Safety Systems – The Ok Tedi Way

OK TEDI MINING

The Ok Tedi Way 2018

WHO WE ARE

- Ok Tedi Mining Limited is a Papua New Guinean company focused on the safe, reliable and profitable development of the Mt Fubilan resource.
- Our core business is mining and processing of copper and gold into concentrate.
- We aim to be a high performance organization, maximising economic recovery of the resource, providing a superior return to our shareholders, and continuously improving against competition.
- We provide interesting and challenging work for our employees and recognize and reward performance.
- We respect the environment and communities within which we operate.

HOW WE OPERATE

- We develop and pursue business strategies and plans that maximize value.
- We have clear job accountabilities and the authority to act. We expect and encourage performance improvement and stretch.
- Support functions are lean and closely integrated into operation, providing either functional support or protecting our social licence to operate.
- We reward excellence, differentiating on the basis of performance.
- We provide our people with the training and tools to develop consistent with business needs.
- Non-core work is considered for outsourcing to specialist providers.
- We operate as one team, recognising inter-dependencies – a One Team, Wan Pasin culture.

OUR VALUES

- Safety, Environment - we care about our employees, business partners and our communities' well-being
- Integrity – we expect honesty, trust, fairness and respect
- Accountability – we own our jobs, we meet our commitments
- Teamwork – our goals are common, our successes shared
- Performance – we give our best every day and seek to continuously improve.
- Sustainability – we use what we need and conserve what we can

OUR SUCCESS
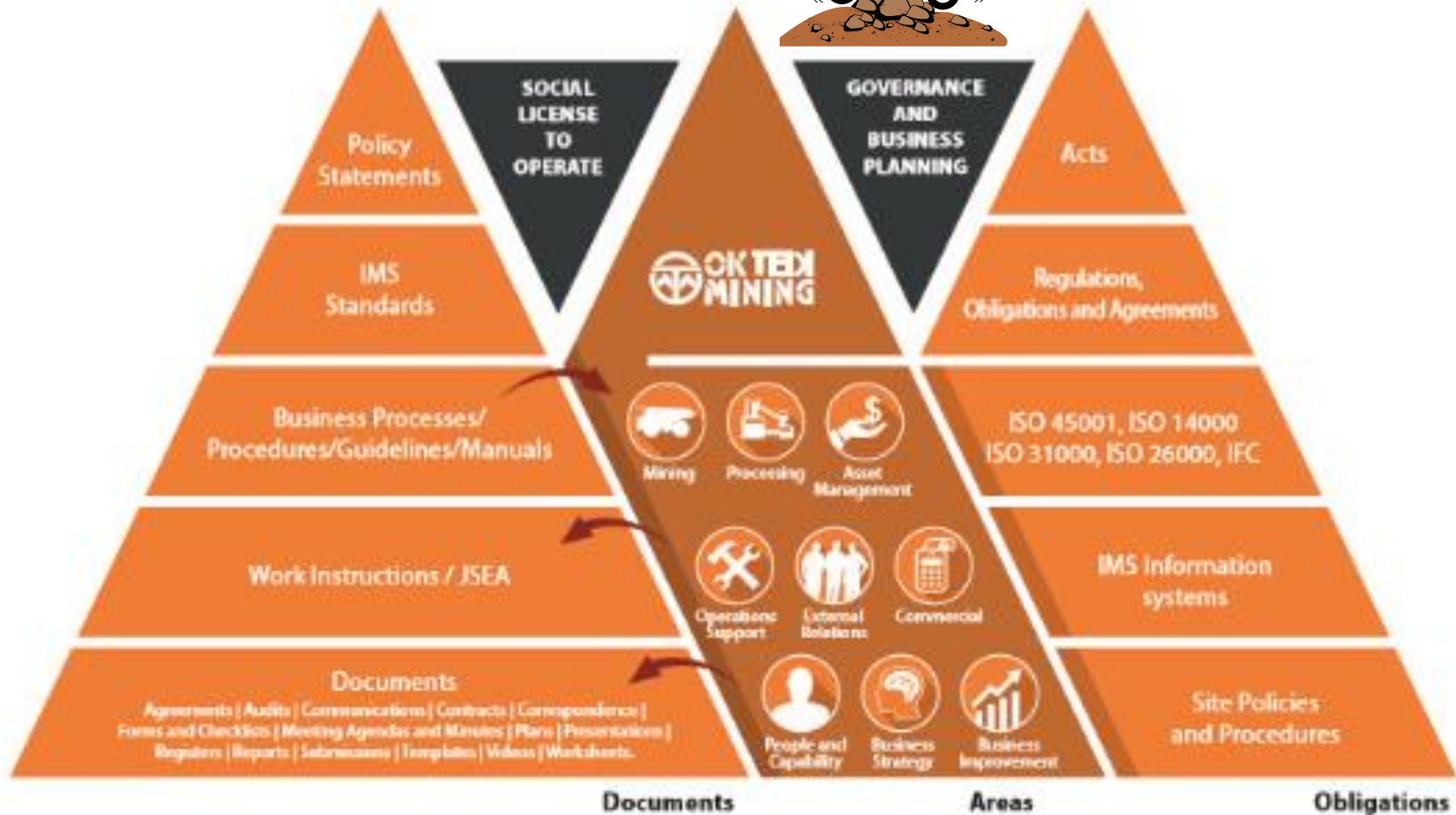
We are successful when:

