Ok Tedi Mining Limited

"Where Safety is the Priority and Zero Harm is the goal"

OK TEDI MINING LTD
INTEGRATED RISK MANAGEMENT SYSTEM

ABSTRACT

Ok Tedi Mining Limited operates the largest open – cut copper and gold mine in Papua New Guinea with a workforce including contractors of about 3500 employees. The mine has been in operation for almost 20 years and is situated approximately 15 kilometres from the border of Indonesia.

OTML operates in a developing country environment with a multicultural indigenous workforce, difficult climatic conditions, in excess of 10 metres of rainfall per annum and the main mine workings located approximately 1700m above sea level, not to mention the numerous logistical challenges presented by our distance from major centres.

The risks when people, plant, equipment and environment are combined increases the potential for incidents to occur.

OTML promotes the slogan that **"Safety is Our Priority"** and **"Zero Harm "**our goal.

To achieve these objectives, we assess the risks and hazards confronting us at the commencement of every shift.OTML recognises that as an integral part of best business practice, all risks must be identified, analysed and managed professionally.

In order to achieve this, OTML has developed "in house" a highly sophisticated, and user friendly Integrated Risk Management System that is still evolving and which provides the Company safety efforts with the following attributes and capabilities:

- A structured risk identification process including *contractor's risk*.
- An in - depth analysis of those risks utilising a numeric matrix methodology to avoid subjectivity. .
- A clearly defined evaluation of the risks
- A risk treatment profile with specific options for control or elimination.
- An electronic action planning and tracking capacity.
- A continuous monitoring, control and review system.
- A risk communication strategy and process to embed the culture of risk management permanently within the workforce.

This process involves a dedicated team of key personnel from the respective OTML business units meeting on a periodic basis to systematically devise and implement methods to improve our risk management performance incorporating the following effort based actions:

- Initiation of actions to prevent or reduce the adverse effects of risk.
- Control & further treatment of risks until the level of risk becomes acceptable.
- Identify and record any problems relating to OTML'S management of risk.
- Initiate, recommend or provide solutions through designated channels.
- Action and verify the implementation of solutions.
- Communicate and consult internally and externally as appropriate

- Documenting actions to provide accountability mechanisms and similar tools.

The development of the aforementioned systems reflect the fact that OTML considers all team members and operators as our "Frontline Risk Managers" thereby practically embracing the OTML message of Safety being our Priority.

1.0 WHY DEVELOP THE SAFETY RISK MANAGEMENT SYSTEM TO SUCH A HIGH LEVEL

A comprehensive risk management system supports high performance operations, low risk safe work practices and maximises stakeholder value by being industry competitive.

Historically the company managed risk within the various departments and this created some variances between methodology and systems used and the resultant data was frequently in several shapes and forms. The Integrated Risk Management system in addition to achieving site wide consistency assists in achieving OTML's Charter aspirations of Shared Purpose and Goals and identifies opportunities for continuous improvement.

Site wide centralised data handling is streamlined and more effective, operating through a central database allowing risks identified site wide to be flagged for action. Loop closing is enhanced by the in built action planning mechanism that allows automatic email alerts to be dispatched to the "risk" action owner 7 to 10 days prior to the end of a month requesting information on the status of the required treatment / action.

Reports can be generated to meet all business needs in descending order from board level down to individuals and departmental teams throughout the mine operating units.

In a recent external audit conducted by the NOSA Organisation the OTML team members were described as being "one of the most risk aware workforces we have encountered throughout our global site audits."

2.0 RISK MANAGEMENT CURRENT STATUS

The Integrated Risk Management System is now being extended to other operational and business areas including environmental risk.

Consistent with this we:

- Use appropriate risk assessment techniques at all levels of the organization and the resulting risk profiles are considered in decision-making.
- Seek continuous improvement in managing threats and opportunities including taking business and stakeholder considerations into account.
- Adopt and apply standards that reflect the company's commitment to risk management and continually review our performance against these standards.
- Ensure that risk management systems not only identify, assess, monitor and control threats but also identify further development opportunities.
- Ensure that all employees and contractors are informed and understand their obligations in respect of the policy, standards and guidelines.
- Foster an ongoing risk knowledge culture by training and active participation and hold individual employees accountable for managing self risks and risks in their area of responsibility.
- Comply with OTML's Risk Management Policy to eliminate fatality potential situations and sustain a "Zero Harm" work environment.
- Provide a consistent, integrated, multidisciplinary approach and language for the management of risks associated with all hazards at OTML by implementing risk reduction strategies for unacceptable risks, maintaining controls for acceptable risks and further enabling risk-informed decision-making.

