

**DEPARTMENT OF
NATURAL RESOURCES AND ENVIRONMENT**

DISCUSSION PAPER

**REVIEW OF NRE'S POLICY ON THE
DETERMINATION AND APPLICATION OF
REHABILITATION BONDS
FOR MINING AND EXTRACTIVE INDUSTRIES**

April 2002



FOREWORD

All mine and quarry sites require a rehabilitation bond in accordance with the *Mineral Resources Development Act 1990* and the *Extractive Industries Development Act 1995*. The Department is responsible for administering these Acts and setting and reviewing all rehabilitation bonds. The purpose of a bond is to provide a guarantee that rehabilitation is undertaken even if the company should default.

The Government is committed to developing a minerals and petroleum industry that contributes substantially to the wealth and wellbeing of all Victorians, while meeting contemporary community expectations for social and environmental outcomes. As part of this, it is also committed to ensuring bonds cover the actual liability. This is outlined in the Ministerial statement on rehabilitation bonds titled *Pillars for Balanced Growth – Minerals and Petroleum for the 21st Century*,

“The Government is committed to ensuring that all new or expanding mining and extractive sites have a rehabilitation bond which properly covers the maximum potential rehabilitation liability of any operation, based on the currently approved work plan; and
For existing mining and extractive sites, the Government is committed to reviewing all rehabilitation bonds every three to five years, based upon the assessed site risks.....”

Concerns have been raised regarding the commercial impact of bonds on industry. In addition, a large amount of government resources are set aside for the setting and review of bonds. For these reasons, the Department is currently reviewing its Rehabilitation Bond Policy. This discussion paper is the first step in that process.

NRE is seeking stakeholder views on the issues raised by the discussion paper and on any other matters considered relevant to the Department’s Rehabilitation Bond Policy. Comments or submissions on this discussion paper should be submitted to NRE by 21 June 2002 and directed to:

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1. INTRODUCTION

The Department of Natural Resources and Environment is responsible for setting and reviewing rehabilitation bonds for mining and extractive sites throughout Victoria as required by the *Mineral Resources Development Act 1990* (MRDA) and the *Extractive Industries Development Act* (EIDA) 1995.

Rehabilitation bonds are financial securities provided by the company prior to the commencement of mining and quarrying to provide a guarantee that rehabilitation is undertaken even if the company should default.

Bonds impose a cost on industry. It is estimated that the cost of providing financial assurances ranges between 0.37% and 1.5% of the face value of the bond and that the total cost on the Australian mining industry is \$17 million per annum (ABARE 2001). These costs have an impact on the price paid by the community for the commodities produced by the industries and may reduce the ability of some operators to compete successfully for venture capital. Also, for the Department, the setting and review of bonds represent a significant workload. Consequently it is desirable that the Department identify new approaches that wherever possible, reduce the costs imposed on industry while still providing adequate protection for community interests. It is also important to free up significant regulatory resources so that the community can have confidence that the industries are regulated to a high standard in the most efficient and effective way.

The proposed review of the rehabilitation bond policy is intended to determine:

- how impacts on the extractive and mining operations could be reduced while still maintaining a high degree of assurance that rehabilitation costs would not ultimately be borne by the wider community, and
- how Department systems for management of bonds could be changed to reduce the amount of government resources required without incurring increased financial risk to the community.

The objective of the policy is to minimise the cost to industry and government while still guaranteeing the rehabilitation of mines and quarries.

This paper seeks your view on the type, setting and reviewing of rehabilitation bonds by:

- outlining the legislative context for the setting and reviewing of rehabilitation bonds for mines and quarries in Victoria, the Government's policy context, and the Department's current rehabilitation bond procedures;
- summarising rehabilitation bond procedures in other Australian jurisdictions and overseas; and

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- outlining some of the options for:
 - the type of bonds, and;
 - setting and reviewing rehabilitation bonds.
- seeking other options and comments.

Issues you may like to comment on are highlighted in boxes throughout this paper.

2. BACKGROUND

2.1 Legislation

The two Acts under which rehabilitation bonds are currently required in Victoria are the *Extractive Industries Development Act 1995* and the *Mineral Resources Development Act 1990*.

The main purpose of the *Extractive Industries Development Act (EIDA) 1995* is to ensure that extractive industry operations (extraction and removal of stone from land) are carried out with safe operating standards and in a manner that ensures the rehabilitation of quarried land to a safe and stable landform. Under this Act proponents who have a Work Plan approved by the Department and can demonstrate that other approvals are in place can be granted an extractive industry Work Authority.