- Health and Safety: No one gets hurt. Zero LTI
- Environment: Nil significant environment incidents
- Communities/Stakeholders: Obligations met, no disruption to operations
- Production: Copper metal ≥110,000 tonnes, ≥Gold 300,000 oz
- Financial: Gross revenue ≥US$1,000M+
- Mining: Cost ≤US$2.15/t ex-pit
- Processing: Cost ≤US$6.50/t milled (excluding Bige)
- General & Admin: Cost ≤US$11.5 M/month
- Sustaining CAPEX: ≤US$50Mpa delivered on time, on budget, benefits realised

Ok Tedi Mining Limited, 2018

The Journey

Mature Safety Culture (Commitment)	**Year Five** Review, amend the program as necessary and apply continuous improvement principles.	**Continuous Improvement (Commitment)**
Developing Safety Culture (Taking Responsibility)	**Year Four** Safety champions mentoring the workforce, bringing workers from a position of Environmental Safety Awareness (ESA) to Personal Safety Awareness (PSA).	**Involving Staff (Participation)**
	Year Three Continue coaching and review the systems. Enhance safety culture based on PSA.	**Managing Systems (Compliance)**
	Year Two Choose safety champions and start coaching desired behaviour, make sure workforce is aware of ESA / PSA requirements.	
Emerging Safety Culture (Compliance)	**Year One** Strengthen foundations, developing systems to ensure we are starting from a position of compliance. **Foundation**	**Developing Systems**

BEHAVIOURS

CAPABILITY FRAMEWORK

SYSTEMS

The Integrated Management System (IMS) is the map for our journey.

Risk Management

Integral to OTML's safety commitment is a structured risk management approach that:

- Streamlines the risk management process

- Ensures lessons learned are not lost or required to be repeated

- Facilitates consistency and best practice processes across OTML.

Play Video

Let's have a look at how we apply this in practice – Entering and Working in a Confined Space.

Major Hazard Scenarios

- Major hazard scenarios are identified at the organisational level for events that could credibly result in:

  - Fatality

  - Major environmental impact

  - Business loss of $AUD 5m.

- Major Hazard Scenario Register is accessed through SharePoint.

- Persons in charge of work must refer to the register before starting a new task.

Bow Tie Process

- Major hazards are analysed using the Bow Tie process.

- Identify key controls.

