The World Bank Group

Oil, Gas and Mining Policy Division

GUIDANCE NOTES FOR THE IMPLEMENTATION OF FINANCIAL SURETY FOR MINE CLOSURE

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Chapter 1 Introduction

It is now accepted practice that when a company relinquishes a mining title, whether for an exploration or mining site, it is responsible for carrying out the rehabilitation of that site prior to departure. To ensure this is the case, most jurisdictions now require some form of closure plan or rehabilitation program to be submitted to the regulatory authority prior to any work starting on the site. It is an increasingly common requirement for the closure plan to contain details of the estimated cost of rehabilitation and for a financial surety to be established at the same time.

This report aims to provide the information necessary to assist governments in making their own, informed decisions regarding financial surety for mine closure. The report is based on a review of existing financial surety systems in a number of countries. Questionnaires were sent out to a total of 14 regulatory authorities and, of these, nine provided sufficient detail about their existing financial surety systems to be included as full case studies. These are presented in Chapter 3 along with a summary of the latest European Union waste directive. Except where otherwise stated, the financial surety applies to all stages of a mining project whatever the size.

The latest IFC (World Bank) Environmental, Health, and Safety Guidelines for Mining (2007) state that mine closure and post closure should be included in business feasibility at the design stage with the minimum consideration being the availability of funds to cover the cost of closure. These funds should be established by a cash accrual system or financial guarantee. The relevant section of the Guidelines is reproduced in Box 1.1.

The purpose of the financial surety is to ensure that there will be sufficient funds available to pay for site rehabilitation and post closure monitoring and maintenance at any stage in the life of the project including early or temporary closure. The main aims of site rehabilitation are to reduce the risk of pollution, to restore the land and landscape for an appropriate use, to improve the aesthetics of the area and to prevent any subsequent degradation. The extent and cost of final site rehabilitation can be reduced if it is undertaken on a progressive basis wherever possible, as mining takes place, so that the rate of restoration is similar to the rate of exploration or exploitation. This ideal is not often achieved and it is more common for the majority of rehabilitation to take place once work on the lease has ceased.

The cost of mine closure can vary enormously as the following extract from the World Bank and IFC publication (2002) shows:

> "Closure costs for environmental issues range from less than US$1 million each for small mines in Romania to hundreds of millions of dollars for large lignite mines and associated facilities in Germany. More typically, closure costs will range in the tens of millions of dollars. Preliminary research indicates that medium-size open pit and underground mines operating in the past 10 to 15 years cost US$5-15 million to close, while closure of open pit mines operating for over 35 years, with large waste and tailings facilities, can cost upwards of $50 million."

This means that the required level of financial surety can differ dramatically between countries and should only be established on a country by country and site by site basis. In addition, because of the variation in conditions, it is not feasible to establish a definitive guide. However, the regulatory authority does need to be consistent in their approach to determining end goals, or rehabilitation standards, and assessing the financial surety requirements. These should include, but not be limited to: the removal of all plant,

equipment and, where it is no longer needed, infrastructure; the removal of all hazardous materials; the sealing of adits; the stabilization of all surfaces; the revegetation of all surfaces; the restoration of surface and ground water flows; the prevention of long term pollution.

In some instances the mining community may have become reliant on the cash flow, infrastructure and facilities provided by, or because of, the mine. It is becoming accepted that these social assets and services should be taken into consideration when establishing the financial implications of mine closure and that funds should be set aside for this purpose.

Box 1.1: IFC Guidelines for Mine Closure and Post Closure

Closure and post-closure activities should be considered as early in the planning and design stages as possible. Mine sponsors should prepare a Mine Reclamation and Closure Plan (MRCP) in draft form prior to the start of production, clearly identifying allocated and sustainable funding sources to implement the plan. For short life mines, a fully detailed Mine Reclamation and Closure Plan (with guaranteed funding) as described below should be prepared prior to the start of operations. A mine closure plan that incorporates both physical rehabilitation and socio-economic considerations should be an integral part of the project life cycle and should be designed so that:

- Future public health and safety are not compromised;
- The after-use of the site is beneficial and sustainable to the affected communities in the long term;
- Adverse socio-economic impacts are minimized and socioeconomic benefits are maximized.

The MRCP should address beneficial future land use (this should be determined using a multi-stakeholder process that includes regulatory agencies, local communities, traditional land users, adjacent leaseholders, civil society and other impacted parties), be previously approved by the relevant national authorities, and be the result of consultation and dialogue with local communities and their government representatives.

The closure plan should be regularly updated and refined to reflect changes in mine development and operational planning, as well as the environmental and social conditions and circumstances. Records of the mine works should also be maintained as part of the post-closure plan.

Closure and post closure plans should include appropriate aftercare and continued monitoring of the site, pollutant emissions, and related potential impacts. The duration of post-closure monitoring should be defined on a risk basis; however, site conditions typically require a minimum period of five years after closure or longer.

The timing for finalization of the MRCP is site specific and depends on many factors, such as potential mine life, however all sites need to engage in some form of progressive restoration during operations. While plans may be modified, as necessary, during the construction and operational phases, plans should include contingencies for temporary suspension of activities and permanent early closure and meet the following objectives for financial feasibility and physical / chemical / ecological integrity.

Financial Feasibility
The costs associated with mine closure and post-closure activities, including post-closure care, should be included in business feasibility analyses during the planning and design stages. Minimum considerations should include the availability of all necessary funds, by appropriate financial instruments, to cover the cost of closure at any stage in the mine life, including provision for early, or temporary closure. Funding should be by either a cash accrual system or a financial guarantee. The two acceptable cash accrual systems are fully funded escrow accounts (including government managed arrangements) or sinking funds. An acceptable form of financial guarantee must be provided by a reputable financial institution. Mine closure requirements should be reviewed on an annual basis and the closure funding arrangements adjusted to reflect any changes.

Ref: IFC (2007)

The IFC Guidelines state that a mine closure plan should incorporate both physical rehabilitation and socio-economic considerations which, by implication, includes the social aspects in the financial surety. There is some ambiguity as to whether a single fund should be established to include both the physical and social aspects of mine closure or if they should be handled separately. This is discussed in more detail in Chapter 5.

Some jurisdictions have developed extremely detailed supporting documentation to assist companies in establishing accurate estimates for the financial surety. In a number of cases this information is available on the internet and this has been identified in the text where relevant. These and other useful website addresses are contained in the Annex 1.

Chapter 2 identifies the main financial surety instruments and the mechanisms for their implementation. Chapter 3 presents case studies from existing jurisdictions. Chapter 4 discusses all the various aspects of the implementation and management of financial sureties, based on the case studies presented in Chapter 3. Chapter 5 summarizes the findings of the study and provides recommendations on the implementation and management of financial sureties. Chapter 6 is an amalgamation of thoughts and comments that emerged during the course of the work.

Box 1.2 on the following page summarizes the standards that should be taken into consideration when establishing financial surety procedures. These were formulated by a senior research associate with the Mineral Policy Center, a U.S. based non-profit environmental organization dedicated to protecting communities and the environment from the impact of irresponsible mining.

The author would like to thank all the people who so generously gave their time to fill in the questionnaire and answer questions. A number of people went out of their way to provide additional information and personal comments all of which have contributed to the writing of this report. In particular, the author would like to thank Ian Wilson and Gavin Murray for their very helpful insights into the current status and thinking behind financial sureties.

Box 1.2: FINANCIAL SURETY STANDARDS

Closure costs: Financial assurances must cover the operator's cost of reclamation and closure as well as redress any impacts that a mining operation causes to wildlife, soil, and water quality. The bond should also cover the cost of a post-closure monitoring period. To accurately compute the level of financial assurance, reclamation and mitigation activities should be clearly spelled out in the operation plan. In addition, the bond should cover the costs of addressing impacts that stem from the operator's failure to complete reclamation, such as the need for long-term treatment of surface and groundwater, environmental monitoring and site maintenance. During mining, assurance levels should be subject to periodic reviews, in order to allow regulators to adjust operators' assurance amounts upward or downward as clean-up needs, environmental risks, or economic factors dictate.

Liquidity: All forms of financial assurance should be reasonably liquid. Cash is the most liquid asset, but high-grade securities, surety bonds and irrevocable letters of credit can serve as acceptable forms of assurance. However, assets that are less liquid, particularly the mine operator's own property or equipment should not be considered adequate assurance, since these items may quickly become valueless in the event of an operator default or bankruptcy.

Accessible: Financial assurances should be readily accessible, dedicated and only released with the specific assent of the regulatory authority, so that regulators can promptly obtain funding to initiate reclamation and remediation in case of operator default. Forms of financial assurance should be payable to regulators, under their control or in trust for their benefit, and earmarked for reclamation and closure. Further, such financial assurances must be discreet legal instruments or sums of money releasable only with the regulatory authority's specific consent.

For their part, regulators must obtain financial assurance up front before a mine project is approved. While regulators, as determined by their periodic reviews, must have the authority to secure financial assurance during the course of mining, waiting until late in the mining process to obtain substantial assurance is unwise, since reduced cash flows at this stage may make it difficult for operators to secure bonding from a surety, bank, or other guarantor.

Healthy guarantors: To assure that guarantors have the financial capacity to assume an operator's risk of not performing its reclamation obligations, regulators must carefully screen guarantors' financial health before accepting any form of assurance. Any risk sharing pools should also be operated on an actuarially sound basis. Regulators should require periodic certification of these criteria by independent, third parties.

Public involvement: Since the public runs the risk of bearing the environmental costs not covered by an inadequate or prematurely released bond, the public must be accorded an essential role in advising authorities on setting and releasing of bonds. Therefore, regulators must give the public notice and an opportunity to comment both before the setting of a bond amount and before any decision on whether to release a bond.

No substitute: Any financial assurance should not be regarded as a surrogate for a company's legal liability for clean-up, or for the regulators' applying the strictest scrutiny and standards to proposed mining plans and operations. Rather, a financial assurance is only intended to provide the public with a buffer against having to shoulders costs for which the operator is liable.

Ref: Da Rosa (1999)

Note: The author has used the terms 'financial assurance' and 'bond' to refer to a financial surety. The term 'bond' does not refer to a Surety Bond as described in Chapter 2.2.

Chapter 2 Financial Surety Instruments

Financial surety is an important tool in ensuring that funds are available to guarantee effective mine closure and rehabilitation. Choosing the appropriate financial surety instrument is critical to making certain this tool is effective. There are a number of different financial surety instruments available and the choice is dependent on the financial strength of the company, the amount of surety required and the time frame over which the fund will need to be in place. It is also essential that the financial surety is quarantined from other company assets, so that it is still available in the event of bankruptcy, and from government abuse.

This Chapter describes the most common forms of financial surety instruments. An evaluation of the most commonly used financial instruments is presented in Box 2.1, taken from the Guidelines on Financial Guarantees and Inspections for Mining Waste Facilities written by MonTec for the European Commission. At the time of publication, these Guidelines had not been adopted by the EC. Chapter 5 provides some comments on the different types of financial surety instruments.

2.1 Letter of Credit

An irrevocable Letter of Credit, also known as a Bank Guarantee, is an unconditional agreement between a bank and a proponent in order to provide funds to a third party on demand. In this instance, the third party is the relevant government department. A Letter of Credit includes the terms and conditions of the agreement between the proponent and the government, with reference to the rehabilitation program and the agreed costs. Any changes to the Letter of Credit require the consent of all parties involved.

To obtain a Letter of Credit, the proponent will have to demonstrate to the bank that provisions have been made for the rehabilitation of the site and that it has sufficient funds or liquidity to cover the costs. A Letter of Credit is usually issued for a year and renewed annually following a review of rehabilitation requirements and costs. If the bank, for any reasons, will not renew a Letter of Credit, and the proponent fails to provide an acceptable alternative form of surety, then the government can request payment for the full outstanding amount of a Letter of Credit.

The government will usually specify from which banks it will accept a Letter of Credit. The annual cost of a Letter of Credit ranges from 0.5% to 9% of the guaranteed amount, depending on the proponent's credit rating. The funds held in a Letter of Credit do not generate any interest.

2.2 Surety (Insurance) Bond

A Surety Bond, which may also be called an Insurance Bond or a Performance Bond, is an agreement between an insurance company and a proponent in order to provide funds to a third party under certain circumstances. In this instance, the third party is the relevant government department. A Surety Bond will include the terms and conditions of the agreement between the proponent and the government, with reference to the rehabilitation program, the agreed costs and the conditions for the release of the bond. Any changes to a Surety Bond require the consent of all parties involved.

A Surety Bond is issued by an insurance company that should be licensed under the relevant legislation. It is issued for a specific time period and can be renewed for further time periods, based on a credit review of the proponent. During this process the amount of a Surety Bond can be increased or decreased depending on the amendments to the

rehabilitation program. If a Surety Bond is not renewed, and the proponent fails to provide an acceptable alternative form of surety, then the government has the option of drawing the full amount. The proponent should be responsible for all fees and charges associated with a Surety Bond.

Box 2.1: Evaluation of Commonly Used Financial Surety Instruments

Instrument	Advantages	Disadvantages
Self-bonding (Company Guarantee)	Most advantageous for mining company Does not tie up capital Simple to administrate Public availability of Annual Reports	Even very large companies can fail, no matter what their financial health was when mining project started Annual Reports and financial statements are not immune to manipulation (accounting scandals) Problematic public acceptance
Insurance Policy (Scheme)	Low costs also to smaller mining companies No tied-up capital Modest cash outflow from mine operator	Only very few insurance products are currently on the market Reluctance of large insurers to cover environmental liability risks
Letter of credit, bank guarantee	Cheap to set up (provided that company meets the bank's requirements) No tied-up capital Modest cash outflow from mine operator Less administrative requirements The government can reserve the right to approve banks from which they accept an LOC, thereby minimizing the risk of failure of weak banks	Surety provider (bank, surety company) itself may fail Obtaining an LOC may reduce the borrowing power of the mining company Availability of bonds depends on state of surety industry and may be negatively affected by market forces outside the mining industry
Surety bond	Generally low costs No tied-up capital	Bond issuer may fail over the long term (see also under "LOC") Rating of the company that determines the cost and it will be substantially higher for small companies, especially those without proven track records
Cash deposit	Cash is readily available for closure and rehabilitation Investment-grade securities (treasuries) can be traded with minimal risk of liquidity High public acceptance ("visibility" of guarantee) For small and junior mining companies, if they fail to meet the criteria of a bank Can be dissolved only partly in case of need Can be transferred in a pooled fund	Significant capital is tied up for the duration of the mine life, especially for large mining projects Some governments may be tempted to use the deposited cash for purposes other than securing the mining project Cash is more vulnerable to being lost to fraud or theft
Trust fund	High public acceptance ("visibility" of trust fund) Trust funds may appreciate in value (but may also lose value, see "Disadvantages")	Risk of bad management of the trust fund (loss of value if fund invests in risky assets) Trust fund may not have enough value accumulated through annual payments if mining project ceases prematurely Trust fund management and administration consumes some of the value and income earned

Ref: Montec (2007)

The government must ensure that a Surety Bond is unconditional and not invalidated by any action or failure of the proponent to act in accordance with the terms of the bond or the legislation.