The purpose of the *Mineral Resources Development Act (MRDA) 1990* is to encourage an economically viable mining industry which makes the best use of mineral resources in a way that is compatible with the economic, social and environmental objectives of the State. Proponents of mining projects must first obtain a mining licence which secures their right to minerals and then gain Work Plan approval, other approvals, and a mining Work Authority.

Both Acts (Section 78, MRDA and Section 31, EIDA) require the holder of a mining licence, exploration licence, or work authority to rehabilitate the land in accordance with an approved rehabilitation plan. Rehabilitation plans are developed prior to the granting of an extractive industry or mining Work Authority and specify the required action once mining or quarrying has ceased. The Acts also require rehabilitation to be carried out progressively during the life of the operation. In addition, most work authorities (or the associated work plans) are granted or approved subject to conditions requiring rehabilitation.

The Acts (Section, 80 MRDA and Section 33, EIDA) also require the holder of a mining licence, exploration licence, or work authority to enter into a rehabilitation bond for an amount determined by the Minister. A rehabilitation plan and bond must be lodged with the Department prior to the issue of a Work Authority. In addition, the Minister may require the licensee or Work Authority holder to enter into a further rehabilitation bond during the life of the mine or quarry for an amount determined by the Minister if he or she is of the opinion that the amount of the bond already entered into is insufficient (Section 80, MRDA and Section 33, EIDA).

2.2 Government Policy Context

The Minister for Energy and Resources, Candy Broad, outlined the Government's policy on rehabilitation bonds in her June 2000 Ministerial Statement on Minerals and Petroleum, entitled "*Pillars for Balanced Growth – Minerals and Petroleum for the 21st Century*", as follows:

- The Government is committed to ensuring that all new or expanding mining and extractive sites have a rehabilitation bond which properly covers the maximum potential rehabilitation liability of any operation, based on the currently approved work plan; and
- For existing mining and extractive sites, the Government is committed to reviewing all rehabilitation bonds every three to five years, based upon the assessed site risks. For sites that are genuinely unable to afford a revised bond level, a specific plan is to be developed over an appropriate time period and for progressive site rehabilitation.”

2.3 Current Bond Policies

2.3.1 Purpose of a Bond

The Government is responsible for regulating the minerals sector for the benefit of all Victorians. In doing such, it is committed to ensuring that community expectations with respect to social and environmental issues are met, and has responsibilities to the community to ensure appropriate environmental management across all land types and land status. For this reason, the Department must ensure appropriate rehabilitation is undertaken even if the cost of rehabilitation is greater than land value.

A rehabilitation bond, assessed regularly against current liability, is a powerful incentive for operators to minimise their impacts, undertake progressive rehabilitation and to finally rehabilitate the land once work has been completed. It also allows rehabilitation to be undertaken by the Department to rehabilitate sites, if the licensee / operator is unable or unwilling to rehabilitate the site in accordance with the approved rehabilitation plan. The overall objective is to rehabilitate the land to an acceptable post-mining or extraction level at nil (or negligible) cost to Government and the community. In order for this to occur, the Department’s regulatory framework for the setting and review of rehabilitation bonds must ensure that rehabilitation bonds cover the total rehabilitation liability. For this reason, the size of a rehabilitation bond is dependent on rehabilitation works required in the approved work plan. These works must be currently achievable and not dependent on further consents or approvals. For example, a bond is not based on the assumption that landfill, particularly for long-lived sites, will be the ultimate end use if that use has not yet been permitted. Furthermore, rehabilitation bonds are intended only for rehabilitation and do not offer “insurance” against other site risks and off-site impacts such as spills and collapses.

2.3.2 Type of Bond

The only form of financial security currently acceptable to the Department for rehabilitation bonds is a bank guarantee. This is in accordance with Departmental policy regarding bank guarantees and securities as outlined in NRE Corporate Procedure FM29, “Bank Guarantees and Securities.

A bank guarantee is provided by way of a letter of credit from a banking institution. The licensee / holder must demonstrate adequate cash or liquidity to the bank in order to obtain a guarantee. Experience with mining has shown that different banks have different approaches with respect to bank guarantees. Some small miners, operating as an agency [Prospectors' and Miners' Association of Victoria (PMAV)], have been able to reach negotiated arrangements with a local financial institution to minimise fees and improve conditions for bank guarantees.

2.3.3 Bond Setting

Bonds are based on the current liability of the site, and are determined by the works required in the approved work plan including rehabilitation plan. Bonds are calculated by costing and estimation using the Department produced "Guidelines for the Establishment of Rehabilitation Bonds for Mining and Extractive Industry". Bonds are calculated on an individual, site-by-site basis in order to assess the rehabilitation liability for each site. There is no generic formula for calculating bond amounts but rather an estimation framework that Department officers apply consistently to individual circumstances.