- Ensure that management and staff know what is required of them regarding managing risk thereby enhancing vertical and horizontal communications.
- Provide auditable criteria against which risk management activities can be measured.

Currently, OTML's Safety Risk Management System is the main proactive component of the Risk Management Program where individual and generic risks are identified, analysed, evaluated, communicated and treated to enable continuous improvement.

The system ensures that all hazards (threats) found to be unacceptable are urgently treated until the residual risk level becomes acceptable by means of Action Plans and the highest priority risks being treated first. Any risk scenario, which has the potential to adversely affect the safety or health of people or to cause damage to property or environment, is stored in the system.

Procedures are established and maintained for all personnel to identify and report hazards, incidents or any situation detrimental to safety or environment. Once risks scenarios have been identified, they are assessed with regard to the likelihood and magnitude of the potential consequences.

High and significant risks are evaluated and appropriately addressed, including actions, systems and arrangements for effectively managing these risks. Regular reviews of the status of registered risks and the effectiveness of control measures are conducted.

Control measures are prioritised and actions selected and applied in accordance with the risk management Hierarchy of Controls (i.e. eliminate, reduce, isolate, protect, etc.)so as to ensure that final risk levels are as low as is reasonably practicable. Appropriate levels of residual risk transfer are in place and monitored regularly for adequacy and coverage.

The natural Risk Owner or Risk Manager is identified and approached to accept this role for each Risk Treatment Action Plan. Risk allocations are based on the party's ability to control the risk and included into contract documents in the case of external parties. A Risk Manager/Owner is tasked with ensuring that such Risk Treatment Action Plans are implemented.

Some responsibilities are given to individual workgroups who are guided and encouraged to embrace a "Hierarchy of Controls" approach to manage and/or mitigate the identified residual risk inherent within their daily work duties.

The Risk Management Officer reports the progress of the risk treatment actions and any risk rating changes to all relevant personnel.

3.0 RISK MANAGEMENT SYSTEM ELEMENTS

The OTML Risk Management System contains: policy and commitment; planning; implementation and operations; checking and corrective action; and management review elements.

- *Policy and Commitment* is aligned to the OTML Company Charter, OTML Risk Management Policy and Guidelines.
- *Planning* activities involve the following process elements: context setting, risk identification, risk assessment and risk treatment planning.
- *Implementation & Operations* and *Communication and Reporting* element involves risk treatment plan implementation, monitoring and communication with all information generated capture on the Risk Register.
- *Checking and Corrective Action* involves Outputs Measures and Performance Targets Indicator (KPI's) reporting and auditing feedback.
- *Management Review* involves an annual management review and the development of a risk management system improvement plan.