2.3 Trust Fund

A Trust Fund, which may also be known as a Mining Reclamation Trust, a Qualifying Environmental Trust or a Cash Trust Fund, is an agreement between a trust company and the proponent for the sole purpose of funding the rehabilitation of a site. In addition to a Trust Fund, there should be a signed agreement between the proponent and the government, administered by the trust company that stipulates the proponent's responsibility with regard to the trust. This agreement should specify that a Trust Fund is to provide security for the rehabilitation costs for a particular site, the total amount required and an outline schedule of payments.

A Trust Fund should be maintained by a company that is licensed under the relevant legislation. The types of investment available to the fund manager should be decided by the proponent and the government, and specified in the agreement. If the payments are not made to a Trust Fund, and the proponent fails to provide an acceptable alternative form of surety, then the government has the option of drawing the full amount of the fund. The proponent should be responsible for all fees and charges associated with a Trust Fund.

Contributions to a Trust Fund would usually be structured as a series of payments over a specific time period. The management and performance of a Trust Fund should be subject to periodic review.

The Appendix of the ICMM report, Financial Assurance for Mine Closure and Reclamation (2005), contains a list of the principles, established by the mining industry, for the design, operation and review of a Trust Fund. These are reproduced in full in Box 2.2 and 2.3. The complete report is available on the ICMM website (see Annex 1).

2.4 Cash, Bank Draft or Certified Check

A deposit can be made for a financial surety as Cash, a Bank Draft or a Certified Check. The funds should be placed in a special purpose account under the management of the financial institution with the government and company holding joint signatory powers. Alternatively, the cash can be used to purchase a certificate of deposit which can be pledged to the relevant government agency. Most commercial banks would charge nominal fees for setting up such accounts and the money would attract interest which would accrue to the fund.

2.5 Company Guarantee

A Company Guarantee, which may also be called a Corporate Financial Test, a Balance Sheet Test or a Self Guarantee, is based on an evaluation of the assets and liabilities of the company and its ability to pay the total rehabilitation costs. A Company Guarantee requires a long history of financial stability, a credit rating from a specialized credit rating service and at least an annual financial statement prepared by an accredited accounting firm.

Many jurisdictions will no longer accept a Company Guarantee as a form of financial surety because of the public perception that a self guarantee for a mining company is a contradiction in terms. Of those that do allow a Company Guarantee, some will only accept this form of financial surety for the first half of the life of the project or for part of the surety.

Box 2.1: Criteria for the efficient design of a trust fund

Site-specific basis for fund	Each mine should be assessed individually and the security required should reflect the costs and risks associated with reclaiming that site.
Basis for cost estimates	Estimated costs should be based on careful engineering and technical studies accompanied by formal risk assessments to take into account the probabilities and consequences of alternative scenarios.
Responsible management of reclamation	The design of the fund should encourage mining companies to manage their reclamation programs in an active and responsible manner, in order to control costs and to develop innovative technical solutions to reclamation challenges.
Similarity to pension fund	The principles for setting up a fund should be similar to those used to establish a pension fund.
Investment policy	Investment policy should permit investments that optimise the risk-return ratio, bearing in mind that the fund is a long-term investment.
Investment manager	The fund should be managed by an investment manager selected by the company. The company should at the same time have the option of managing the fund internally with reasonable guidelines, as with a pension fund.
Monitoring legislation	Legislation modelled on pension statutes or other similar legislation can be used to monitor performance of the fund and to ensure compliance with investment policy.
Choice of financing mechanism	As justified by the circumstances, a company should have the option to determine which government-authorized financing mechanism (or combination of mechanisms) represents efficient use of the company's capital.
Expenses deductible for tax	Where a government-mandated mine reclamation fund is required, payments into the fund should be allowed as a deductible expense at the time they are made for purposes of income tax and mining taxes.
Fund income sheltered from tax	Income generated by a fund should be tax-sheltered until withdrawn.
Investment management fees	All investment management costs should be financed from the proceeds of the fund.
Fund Trustee	An independent third party, such as a trust company, is an acceptable trustee of a fund.
Sole government control	The mining industry is opposed to the government having sole control over the management of investments in a fund.

Ref: ICMM 2005

Box 2.2: Guidelines for the review and audit of a trust fund

Site-specific basis for fund	Each mine should be assessed individually and the security required should reflect the costs and risks associated with reclaiming that site.
Basis for cost estimates	Estimated costs should be based on careful engineering and technical studies accompanied by formal risk assessments to take into account the probabilities and consequences of alternative scenarios.
Periodic review or audit	A periodic review or audit of activities of a fund is necessary to ensure appropriate disbursement and use of funds pursuant to the approved decommissioning plan
Scope of audit	An audit would include the preparation of financial statements and a technical review of work performed. It should also include, where applicable, a reassessment of reclamation requirements and funding contributions.
Conduct of audit	An appropriate panel should be engaged to undertake the review and audit, using technical, engineering, legal and actuarial expertise.
Frequency	A review should be held with a stated frequency, which could be from three to five years, or more frequently if deemed desirable by the government or the company.
Disposition of surplus funds	Any surplus funds determined by a review should be returned, net of appropriate tax adjustments, to the company.

Ref: ICMM 2005

2.6 Insurance Scheme

There are a wide range of insurance options but, until recently, none have been specifically designed to cover long term rehabilitation costs. General forms of insurance, such as premium financing, commercial general liability and professional indemnity do not normally cover environmental liabilities. One major advantage of an Insurance Scheme is that premiums paid into a policy are usually tax deductible.

In the US, one insurance company set up a custom designed product that is a combination of three products; a conventional Surety Bond, accumulation of cash within the policy and insurance protection for overruns and changing requirements. The policy is based on the rehabilitation plans and projected costs, the credit worthiness of the proponent and the market value of the mine assets. From the funds deposited the insurance company issues the required security bonds to the government and pays the actual rehabilitation costs. At the end of project life, if there is a surplus in the account, it goes back to the proponent. If there is a deficit the insurance company pays.

2.7 Unit Levy

The Unit Levy option requires the financial surety to be paid in regular installments, the payments being based on the amount of ore or waste mined or milled. The level of payments per tonne would be calculated on the proposed life of the mine, the estimated

closure costs and the mining rate. The financial surety payments can be Cash, Letter of Credit or Surety Bond. The proponent would make payments to the fund until the full amount of the financial surety had been reached. In some jurisdictions it is required that the financial surety would be paid in full before the half life of the mine. Signed financial assurance agreements should be included with a closure plan incorporating the terms and conditions for the amount/tonnes, form and timing of the payments.

2.8 Sinking Fund

A sinking fund is a method of incremental payments into a Letter of Credit, Surety Bond or Cash financial surety. A schedule of payments is established at the time of setting up the financial surety. The proponent would then make payments into the fund until the full amount of the financial surety had been reached. In some jurisdictions it is required that the financial surety would be paid in full before the half life of the project. Signed financial assurance agreements should be included with a closure plan when the proponent provides financial assurance in the form of a sinking fund. The agreements include terms and conditions as to the amounts, form and timing of the payments.

2.9 Pledge of Assets

In some jurisdictions a Pledge of Assets is an acceptable form of financial surety. This takes the form of all surplus equipment and scrap metal that remains at mine site after operations have ceased. The surplus equipment includes all stationary equipment and buildings. The scrap metal includes all metal debris produced during site demolition and the clean up process.

If a Pledge of Assets is being used as a financial surety several factors should be taken into consideration. These include that the assets are free and clear of encumbrances, that the assets are fixed and not easily moved, that the assets are not contaminated and that there is a market demand for the assets. The value estimation must be carried out by a third party, should include the cost of retrieval and transportation from the site to the market place and be recalculated periodically. However, this is generally viewed as a high risk form of financial surety and is not accepted in many countries.

2.10 Fund Pool

In some jurisdictions the industry is permitted to set up a Fund Pool that receives contributions from all the mining operators in the region and is managed by the industry. However, this is not a particularly popular form of financial surety as it is largely out of the control of the government and it can result in responsible companies subsidizing irresponsible ones.

2.11 Transfer of Liability

Some research has been carried out into the possibility of establishing a specialized company specifically to carry out mine site rehabilitation. This company would have a contractual arrangement with the mining company involved and would be responsible for providing insurance cover. As far as the author could establish, this form of financial surety is not currently available in any jurisdiction.

Chapter 3 Case Studies

3.1 ONTARIO

Legislation and Governance

In Ontario (Canada) the *Mining Act R.S.O. 1990 (Bill 26, proclaimed 1991)*, Chapter M. 14, Part VII covers the rehabilitation of mine land, the requirement for the proponent to submit a closure plan and for a financial assurance to be part of the closure plan. The *Ontario Regulation 240/00*, adopted under Part VII of the *Mining Act*, specifies the standards, procedures and requirements for site rehabilitation and the closure plan, including the financial assurance. Schedules 1 and 2 of these Regulations provide details of the rehabilitation requirements and the information to be included in a closure plan. The latter includes detailed costs for the implementation of the rehabilitation measures and monitoring programs and the form and amount of financial assurance. Financial surety is required for any advanced exploration[1] or mining project.

The Government has also produced a *Financial Assurance Policy Index* that is available on the Ministry of Northern Development and Mines website (see Annex 1). This index is designed to aid in the understanding of the administration of the financial assurance provisions of the *Mining Act*. Templates for a Letter of Credit and Surety Bonds are also available to the proponent (Annex 2 and 3).

The Ministry of Northern Development and Mines is responsible for the administration of the *Mining Act*. All aspects of mining are handled by the Mines and Minerals Division, Mineral Development and Lands Branch, including mine closure and financial surety.

Timing

The *Mining Act*, Sections 139-144, specifies that a closure plan must be submitted, filed and approved before the start of advanced exploration or mine production. Section 145 then goes on to stipulate that the financial assurance is required as part of the closure plan. This means that a mining lease can be issued prior to the filing of the closure plan but that the closure plan, including the financial surety, must be filed and approved before any work can start on site.

Financial Surety Instruments

The *Mining Act*, Section 145, identifies the following mechanisms acceptable as financial surety:

- Cash
- Letter of Credit
- Surety Bond
- Trust Fund
- Corporate Financial Test (Company Guarantee)

Or any other acceptable form of security or guarantee including pledge of assets, sinking fund or royalties per tonne, at the discretion of the Director of Mine Rehabilitation.

[1] "advanced exploration" means the excavation of an exploratory shaft, adit or decline, the extraction of prescribed material in excess of the prescribed quantity, whether the extraction involves the disturbance or movement of prescribed material located above or below the surface of the ground, the installation of a mill for test purposes or any other prescribed work; ("exploration avancée")

In Ontario there are currently 154 financial surety forms for 144 approved reclamation (closure) plans. The breakdown of these sureties is as follows:

- 57% Letter of Credit
- 12% Corporate Financial Test
- 26% Cash/Cash Levy
- 3% Pledge of Assets
- 2% Surety Bond

It is interesting to note that, even though the Corporate Financial Test only accounts for 18 of the total number of forms, it accounts for 67% of the funds being held for financial surety.

Scope of Financial Surety

The *Ontario Regulation 240/00*, Section 4, states that all those engaged in rehabilitation shall comply with the standards, procedures and requirements of the *Mine Rehabilitation Code* set out in Schedule 1. The Regulations, Section 11, go on to say that a closure plan shall include at least the items and information set out in Schedule 2. A summary of the minimum rehabilitative measures referred to in the Code is given in Section 24. The financial surety must be sufficient to cover the following elements of closure:

- Mining infrastructure
- Underground mines
- Adits
- Open pits
- Tailings storage facilities
- Surface and ground water monitoring
- Acid drainage
- Physical stability
- Revegetation

The financial surety must also cover any long term care requirements. The legislation does not specify the inclusion of costs for administration and management of the financial surety but, if the calculations are based on third party costs, these should be automatically included.

Level of Financial Surety

The level of financial surety is based on the cost of using external contractors. The figures are established by the proponent, and their consultants, according to Schedules 1 and 2 in the *Ontario Regulation 240/00*. They must be based on the market value costs of the goods and services required by the work. The level of the financial surety must comprise the end of project costs though payments may be phased in.

Incremental contributions may be made via a Sinking Fund. In this instance a schedule of financial surety payments would be established so that the full amount had been lodged before the half life of the mine, or sooner if feasible. Incremental payments are not available for advanced exploration projects or most higher risk projects.

Tax

There are no tax breaks offered in Ontario for financial sureties. The government does not consider them as an expense as the funds will be returned to the company when they have completed the closure plan.

Review

The proponent's senior executives must certify that the financial surety is sufficient to cover the closure of the site as per the legislative requirements. The government carries out a quick overview and compares the costs with other projects, but this is not done in any detail. There is no third party involvement or verification.

The *Mining Act*, Section 143, requires that any amendments made to the closure plan must include amendments to the financial surety, if the amount needs increasing. Amendments to the closure plan may be made voluntarily by the proponent or at the request of the authorities. The government is in the process of considering introducing a regular review of closure costs, either every three or five years and, if necessary, adjustment of the level of the financial surety. This review would be carried out by the proponent and their consultants.

Release

Funds are not available to the proponent for on-going rehabilitation. If a company carries out progressive rehabilitation the government may agree to return some of the financial surety. This is based on a certified technical report stating that the work was carried out in accordance with the legislative requirements and the current value of the remaining rehabilitation work. Following successful closure, the funds are returned to the proponent. Some funds may be retained for short term monitoring costs or long term care.

Experience

The Province of Ontario has had the requirement for a financial surety in place since 1991. Since this date, five exploration sites and mines have closed that had a fund in place. In the majority of these cases the companies closed out the site using their own funds and in several cases the financial surety was returned to the company where there were no long term care requirements. In a couple of instances companies, which shut down operations due to economic difficulties, had financial sureties based on a royalty per tonne (Unit Levy). The government was then left with a deficit in the level of fund required to compete closure of the site.