The rehabilitation bond initially set is based on the forecast disturbance as outlined in the work plan for the first stage of the operation. There is no minimum bond amount required for mining or extractive sites.

2.3.4 Bond Reviews

The Department implements a program of regular review of rehabilitation bonds for mines and quarries to ensure they are set at amounts that reflect the likely cost of rehabilitation. Rehabilitation bonds are reviewed on a site-by-site basis, using the same method of calculation as for the initial bond setting. The frequency of review is based on assessed site risks but generally speaking, all sites are reviewed every three to five years and/or when there is a major change in the operation, indicated by a variation to the work plan. The consistent application of the Department's bond review procedures has been verified by external audit, including audit by the Auditor General in 1999.

The bond review program has resulted in significant increases at some sites in the past few years, as previous bonds were set at nominal or insufficient amounts. The increases result from an accurate assessment of the likely rehabilitation cost. Many assessments have not resulted in increases (Table 1, page 6).

The Government has a policy that all decisions must take into account the triple bottom line, that is, the Department must take into account economic, social and environmental implications of its decisions. As mentioned earlier, the Government's policy on rehabilitation bonds notes the impact of bond increases on some operators. Accordingly, the Department exercises discretion in the

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implementation of revised bond requirements, and the Department has due regard to the commercial impact of bond increases on operating mining and extractive sites. A range of measures are implemented where hardship is apparent; including commitment to progressive rehabilitation to reduce and maintain the bond liability, delayed increases, or staged submission of the bond. Departmental staff have implemented such measures in a significant number of cases where good will was apparent and the Government was not exposed to undue risk.

Table 1: Results of bond reviews undertaken in 2000 and 2001

Year	Number of bond reviews	Results of bond review		
		Bond Increase (Median: % change)	No Change	Bond Decrease (Median: % change)
2000	370	94 (148%)	270	6 (58%)
2001	335	42(100%)	288	2 (66%)

* Note: results do not include initial bond set or release of bonds for expired and surrendered titles.

2.3.5 Bond call-ins

In Victoria since 1995 the Department has called-in 42 bonds. All of these operations except one have been mining tenements. The bond amounts have ranged from \$800 to \$395,000. In more than 60% of cases, the bond has been adequate to rehabilitate the land to the satisfaction of the landowner / land manager. However, some bond amounts have been inadequate and the Government has incurred significant costs at some sites as a result.

3. REHABILITATION BOND OPTIONS

3.1 Bond Issues

3.1.1 Quarry versus Mining

Bonds are currently applied in the same manner to both the mining and quarrying sectors. This approach has been facilitated by the fact that the two Acts have almost identical provisions regarding bonds and rehabilitation. It is important to note, however that there are some key differences between quarrying and mining. In particular:

- stone is the property of the landowner while minerals are owned by the Crown;
- quarries often operate for very long periods, sometimes many decades while mines are often worked out more quickly;
- the rate of advance is usually significantly slower in quarries than in mines;
- quarries produce low value products but at relatively stable prices whereas many minerals are price volatile;
- all quarries are open cut;
- some mines use toxic reagents in their processing whereas this does not generally occur in the quarry sector;
- most quarries are located near urban areas and the hole in the ground can provide a valuable community asset in terms of land fill or other community uses; and
- experience has shown that financial failures are more likely to occur in the mining sector.

These factors mean that mining can be considered to have greater inherent commercial and environmental risk. Some observers have concluded that this difference would justify different policies with respect to the setting of bonds or other mechanisms for rehabilitation assurance. The alternative view is that while there may be less risk of financial impact on the community, the risk is reduced not eliminated and bonds are still justified as an incentive for good performance.

Issues

- **Should there be a different bond approach to mining compared to extractive operations, and why / why not?**

3.1.2 Exploration

In the case of exploration licences, a standard bond of \$5000 is applied to licences at the time of grant. Where intrusive work, such as large diameter drilling, track construction, or mechanical excavation is proposed, a revised bond is calculated in accordance with the Departmental guidelines. Some concerns have been raised that exploration liabilities may not be covered by the existing bonds. Alternatives, include more detailed bond assessments for exploration or higher standard bond

amounts. Standard bonds for exploration are applied by many other Australian jurisdictions but are commonly set at \$10,000 or more.

Issues

- **Is there a need to change how bonds are set or the standard bond amount for exploration licences?**

3.1.3 Private Land versus Crown Land

Should bond policies vary for private versus Crown land? EIDA operations can only proceed on private land with landowner permission and it has been suggested that landowners should bear their own liabilities for rehabilitation. Changing to such a policy would present some difficulties. In particular, the fact that most existing private land operations have been negotiated with landowners on the presumption that a government bond will cover liabilities. Also, the landowner may take the money and not rehabilitate to an appropriate community standard. In addition, the Department has an important role in mining activities because the Crown legally owns all mineral resources.