- Key controls for confined space work include:
    - Trained & authorised personnel
    - Authority to Work
    - Atmospheric testing
    - Spotter/Sentry
    - Signage
    - PPE.
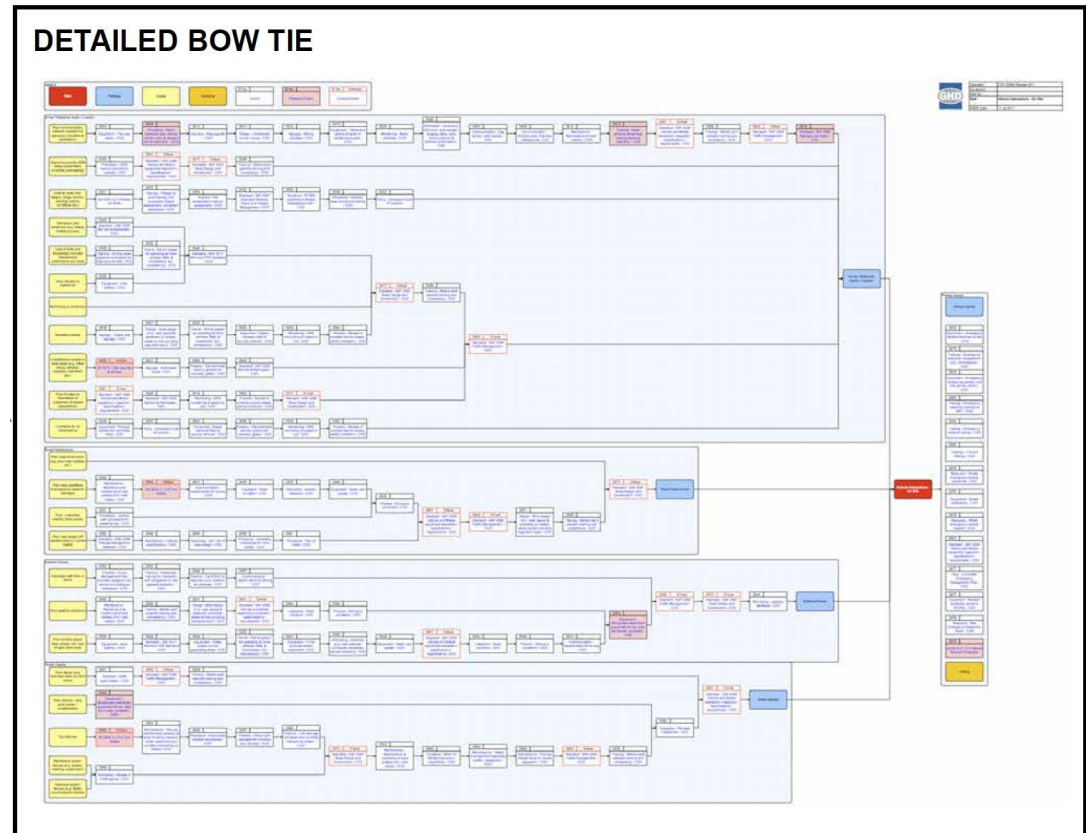
Key Control Data Sheets

OK TEDI MINING

Procedure

Confined Space Atmosphere Testing

Key Control Data Sheet

Procedure Number: RSK-PRO-KCD-025

Scope of Application: Ok Tedi Mining Limited

Issued: *Nov, 2017*

Document Owner: Manager – OHS & Training

Why is the Control Important – Testing of the atmosphere for O2, LEL and any other hazardous gases which may be present prior to entry prevents exposure to personnel entering the space and confirms isolation, decontamination and purging has been adequate.

Exemption – No exemptions permitted.

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RSK-PRO-KCD-025   Procedure

Confined Space Atmosphere Testing

Operational Requirements

Performance Metrics

There is a confined space permit prepared prior to entry which lists testing requirements prior to entry whilst personnel are inside the Confined Space.

Atmosphere monitoring units must be field calibrated (bump tested) against a known reference point or sample immediately prior to use.

Ventilation purging of the space top during atmosphere monitoring.

Entry must not occur, and the space evacuated if the atmosphere measurements are not: O2 between 9.5% - 23.5%, LEL below 5%, below 30 ppm, CO2 below 5000p

Utilisation

Atmosphere testing is conducted thereafter (as specified on the 24hrs.

Safety Critical Defeat

No defeats permitted.

Testing & Verification

At least once per confined spa

- Verify the pre-entry atr confined space entry p
- The atmosphere monit

Maintenance

Atmosphere monitoring units with manufacturer recommend months.