3.2 NEVADA

Legislation and Governance

Mining on federal land in the United States of America is governed by the 1872 federal law titled '*An Act to Promote the Development of Mineral Resources of the United States*'. Most details regarding the procedures for a project on federal land are left to the individual state, providing that state laws do not conflict with federal laws. As 85% of land in Nevada is federal land, the majority of mining projects are governed by the 1872 law and related United States Codes (USC) as well as Nevada State Law. Most of the federal land is managed by the Bureau of Land Management (BLM) and the US Forest Service (USFS).

The relevant federal codes for the BLM are *USC Title 30, 'Mineral Lands and Mining 1970', Title 43, Chapter 35, 'Federal Land Policy and Management 1976'* and the *Code of Federal Regulations (CFR) Title 43, 'Public Lands'*. Sections 3809.500 to 3809.560 (CFR 43) outline the financial guarantee requirements for all mining projects on BLM managed land that cause surface disturbance by more than casual use. The relevant federal codes for the USFS are the *Organic Act 1897*, *USC Title 16, 'National Forest Management Act'* and *36 CFR, 'Parks, Forests, and Public Property'*. 36 CFR 228 requires an operator to file a plan of operations and, when required, lodge a financial surety. The USFS has produced a Reclamation Bond Estimation and Administration Guideline (2004) for mining operations authorized and administered under 36 CFR 228A available on its website (see Annex 1).

The state legislation relating to mine closure is contained in the *Nevada Revised Statutes (NRS) 445A, Water Pollution Control*, and *NRS 519A, Land Reclamation*. Regulations adopted under these Statutes are incorporated in the *Nevada Administrative Codes (NAC) 445A and 519A*. *NRS 519A* requires that any application for an exploration or mining project should include a bond or other surety. The details of this obligation are contained in *NAC 519A*. Projects of less than 5 acres, or mine production of less than 36,500 tons (includes all ore, waste etc), are not required to lodge a financial surety.

The Nevada State Government has signed a Memorandum of Understanding with the federal land managers (Bureau of Land Management and US Forest Service) to coordinate the administrative and enforcement obligations pertaining to the reclamation of land disturbed by exploration or mining activity. The agency responsible for site reclamation and the financial surety is the Nevada Bureau of Mining Regulation and Reclamation, Division of Environmental Protection, Department of Conservation and Natural Resources and *NRS/NAC 519A* is the primary legislation. This arrangement avoids duplication.

Timing

The *NRS/NAC 519A* requires that an application for an exploration or mining permit should include in writing the assumption of responsibility for the reclamation of the site, a reclamation plan and evidence of a financial surety. The exploration or mining permit, and the reclamation permit, may be issued but are not effective until the financial surety has been accepted.

Financial Surety Instruments

The type of financial surety accepted by Nevada State Law is specified in the *NAC 519A*. They include the following:

- Trust Fund
- Surety Bond
- Letter of Credit

- Insurance
- Corporate Guarantee

Or any combination of these mechanisms. Large companies may obtain a state Corporate Guarantee for up to 75% of the value of the surety if they can meet regulatory criteria to demonstrate adequate financial health. In addition, the Nevada Bureau administers a Bond Pool that guarantees up to US$ 3 million reclamation costs for small companies that have been refused commercial support. Smaller operations may also be allowed to fund the surety with a Cash Deposit. The recently revised Section 3809 Regulations (43 CFR) do not allow any new or expanded Corporate Guarantees on BLM managed land, though existing guarantees are recognized.

Of the 214 mining and exploration projects that currently have a financial surety in place the breakdown is as follows:

- 23% Surety Bond
- 56% Letter of Credit
- 17% Corporate Guarantee
- 2% Cash Deposit
- 1% Certificate of Deposit
- 1% Bond Pool

The Nevada Bureau currently holds US$ 785 million in mining reclamation bonds.

Scope of Financial Surety

The Nevada legislation states that the financial surety must be sufficient to cover the cost of all aspects of physical closure and include administrative and contingency costs. The physical closure includes:

- The removal of all plant and equipment
- The demolition and disposal of infrastructure
- Stabilization and regrading of surfaces
- Erosion control
- Revegetation
- Process fluid stabilization
- Interim fluid management

The funds must also cover ongoing or long term care required to maintain the effectiveness of reclamation or are necessary in lieu of reclamation. The stabilization of fluids from non-process components (for example seepage from waste rock dumps) and unspecified contingencies are not included.

Level of Financial Surety

The financial surety must be based on third party costs using government rates. The level of surety is established by the proponent, in accordance with the regulatory requirements, and all sources of estimates and calculations must be submitted to the Nevada Division of Environmental Protection.

The Bureau has produced a Reclamation Bond Checklist in order to assist the proponent in calculating the engineering and environmental costs. This document specifies that the administrative costs should be established at 10-15% of the contract cost. The department recommends that all operators should use the Nevada Standardized Reclamation Estimator

Model to demonstrate how costs were established. The model is available on its own website (see Annex 1).

Incremental payments for the financial surety are accepted as long as the amount of the fund at any given time covers the outstanding reclamation obligation. These payments are usually only applicable to larger projects and payment would be made at each subsequent phase of operations.

Tax

The state of Nevada, in line with federal policy, allows a deduction of the financial surety for tax purposes. The expense of maintaining a financial surety (premiums etc) are counted as an expense and are tax deductible as well as actual expenditure on rehabilitation. The company is allowed to distribute the financial surety payments over a number of years for tax reduction purposes.

Review

The proponent submits the reclamation cost estimates to the Nevada Division of Environmental Protection. These costs are reviewed internally or jointly with the federal Bureau of Land Management or US Forest Service if public land is involved. They are also subject to public review and comment but are not verified by a third party.

The level of financial surety may be reviewed and revised at any time. A full review is carried out at least once every three years and whenever the reclamation plan is modified. If the proponent is paying the financial surety in increments then more frequent reviews are carried out.

Release

Funds are not available to the proponent for on-going rehabilitation but, as discrete steps in the reclamation plan are completed, partial release of the surety may be allowed. Following successful closure the funds are returned to the proponent unless there is a long term outstanding obligation such as perpetual water treatment. In this case a special arrangement may be made such as a self-perpetuating fund.

Experience

The State of Nevada initiated the requirement for a financial surety in 1990. Since this date about 75 exploration sites and mines have closed that had a fund in place. In addition, about 25 sites have been abandoned because of the failure of the operator. In the majority of these latter cases, the funds were not sufficient to pay for all the required reclamation, and the State had to priorities the work and find alternative funds to complete the closure requirements. The main reason why these funds were insufficient to carry out all the necessary reclamation work was they were older sites, run by financially marginal operators that had inadequate surety to begin with. On most of these sites, the regulatory agencies were working to increase the surety, but the operators were unable or unwilling to do so prior to bankruptcy and abandonment.

3.3 QUEENSLAND

Legislation and Governance

The *Mineral Resources Act 1989* provides the framework for the application and granting of mining titles. The *Environmental Protection Act 1994* requires all mining related activities to be issued with an Environmental Authority and for mining projects to produce an Environmental Management Plan, which must include a rehabilitation program. In addition, both laws have provisions for a financial security to be lodged though neither specifically mentions closure plans.

In 2001 the Queensland Government transferred the responsibility for the environmental regulation and management of mining from the Department of Mines and Energy (DME) to the Environmental Protection Agency (EPA). This required the repeal of the environmental provisions contained in the *Mineral Resources Act* and the insertion of a new chapter in the *Environmental Protection Act*. These changes were implemented by the *Environmental Protection and Other Legislation Amendments Act 2000*. Under this new legislation, the Minister of Mines lost most powers in the environmental decision making process but retained the right to make representations if an objection is lodged against a new mining project or a refusal is likely.

The *Minerals Resources Act* requires that a 'security' is deposited prior to a mining title being issued. This is for non-compliance with the title conditions and 'improvement restoration' but no longer covers rehabilitation. The *Environmental Protection Act* requires the rehabilitation program to include the proposed amount of the financial surety for larger projects while the Codes of Environmental Compliance require a financial surety for small projects. A financial surety is required for all mining titles but the proponent may lodge a single surety to cover the requirement of both the *Mineral Resources Act* and the *Environmental Protection Act*.

The DME is responsible for granting, and for the surrender of, all mining titles. The EPA is responsible for granting, and for the surrender of, an Environmental Authority. The DME is responsible for the receipt and management of both the security under the *Mineral Resources Act* and the financial surety under the *Environmental Protection Act*. Under the *Environmental Protection Act*, the EPA has produced a number of Guidelines and Codes which contain the detail of the environmental management of all mining projects. Of particular relevance is Guideline 17: Financial Assurance for Mining Activities (2003). All legislation is available through links on the EPA website (see Annex 1).

Timing

An application for a mining title must be accompanied by a completed application for an Environmental Authority (mining activity). For all mining licenses, except a mining lease, the financial surety must be lodged before the title is granted. In the case of a mining lease, the financial surety does not need to be lodged until after the mining title and the Environmental Authority have been granted. However, it must be in place before any activity proposed in the Plan of Operations is carried out on site.

Financial Surety Instruments

The *Environmental Protection Act* gives the EPA discretion to determine the form of financial surety. Guideline 17 specifies that the acceptable forms of financial surety include:

- Cash

- Bank Guarantee (Letter of Credit)
- Insurance Bond

Queensland currently has about 1,000 financial sureties for mining claims, 1,000 for exploration permits, 200 for mineral development licenses and 1,200 for mining leases. Approximately 70% of the mining lease sureties are Cash and 30% Bank Guarantees, though the latter represent 98.5% of the total amount of financial surety held by the department.

Scope of Financial Surety

The Queensland legislation does not specify what aspects of mine closure are encompassed by the term rehabilitation or what should be covered by the financial surety. The elements identified by the EPA that could be included under the term rehabilitation are:

- Removal of plant and equipment
- Recontouring waste dumps and pits
- Capping tailings storage facilities and other hazardous materials
- Breaching dams and restoring water courses
- Making slopes and openings safe
- Replacing topsoil
- Revegetation
- Monitoring water and air quality, erosion rates, vegetation
- Conducting contaminated land surveys
- Implementing site management plans

The Amendment Act 200 and Guideline 17 specify that maintenance and monitoring costs should be included in the financial surety.

In January 2006, new provisions relating to residual risk payments were introduced allowing for a separate cash payment to be made when the Environmental Authority is surrendered or when progressive rehabilitation is certified. This residual risk payment covers future maintenance and remedial work.

Level of Financial Surety

The financial surety for exploration and small (standard) mining projects is based on the total area of disturbance and the risk associated with the rehabilitation. A simplified version of the table from Guideline 17 is shown below.

Table 3.3.1: Financial Surety for Standard Exploration and Mineral Development Projects

Total Area of Disturbance	Low Risk: simple straight forward rehabilitation	High Risk: Difficult rehabilitation
Less than 1 hectare	A$2,500	A$5,000
1 to 4 hectares	A$10,000	A$20,000
4 to 10 hectares	A$20,000	A$40,000

The level of financial surety for a non-standard project is calculated on a project specific basis, even though one project may include a number of leases. It is calculated by using a unit rehabilitation cost multiplied by the estimated disturbed area, based on using third party contractors. The amount is established by the proponent. The Code of Environmental Compliance for Mining Lease Projects contains a worked example to assist the proponent in

establishing the costs. The maintenance and monitoring costs are calculated at 10% of the total rehabilitation costs.

The financial surety system allows a discount of 10% to 75% based on previous environmental performance. The maximum discount will be reduced to 30% in January 2009. The performance criteria and discount rates are included in Appendix B, Table 2 of Guideline 17.

The financial surety can be paid incrementally, established by estimating the maximum level of disturbance for each planning period covered by the Plan of Operations. This period can be anything between 1 and 5 years.

Tax

A 10% goods and services tax is payable on all taxable supplies which can be reclaimed if the administering authority makes a claim on the financial surety.

Review

When submitting a financial surety, the holder of the Environmental Authority must also certify that the correct procedures were used. The holder may decide to go to an outside audit but third party verification is not required. However, the penalties for providing false or misleading information can be quite severe (up to two years in prison).

The financial surety is reviewed whenever a mining title is renewed or, in the case of a mining lease, when a new Plan of Operations or Environmental Authority is amended or replaced. The time between reviews is governed by the type of mining title. The EPA has the power to reassess the financial surety at any time provide it has good reason to do so. At any of these reviews the level of financial surety can be changed.

Release

The financial surety is not available to the holder of the Environmental Authority for on-going rehabilitation. However, when a new Plan of Operations plan is submitted, and the rehabilitation liability recalculated, work that has been completed will no longer be included in the total.

The Environmental Authority must be surrendered or cancelled before a mining title can be relinquished. An application for the surrender of the Environmental Authority requires the holder to also submit a final rehabilitation report. The financial surety remains in place until the EPA is satisfied that no further claim is likely to be made against it. At this stage a residual risk payment will be established and the surety surrendered.

Experience

A number of small and medium sized mines have closed since the financial surety system was introduced to Queensland. In some cases the mining title was revoked because of financial failure or non-compliance with the legislation. Several of these have required the government to carry out the rehabilitation work and in two instances the costs have been more than A$ 1 million. Most mines that close through a planned closure process have not required any additional work.

3.4 VICTORIA

Legislation and Governance
In Victoria all mining activity is regulated by the *Mineral Resources (Sustainable Development) Act 1990* and the Extractive *Industries Development Act 1995* and associated Regulations. Both Acts contain the requirement for a Rehabilitation Plan and a financial surety, known as a rehabilitation bond the details for which are contained in the draft Guidelines, Establishment and Management of Rehabilitation Bonds 2007. These Guidelines will replace the 1997 Guidelines. The *Extractive Industries Development Act* regulates quarrying activity while the Mineral *Resources (Sustainable Development) Act* regulates the remainder of the mining industry.

The *Mineral Resources (Sustainable Development) Act* establishes a three stage approval process for mining projects; the Mining License; the Work Plan; and the Work Authority. The Rehabilitation Plan must be submitted as part of the Work Plan. Work on site cannot start until a Work Authority has been granted by which time a rehabilitation bond must have been lodged.

A recipient of a mining license must also follow the planning permit process regulated under the *Planning and Environment Act 1987*. The application for the planning permit must include details of proposed rehabilitation. Under the *Environment Effects Act 1978*, the Minister for Planning may determine that an Environment Effects Statement is required. This statement should also contain the rehabilitation plan.

The Department of Primary Industries (DPI), Minerals and Petroleum Division is responsible for the administration of the *Mineral Resources (Sustainable Development) Act* and the Extractive *Industries Development Act.* The rehabilitation plan must be approved by the DPI and the rehabilitation bond lodged with the Minister for Resources.

