

# **BROADLEAF CAPITAL INTERNATIONAL PTY LTD**

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*Specialists in Strategic, Enterprise and Project Risk Management*

## **ACTIVITIES IN THE MINING AND RESOURCES SECTOR**

Broadleaf has carried out quantitative risk analyses and capital evaluations for many mining and minerals processing businesses. Some of the larger examples are listed here.

- Quantitative business enterprise risk analysis of a new mineral processing and smelting process;
- Development of incentive models based on the achievement of project cost, schedule and safety targets for a large processing plant construction contract ;
- Risk analysis of mine development plans for an established gold mine;
- Quantitative risk analysis for the capital evaluation of a major gold mine expansion and development;
- Technical risk assessment and quantitative risk analysis of options for new nickel smelting technologies and mine infrastructure packages;
- Audit of a sophisticated quantitative risk analysis for a sensitive mine waste management project involving engineering, social and environmental aspects, for Ok Tedi Mining Limited;
- Risk assessment and capital evaluations for BHP's Hot Briquetted Iron (HBI) plants, in Australia and Venezuela;
- Pre-feasibility and feasibility evaluations of several large combined mining, ore processing and shipping projects;
- Risk assessment for a smelter expansion;
- Modelling of energy supply risk for a smelting operation and associated insurance impacts.

We regularly perform qualitative risk assessments and associated activities for mines, minerals processing plants, smelters and steel production facilities. These generally follow the AS/NZS 4360 process. Our approach generally relies heavily on facilitation and close cooperation with the in-house project team. Examples of these assignments include:

- Project risk assessments;
- Technology risk assessments, including risks associated with different technology choices and with the installation and operation of critical equipment;
- Hazard and safety studies;
- Risk assessments of mine-wide site operations, process plant operations, cogeneration projects, mini-mill and smelter operations, and transport hazards;
- Project value management and value improvement studies;
- Development of Risk Management Plans and Risk Management Strategies.

We have worked for many years with major oil and gas exploration and production companies in the Middle East to implement corporate and project risk management processes we have prepared. Recent activities have included:

- Development of project risk management guidelines, tailored for the organisations and the way they operate;
- Corporate risk assessment of strategic and business-wide risks with the senior management teams;
- Risk assessments of plant upgrade projects;
- Risk assessments at progressive stages of a major instrumentation upgrade, a project of strategic importance to the business;
- Reviews of risk management implementation in specific projects.

We conduct public and in-house training in all aspects of risk management and risk analysis. Such exercises have included:

- Resource project risk management;
- Risk management training for site personnel at all grades;
- HAZOP training for project teams;
- Training for operators of a complex metallurgical processing plant;
- Training in quantitative risk analysis using @Risk for project cost and schedule estimation;
- Risk analysis software training.

Some of our clients include:

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|--------------------------------------|------------------------------|
| – Abu Dhabi Company for Onshore Oil  | – Ok Tedi Mining Limited     |
| – Abu Dhabi Gas Liquefaction Company | – OneSteel                   |
| – Alcoa World Alumina Australia      | – Otter Gold Limited         |
| – AngloGold Australasia              | – Rio Tinto                  |
| – Australian Magnesium Corporation   | – Solid Energy NZ            |
| – BHP Billiton (various divisions)   | – Western Mining Corporation |
| – BlueScope Steel                    | – Woodside                   |
| – Boddington Gold Mine               | – Worsley Alumina            |
| – Kalgoorlie Consolidated Gold Mines | – Xstrata                    |
| – Nabalco                            | – Zakum Development Company  |

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