Refer to Figure 1 to illustrate the elements involved in the continuous improvement loop.
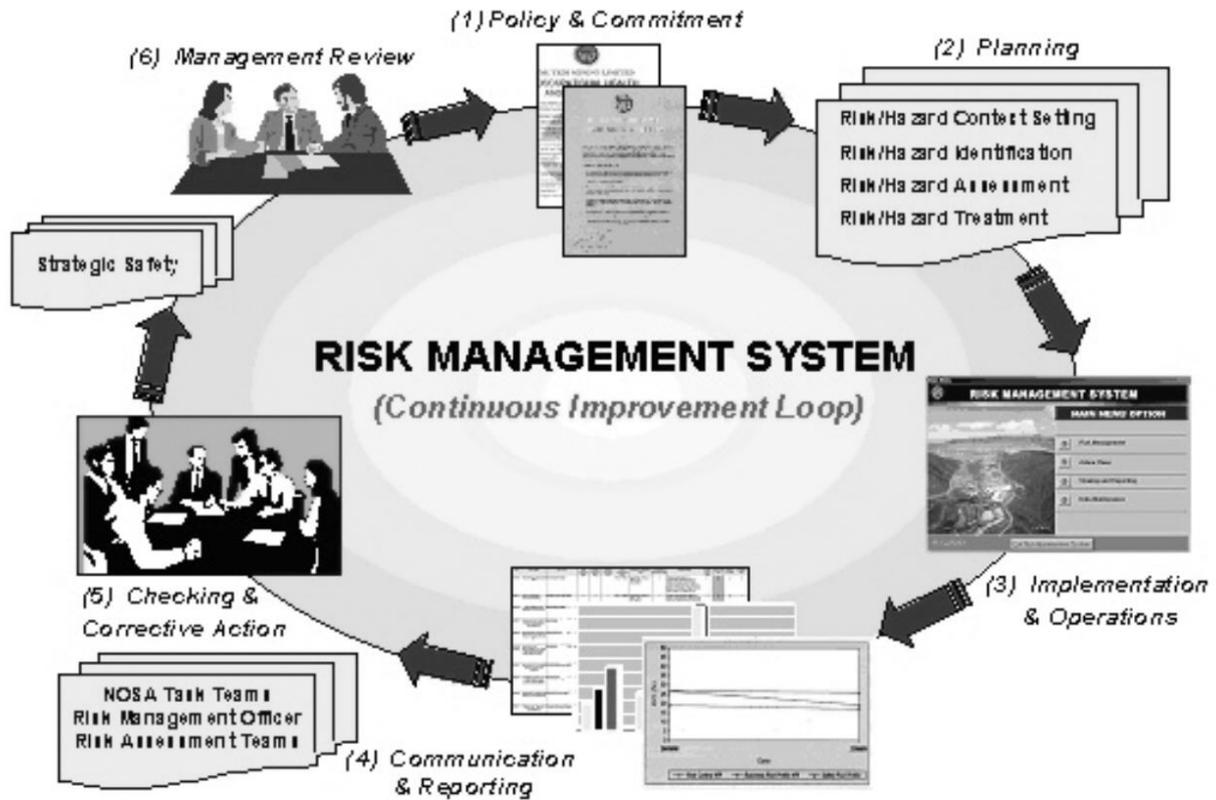

Figure 1: Risk Management System Elements.

4.0 RISK MANAGEMENT PROCESS

The risk management standard AS/NZS 4360:1999 has been used to guide all risk management activities carried out in the company. Figure 2 shows the steps involved and also list sub-steps in the establishing stage.

5.0 CONTINUOUS RISK MONITORING

It is our ultimate aim to ensure that a clear understanding of risk management performance and trends, and their significance and implications, exists at all levels in the company; and that performance measurement is utilised in the identification of adverse trends or situations and in the development of continuous improvement and corrective actions measures, as appropriate.

Outputs Measures and Targets are defined and utilised (Performance Management System) at all levels of operations at OTML. In addition, specific risk performance criteria and measures are defined for individual units, departments, as appropriate. In addition to maintaining standards of performance, such management tools are designed to facilitate.

The system has been established and maintained for the analysis of risk data, monitoring trends, applying corrective action and facilitating continuous improvement