On the other hand, McAllister, Beil and Cox (1994) in ABARE (2001) point out that where a mining company owns the land and there are no offsite effects from its operations, it may be more difficult to justify extensive government regulation of the rehabilitation process, as the company would already have the incentive to efficiently rehabilitate to a level that would maximise the private benefits from the future use or sale of the land. Despite this, rehabilitation must be undertaken to an appropriate community standard.

Issues

- **Should different bond strategies apply depending on land status, and why / why not?**

3.1.4 Environmental Performance Discounts

A system of environmental performance discounts is used in calculating rehabilitation bonds in Queensland and, in a less formal manner, in the Northern Territory. In Queensland, the responsible authority (the Environment Protection Authority) must consider the environmental record of the holder or proponent when determining financial securities for mines and quarries, in addition to the environmental risk of the proposed activities, and the likelihood of action being required to rehabilitate or restore the environment. The net bond payable is the gross bond (calculated by the miner on the basis of detailed costings supplied by the miner as part of their rehabilitation plan equivalent) minus an environmental performance discount of between 0 and 75%.

The level of environmental performance discount is determined by assessment against a set of environmental performance criteria, recognising the implementation of procedures that reduce the risk

of non-compliance or the magnitude of potential environmental harm. These procedures include progressive rehabilitation, environmental management systems, and compliance with other codes of environmental management. The past performance of the proponent is also considered. The discounts are available over the life of the project, and are adjusted whenever the financial assurance is reviewed.

To qualify for a particular performance category, the proponent must provide satisfactory evidence that the performance criteria for that category and all criteria for lower categories have been met, and will continue to be met during the period covered by the financial assurance. Copies of the performance discount system for standard (ie small-scale mining) and non-standard mining projects on mining leases are included as Appendix 3.

Advantages:

- + Recognises good environmental performers.
- + Reduces costs to good environmental performers.
- + Encourages companies to be good environmental performers to obtain future discounts.

Disadvantages:

- Not a consistent process (can be perceived by industry and community as biased towards some companies).
- No relationship between environmental performance and company viability.
- Puts newcomers and smaller operators into the Victorian industry (who would not have established an environmental ‘track-record’ in Victoria) at a competitive disadvantage.
- Does not consider liability anomalies, such as where the majority of rehabilitation can only be undertaken when production is finished eg. tailings dam.

3.2 Bond Alternatives

The need for the Department to require rehabilitation bonds has been questioned by some stakeholders. It has been suggested (ABARE 2001) that rehabilitation to the standards required by government is often not justified if considered on purely economic grounds. This argument is based on the assumption that the value of rehabilitated land should reflect the cost of the work done to restore it to its final state. However, ABARE acknowledge that low standards, or a lack of rehabilitation would probably not be acceptable to the community irrespective of the economic situation. They comment that there are a number of reasons supporting government involvement in regulating mine site rehabilitation (and other environmental issues associated with mining). The most fundamental reason is that mining companies are unlikely to consider all the social costs and benefits of their mining and rehabilitation activity (ABARE 2001).

Concerns have also been raised regarding the commercial impact of bonds on industry given that the costs imposed on companies have increased in recent decades as the size of bonds has risen in line with more stringent rehabilitation standards. Such recent requirements include the suggestion by certain groups that rehabilitation should bring the land back to its previous condition, such as agricultural use. Also, government policy on biodiversity requires at the least, no net loss to flora and fauna values. On the other hand, it is important to note it may not be in the community's interest if bonds are so high or prohibitive as to discourage investment in the mining and extractive industry.

Questions have also been raised whether the bond system impacts on firms of different sizes differentially. Small to medium sized operators rarely have ready access to collateral compared to larger operators, and generally need to provide cash funds to the bank in order to obtain a sufficient bank guarantee. The rate charged to smaller operators for the provision of a bond also appears to be greater than that for larger companies. In addition, operators have to find the cash funds to undertake the rehabilitation work and in effect have to find the money twice.

3.2.1 Insurance Scheme

In place of a bond, it has been suggested that a form of insurance could be developed that enabled operators to cover the rehabilitation liability by payment of a regular premium to a third party provider. This might involve legislative changes to ensure insurers were accredited and accept financial responsibility for rehabilitation liabilities. The insurer would in turn be responsible for assessing the suitability of applicants for coverage. Operators unable to obtain coverage would be required to submit a bond in accordance with the Department's requirements.

