-HSE-0001-E).

5. DEFINITIONS

ALARP (as low as reasonably practicable): Risk that is tolerable on the basis that the risk is acceptably low and cannot be further reduced effectively considering the cost, time and resources involved.

Control: Any process, policy, device, practice or other measure that is intended to minimise risk.

Hazard: A source of potential harm or a situation with a potential to cause actual or perceived loss or damage to people, the environment, or plant and equipment.

Hazard identification: The process of identifying threats (risks with a negative consequence) or enhancement measures for opportunities (risk with potential positive consequences).

Risk: A risk is an uncertain event or condition that if it occurs will affect the achievement of one or more objectives. It is measured in terms of the likelihood of occurrence and its potential consequences, and assigned an overall risk classification.

SQRA: Semi-quantitative Risk Assessment

SWP: Standard Work Procedure

Significant risk: A risk that has been analysed and assigned a risk classification of 'high' (Class III) or 'critical' (Class IV) (Rio Tinto definition).

6. REFERENCES AND RELATED DOCUMENTS

	Name	Location
Legal and Other Requirements	Rio Tinto HSEQ Management System Standard Element 3 - Hazard Identification and Risk Management	Prospect
	Rio Tinto HSEQ MS Standard Guidance Note Element 3 - Hazard Identification and Risk Management	
	WCMS0301 Work cycle: Hazard Identification and Risk Management	
	WCMS0302 Work cycle: Hazard Identification and Reporting	
	Supporting information and tools • Risk assessment hand-out hazard and impact types • Preliminary evaluation (self-assessment) process safety hazards and occupied buildings template (and example) • Risk control and action plan form	
Oyu Tolgoi HSE Management System	Documentation and Document Control Procedure (OT-08-PRC-0001-E)	OT Portal
	Action Management Procedure (OT-14-PRC-0009-E)	
	Pre-task Hazard Assessment Job Hazard Analysis Procedure (OT-03-PRC-0005-E)	
	Pre-task Hazard Assessment TRACK Procedure (OT-03-PRC-0003-E)	
Forms, Checklists, Permits, Templates	Level 2 Risk Assessment Workshop Template (OT-03-TMP-0015-E)	
	TRACK Checklist Card Template (OT-03-TMP-0001-E)	
	Job Hazard Analysis (JHA) Template (OT-03-TMP-0013-E)	
Records	Risk registers (refer list of OT risk assessments)	Excel eRoom RTBS

	Action plans	
Communication/ Training	Rio Tinto Level 2 Risk Assessment Facilitator (4 modules)	OT Intranet
	HSE Risk Matrix A4 (OT-03-COM-0009-E)	
	HSE Risk Matrix Wallet card (OT-03-COM-0010-E)	

7. DOCUMENT CONTROL

File Name	OT-03-PRC-E-0001-Hazard and Risk Management Procedure
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2.0	2013.01.18	Dolgor Baasansuren	Mahoney D'Alterio	Updated following sections: • 4.2.3 • 4.4 replaced 'significant' with 'high and critical' • 5: updated Definitions. Minor formatting changes.
2.1	2013.06.03	Dolgor Baasansuren	Mahoney D'Alterio	Minor correction of some terms and formatting.