Figure 3 shows the OTML risk monitoring process, which ensure that the recommended corrective actions are implemented.
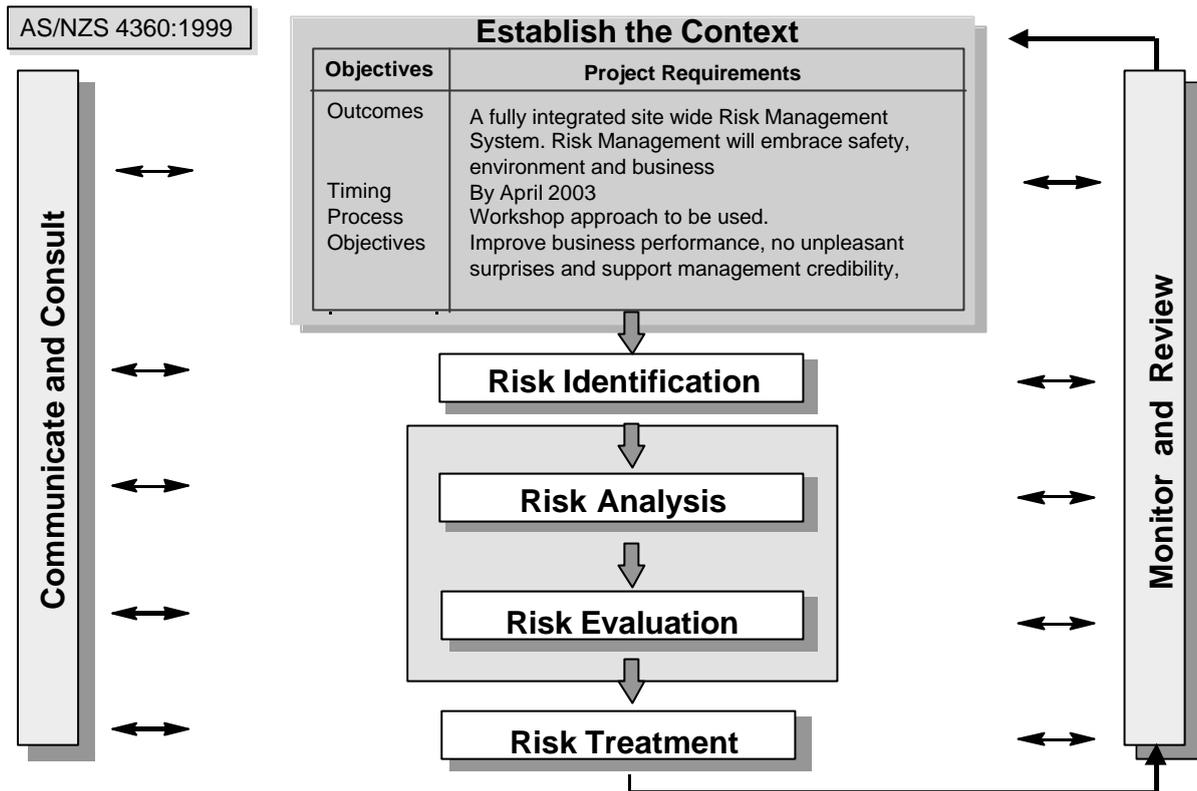
Establish the Context

Objectives	Project Requirements
Outcomes	A fully integrated site wide Risk Management System. Risk Management will embrace safety, environment and business
Timing	By April 2003
Process	Workshop approach to be used.
Objectives	Improve business performance, no unpleasant surprises and support management credibility,

AS/NZS 4360:1999

Communicate and Consult

Monitor and Review

Risk Identification

Risk Analysis

Risk Evaluation

Risk Treatment

Figure 2: Risk Management Process. AS/NZS 4360: 1999.
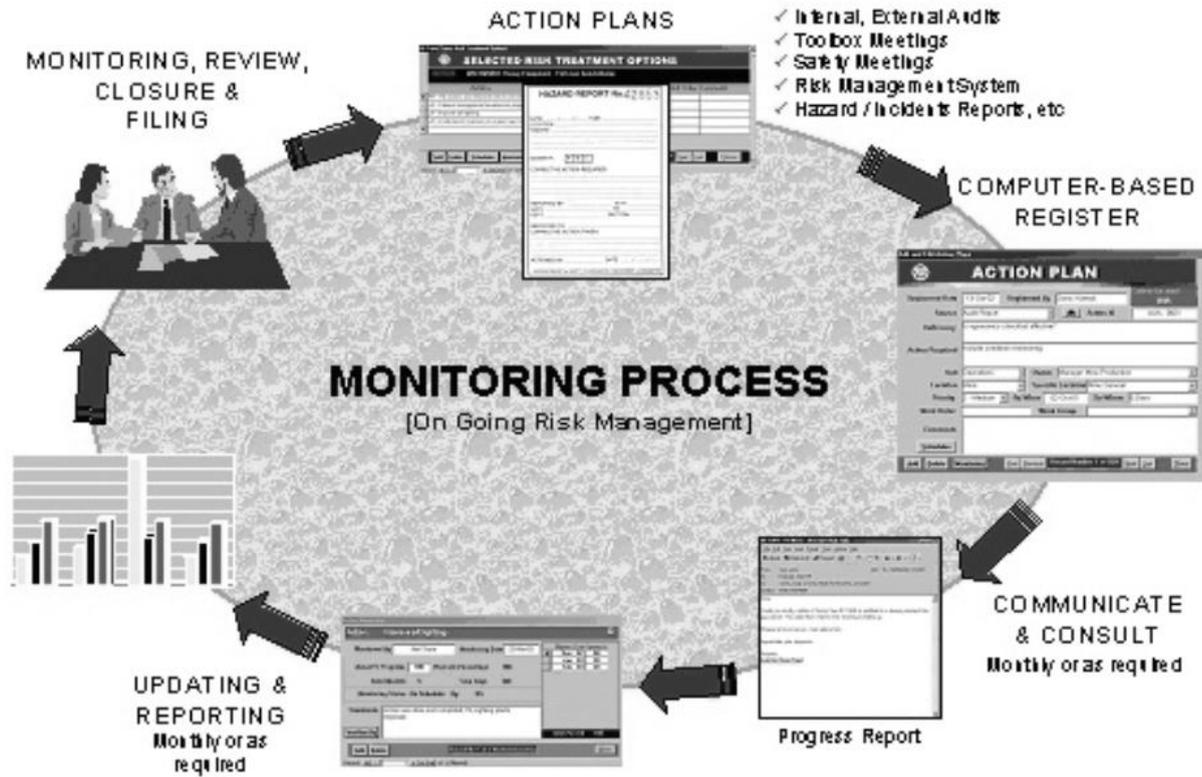
Figure 3: Risk Monitoring Process.