Recently there have also been proposals put forward for a Rehabilitation and Environmental Structured Package (RESP) involving a credit insured sinking fund for anticipated environmental exposures and a cost over-run and environmental liability insurance to cover un-anticipated exposures.

NRE has been unable to find any example of an insurance scheme being put into practical application as yet.

Advantages:

- + Eliminates the need for operators to make a large up-front commitment of funds.
- + Greater financial flexibility operators.
- + Government involvement is reduced.
- + The scheme would encourage responsible operation as poor operators would not be able obtain coverage.

Disadvantages:

- Requires wide participation to allow risks to be spread effectively.
- Normal insurance products are not suitable as they cease to operate when premiums payments cease.
- Premium payments are “lost” as opposed to bonds which can eventually be recovered.
- Funds may not be easily accessible to the Department if required.
- Too risky in light of recent insurance company collapses.

3.2.2 Government Levy

In some jurisdictions rehabilitation is guaranteed by collection of a levy on production. This method is used for extractive industry operations in South Australia. The South Australian *Mining Act 1971* (Section 63) sets up the “Extractive Areas Rehabilitation Fund” to provide a mechanism for the rehabilitation of extractive mineral sites approved by the Minister through a levy placed on each tonne of quarry product. This “user pays” arrangement is intended to spread the cost of rehabilitation amongst end users of quarry products, and allows the cost of rehabilitation to be spread across the extractive industry. Under current arrangements, the levy is paid as a royalty at a rate of 2.5%. The assessed value of extractive minerals was set at \$8.00 per tonne, resulting in a royalty of 20 cents per tonne. Half of that royalty (ie 10 cents per tonne) constitutes the rehabilitation levy and is paid into the rehabilitation fund. The other half is paid into consolidated revenue. The scheme is considered to have the following advantages and disadvantages.

Advantages:

- + Financial security for rehabilitation is not a financial burden for proponents, because the amount paid into the rehabilitation fund is linked to production (ie proponents pay as they earn and there is no up-front liability).

Disadvantages:

- Not linked to sites (ie money not linked to liability).
- Funds don’t meet the rehabilitation liabilities (funds could meet rehabilitation liabilities by applying different rates for different types of stone extracted and different types of extraction methods used).
- Licensees need to submit proposals to the Minister for grants from the fund, in order to do their rehabilitation. There is an administrative disincentive to do rehabilitation, and the system does not encourage progressive rehabilitation.
- Payments are linked to production / profits. Proponents may cause damage / environmental impacts before they are producing or profiting from their operation (and before they are paying the rehabilitation levy). This damage that occurs prior to proponents contributing to the levy results in unfunded liabilities.

- Extra government resources required to administer.

3.2.3 Industry Fund

An industry run fund has been suggested to replace a rehabilitation bond. Similarly to the government levy, a levy would be paid on a cents per tonne basis, however with a flat joining fee. The fund would need to meet the rehabilitation liability.

Advantages:

- + Financial security for rehabilitation is not a financial burden for proponents, because the amount paid into the rehabilitation fund is linked to production (ie proponents pay as they earn and there is no up-front liability).
- + Extra government resources not required to administer.

Disadvantages:

- Not linked to sites (ie money not linked to liability).
- Payments are linked to production / profits. Proponents may cause damage / environmental impacts which are greater than their contribution to the fund.
- Possible lack of community acceptance.
- Good operators could be paying for poor performers.
- Lack of incentive for good environmental performance.
- Requires regularly monitoring to ensure contributions cover liabilities.

Issues

- **Is the current bond process appropriate to ensure that rehabilitation is always achieved?**
- **Are there mechanisms other than bonds that the Department should consider for assurance of rehabilitation?**
- **Are there any alternatives that the Department should consider to ensure a more flexible and speedy administrative system to access bond funds?**
- **Would an insurance scheme or industry fund be feasible and/or effective?**
- **Would a levy system (government or industry run) be a useful alternative to a bond? Would the benefits outweigh the disadvantages? Why / why not?**
- **Would a government or industry run levy system be acceptable? Why / why not?**
- **If administrative systems allowed operators easier access to bond funds for rehabilitation, would this be of significant assistance to operators, or would it cause problems / complications?**

3.3 Type of Bond

The type of bonds used in other Australian jurisdictions and overseas is summarised in Table 2-3 (page 23-24) and Table 4 (page 25) respectively.

A brief description of the several types of bonds and some advantages and disadvantages are provided below.

3.3.1 Bank Guarantee

This is an irrevocable, unconditional and on demand undertaking by a bank to pay an amount of money in the circumstances stipulated in the financial document. A bank guarantee is provided by way of a letter of credit from a banking institution. The licensee / holder must demonstrate adequate cash or liquidity in order to obtain a guarantee. Banks can charge an establishment fee and annual fee starting at approximately 0.5% and 2% respectively of the amount on the bank guarantee.