Timing
Once a mining title has been issued, in the case of a mining license, the proponent has six months to submit a Work Plan which also includes the rehabilitation plan. This is reduced to three months for an exploration license. The rehabilitation bond must then be lodged before the Work Authority is granted and prior to any work starting on site

Financial Surety Instruments
The only form of financial surety accepted by the DPI is a Bank Guarantee (Letter of Credit).

Scope of Financial Surety
The Victoria legislation does not specify what aspects of mine closure are encompassed by the term rehabilitation or what should be covered by the financial surety. The *Mineral Resources Development Regulations 2002, Schedule 13* state that a rehabilitation plan should include the following:

- Concepts for the end utilization of the site
- A proposal for the progressive rehabilitation and stabilization of extraction areas, road cuttings and waste dumps, including re-vegetation species
- Proposals for the end rehabilitation of the site, including the final security of the site and the removal of plant and equipment.

The 2007 Guidelines provide a manual for common rehabilitation principles and include possible acceptable methods of treatment. Appendix C.3: Generally Accepted Closure Methods also provides guidance, though rehabilitation plans are done on a site by site basis.

Level of Financial Surety

The Minister for Resources must determine the level of financial surety required and this is done in consultation with the Department of Sustainability and Environment if Crown land is involved. For licenses on private land consultation is with the local council and the landowner. The surety is calculated by the DPI environmental officers, following receipt of the rehabilitation plan, and is based on utilizing third party contractors. The financial surety also includes 10% for project management, 10% for contingency costs and 5% for monitoring. The level of financial surety is established using standard rates for simple operations and the Rehabilitation Bond Calculator (available on the DPI website; see Annex 1) for larger, more complex sites. This Calculator is based on the URS/GSSE Rehabilitation Cost estimate Tool (see Chapter 5.5). The final amount of the financial surety is subject to consultation with the proponent but must reflect the actual cost of the proposed rehabilitation.

There is no facility for the initial financial surety to be paid in increments. However, where a substantial surety increase is required, and the proponent has demonstrated that the increase might have a serious impact on the viability of the project, incremental payments of the additional surety may be approved.

Tax

The legislation does not specify the tax position for funds paid into a financial surety.

Review

There is no third party involvement is establishing the financial surety and no process of verification. The DPI has written procedures for establishing bonds which are subject to an internal audit. Individual assessments are checked in all cases by a second officer and further checks apply to the larger sureties. The DPI has also had an external audit of the surety systems by third party auditors and by the State Auditor General.

The frequency that a financial surety is reviewed ranges from every two years for high risk sites to every ten years for low risk sites based on the table contained in the Guidelines. In addition, a financial surety would be reviewed if the proponent changed the work plan or a transfer of assets. The Minister may, at any time, require the proponent to increase the level of the financial surety if the Minister is of the opinion that the existing amount is insufficient. In all cases the review is carried out by the DPI.

According to the 2007 Guidelines, a proponent is now required to submit an annual assessment of the current rehabilitation liability at the end of each reporting period. The assessment will not be used to as an automatic trigger for a financial surety adjustment but may lead to the rescheduling of the next departmental review.

Release

The financial surety funds are not available to the proponent for on-going rehabilitation. The funds may be partially released where progressive rehabilitation has been successful. Following the successful rehabilitation of the site all of the financial surety is returned to the proponent following consultation with the relevant groups.

Experience

In the state of Victoria there are approximately 300 financial sureties in place for operating mines and 180 for exploration licenses, not including quarries of which there are a further 900. All of these financial assurances are in the form of Bank Guarantees (Letter of Credit). Over the last ten years, mines that have closed with a financial surety in place have generally had sufficient funds to cover the closure costs.

The Minerals Council of Australia has commented on the 2007 draft Guidelines and has made the following recommendations:

- That the form of financial surety should be addressed;
- That the initial financial surety should match the liability of the formal review period and not maximum liability for the life of the project; and
- That clarity is required regarding self-assessments using the Calculator and formal bond reviews.

3.5 BOTSWANA

The Government of Botswana is in the process of initiating financial surety requirements for mining projects. The Ministry of Minerals, Energy and Water Resources is actively encouraging mining companies to establish financial sureties for closure separate from the company's other accounts. A discussion regarding the possibility of the government agreeing to tax concessions for the funds is currently taking place. To date, although some of the companies have agreed in principle, no financial sureties have been established.

Legislation and Governance
The *Mines and Minerals Act 1999* provides the framework for the application and granting of a mining license. Part IX of this Act covers the environmental obligations which include the requirement for the holder of a mining license to carry out on-going rehabilitation of the site and to restore the land substantially to the original condition, as far as is practicable and in a manner acceptable to the Director of Mines, at the end of operations. The same section also provides for the proponent to make adequate financial provisions for compliance with the obligations contained in this section.

The *Mines, Quarries, Works and Machinery Act 1978*, the *Waste Management Act 1998* and the *Environmental Impact Assessment Act 2005* also all contain additional mine closure and rehabilitation requirements. However, none of these specifically mention financial surety. The Guidelines for preparing Environmental Impact Assessment Reports 2003 include a financial provision that require a proponent to provide details regarding the ability to fund the Environmental Management Program which includes decommissioning and closure.

The Ministry of Minerals, Energy and Water Resources, Department of Mines is responsible for the implementation of mine closure. It is proposed that the Department of Mines and the Ministry of Finance and Development are jointly responsible for the implementation and management of the financial surety for mining projects. The Ministry of Finance is involved because it will be housing the institution that will host the fund.

Timing
The financial surety must be in place before the mining title is granted.

Financial Surety Instruments
The form of financial surety is not identified in the legislation and the government is still deciding which types will be acceptable.

Scope of Financial Surety
The legislation does not specify what aspects of mine closure are included by the term rehabilitation or what should be covered by the financial surety. The Department of Mines states that, by default as part of the approved closure program, the financial surety should encompass the closure objective and plan, all rehabilitation costs and post closure monitoring costs.

Level of Financial Surety
The level of financial surety is currently based on existing estimated costs for all elements included in closure activities. The Department of Mines intends to develop guidelines to provide a basis for the calculations.

Review
The financial surety is calculated and submitted by the proponent and then reviewed and approved by the Department of Mines. The level of financial surety may be reviewed and revised whenever there is a change in the operating plan. A full review will be carried out every five years and then a year prior to closure by the department and the proponent.

Release
The method for the release of the financial surety has not yet been established.

Experience
There are currently no financial sureties in place.

3.6 GHANA

Legislation and Governance

The *Mining and Minerals Law 1986* provides the framework for the application and granting of exploration and mining titles. Section 66 of this Law states that a certificate of surrender (of the license) will not be granted if the Secretary "is not satisfied that the applicant will surrender the land in a condition which is safe and accords with good mining practice." *The Environmental Protection Agency Act 1994* makes no specific reference to mining but does allow for regulations to be drawn up to provide for "standards and code of practice relating to the protection, development and rehabilitation of the environment".

The *Environmental Assessment Regulations 1999*, developed under the *Environmental Protection Agency Act*, require that an environmental impact statement for mining shall include reclamation plans and the proponent post a reclamation bond. The Mining and Environmental Guidelines 1994 state that an exploration site should be rehabilitated to a condition consistent with the pre-existing character and utility of the area within three months of abandonment. The Guidelines also require that an initial reclamation plan should be submitted as part of the environmental impact assessment and environmental action plan and gives the government the right to request a reclamation bond. The final reclamation plan must be submitted within the first two years of operation. These Guidelines have been updated (2007) but are not yet available for general release.

The Minerals Commission and the Environmental Protection Agency (EPA) are jointly responsible for mine closure and the EPA is responsible for the implementation and management of the financial surety.

Timing

The legislation does not specify when the reclamation bond should be put in place. The EPA currently requires that the bond is lodged after the mining license has been granted.

Financial Surety Instruments

The legislation does not specify which financial surety instruments are acceptable. The EPA lists the following mechanisms as being available to the proponent:

- Bank Guarantee
- Letter of Credit
- Performance Bond
- Insurance
- Cash Deposit

There are currently ten projects that have financial sureties in place. For the majority of these projects approximately 80% to 90% of the surety is in the form of a Bank Guarantee, the remainder is Cash. One company has an Insurance Scheme.

Scope of Financial Surety

The Mining and Environmental Guidelines specify the minimum standards required for the reclamation plan though the legislation does not specify what aspects of mine closure should be covered by the financial surety. These are defined by the EPA as all elements of closure including the transfer of immovable assets to the local authority, the return of the site to pre-mining land use status and the physical and chemical stability of the reclaimed site.

Level of Financial Surety
The level of financial surety is based on the full reclamation costs. It is not specified whether this level is the cost of the work being carried out by the proponent or by a third party.

Review
The financial surety is calculated on the basis of the reclamation plan by the proponent and then submitted to the EPA for approval. Once in place a financial surety is reviewed by the EPA every two years. At the time of the review the level of surety may be adjusted depending on the value of rehabilitation work done by the company during the review period.

Release
The funds contained in the financial surety are not available to the proponent for on-going rehabilitation. The surety is retained for three years following the completion of the reclamation plan and then returned to the proponent in full. This period is extended to seven years if there is the potential for acid mine drainage.

Experience
So far one mining project has been closed that had a financial surety in place. The level of financial surety was sufficient to fund all closure costs.

3.7 PAPUA NEW GUINEA

The Government of Papua New Guinea is in the process of initiating financial surety requirements for mining projects. The previous Department of Mining, now the Department of Mineral Policy and Geohazard Management, produced a draft Green Paper on Mine Closure Regulation and Guidelines that are still under review. The only project that currently has a financial surety in place is the Ok Tedi Mine, which has its own legislation.

Legislation and Governance
The *Mining Act (1992)* and associated Regulations provide the framework for the application and granting of mining titles. Amendments to the *Mining Act* are currently being prepared to insert provisions that require all holders of exploration and mining titles to carry out rehabilitation prior to relinquishing the title. At present there is no requirement in the *Mining Act* for the proponent to produce any form of financial surety.

The Government is currently drawing up *Mine Closure Regulation and Guidelines*, developed under the *Mining Act*. The 2005 draft requires that mine closure planning should be an integral part of all mining operations and that the proponent must establish a Mine Closure Security and a Mine Closure Trust Fund. This requirement is only for mining licenses. Exploration licenses and alluvial mining leases are addressed in the *Environmental Code for Mining* developed under the *Environment Act 2000* and the *Mining Act*. The *Environment Act* allows for an environmental bond to be lodged for any activity that requires an environmental permit.

Discussions are still taking place to establish the exact interaction between the *Mine Closure Regulation and Guidelines* and the *Environment Act*. Current thinking is that, if a financial surety is required under the jurisdiction of the *Mining Act*, then no further cover will be required under the *Environment Act*. However, small alluvial mining leases will still be covered by the *Environment Act*.

The draft *Mine Closure Regulation and Guidelines* allow for a proponent to be exempt from the requirement of providing a financial surety if:

- "it is impracticable for the developer to provide security or such security cannot be provided at an economic cost (having regard to the scale of mining and the financial resources available to the developer); and

- The benefits to the public welfare from the development of the mineral resources outweighs the risk from permitting the project to proceed without sufficient security being provided to support mine closure obligations."

The Mineral Resources Authority (MRA) is responsible for the administration of the *Mining Act* and the Department of Mineral Policy (DMP) is responsible for formulating policies relating to mining activities. This administration is carried out in coordination with the Department of Treasury, Finance and Planning for the financial aspects of the legislation. The Department of Environment and Conservation (DEC) is responsible for the administration of the *Environment Act* and the environmental bond. Both the MRA and DEC will review and approve the mine closure plan whilst the DMP will approve policies relating to mining activities including mine closure.

The Ok Tedi mine is governed by the *Mining (Ok Tedi Agreement) Act 1976* and is amended by Supplemental Agreement Acts. The *Mining (Ok Tedi Ninth Supplemental Agreement)*

Act 2001, also known as the *Mine Closure and Decommissioning Code 2001,* establishes the requirement for both closure plans and financial surety. This case is discussed in more detail under the heading 'Experience'.

Timing
The mine closure plan should be submitted with the feasibility study and includes estimated costs for closure and the financial provisions. Both the security for mine closure costs and the Mine Closure Trust Fund must be established before the commencement of construction of the mine but after the mining license has been granted. The legislation does not specify when the environmental bond should be lodged.

Financial Surety Instruments
The draft *Mine Closure Regulation and Guidelines* identifies the following forms of financial surety as acceptable:

- Bank Guarantee
- Parent Company Guarantee
- Insurance Policy
- Cash Deposit

A Mine Closure Trust Fund may be held off-shore at the Mining Advisory Board's discretion.

The *Environment Act* states that the environmental bond may be submitted as a Bank Guarantee, Insurance Policy or any other form of security approved by the Director of Environment.

Scope of Financial Surety
The Mine Closure Security will be established at the start of operations and is designed to cover the costs of the technical and physical rehabilitation aspects of premature mine closure. The Mine Closure Trust Fund will accrue during the life of the project and will cover the actual costs of mine closure including decommissioning, rehabilitation and post closure monitoring. The Mine Closure Security will be reduced as the Mine Closure Trust Fund increases. It has not been specified what will be included in the environmental bond.

Any holder of an alluvial mining lease will be required to pay a levy on the sales revenue derived from the activity. This levy will accumulate in a special fund and will be used to remedy a failure by the alluvial miner to comply with the closure guidelines which includes preservation of the environment and removal of mining equipment.

It is interesting to note that the draft *Mine Closure Regulation and Guidelines* state that a different mechanism will be established to cover the social implications of closure. This is discussed in Chapter 5.9.

Level of Financial Surety
The level of financial surety is based on the estimated cost of closing the mine and should incorporate premature closure.

Tax
The proponent may write down the contributions to the financial surety as an expenditure relating to mine closure which are tax deductible. Any funds removed from the financial surety other than for the purpose of implementing closure obligations would be recognized

as assessable income and subject to tax. Any interest that accumulates in the fund will be used for mine closure. In addition, rehabilitation costs during commercial production may be written down as direct operating costs for tax purposes.

Review

The initial mine closure plan and financial surety is reviewed by the mining and Environment departments. It will then be subject to a periodic audit during the life of the mine by the Project Liaison Committee; every two years, if the remaining mine life is less than ten years, and every five years when the remaining mine life is more than ten years. It will also be reviewed if any material changes are made to the operating plan. These reviews will include the financial surety and take into consideration any changes that are required. The Director of Environment or the Mining Advisory Council may also request a review at any time.