6.0   RISK COMMUNICATION

Communication is an important element of risk management because it ensures that risk management performance is adequately communicated to all OTML personnel, that opportunities are regularly provided for effective two-way communication (vertical), that effective cross-communication (horizontal) exist throughout the company, and the systems are in place for the communication of risks to and from other parties as appropriate.

Once the critical risks scenarios are identified, they are communicated to the workforce using a "Risk Cascade" approach. This involves strategically positioned 3 x 1metre signage being installed in all key work locations to ensure that immediate work area risks are clearly visible to all employees or visitors and contractors.

Risks-based reports have been created and implemented to ensure that relevant, reliable and timely information is readily available to people inside and outside OTML who have the responsibility to act on such information and as required by legislation.

Communication of risk within the company is further improved by utilising OTML's television channel to flag potential risk scenarios to the broader workforce and indeed the community as the need arises.
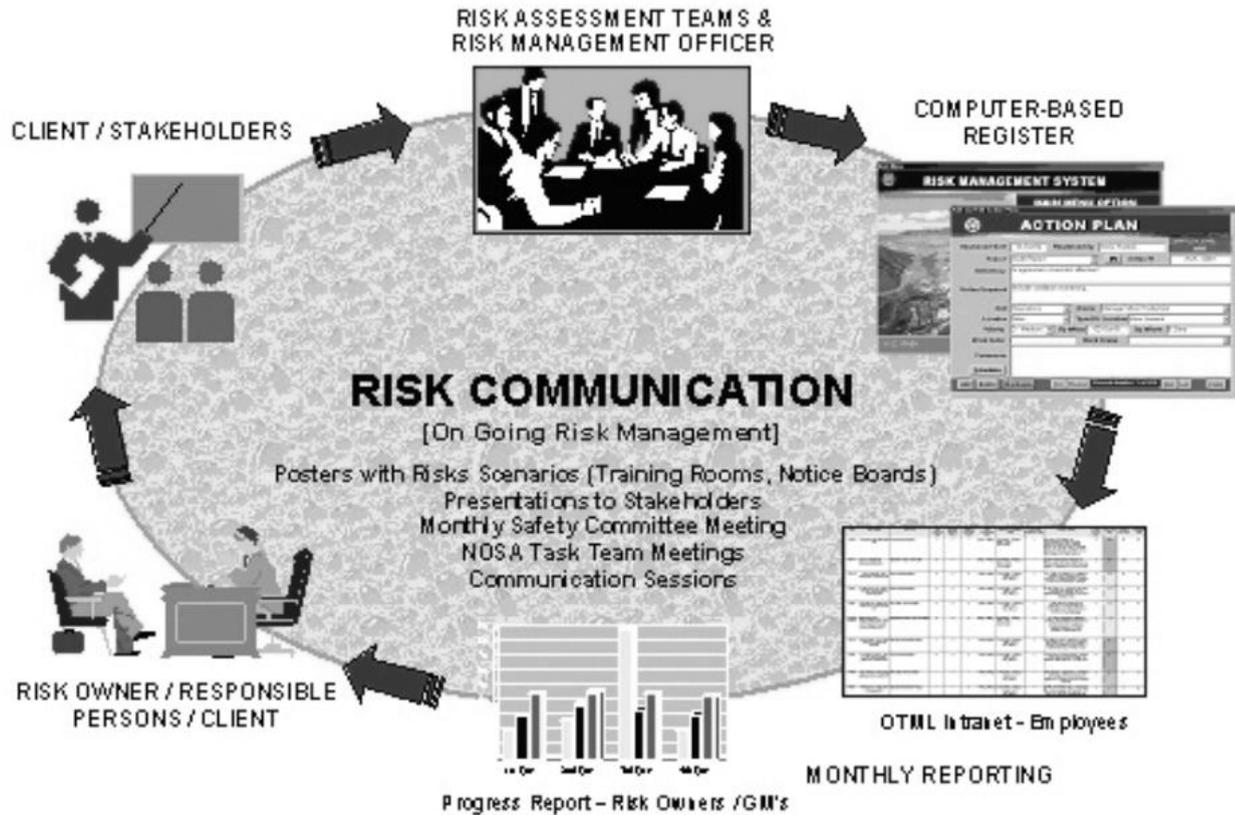
Figure 4: Risk Communication Process.