Advantages:

- + Ease of administration.
- + Transparent accounting.
- + Funds easily accessible to the Department if required.

Disadvantages:

- Not flexible.
- To change, requires a new guarantee to be obtained resulting in a new establishment fee being charged.
- Requires clients to pledge assets as security and restricts the use of those assets to support other uses.
- Places financial constraints on smaller operators in terms of collateral.

3.3.2 Cash

The Department has in the past accepted direct submission of cash or nomination of a term deposit as a bond.

Advantages:

- + Funds easily accessible to the Department if required.
- + No establishment costs.
- + Licensee could in some cases earn interest on the funds.

Disadvantages:

- Administratively cumbersome for the Department.

- No financial flexibility.
- In a number of cases, term deposits were withdrawn by licensees without Department knowledge.

Issues

- **Are bank guarantees the most appropriate form of bond, and if so, are there any changes that would improve them further?**
- **Are there other forms of bonds that could be applied to the mining and extractive industries other than bank guarantees? If so, what types of bond need to be considered? Please explain in detail.**

3.4 Method of Calculation

Rehabilitation bond procedures in other Australian jurisdictions are summarised in Table 2 (page 23), for mines, and Table 3 (page 24), for extractive industry. The tables present the type of bond held, and the method for setting and reviewing bonds in each Australian jurisdiction. Table 4 (page 25) presents information on rehabilitation bond procedures in several overseas jurisdictions.

A brief description of some of the different methods of calculation used for setting and reviewing bonds is provided below. A summary of some of the key advantages and disadvantages of each method is also included.

3.4.1 Case-by-Case Costing against Rehabilitation Plan

This is the method currently used by the Department. Bonds are based on the current liability of the site, are calculated by the Department and are determined by the rehabilitation works required, as specified in the rehabilitation plan. Bonds are calculated by costing and estimation on a site-by-site basis in order to accurately assess the rehabilitation liability for each site.

Advantages:

- + Provides accurate bond amounts.
- + Requires the Department to assess all sites and issues thoroughly (cf. applying a formula as outlined under 3.4.2 below, and visiting only high-risk or complex sites).

Disadvantages:

- Time-consuming / resource-intensive to regulator.

3.4.2 Predetermined Unit Cost per Hectare Depending on Activity

This method for calculation of bond amounts is the summation of the total area of land for particular types of disturbance, multiplied by a set rehabilitation cost per hectare for that particular type of disturbance (eg waste rock dump, tailings dam, shafts, adits, open pits, infrastructure etc). This

method is used in NSW and Northern Territory. Costs per hectare are based on actual costs usually incurred by industry, and would be updated on a regular basis to ensure that they remained current. Bond amounts could be calculated by the Department, or calculated by industry or a consultant and then verified by the Department. Examples of typical costings used for bond calculation are provided as Appendix 1 and Appendix 2 (from the Northern Territory, and New South Wales respectively).

Advantages:

- + Transparent and reproducible.
- + Consistent across sites.
- + Enables operators to anticipate likely bond amounts.
- + Low resources required to calculate bonds.
- + Can be calculated by Department, industry, or consultant.

Disadvantages:

- This method may not produce accurate bond amounts, especially for larger sites (where costs may not be directly proportional to the amount of area disturbed for some types of activity).
- Examples seen do not encompass all types of activities indicating that it is not effective in some situations.

3.4.3 Licensee Supplies Detailed Costings with Rehabilitation Plan

Under this method, the licensee prepares a fully designed and costed rehabilitation / operation plan. Competent and qualified persons must prepare the plan, and costs presented in the plan must be at current market contract rates, not the cost to the licensee using their existing on-site equipment. The Department assesses the proposed rehabilitation costings as part of their assessment of the rehabilitation plan, to ensure that the rehabilitation proposal is acceptable, and that the costings are within realistic market values.

Advantages:

- + Less resource-intensive for the Department than existing approach.
- + Site-specific.
- + Operators become aware of rehabilitation costs up front and can factor these into planning and budgeting.

Disadvantages:

- Require good audit processes to verify costings.
- Preparation of detailed costings may be difficult and raise resource issues for smaller operators (may need to require different levels of detail depending on size of operation).
- Possible lack of community acceptance (may not be seen as transparent).

3.4.4 Minimum Bond Amount

A minimum bond amount could be applied in conjunction with other bond calculation methods. It would involve setting a minimum bond level, applied to licensees / holders on grant, and reviewed on commencement of production, in accordance with the work / rehabilitation plan. This type of arrangement might apply to small or medium sized operations, where there is significant lag time between title grant, commencement of works and commencement of commercial production.