Release

The financial surety funds are not available to the proponent for on-going rehabilitation. Once the agreed completion criteria for closure have been achieved to the satisfaction of the Government, the MRA will issue a closure certificate which is the mechanism for the formal relinquishment of the mining lease. However, depending on the post closure monitoring requirements, as specified in the mine closure plan, the mining lease may not be relinquished for up to 10 years. During this period the proponent is responsible for any additional rehabilitation work. Financial surety is required to support these obligations either through the original security or by provision of a specific fund.

Experience

There are currently no financial sureties in place under the above process. However, the *Ok Tedi Mine Closure and Decommissioning Code (2001)* provides the legal framework for the preparation of a mine closure plan for the Ok Tedi mine. This plan must be updated every 2 years. The *Code* also states that the company must establish a financial assurance to cover the costs of closure include in the plan.

The 2006 draft Mine Closure Plan[2] produced by Ok Tedi Mining Ltd (OTML) consists of a detailed description of the physical closure process and the costs involved. It includes the demolition and removal of infrastructure, site rehabilitation, monitoring and aftercare for up to 6 years and redundancy payments. It also includes a 20% contingency and an annual escalator of 3% up to 2013, the forecast mine closure date. The total financial assurance currently stands at US$ 126 million, of which US$ 75.6 has been contributed by OTML (August 2008). The Funds contributed by Ok Tedi are tax deductible, and the interest earned is tax exempt, and are held in a Trust account offshore, administered by a UK bank. The costs were subject to an external audited review in 2003 and an internal unaudited review in 2006.

The mine closure plan includes a social and economic report that focuses on the communities that will be most impacted by mine closure. OTML has established a number of trust funds designed to reduce the immediate impact of premature or planned closure. These funds receive the dividend entitlements, compensation and development money. The company is currently administering 13 Trusts and 7 village funds. There are slightly different arrangements for each fund but in general:

- Some have a cash component;

[2] The Mine Closure Plan is available on the OTML website (see Annex 1)

- Most have a development component – used for infrastructure, education, social activities etc.;
- All have an investment component (future generations fund); and
- Most have tax (GST) exemption status.

All funds are banked in Trust accounts in Papua New Guinea and a Board of Trustees has been established for each fund. The Boards comprise representatives from National and Provincial Government, Council of Churches, OTML and the communities. Resolutions passed by the Board of Trustees must be unanimous. Up until 2007, OTML has contributed a total of K800 million to the various trusts. The contributions are made each year in accordance with the agreements. A Trust Administration Department is in place to manage the use of these funds and OTML is looking at how these trusts will be administered post closure to ensure remaining funds continue to benefit the beneficiaries into the future.

3.8 SOUTH AFRICA

Legislation and Governance
In South Africa, the *Minerals and Petroleum Resources Development Act* (MPRDA) *2002*, which came into effect in 2004, provides the regulatory environment for the minerals industry. It is supported by the *Minerals and Petroleum Resources Development Regulations 2004*. Environmental management principles are established in the *National Environmental Management Act 1998* (NEMA) and are applicable to all prospecting and mining operations. These serve as guidelines for the interpretation, administration and implementation of the environmental requirements of the MPRDA.

The MPRDA includes the obligation for all prospecting and mining operations to submit an environmental management plan or program and to rehabilitate the affected environment and to make a financial provision for this rehabilitation or management of negative environmental impacts. The *2004 Regulations* specify that an environmental management plan or program must include closure and environmental objectives and a financial provision. This is commonly referred to as the preliminary mine closure plan which is finalized nearer to the decommissioning date.

The environmental aspects of the MPRDA are the responsibility of the Minister of Minerals and Energy and administrated by the Department of Minerals and Energy (DME) at both the national and regional level. Recent amendments to the MPRDA and NEMA, currently waiting for parliamentary approval, will transfer the environmental responsibilities including some closure and financial provisions to the Department of Environmental Affairs and Tourism.

Timing
According to the MPRDA, applicants for a reconnaissance permission, prospecting right, mining right or mining permit must submit, and obtain approval for, an environmental management plan or program prior to the title coming into effect. This plan or program must include details of the financial surety which has to be established prior to approval being granted.

Financial Surety Instruments
The 2004 Regulations specify that the financial surety instruments available to the proponent are:

- Trust Fund
- Bank Guarantee
- Cash Deposit

Or any other method determined by the Director General of the DME. The major mining companies in South Africa generally use trust funds and centralized them at a corporate level.

Scope of Financial Surety
The financial surety is assessed by the DME using the Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine (2005). This Guideline provides a generic approach to the determination of the financial surety for all essential closure components which includes removal of infrastructure, sealing of voids, rehabilitation, water management and post closure maintenance and aftercare. The

calculations are based on third party costs and include 12.5% for preliminary and general management and administration and 10% contingency. A master unit rate is determined depending on risk class and area of sensitivity.

Level of Financial Surety

The level of financial surety is based on the assumption that the rehabilitation work will be carried out by a third party employed by the DME. It is not stated but implied that the financial surety may not be paid incrementally. The Evaluation Guidelines include a detailed breakdown of the closure costs with a master rate for each component and a multiplication factor depending on the risk class and area sensitivity. The master rates are updated annually.

It has been proposed that prospecting operations attract a flat rate financial surety as follows:

- R 20,000.00 per hectare in low sensitivity environments
- R 50,000.00 per hectare in medium sensitivity environments
- R 80,000.00 per hectare in high sensitivity environments

Where every hectare does not just refer to the disturbed areas but to the whole prospecting area as identified on the title.

Tax

The financial surety should include 14% VAT. Contributions to a trust fund are tax deductible as running costs. The trust funds are exempt provided they are used for the purpose of rehabilitation after decommissioning.

Review

According to the MPRDA, the Minister is responsible for both the assessment of environmental liability and financial surety and may appoint an independent assessor if deemed necessary. This function has been devolved to the regional offices.

The Act states that the proponent must assess their environmental liability annually and increase the financial surety to the satisfaction of the Minister.

Release

The financial surety is not available for ongoing rehabilitation. It is released when the Minister has issued a closure certificate but a portion may be retained to cover latent or residual environmental impacts.

Experience

There are some examples of mines closing down prematurely but they were operating under the old regulations. Currently there is generally reluctance on the part of the MPRDA to issue closure certificates.

3.9 SWEDEN

Legislation and Governance
At present the *Minerals Act 1992* and the *Environmental Code 1998* both contain clauses relating to mine decommissioning and rehabilitation and the provision for a financial surety but in very general terms. However, the *Environmental Code* provisions are only applied in practice for quarrying operations. The mining industry has been dominated by three major mining companies that have taken responsibility for mines they have closed negating the need for financial sureties.

The legislation provides very little guidance on what elements should be included in the financial surety, how to calculate the amount or any other details. Over the past five years a number of financial sureties have been required following judicial proceedings but the way in which the provisions have been applied has been quite inconsistent.

The government recently adopted the *European Union (EU) Directive 2006/21/EC on the Management of Waste from Extractive Industries,* which will be implemented in national law in 2008 by amendments to the *Environmental Code*. The *Directive* specifically states the requirement for a mine closure plan, rehabilitation and monitoring and the provision of a financial surety. Technical Guidelines (MonTec 2007) for establishing a financial surety have been developed for the European Commission in accordance with Article 22 of the Directive. The Directive is discussed in more detail in Chapter 3.10.

The government body in Sweden responsible for mine closure and the financial surety is the Environmental Court.

Timing
The establishing of a financial surety is part of the licensing procedure and operations may not start until the fund is in place.

Financial Surety Instruments
The *Environmental Code* specifies the acceptable financial surety instruments as a Bank Guarantee or a Pledge of Assets. Cash Funds are also admissible.

There are currently 4 or 5 mines with a financial surety in place with an equal division of Bank Guarantees and Cash Funds.

Scope of Financial Surety
The existing legislation does not specify which elements of closure should be included in the financial surety. In principle, all measures included in the closure plan are taken into consideration.

Level of Financial Surety
The existing legislation does not specify the required level of financial surety, how the figures should be established or what aspects should be included.

Review
The level of financial surety is calculated and proposed by the proponent and is reviewed by the Environmental Court, other relevant authorities and stakeholders as part of the licensing procedure.

There are currently no legal requirements for the financial surety to be reviewed on a regular basis apart from when a permit comes up for renewal. However, the permitting authority may request additional funding if required.

The *EU Directive* requires a waste management plan to be reviewed every five years with the size of the financial surety adjusted accordingly. This review will most likely be carried out by the County Administration and then approved by the Environmental Court.

Release
The funds are not available to the proponent for on-going rehabilitation. The funds are released when reclamation has been completed.

Experience
To date no operations have closed with a financial surety in place.

3.10 EUROPEAN UNION

Legislation and Governance
The European Union produces legislative acts, known as *Directives*, which require member states to achieve a particular result without dictating the means of achieving that result. There are a number of EU Directives that are applicable to mining operations; the most specific is *EU Directive 2006/21/EC on the Management of Waste from Extractive Industries* which had to be implemented by 1st May 2008. Article 5 of this Directive requires that an operator draws up a waste management plan which should contain the proposed plan for closure, including rehabilitation, after-closure procedures and monitoring. Article 14 establishes the need for a financial surety, known as a financial guarantee, to cover the accumulation or deposit of waste. The term 'waste' is defined in Article 1(a) of *European Community Council Directive on Waste 75/442/EEC* and encompasses "any substance or object which the holder disposes of or is required to dispose of".

EU Directive 2006/21/EC amends *EU Directive 2004/35/EC on environmental liability with regard to the Prevention and Remedying of Environmental Damage*. The latter refers to the 'polluter pays' principal and requires that a financial surety be used to cover the responsibilities under this Directive. Both Directives are supported by a reference document produced by the European Commission in July 2004, Best Available Techniques for Management of Tailings and Waste Rock in Mining Activities, which includes closure methods but only refers to a financial guarantee in the glossary. The European Commission has recently commissioned the production of Guidelines for Financial Guarantees and Inspections for Mining Waste Facilities which will be published on the Directorate General (DG) Environment website (MonTec 2007). The content of these Guidelines does not necessarily represent the formal opinion of the European Commission.

All Directives can be accessed on the EU Database website (see Annex 1).

Timing
Article 14 of *EU Directive 2006/21/EC* specifies that a financial surety should be in place prior to the start of any operation that involves the production of waste.

Financial Surety Instruments
Article 14 also establishes that the financial surety should be in the form of a financial deposit, or equivalent, which may include industry-sponsored mutual guarantee funds.

Scope of Financial Surety
EU Directive 2006/21/EC covers the management of waste from land-based extractive industries and includes all waste arising from the prospecting, extraction (including the pre-production development stage), treatment and storage of mineral resources and from the working of quarries. All these aspects of waste must be covered by the financial surety including post closure procedures and monitoring. The financial surety in this Directive does not include the infrastructure and other facilities related to a mining operation or inert waste or unpolluted soil unless deposited in a Category A waste facility (hazardous or dangerous waste or incorrect operation). Some aspects of these exclusions could be covered by the financial surety requirements of *EU Directive 2004/35/EC* though this is debatable.

Level of Financial Surety
The *EU Directive 2006/21/EC* establishes the level of financial surety should be based on third party costs.

Tax
The *EU Directive 2006/21/EC* makes no reference to the tax implications for the financial surety.

Review
It is assumed in the *EU Directive 2006/21/EC* that the financial surety calculations are assessed by a third party. It requires for the waste management plan to be reviewed every five years and provisions to be made to periodically adjust the surety in line with these reviews.

Release
Article 12 of the *EU Directive 2006/21/EC* places the accountability for the waste facility, even after closure, on the operator and they have the duty to keep the regulatory authority informed of any events or developments likely to affect the stability of the site. The financial surety may be released when the competent authority approves closure or takes over the tasks of the operator.

Experience
After May 2008 no waste facility should be allowed to operate without a permit and all waste facilities that are licensed are obliged to comply with *EU Directive 2006/21/EC*. Any waste facility that is granted a permit prior to the 2008 date has until 1st May 2012 to comply with the provisions set out in this *EU Directive*. This does not apply to waste facilities that have closed by May 2008.

Chapter 4 Discussion based on Case Studies

4.1 Legislation and Governance

The legal requirement for a mine closure plan or rehabilitation program may be found in either the mining law, as is the case in Ontario, Canada, or in both the mining and environmental laws which is more common. It is rarely found only in the environmental law. Some jurisdictions, such as Nevada, have developed a law solely to cover reclamation. Similarly the requirement for a financial surety is usually found in the mining and environmental laws or sometimes just in the mining law, though these usually do not identify the acceptable mechanisms.

As well as the relevant mining and environmental laws, most governments have produced regulations, guidelines or codes of practice that specify in more detail the requirements for rehabilitation and, in some cases, the financial surety mechanisms. For example, in Canada the Ontario Regulation 240/00 contains schedules that provide details of the rehabilitation requirements and information to be provided in the closure plan. The Government of Ontario has also produced a policy document that contains information on the type, and requirements for, each form of financial assurance accepted by the legislation. These are available on the Ministry of Northern Development and Mines website.

A number of countries included in the survey, such as Victoria, Botswana, Ghana and Sweden, are non-specific in regard to the size of a project that requires a financial surety. The legislation refers to the generic term 'mining' with the presumption that this encompasses all aspects including small, medium and large as well as exploration. In some jurisdictions smaller projects, alluvial mining and quarrying are treated separately. See table below.

Table 4.1.1: Summary of Mining Title specified in Legislation as requiring a Financial Surety

Jurisdiction	Prospecting	Exploration	Advanced Exploration	Mining (generic)	Other
Ontario			yes	yes	
Nevada		yes		yes	No financial surety for projects < 5 acres or producing < 36,500 t
Queensland				yes	Exploration and smaller projects are charged at a flat rate (see table p.21)
Victoria		yes		yes	Quarrying specified in separate legislation
Botswana				yes	
Ghana		yes		yes	
Papua New Guinea		yes		yes	Alluvial mining lease required to pay levy on sales
South Africa	Charged at flat rate			yes	
Sweden				yes	Quarrying specified in legislation
European Union					Waste management

In the majority of countries included in the survey the closure plan, rehabilitation and financial surety come under the jurisdiction of the government department responsible for mining or jointly with the department responsible for the environment. One notable exception to this is Queensland, Australia. In 1999 the government decided to transfer the responsibility for the environmental regulation and management of mining from the Department of Mines and Energy to the Environmental Protection Agency. This included transferring the responsibility for the rehabilitation program, though the receipt and management of the financial surety remained with the department responsible for mining.

In most jurisdictions the department responsible for government finances is involved to some extent in the financial aspects of the implementation of mining legislation. This may involve full coordination in the receipt and administration of the financial surety, as is the case in Papua New Guinea, or only for tax purposes.