RSK-PRO-KCD-025   Procedure

Confined Space Atmosphere Testing

Design Requirements

1. **Design Stan**
   AS2865 – Entry
   ease of entry an
   OHSA -1910.14

2. **Safety Param**
   Personnel condu
   confined space a
   Atmosphere mon
   explosive atmos

3. **Design Life**
   Not applicable.

4. **Safe Separa**
   Not applicable.

5. **Special Req**
   No additional re

RSK-PRO-KCD-025   Procedure

Confined Space Atmosphere Testing

Task Requirements

The following are the key day to day requirements operators/maintainers and supervisors _must_ follow to ensure the control is being used correctly.

1. **Task Requirements**

No.	Supervisor	Operator/Maintainer
1	Prepare Confined Space Permit listing gases to be tested and locations.	Only conduct confined space atmosphere monitoring or entry if trained, assessed as competent and the training is current.
2	Provide gas detection equipment which is calibrated.	Space is tested prior to entry, periodically as per instructions on the Confined Space Permit at least every 24 hours.
3		Meter is suitable, in date for calibration and bump/challenge tested prior to every sample.
4		Entry to space is disallowed if gas test results are not: O2 between 19.5% - 23.5%, LEL below 5%, CO below 30 ppm, CO2 below 5000ppm, or the specified range of other gases on the confined space entry permit.
5		All sample results are recorded on the confined space entry permit.

2. **Skills Requirements**
   Personnel conducting gas tests must be trained and authorised.

3. **Permits**
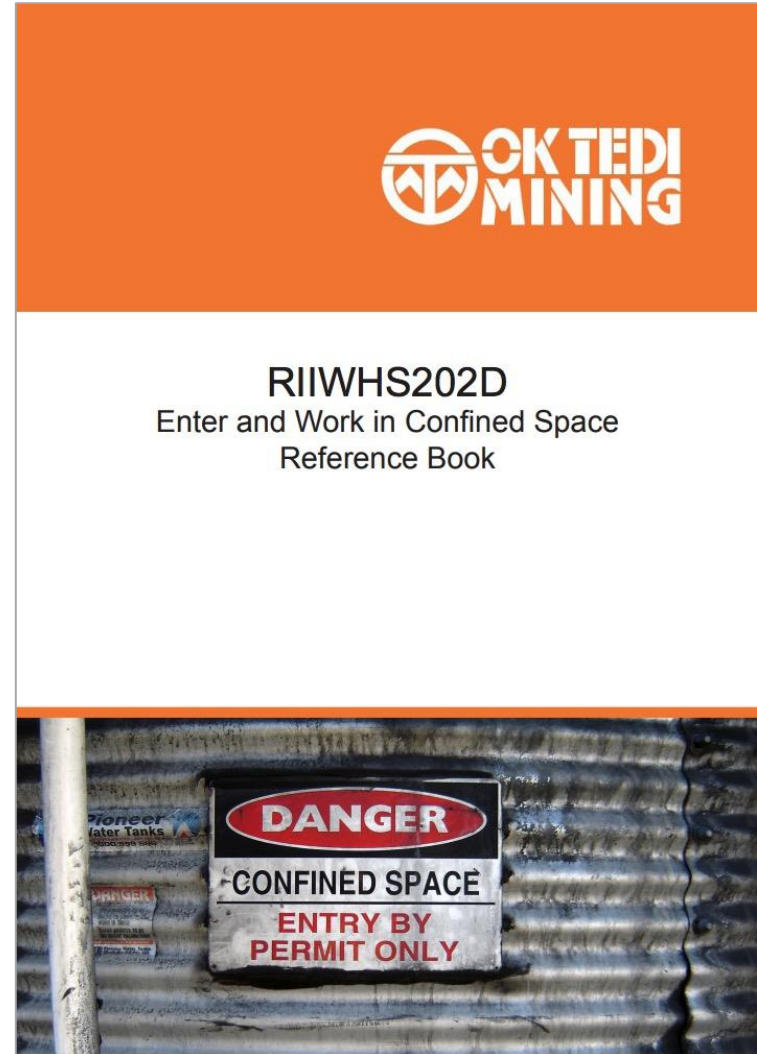   Gas testing results are recorded on the Confined Space Entry Permit.