Advantages:

- + Would assist new operators - no need to pay large amounts of money up-front before they were producing (and generating cash-flow) from the site.
- + Environmental risk in the pre-production stage is relatively low.

Disadvantages:

- Bond for small operations would no longer reflect amount of disturbance.
- Some small operations might have higher bonds.
- Reduction in workload for the Department.

Issues

- **Should a minimum bond for new operations be imposed?**
- **Is there a need for more than one bond setting method? If so, why?**
- **Which of these bond setting methods are most suitable for mines and quarries in Victoria, and why?**
- **Are there other bond setting methods that could be applied for mines and quarries in Victoria? Please explain in detail.**

3.5 Bond Reviews (Timing)

In most Australian jurisdictions, bonds are reviewed regularly to ensure they are set at amounts that reflect the likely cost of rehabilitation. Bonds are reviewed using the same method of calculation as for the initial bond setting and involve a combination of desktop and / or field visit triggers.

In Victoria, bonds are currently reviewed:

- on renewal, transfer or variation of licence / work authority;
- following review of the work plan;
- following site assessment / audit according to program of scheduled bond reviews, or
- at request of licensee / holder.

Other events that trigger bond reviews (in selected jurisdictions) are:

- following submission of Annual Environmental Report; or
- following change in the proponent's environmental performance.

Issues

- **Is there a need to change the current triggers or timing for the undertaking of a bond review?**
- **What additional triggers or other situations should be considered?**

3.6 Who Conducts the Bond Assessment?

There are almost 1,400 sites with rehabilitation bonds in Victoria. The current bond review program sees bonds reviewed every three to five years depending on assessed site risks.

Some of the options regarding who may undertake the bond assessment have been identified below:

- (i) Maintain the status quo (ie Department responsible for all bond assessments).

Advantages / Disadvantages:

- No effect on current resource issue for the Department.
- No change in commercial impact on industry.

- (ii) Department responsible but adopts a simpler, less resource-intensive bond calculation method.

Advantages / Disadvantages:

- Simpler for all parties.
- Some effect on current resource issue for the Department.
- Bond assessments likely to be more conservative and cost increase for industry.
- Chance that some assessments do not reflect the true liability.

- (iii) Industry responsible.

Costings to be submitted by the company, or a qualified or accredited assessor on behalf of the company, with the Department adopting an auditing role.

Advantages / Disadvantages:

- Reduction in bond assessment workload for the Department.
- Forces companies to understand and focus on rehabilitation issues.
- Department able to adopt random audit role.
- Possible lack of community acceptance.

- (iv) Insurance Scheme, Government Levy, or Industry Fund to cover unforeseen liabilities and bond system costed only nominally.

No other Australian jurisdiction outsources its bond setting and review process completely, however many jurisdictions partially externalise this process, by requiring operators to submit rehabilitation costings and adopting an auditing role. In other cases, bonds are set using conservative rules of thumb and operators can submit their own more detailed costings if they desire.

Issues

- **Should the responsibility for carrying out bond assessments lie with the Department, industry or any other party, and why?**
- **Which of the above options are most suitable for Victoria, and why?**
- **Are there other options that need to be considered? Please explain in detail.**

4. IMPLEMENTATION STRATEGY

The proposed schedule for the review of the rehabilitation bond policy includes:

- distribution of discussion paper to targeted stakeholders for comments;
- development of draft rehabilitation bond policy;
- circulation of draft policy for public comment;
- policy approval; and
- legislative amendments (if required).

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6. TABLES

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Table 2: Rehabilitation Bond Procedures for Mining in Australian Jurisdictions