4.2 Financial Surety Instruments

Most of the regulatory authorities that responded to the survey allow a number of financial surety instruments to be used, with the notable exception of Victoria, Australia which will only accept a Letter of Credit (Bank Guarantee). The most common form of financial surety instrument currently in use is the Letter of Credit, which is accepted by all the developed countries included in the survey. Surety Bonds, Trusts Funds and Cash are used fairly regularly and Ontario and Nevada both allow Corporate Guarantees.

In some jurisdictions, for example Nevada, a combination of mechanisms is allowed for a single surety. This is most commonly used for larger companies that may obtain up to 75% of the financial surety as a Corporate Guarantee. Experience in some jurisdictions has shown that Corporate Guarantees do not provide sufficient protection, while in others Surety Bonds have failed to meet their expectations and Unit Levies have left governments with a shortfall when projects have closed prematurely. Cash financial sureties are more common for smaller mining companies which do not have sufficient assets to satisfy the requirements for a Letter of Credit. It is interesting to note that in Queensland the government will no longer accept a Corporate Guarantee because public opinion has no faith in them.

The trend in developing countries is to use Trust Funds as the financial surety instrument of choice. These are also acceptable in Ontario and Nevada but are rarely used. In South Africa the major mining companies use centralized Trust Funds at a corporate level.

4.3 Timing

In most of the jurisdictions included in the survey the financial surety does not have to be lodged until after the mining title is granted. However, the legislation in all these cases does stipulate that no work is allowed to start on site until the financial surety is in place. In some instances, such as Victoria, Australia, the government issues a separate Work Authority after the surety has been arranged. In Queensland the financial surety for all mining titles, with the exception of a mining lease, have to be lodged before the title is granted. In this case the surety is required before activity starts on site. In Botswana the proposal is for the financial surety to be put in place before the mining title is granted.

All of the developed jurisdictions included in the survey, with the exception of Sweden which does not specify, allow for the financial surety to be funded in incremental payments. This was not stipulated in the legislation for the developing countries. However, the implication for South Africa is that the full amount of the financial surety must be in place before a project can start.

4.4 Scope of Financial Surety

In all the case studies included in this review the primary legislation (Act) is non-specific in terms of what should, or should not, be included in the financial surety. The scope is referred to in general terms such as 'closure' or 'reclamation plan', 'rehabilitation' or 'revegetation', with the detail being given in the secondary legislation (regulations, guidelines, codes etc). For example, in Ontario the Mining Act obliges the proponent to submit a closure plan which includes the financial surety. The detail of what is required in the closure plan, and thereby included in the financial surety, is specified in the Mine Rehabilitation Code. This provides the proponent with comprehensive guidelines and allows the regulatory authority to vary the requirements without having to change the primary legislation.

The financial surety is expected to cover the cost of all aspects of the physical closure of the site. In some jurisdictions this includes the administrative and management costs though these may be automatically included if the costs are based on the work being carried out by a third party. There is, however, considerable ambiguity surrounding the issue of the funding of long term care of the site, or what time period the financial surety should cover after the rehabilitation work has been completed. In Queensland this discrepancy was recently addressed by the introduction of residual risk payments. These allow for separate cash payments to be made, to cover future maintenance and reconstruction, when the Environmental Authority is surrendered or when progressive rehabilitation is certified.

If one project includes a number of different licenses or titles then most regulatory authorities only require one financial surety.

The IFC Environmental, Health, and Safety Guidelines for Mining (2007) specify that the mine closure plan should include socio-economic considerations and, by association, the financial surety. The only legislation that specifically includes the social and economic impacts in the mine closure plan is the Ok Tedi Closure and Decommissioning Code (see Chapter 3.7). The details of this requirement are established by Ok Tedi Mining Ltd, in consultation with the relevant stakeholders, and reviewed every two years.

In Papua New Guinea, there is also a 'Future Generations Fund' that protects some mine benefits for use by subsequent generations. In addition, there is an infrastructure incentives scheme whereby, companies can use part of their income tax payments to construct infrastructure projects in agreement with the local community.

In the Philippines, a mine is required to contribute a percentage (90% of 1%) of the direct mining and milling costs to a centralized Social Development and Management Program (SDMP) as part of a five year plan. This program is designed to be used for the sustainable improvements in the living standards of the host and neighboring communities by creating responsible, self reliant and resource based communities. Details of the SDMP can be found on the Mines and Geosciences Bureau website (see Annex 1).

4.5 Level of Financial Surety

The level of financial surety can range from a few thousand dollars to hundreds of millions depending on the size, nature and complexity of the project. In most cases, the amount that is required for the financial surety is based on the specific itemized costs of all components included in the closure or rehabilitation plan. In some jurisdictions the detail is left up to the proponent, whilst in others the regulatory authority has established a list of the components

and methods of calculation. For example, in Queensland the Code of Environmental Compliance for Mining Lease Projects (available on the EPA website) contains a schedule of rehabilitation costs and specifies that maintenance and monitoring costs should be calculated at 10% of the total rehabilitation costs. Both Victoria and New South Wales use the URS/GSSE Rehabilitation Cost Estimate Tool (see Chapter 5.5). Since the introduction of the Tool in New South Wales surety funds have been increased by over 50%.

South Africa has a similar method for establishing the financial surety contained in Section B of the Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision Provided by a Mine (available on the Department of Minerals and Energy website). The process, which is designed to be used by DME regional office personnel, involves ranking mines according to risk and the sensitivity of the area before applying unit rates for the various closure components. Up to 13% of this total may then be added for administrative and management costs and a 10% contingency.

It is common practice for the financial surety to include administrative and management costs, usually established on a percentage basis. The level of financial surety is commonly based on the work being carried out by a third party, such as an outside contractor.

The only authority included in the survey that accepted the financial surety in the form of a Unit Levy is Ontario. This is established by looking at the proposed life of the mine, the estimated closure costs and the mining rate and then negotiating a dollar rate per tonne mined and the timing of the payments. The negotiations also establish that the financial surety is covered by the half life of the mine. However, a number of jurisdictions do accept incremental payments, sometimes known as a Sinking Fund, for a number of financial surety instruments.

In Queensland the financial surety for exploration and small (standard) mining projects is based on the total area of disturbance and the risk associated with the rehabilitation (see Chapter 3.3). In 2008, the Western Australian Department of Industry and Resources published new rates for calculating environmental performance bonds (surety bond). These represent a minimum rate that will be varied according to the risk at a particular site. The minimum bond will generally be A$10,000.

Table 4.5.1: Western Australia Minimum Bond Rates 2008

Rate	Description	A$
1*	Tailings Storage Facilities, including in pit disposal, Heap/Vat leach, Evaporation dams, Turkey Nest Dams, Waste dumps, ROM pads, low grade oxide stockpiles, plant sites, workshops and process water dams	20,000
2	Camp Sites, Strip Mining (backfilled mining voids), hyper saline pipelines (>15,000 TDS), causeways, haul roads, sewage ponds and landfill.	5,000
3	Roads and access tracks, "Fresh" water pipelines, laydown areas, borrow pits and airstrips	3,000
4	Exploration – where clearing takes place, metal detecting, dry blowing and prospecting	2,000

* *High risk facilities and landforms (sulphides present, highly erodible or >25m high) may attract a higher rate and will be determined on a case by case basis).*

Large companies in Nevada may obtain a Company Guarantee, known as a State Corporate Guarantee, for up to 75% of the total financial surety if they can meet regulatory criteria to demonstrate adequate financial health. Similarly, in Queensland companies can earn a 75% discount based on previous environmental performance.

4.6 Tax Implications

The treatment of the financial surety for tax purposes varies from country to country. In Nevada, under both state and federal legislation, payments in to a financial surety are treated as an operating cost and therefore tax deductible, as well as the actual expenditure on rehabilitation. In addition, operators can distribute the rehabilitation obligation over a number of years thereby further reducing taxes. In contrast, in Ontario there is no tax allowance for a financial surety as the government does not consider it to be an expense as it will be returned to the company once rehabilitation has been completed. In Botswana, the industry is putting pressure on the government to make payments into a trust fund for a financial surety, tax exempt.

4.7 Review

In all cases included in the survey the level of financial surety is established by the proponent and, in all but one, is reviewed by the relevant government department. The exception is Queensland where the proponent has to certify that the correct procedures have been used and the government has the power to impose severe penalties for providing false or misleading information. No authorities employ third party verification in the process of accepting the financial surety though, in Nevada, the public are allowed to review and comment.

The legislation in all jurisdictions, apart from Ontario, allows for the financial surety to be reviewed and adjusted on a regular basis. The timing of this review varies from annual (South Africa) to every ten years (Queensland) depending on the size of the project, the life span or the liability risk. In Victoria, the draft Guidelines contain an assessment matrix for the review period reproduces below.

Table 4.7.1: Victoria Surety Review Periods

	Likelihood			
Consequences	**High**	**Medium**	**Low**	**Negligible**
High	2 years Large mine - gold	3 years Large mine – other metals HM sand	6 years Large mine – non metallic (other than coal for major power generation)	10 years Coal (major power generation
Medium	3 years Small mine – gold and other metals	6 years WA – regional significance	10 years WA – state significance	10 years
Low	6 years Small mine – non metallic	10 years WA – local significance	10 years	10 years

The majority of jurisdictions also require a financial surety to be reviewed and adjusted when the mining title in renewed, when there is a change to the operating plan, when there is a transfer of assets or when the regulatory authority has due reason to request a review. At the time of the review the level of financial surety can be increased or decreased. If the proponent is paying the financial surety in increments then the timing of reviews is usually more frequent.

4.8 Release

In none of the completed surveys were the funds available to the proponent for on-going rehabilitation during the life of the project. However, work that had been completed at the time of a review could be taken into consideration during the reassessment of the level of

the financial surety. For example, in Nevada as discrete steps in the reclamation plan are completed partial release of the surety may be allowed.

Following the successful completion of rehabilitation most authorities, if they are satisfied no further claim might be made, return the majority of the funds held in the financial surety to the proponent. However, where necessary a number of jurisdictions withhold some of the funds for long term care costs. One variation on this theme is Queensland which can require a cash residual risk payment to be made when they release the original financial surety.

4.9 Additional Experience

Three of the case studies from developed countries reported that, when mines had closed due to economic difficulties, the financial surety had not been sufficient to cover the closure costs. In the developing countries the financial surety requirement had not been operating for long enough for there to be any examples or the y were reluctant to provide the information. The following examples are included to give an idea of how expensive closure legacies can be.

In the UK, following the coal mine closure program of the 1980/90's, the Coal Authority was left with substantial environmental and safety liabilities with no money to fund the required work. In the 2007/2008 tax year the Coal Authority spent £18.9 million managing legacy liabilities (£16.6 million 2006/2007), and currently has 46 operational water treatment schemes covering 300 kms of watercourses. There are a further 84 water treatment schemes that have been identified that need to be constructed by 2027 and it is estimated that the responsibility for mine water treatment will extend for another 100 years.

According to the latest Annual Report, at the end of June 2007 the Western Australian Department of Industry and Resources held 3,365 unconditional performance bonds (surety bond) with a total value of A$608.3 million. This value represents approximately 25% of the expected total rehabilitation costs. In 2005 the amount held in bonds was A$430 million with an average of A$2,395/ha.

BHP Billiton's Island Copper Mine in British Columbia, Canada, closed in 1995. The closure plan submitted to the government in 1994 estimated the costs for environment mitigation and monitoring were C$15 million with additional money set aside for severance packages and decommissioning. It was presumed that monitoring would be required for 10 years with the level decreasing significantly for the second five years. Well in excess of these costs have now been spent. In 2007 it was reported that revegetation of the 700 hectares had been hugely successful and, over time, it is expected that the mine's closure objectives or productive forest and wildlife habitat will be achieved. However, since initial closure, BHP Billiton has come to realize that the closed mine site will require care, maintenance and monitoring in perpetuity, principally due to the evolving nature of the mine drainage and its treatment requirements. For further detail see the 2007 Annual British Columbia Jake McDonald Mine Reclamation Award (www.trcr.bc.ca).

Chapter 5 Implementation Guidelines

A financial surety is essential to ensure that an exploration or mining project does not burden a government with a detrimental environmental or social legacy. However, it should do more than protect the regulatory authority from the risk of default; it should also work as an incentive for the proponent to keep the physical impacts to a minimum and to carry out progressive rehabilitation. This incentive can be augmented by regular review and the release of the surety for work that has been completed. Site rehabilitation should be progressive so that, wherever possible, the rate of restoration is similar to the rate of exploration or exploitation.

Closure may not always occur as planned. The life span of an exploration project is dependent on the discoveries made, or not, and it is quite common for the life of a mine to be extended by the re-evaluation of existing reserves, changes in the commodity markets, new ore discoveries, etc. This type of change can be accommodated by revising the closure plan and reviewing and revising the financial surety. Alternatively, the life of an exploration or mining project may be curtailed unexpectedly because of falling metal prices, technical difficulties, or financial problems of the company. In these instances, if the company is not in a position financially to carry out any of the planned rehabilitation, it is essential that the regulatory authority has the funds available to commission the work themselves.

Before setting up a financial surety it is essential to establish the rehabilitation goals. These should involve restoring all affected areas, as far as is possible, to their most appropriate economic and social value. This does not always involve returning a site to its original state or use. The main aims of site rehabilitation are to reduce the risk of pollution, to restore the land and landscape, to improve the aesthetics of the area and to prevent further degradation. These goals should be discussed as part of the consultation process and the views and opinions of the land owners and local community, as well as the national and provincial government, should be taken into consideration.

Site closure, especially in the case of a mining operation, can be difficult to define as a discrete period as post closure monitoring and long term care may be required after the rehabilitation work has been completed. The regulatory authority must take the necessary steps to ensure there will be sufficient funds available to pay for post closure monitoring and maintenance and, when required, remedial action. These funds can form part of the financial surety or a separate, self perpetuating fund, can be established when the original financial surety is released.

It is critical that the financial surety is only used for the purpose it was designed, and not viewed as a general source of funds by any of the parties involved. For this reason, it is advisable for the management and control of the fund to be shared by the regulatory authority and the company, with a clause allowing for the release of the fund if the company defaults. It is also essential that the financial surety is quarantined from other company assets, so that it cannot be seized in the event of bankruptcy, and from government abuse. The financial surety must be returned to the company following the satisfactory completion of mine closure and the rehabilitation program.