4. **Task Specific PPE Requirements**
   PPE requirements for personnel conducting confined space gas testing is specified on the Confined Space Permit.
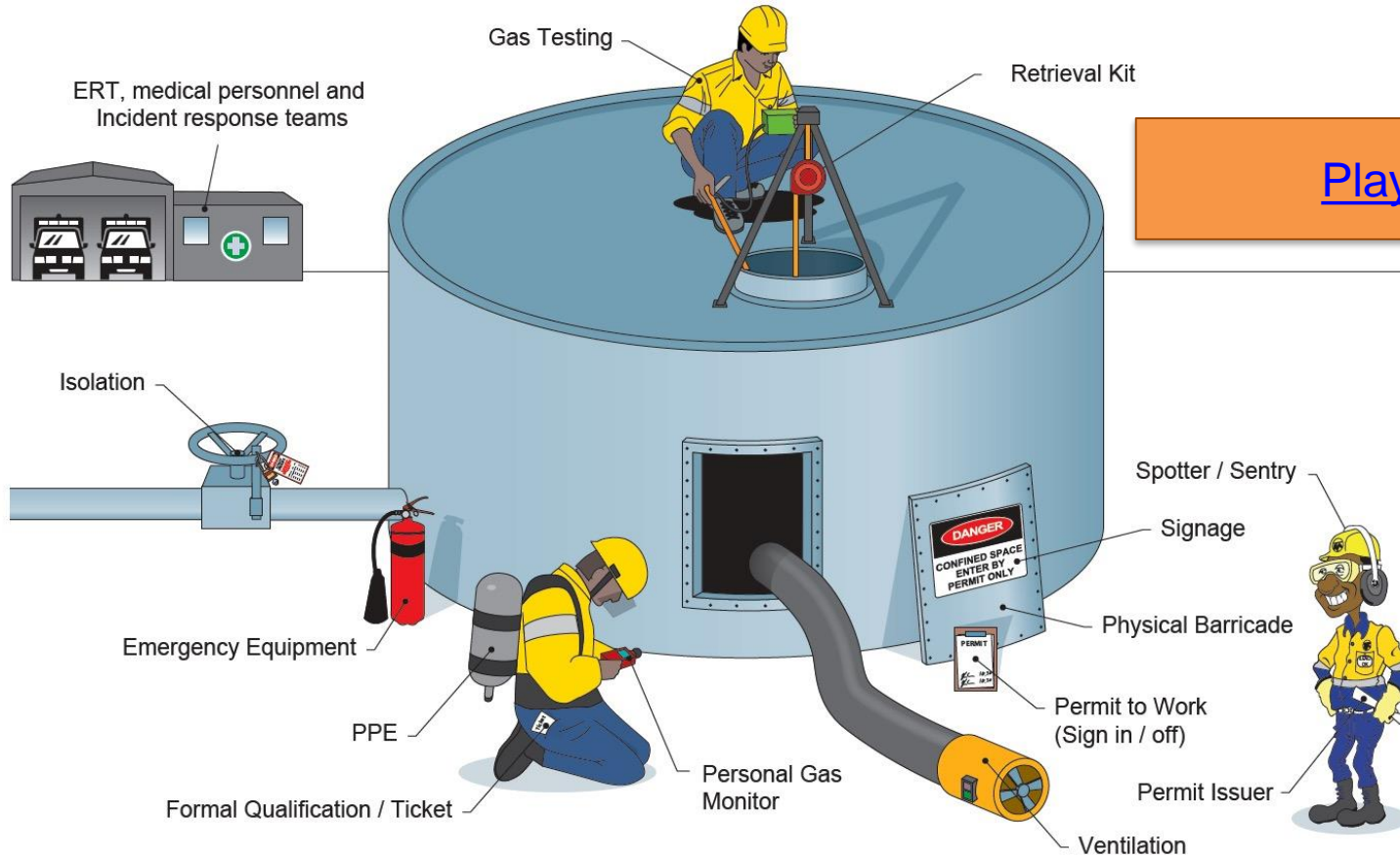
Procedures and Processes