7.0 THE ROAD AHEAD – OPPORTUNITIES FOR FUTURE DEVELOPMENT

To quote OTML's Managing Director "to stand still is to fall behind." This statement encapsulates the philosophy and energy required by the company to move forward in an atmosphere of continuous improvement.

In order to meet stakeholder expectations we are presently expanding the database methodology to capture business and environmental risks.

This will allow us to manage and treat our environmental issues on a parallel basis to our safety risks and to ensure that our efforts are focussed and based facts rather than assumptions.

The Integrated Risk Management System is geared to provide us with a direct relationship to OTML's Performance Management process as we develop the capacity to align our safety and environmental risks through action plans, to set clear, measurable and challenging performance targets for all levels of employees within our organisation.

OTML has a "maturing workforce" and with that maturity comes a responsibility to ensure that our Occupational Health requirements are adequately assessed, risk rated and managed to achieve corporate standards of compliance The risk management system will assist greatly in ensuring that we accomplish this in a systematic and professional manner by undertaking a site wide occupational risk analysis and integrating the outcomes with that of our Medical Centre Management to ensure that we continually seek to mitigate occupational health risks for our workforce.

OTML is presently undertaking a major company wide information technology upgrade.

As the Integrated Risk Management System is designed on a Microsoft Access platform and requires minimal hardware and software support we aim to ensure that the system is fully linked and compatible to other important company databases and management systems such as MIMS, Concept (HR &Training) etc, to ensure that captured data can be easily shared / imported and aggregated in order that continually higher and more effective levels of planning and implementation occur. It also archives previous risk histories – allowing retrospective comparisons to be made.

In this way data can be easily manipulated by the system to meet the varying reporting requirements of a range of management, business units and specialist work teams.

Human resource initiatives are important also for the future as we aim to equip all of our key safety personnel and our site wide location risk teams with an accredited credential / qualification in Risk Management.

In summary:

The system is continually "evolving" with each risk assessment session undertaken frequently highlighting areas where we can improve and better meet the needs of our clients and stakeholders.

The system is a cornerstone tool that is flexible enough to grow and develop to meet the organisations future Safety, Environment and Business risk needs.

The ongoing objective for the Integrated Risk Management System is to fully realise its potential as a first class continuous improvement and risk management tool.

Statistical achievements accrued during the implementation period of the Integrated Safety Risk Management System are listed below:

OTML has achieved a fatality free mine site since the 19th of November 2001.

Between the 26th of August 2002 and the 25th of April 2003, OTML and contractors combined to record a total of 6,348,011 man hours Lost Time Injury free.
Of this total, Contractors achieved 2,924,758, man-hours Lost time Injury free an OTML contractor record.

OTML's record and indeed a Papua New Guinea mining record achieved between 19TH of November 2001 and the 25th of April 2003 stands at 6,794,411 man-hours Lost time Injury free.