5.1 Legislation and Governance

The general direction is for legislation to be non-prescriptive, to allow for flexibility when regulating so as not to stifle development. In the case of financial surety, too much flexibility can result in confusion and inconsistencies, which may result in deterring investment. As can be seen from the survey carried out for this report, there are as many

variations in the way financial surety requirements are included in the legislation, and administered by the regulating authority, as there are case studies. The simple deduction is that there is no 'correct' way of legislating for, or managing, financial surety requirements. However, if a system is too complex neither the industry nor the government will implement it successfully. Legislation should also be designed to take government structure and capacity into consideration.

> It seems that it works better to have an independent mine closure law that establishes a single agency to implement the law. This model gives the business community an assurance that one agency will take the lead on its problems and that it will not have to answer to many differing opinions on how operation, reclamation and closure success will be measured. This model also allows the public and NGOs a single place to go for information on mining regulation.
>
> Ref: Cochilco, MMSD 2002

At present, any mining project whether exploration or exploitation, in almost any country, has to obtain a mining (or exploration) license and an environmental permit. These requirements are contained in the Mining Act and the Environmental Act which are usually administered separately, by the relevant department. Prior to obtaining an environmental permit, most jurisdictions require the proponent to produce an environmental impact assessment that would also contain a closure or rehabilitation plan. It is therefore logical to assume that the financial surety requirement for rehabilitation would be included in the environmental legislation and administered by the relevant department.

In practice however, this logic does not stand up to scrutiny. Many or most of the environmental liabilities associated with mining are now an accepted integral part of the overall operation and closure plans are as much part of the operating plan as they are of the environmental assessment. In addition, it is common practice for the mining legislation to include most, if not all, of the financial aspects of the license. For these reasons it makes more sense for the financial surety requirement to be a part of the mining legislation and to come under the authority of the department responsible for mining. That said, it is essential that the administration and management of the financial surety should involve consultation with all relevant departments including environment, water and finance.

Recommendations:

- A financial surety should be a requirement for all projects but tailored to fit the size and complexity of the project.
- The financial surety requirement should be clearly stated in the legislation and should be linked to the permitting process.
- The legislative, regulatory and fiscal framework for financial surety should be clear and application consistent.
- The financial surety requirement should be primarily included in the mining legislation, preferably directly associated with mine closure.
- The law or act should be supported by regulations and/or guidelines that specify the rehabilitation requirements and financial surety mechanisms.
- The department responsible for mining should administer the financial surety in consultation with other relevant departments.

5.2 Financial Surety Instruments

Success of any financial surety instrument depends on the care and effort put into setting it up and managing it. Most will work if they are done properly. The most commonly used forms of financial surety are the Letter of Credit, Surety Bonds, Trusts Funds and Cash.

A *Letter of Credit* (Bank Guarantee) is the most frequently used type of financial surety instrument. These are acceptable to the industry because they are relatively cheap to set up and they are attractive to governments because there are less administrative requirements. However, obtaining a Letter of Credit may reduce the borrowing power of the company.

Surety Bonds have many similar attributes to the Letter of Credit and are attractive to smaller companies as they do not involve tying up capital. However, the long term viability of the insurance company providing the bond should be taken into consideration.

Trust Funds are more visible and often better understood than other forms of financial surety. Any surpluses created in the fund can be returned to the proponent with more ease but, if they are invested, there is the possibility that the value of the fund will fall. It can be difficult to ensure that their value stays in line with the rehabilitation obligations. Trust Funds are more available to smaller mining companies which do not have sufficient assets to satisfy the requirements for a Letter of Credit or Surety Bond.

Cash also provides a more attractive option for smaller companies (see Trust Fund) and the money can earn interest and thereby keep ahead of inflation. There are no delays in getting access to the money and no need to retrieve the entire fund if only part is required. Cash is also easier to place in a pooled fund. However, a Cash fund may be more accessible to misappropriation. There is also the risk that, should the mining company become bankrupt, any cash deposits will be recovered by the receiver.

The *Company Guarantee* is the financial instrument of choice of the mining companies due to the lack of cost and paper work involved. However, they do tend to fail because the time when the money is most needed is often when the company is not able to deliver. They are also unpopular with the public which does not hold the mining industry in very high regard and therefore does not trust this form of financial surety. This type of financial surety instrument is only really acceptable for large, well established companies and can therefore be seen as being a disadvantage to smaller operations.

Insurance Schemes are currently not available to the mining industry outside of the USA.

Unit Levy and *Pledge of Assets* are increasingly unlikely to be accepted as financial surety instruments because of the uncertainty of the fund meeting the rehabilitation requirements.

A *Fund Pool* and *Transfer of Liability* are not widely available and generally not recommended.

The choice of financial surety instrument will depend on the track record and financial strength of the proponent, the level of surety required and the period of time it is necessary. It is essential that the financial surety can be converted into cash quickly and reliably and can only be used for the purpose for which it was designed. It is also essential that the financial surety is quarantined from other company assets, so that it cannot be seized in the event of bankruptcy, and from government abuse. In some instances a combination of financial surety instruments may prove to provide the best cover.

Recommendations:

- Produce guidelines identifying which forms of financial surety are acceptable and how they should be implemented.
- Allow the proponents a choice of fund, preferably from the first four in the above list.
- Ensure that unbiased financial advice is available in the choice of the financial surety and its management.
- Ensure that the financial surety is quarantined from other company assets, so that it cannot be seized in the event of bankruptcy, and from government abuse.
- Ensure the financial surety can only be used for the purpose for which it was designed and in a timely fashion.

5.3 Timing

The financial surety can be put in place either before the mining title is granted or after the mining title is granted but before the proponent is allowed to start work on the site. There are no benefits or disadvantages for either option as long as the security is lodged before any work starts on the site that would require rehabilitation. The incremental payment of a financial surety may be an acceptable option, especially in the case of a large project with a long life span. However, it should not be the preferred option for explorations sites or smaller projects.

Recommendations:

- The financial surety must be in place before work starts on the site.
- If the financial surety is to be paid incrementally, ensure the funds are always sufficient to cover closure costs.

5.4 Scope of Financial Surety

The scope of the financial surety is currently accepted to include all the physical aspects of mine closure. This should include activities associated with decommissioning, removal of plant and infrastructure, as well as rehabilitation. The main question is how prescriptive the administrative authority needs to be in defining all the elements. While some jurisdictions feel it is necessary to provide proponents with detailed lists of the specific elements to be included in the financial surety, others hardly provide any guidance at all. A balance between these two might be the seen as the best option.

It is essential that the mine closure and site rehabilitation goals are an integral part of the scope of the financial surety. These can be established as closure criteria or standards and should take into consideration the potential end use for the site.

Almost all sites, especially mining licenses, will require some form of post closure monitoring and, in some cases, long term care and/or remedial action. These requirements should be included in the financial surety scope.

The social and economic aspects of mine closure, and financial implications, are discussed in separately (see Chapter 5.9) and are not included in the following recommendations.

Recommendations:

- Establish the physical mine closure and rehabilitation criteria or standards.
- Establish outline guidelines of the elements of mine closure and rehabilitation to be included in the financial surety.
- Consult with the relevant environmental authorities to ensure all aspects of the environmental assessment are addressed.

- Consult with the community regarding rehabilitation goals and end of site use.
- Set up procedures for establishing the requirements for long term maintenance and monitoring and the method of funding.

5.5 Level of Financial Surety

For exploration sites and small, low risk mining projects it is feasible to use a basic formula to calculate the required level of financial surety. For the larger, high risk mines it is advisable to establish a detailed breakdown of all the components with individual costings. The level of financial surety is usually worked out by the proponent and then submitted to the regulating authority for review. Often, in the case of international companies, the person calculating the figures is not in their home country, and therefore not in a position to know what the various costs will be. Because of the specialized nature of the work the costs can be difficult to come by. Establishing accurate rehabilitation costs is not an exact science and this just adds another level of uncertainty.

The level of financial surety can be calculated in a number of different ways:

- Use of a formula based on the type of project, rehabilitation plan and/or track record of the company.
- Specified in legislation on standard rates and unit costs.
- A percentage of capital costs.
- Negotiated based on the feasibility study.
- Negotiated on a per tonne basis.

Whichever method of establishing a financial surety is chosen, the details should be worked out on a site by site basis and any guidelines or models just used as a starting point. A more complex Rehabilitation Cost Estimate Tool (see Box 5.5.1) has been developed in Australia which may help to remove some discrepancies across the industry and the need for detailed review by the government. This Tool should also ensure that the level of financial surety is not dependent on the business success of the company or the overall economic conditions in the mining industry. In Australia all mines in New South Wales, and more complex mines in Victoria, are required to use the Tool to assist in surety calculations.

Another Cost Estimation Model for Mine Closure has also been developed for a Ph.D. dissertation at Colorado University (Peralta-Romero 2007). This Model uses the graphical interface of MS Excel with three main functional modules; input and utilities; closure activity costs; and output, with color differentiation. Information contained in a database can be incorporated into calculation worksheets including disturbance rates, equipment type and model, production rates and unit costs. The model will then generate an executive cost summary.

The financial surety should be designed to cover all mine closure costs at the time of closure, whether planned or not, in the absence of the proponent. This means that, at a minimum, the amount should be based on third party costs and should include all administrative, maintenance and monitoring costs. There are also good arguments for the inclusion of a contingency, allowance for engineering redesign and inflation. The required standard of rehabilitation is site specific and this should be reflected in the financial surety calculations.

Box 5.5.1: Rehabilitation Cost Estimate Tool

Two consulting companies in Australia, URS and GSSE, have developed a Rehabilitation Cost Estimate Tool. This is a cost calculation workbook, using Microsoft Excel, that aims to provide mine operators or government with a general guide in calculating an appropriate rehabilitation estimate.

The design of the workbook is a tiered approach which establishes the level of detail required based on the scale and type of operation. The mine site is divided into a series of domains, each representing a unique area, and comprising a number of precincts. By selecting the type of mining operation the relevant domain worksheets will be activated.

The Tool includes all aspects of mine closure from the demolition and removal of infrastructure to the maintenance and monitoring of the rehabilitation. Third party costs, as well as administration and management, are also built in to the workbook. The unit costs used in the Tool are based on generic rates though there is the facility for users to insert their own rates, with justification. The costs do not incorporate an automatic calculation to determine future value.

Comments from the industry say that the Tool is easy to use, provides a useful framework for developing the closure plan and has a clear systemic approach. However, the integrated costs in the Tool do not take account of regional variations. In addition, it has been reported that there has been a substantial increase in rehabilitation cost estimates since the introduction of the Tool.

For further information contact michael_woolley@urscorp.com.

Junior and local mining companies may not have the necessary financial resources to establish the entire surety before the start of a project. Paying the financial surety in increments may be the only alternative. However, there is always a risk with incremental contributions that, at any given time, the surety may not be sufficient to cover the costs of rehabilitation should the proponent default. Most junior companies use outside financing so it may be possible for the financial institution involved to also provide a Bank Guarantee. Alternatively, the company could reduce the initial operating plan size so that both capital costs and the financial surety are less.

Recommendations:

- Establish guidelines containing an outline of rehabilitation costs.
- Ensure these costs are based on using a third party contractor, include all administrative costs, a contingency and inflation factor.
- Use site specific costs based on site specific closure plans.
- Include a separate cost item in the financial surety for remedial action, maintenance and monitoring.
- Accept incremental payments of the financial surety as the last option.

5.6 Tax Implications

There are five separate issues related to tax and a financial surety fund. These are:

- Whether money paid into the financial surety is counted as an operating cost or an expense and is therefore tax deductible?
- Whether decommissioning and rehabilitation costs count as an operating cost and are therefore tax deductible?

- Is any interest earned on the financial surety fund taxable?
- Is any capital gain made on the financial surety fund taxable?
- When the financial surety fund is released back to the company is it taxable?

One question is, if the funds paid into a financial surety are tax deductible, then the decommissioning and rehabilitation costs should not be, or vice versa. However, there is a problem making decommissioning and rehabilitation costs tax deductible because the majority of the expenditure comes once a mine has ceased operating and so there is no income to offset the tax against. One way of getting round this problem is to allow a company to claim tax deductions for closure provisions based on a unit of production basis during the operating life of the project.

The countries that took part in this survey generally accepted that the administration costs associated with setting up and managing a financial surety are tax deductible as a business expense. It is also acknowledged that any interest earned by the financial surety, or capital gains made by the fund, are taxable but that the release of the original fund is not.

For obvious reasons, the mining industry will wish to secure as many tax breaks as feasible and the onus is on the government to establish a fair system that takes into consideration the financial implications for the industry. As can be seen from the case studies, attitudes do vary around the world to this sensitive subject. In spite of some individual attitudes, there can be no wrong or right way of making these decisions, just the best for the country involved.

Recommendations:

- Liaise with the department responsible for government finances before making any decisions.
- Liaise with the mining industry as to the implications for different tax regimes before establishing the requirements.
- Establish the tax regime and stick to it – avoid negotiation on a site by site basis.

5.7 Review

When the financial surety is submitted to the regulatory authority it is usually reviewed internally. This process is complex, uses considerable resources and can be very time consuming as it involves negotiations and consultations. If the relevant department does not have the capacity to carry out the review internally then third party verification could be considered. This could either be done by the proponent, with a system of certification, or by the regulatory authority. The financial surety arrangements should also be part of the community consultation process so that the end use for the site can be established. Ideally this should take place at the same time as the environmental and social impact assessment consultations and should include the mine closure and rehabilitation plan.

During the life of the project the closure and rehabilitation requirements may change due to planned or unforeseen modifications to the exploration or operating plan. This means that there needs to be a mechanism for reviewing and adjusting the financial surety. There should also be a statutory requirement for periodic reviews of the financial surety to enable the regulators to ensure that the surety level is adequate and that the fund is properly secured. The period between reviews depends on length of project. The World Bank Report (2002) recommends every 5 years for a 30 year project life and every 2 years for a 10 year project life. The IFC Guidelines (2007) state that the mine closure requirements should be reviewed on an annual basis and the closure funding arrangements adjusted to reflect any changes.

The review would be carried out by the proponent and submitted to the regulatory authority. The same verification and consultation process should then be repeated as for the initial submission. At the time of this review any rehabilitation carried out by the proponent could be taken into consideration in re-establishing the level of financial surety. However, the adequacy of the rehabilitation work must be assessed before any reduction in the financial surety is accepted.

Recommendations:

- Establish whether the initial assessment of the financial surety will be carried out by the regulatory authority, by the proponent, or third party verification.
- Establish the consultation process.
- Establish requirements and processes for periodic reviews.

5.8 Release

The financial surety fund should not be available to the proponent to pay for on-going rehabilitation. However, if rehabilitation has been carried out it could be taken into consideration at the time of the periodic reviews. Staged reductions in the level of financial surety can help to promote progressive rehabilitation and good practice.