With a clear idea of our major hazards and key controls:

- Procedures and work instructions are developed

- Systems implemented

- Personnel receive training

Other Support Tools

Gas Testing

Retrieval Kit

ERT, medical personnel and Incident response teams

Play Video

Isolation

Spotter / Sentry

Signage

DANGER
CONFINED SPACE
ENTER BY
PERMIT ONLY

Emergency Equipment

Physical Barricade

PERMIT

PPE

Permit to Work (Sign in / off)

Personal Gas Monitor

Permit Issuer

Formal Qualification / Ticket

Ventilation

Docs
- Confined Space Register
- Confined Space Check List
- Isolation Procedure
- Confined Space Permit

Systems
- General Awareness Training
- Formal Confined Space Training
- Confined Space
- Maintenance Schedule

The Drivers

Our people to progress the safety journey.

- Senior staff demonstrate visible safety leadership.

- Safety champions help others.

- All workers have the right to stop work and speak up about unsafe conditions, behaviours and practices.

- We promote 'safety thinking' and personal safety responsibility.

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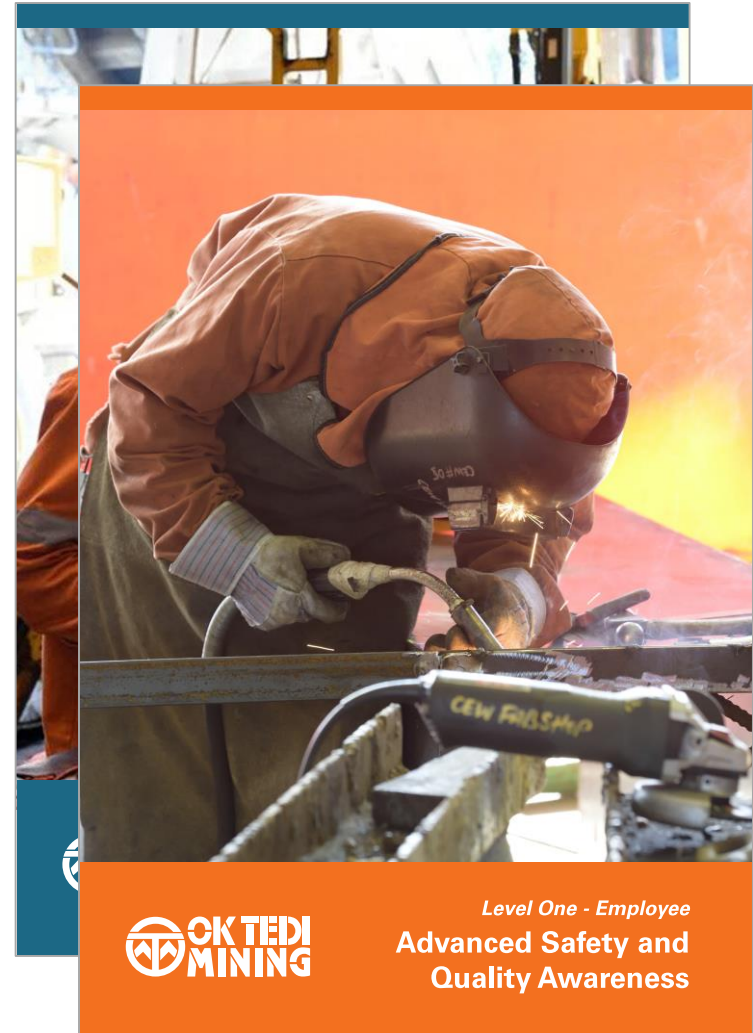
Level One - Employee
Advanced Safety and Quality Awareness

OTML's Safety System - Our Journey

- **Our Destination** – The OK Tedi Way (How we do business).

- **Our Journey** – From emerging safety culture based on compliance to mature safety culture based on personal responsibility and commitment to safety.

- **Our Map** – OTML Integrated Management System.

- **Our Tools** – Structured hazard and risk control supported by:

  - Procedures

  - Training materials

  - Posters, videos, etc.

- **Our Drivers** – Visible leadership, safety champions, OTML 'safety thinking' workers.