Following the satisfactory completion of mine closure and the rehabilitation program, the financial surety fund can be returned to the proponent. Before any money is returned the regulatory authority should establish that the program has been successful and no further work is required on the site. A commonly used method of evaluating the release of the financial surety is the success of the revegetation program. It is also possible to use the surface stability or water quality, or a combination of all three.

If the site requires long term monitoring, maintenance and/or remedial action, a separate fund should be set up to finance this for whatever period is required. This fund should be self perpetuating so that the regulatory authority is never left with a deficit.

Recommendations:

- Establish practical criteria for assessing adequacy of rehabilitation efforts (completion criteria).
- Establish criteria for the release of a financial surety including staged reductions during the operating life of the project.
- Establish a method of funding long term monitoring, maintenance and remedial action.

5.9 Social and Economic

It is starting to be accepted that it is essential to set funds aside early on in project development to finance the social and economic aspects of mine closure. Severe economic distress may follow closure if the project is the sole source of direct and indirect employment in the region and unsustainable social infrastructure that was previously supported by the mine is liable to collapse. The elements that should be taken into consideration are:

- Redundancy payments
- Retraining schemes
- Support for dependent (spin-off) businesses
- Utilities: electricity, water, communications etc
- Social facilities: health, education, justice etc

- Infrastructure: roads, airstrip, wharf etc
- Food security
- Financial system

At present, it is not common for financial provisions to be made for these aspects of mine closure though there are some notable examples such as Papua New Guinea and the Philippines (see Chapter 4.4).

Integrated closure planning should, as the name suggests, include all aspects of mine closure and, by association, the financial implications of the social and economic impacts should also be taken into consideration. However, the nature of the requirements is very different to the physical financial surety and there may be advantages in keeping the funds separate. This can be achieved by establishing a specialized trust fund or foundation that is designed to exist for a period of time after mine closure.

Chapter 6 After Thoughts

The most memorable statement that has been made during the research and consultation that went in to producing this report is the following:

"I have never seen a closure program cost less than the estimate."

Even with the best will in the world, forecasting accurate estimates for closure costs is extremely difficult and the best that might be expected is a close approximation to the reality. The temptation could be to over estimate, in order to ensure that there is not a shortfall in funds, but this should not be done to the detriment of the financial viability of the industry.

In 1999, a principal environmental specialist with the European Bank for Reconstruction and Development identified a number of specific risks and suggested mitigation related to financial sureties. These are presented in Box 6.1. All these risks are still relevant today and need to be taken into consideration when establishing the policy and regulatory framework for the implementation of financial sureties.

Both the regulatory authority and the mining companies have a vested interest in agreeing on a realistic level of financial surety. The government needs to ensure that there are sufficient funds to complete a satisfactory rehabilitation program but at the same time maintain an attractive investment climate. The mining company has to have adequate capital to continue with the investment.

The required level of financial surety can be a substantial portion of the capital costs of the project and junior and local mining companies may not have the financial resources to provide the funds up front. In this instance, the government has to decide whether or not they want to take the risk of these companies defaulting on their obligations. The requirement for an up front commitment to the full amount of the financial surety is one way of testing the commitment and resolve of the company. It should also work as an incentive for the proponent to keep the physical impacts to a minimum and to carry out progressive rehabilitation.

There is also a risk associated with the financial surety instruments. The long-term viability of the bank or company providing a Letter of Credit or Surety Bond cannot be guaranteed. In Australia, a company that provided Surety Bonds to the mining industry collapsed and the bonds were rendered worthless. Additionally, if a mining company goes bankrupt, a financial surety that is not isolated may be frozen or claimed to pay creditors. There is also a risk that any form of cash investment might be seen as too much of a temptation for someone with corrupt tendencies.

In spite of all the pitfalls, financial sureties are essential in ensuring that that the physical impacts of mining are minimized in the short term and non-existent in the long term.

Box 6.1: Specific Risks and Suggested Mitigation

- **Premature termination during construction:** Project termination for technical or financial reasons can be mitigated with adequate completion guarantees which ensure that premature termination and abandonment will trigger an obligation by the guarantor to implement, or cause and fund a third party to implement, a satisfactory closure programme.

- **Material changes made to closure requirements and objectives:** During the mine life material changes can largely be avoided by agreeing a clear, transparent, up-front, realistic and approved definition of post-operational land use, the environmental performance standards to be met within a specified period of time, and sign-off procedures to be followed.

- **Material changes to the project and processes:** These changes may have implications with regard to mine closure requirements and related costs. Mine closure plans, the related costs implications and financial guarantees should be subject to a periodic review process, so that the implication of any material change can be assessed and addressed; This would also mitigate the risk of significant over- or under-capitalisation of the closure funds and related guarantees which should reflect the life of the mining project based on proven reserve estimates.

- **The risk of financial failure:** Financial failure of the mining company and organisations involved in the financial guarantee (holder of cash reserve, trust fund, etc.) resulting in a failure to provide funding for mine closure can be mitigated by establishing non-accounting provisions monitoring financial performance, separating the financial structure for the closure fund from that of the company, allowing only investments of closure funds in financial instruments providing 'assured' future payment, and spreading the risk to a combination of financial vehicles to jointly secure closure funds.

- **The danger of closure funds being redirected:** This can be mitigated by using a non-fungible financial structure and a certification process, for example involving a trustee, for appropriate use of proceeds to safeguard closure funds from being used, for payment for measures unrelated to the project such as additional drilling, or repayment of loans in a default situation;

- **The government might continue operating an 'inherited' project:** This could occur without due consideration given to profitability and environmental implications which would have otherwise required implementation of mine closure activities. Experience seems to suggest that funding limitations may 'discourage' the government to implement mine closure in the absence of availability of funds earmarked for this purpose.

Ref: Nazari 1999

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ANNEX 1 WEB SITES

Australia

NSW – Department of Primary Industries	www.dpi.nsw.gov.au
Queensland – Environmental Protection Agency	www.epa.qld.gov.au
Queensland – Department of Mines and Energy	www.dme.qld.gov.au
Victoria – Department of Primary Industries	www.dpi.vic.gov.au
Victoria – Department of Sustainability and Environment	www.dse.vic.gov.au
Victoria – Legislation	www.dms.dpc.vic.gov.au
State – Department of Industry, Tourism and Resources	www.industry.gov.au
Best Practice Environmental Management in Mining Booklets	www.natural-resources.org/minerals
Minerals Council of Australia	www.minerals.org.au
Western Australia – Department of Industry and Resources	www.doir.wa.gov.au

Botswana

Department of Mines	www.mines.gov.bw
Department of Environmental Affairs	www.envirobotswana.gov.bw

Canada

Legislation – Mining Law and Regulations	www.e-laws.gov.on.ca
Ontario Ministry of Northern Development and Mines	www.mndm.gov.on.ca
Ontario Mineral Exploration and Mining	www.serviceontario.ca/mining

European Union

European Commission – DG Environment	www.ec.europa.ec/environment
EU Database	www.europa.eu.int/eur-lex

Ghana

Ghana Minerals Commission	www.ghanamining.org
Ghana Environmental Protection Agency	www.epa.gov.gh

Papua New Guinea

Department of Mining	www.mineral.gov.pg
Mineral Resources Authority	www.mra.gov.pg
Government Departments	www.pngonline.gov.pg/government

Ok Tedi Mining Ltd	www.oktedi.com
Philippines	
Department of Environment and Natural Resources Mines and Geoscience Bureau	www.mgb.gov.ph
South Africa	
Department of Minerals and Energy	www.dme.gov.za
Department of Environmental Affairs and Tourism	www.environment.gov.za
Sweden	
Swedish Government	www.sweden.gov.se
Mining Inspectorate	www.bergsstaten.se
Environmental Protection Agency	www.naturvardsverket.se
USA	
Nevada Bureau of Land Management	www.nv.blm.gov
Nevada Division of Environmental Protection	www.ndep.nv.gov
Nevada Commission of Mineral Resources	www.minerals.state.nv.us
Nevada Legislation	www.leg.state.nv.us
Nevada Standardized Reclamation Estimator Model	www.nvbond.org
US Forest Service	www.fs.fed.us/geology
Odds	
International Council on Mining and Metals	www.icmm.com
International Institute for Environment and Development/MMSD	www.iied.org/mmsd
Centre for Science in Public Participation	www.csp2.org
The World Bank	www.worldbank.org/mining
Department for Communities and Local Government (Proceedings of Seminar On Financial Guarantees)	www.communities.gov.uk

ANNEX 2 LETTER OF CREDIT TEMPLATE

DRAFT FORM OF IRREVOCABLE LETTER OF CREDIT

(To be typed on Bank Letterhead)

Her Majesty the Queen in Right of Ontario as represented by
The Minister of Northern Development and Mines
Ministry of Northern Development and Mines
933 Ramsey Lake Road
6th Floor
Sudbury, Ontario
P3E 6B5

We hereby issue in your favor this Irrevocable Standby Letter of Credit in the amount of <X SUM OF DOLLARS (CAD $X)>, which is available by payment against your written demand, addressed to <BANK X, ADDRESS>, bearing the clause "drawn under standby letter of credit Number... issued by <BANK X, ADDRESS>."

Any written demand for payment must be accompanied by your signed certificate stating that the Ministry of Northern Development and Mines has the right to make demand for payment in accordance with a closure plan between <PROPONENT Z> and the Ministry of Northern Development & Mines regarding closure costs for the <ABC MINE/SITE/LOCATION>. We shall then honor your demand without enquiring whether you have the right as between you and our Customer, <PROPONENT Z> to make such demand and without acknowledging any claim of our Customer.

This Letter of Credit will continue to <DATE, 200x> and will expire on that date and you may call for payment of the full outstanding amount under this Letter of Credit at any time up to the close of business on that date. It is a condition of this Letter of Credit that it shall be deemed to be automatically extended for one year from the present or any future expiration date hereof, unless at least ninety (90) days prior to any such date, we shall notify you in writing by Registered Mail that we elect not to consider this Letter of Credit renewed for any such additional period. In the event of a notification of non-renewal, the Ministry may demand the full or any portion of this credit provided the customer has not provided the Ministry with full alternate financial assurance satisfactory to the Ministry at least 10 days prior to the expiration of this Letter of Credit.

It is understood that the amount of this credit may be reduced from time to time as <PROPONENT Z's> obligations pursuant to the aforementioned Agreement are discharged, such reduction will be effected upon receipt of your written notice delivered to this office.

Written demands for the full amount or any portion or portions thereof must be presented to us along with this original Credit Instrument.

This Letter of Credit is subject to the "Uniform Customs and Practice of Documentary Credits (1993 Revision) International Chamber of Commerce, Publication Number 500."

ANNEX 3 SURETY BOND TEMPLATE

LAND REHABILITATION PERFORMANCE BOND

Bond # Amount:

KNOW ALL PERSONS by these presents that [*name of compan*y] (hereinafter called the Principal) whose place of business is at [company address] and The [name of insurance company] (hereinafter called the Surety) whose place of business is at [insurance company address] are held and firmly bound unto Her Majesty the Queen in Right of Ontario as represented by the Minister of Northern Development and Mines, its heirs, and successors (hereinafter called the Obligee) whose place of business is at B6 - 933 Ramsey Lake Road, Sudbury, Ontario P3E 6B5 in the penal sum of [*amount of bond*] lawful money of Canada for the payment of which we bind ourselves, our heirs, administrators and successors, and assigns firmly by these presents.

WHEREAS, the Principal will operate/operates a [*mining activity*] located at [*legal property description*] (locally known as _____) in accordance with a certified Closure Plan filed with the Director of Mine Rehabilitation on _____.

NOW, THEREFORE, the condition of this obligation is such that, if the Principal shall comply with the terms of the certified Closure Plan then this obligation shall be void; otherwise it shall remain in full force and effect, subject to the following conditions:

1. Whenever the Principal shall be in default and declared by the Obligee to be in default of the terms of the certified Closure Plan, the Obligee shall send a registered letter to both the Principal and Surety, stating in substantial detail the facts leading to the default.

2. That the Surety's obligation to the Obligee shall only be to pay such amounts demanded by the Obligee and this bond will be totally exonerated by remitting to the Obligee such amounts in default, provided however, the total liability of the Surety shall in no event exceed the penal sum of the Surety.

3. The term of this bond shall remain in full force and effect to the time of release of the bond by the Ministry of Northern Development and Mines, or replaced by a form of financial assurance acceptable to the Director of Mine Rehabilitation.

4. Provided that, if the Surety at any time gives at least three calendar months notice in writing to the Obligee and to the Principal of its intention to terminate this obligation, then this obligation shall be deemed to be terminated on the date stated in the notice, which date shall not be less than three calendar months after the date of the receipt of the notice by the said Obligee or by the said Principal, whichever is the later date of receipt, provided that, should the Principal fail, within two calendar months of the above referred to later date of receipt, to provide a financial assurance in at least the same amount as this bond in a form acceptable to the Obligee, the Surety shall automatically and immediately pay the full amount of the bond to the Obligee.

5. Any suit or action on this bond against the Surety must be commenced by the Obligee within 120 days from the date of notice of default mentioned in clause #1 above.

6. In the event the Surety becomes unable to fulfill its obligations under the bond for any reason, notice shall be given immediately, by registered mail, to the Principal and the

Obligee. Upon Obligee's receipt of Surety's notification or upon the incapacity of the Surety by reason of bankruptcy, insolvency, or suspension or revocation of its license, the Principal shall be deemed to be without bond coverage and will be required to submit alternate financial assurance, subject to the approval of the Obligee and as required by Section 145 of the Mining Act, within 30 days.

7. The Surety is approved under the Insurance Act or its successor.

8. Upon partial completion of the rehabilitation and reclamation of the site, and the submission by the Principal of a written application under Section 145 of the Mining Act including technical supports and relevant information, the Director of Mine Rehabilitation at his discretion may reduce the amount of the bond to an amount consistent with the financial requirements of the rehabilitation work left to be completed.

9. This bond will be valid for the term of [*date bond sealed*] to [*date 1 year hence*] and shall be automatically renewed, without further documentation from year to year thereafter unless terminated as aforesaid, provided that the Surety may, if it wishes, issue certificates evidencing such renewal.

Sealed with the respective seals of the Principal and of the Surety the ____day of _____, 200 .

SEALED, SIGNED AND DELIVERED
In the presence of

_____

[NAME OF COMPANY]

_____
Signature

_____
Name of Signatory (Please Print)

[NAME OF SURETY]

_____
Signature

_____

Name of Signatory (Please Print)