	LEGISLATION	BOND SETTING	BOND REVIEWS	SECURITY TYPE
New South Wales	<i>Mining Act 1992</i>	<ul style="list-style-type: none"> Unit cost/ha α rehabilitation activity 	<ul style="list-style-type: none"> \uparrow/\downarrow periodic reporting against EMP \uparrow/\downarrow environmental performance \uparrow change in operation 	Security deposits: <ul style="list-style-type: none"> Bankers certificate bond Cash
Northern Territory	<i>Mining Act 1980</i> - includes extractive minerals	<ol style="list-style-type: none"> Unit cost/ha α type of disturbance (smaller miners) Fully engineered rehabilitation plan including cost for works (larger companies, although “discounts” apply similar to QLD’s category system but very informal process) 	<ul style="list-style-type: none"> \uparrow/\downarrow upon renewal \uparrow/\downarrow review of EMP’s and Operational Plans 	Security: <ul style="list-style-type: none"> Bank guarantees Cash Secured bearing deposits
Queensland	<i>Mineral Resources Act 1989</i>	<ul style="list-style-type: none"> Net bond = gross bond (determined by miner) – environmental performance discount (100%-25%) 		Financial assurance: <ul style="list-style-type: none"> Bank guarantees Cash Insurance bonds
South Australia	<i>Mining Act 1971</i> - includes extractive minerals	<ul style="list-style-type: none"> Case by case - cost calculated by Engineers 		
Tasmania	<i>Mineral Resources Development Act 1995</i> - 4 categories of minerals including stone	<ol style="list-style-type: none"> EMP to provide costing (larger companies) General guide \$10,000/ha for area disturbed although site specific * min. \$2,000	<ul style="list-style-type: none"> \uparrow renewal \uparrow transfer \uparrow change in scale of operation 	
Victoria	<i>Mineral Resources Development Act 1995</i>	<ul style="list-style-type: none"> Case by case - cost calculated by Inspectors 	<ul style="list-style-type: none"> \uparrow/\downarrow according to assessed site risk 	Rehabilitation bond: <ul style="list-style-type: none"> Bank guarantee
Western Australia	<i>Mining Act 1978</i> - includes minerals and stone on crown land	<ul style="list-style-type: none"> Rate/ha α activity * \$5,000 paid at grant	<ul style="list-style-type: none"> \downarrow rehabilitation works \uparrow submission of Annual Environmental Report 	Rehabilitation bond: <ul style="list-style-type: none"> Bank guarantee Unconditional performance bonds: (contract between Minister for Mines and a financial organisation)

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Table 3: Rehabilitation Bond Procedures for Extractive Industry in Australian Jurisdictions

	LEGISLATION	BOND SETTING	BOND REVIEWS	SECURITY TYPE
New South Wales	Regulated by EPA (pollutants) and local council (rehabilitation)			
Northern Territory	Refer to mining table	Refer to mining table	Refer to mining table	Refer to mining table
Queensland	Environmental responsibility transferred to EPA No environmental legislation or regulation of extractive industry	N/A	N/A	N/A
South Australia	Refer to mining table	<ul style="list-style-type: none"> 10 cents per tonne extracted 		Extractive Areas Rehabilitation Fund
Tasmania	Refer to mining table	<ul style="list-style-type: none"> Unit cost/ha α activity 		
Victoria	Refer to mining table	Refer to mining table	Refer to mining table	Refer to mining table
Western Australia	<i>Mining Act</i> 1978 – stone on private land Regulated by Dept. of Environment Protection and local council			

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Table 4: Rehabilitation Bond Procedures Overseas

	LEGISLATION	BOND SETTING	BOND REVIEWS	SECURITY TYPE
California	<i>Surface Mining and Reclamation Act 1975</i>	Determined by mine operator	In accordance with S2770, 2773.1 of the Act	Financial assurance: <ul style="list-style-type: none"> • Irrevocable letters of credit • Surety bonds • Trust fund
Virginia		<ol style="list-style-type: none"> 1. \$1,000 per acre disturbed plus acres to be disturbed in the next 12 months 2. \$50 per acre disturbed plus acres to be disturbed in the next 12 months (applicable to satisfactory operators for 5 years or more) 		Reclamation bond: <ul style="list-style-type: none"> • Minerals Reclamation Fund
Illinois	<i>Surface Coal Mining Land Conservation and Reclamation Act</i>	Case by case determined by Department based on estimated cost submitted by applicant *min.: \$600 per acre of entire area or \$10,000	Regular review program	Performance bond: <ul style="list-style-type: none"> • Collateral bond • Self-bond • Surety bond
South Africa	<i>Minerals Act 1991</i>	Determined by operator		Financial provision: <ul style="list-style-type: none"> • Bank guarantee • Cash • Trust fund
Ontario	<i>Mining Act</i>	Determined by operator as per closure plan		Financial assurance: <ul style="list-style-type: none"> • Bank guarantee • Cash • Letter of credit

7. APPENDICES

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Appendix 1: Typical costings used for bond calculation from Northern Territory

NORTHERN TERRITORY
DEPARTMENT OF MINES AND ENERGY

ATTACHMENT A

CALCULATION OF SECURITY

General Information	
Mine name	
Titles involved	
Title holder	
Location	
MEMP approved	Date:
Last security set	Date: Amount:
Next security review	Date:

Rehabilitation Requirement	Unit Cost per ha	Estimated Cost (A)	Quantity (B)	Total Cost (AxB)
Tailings Dams (acid producing)	20,000-30,000			
Tailings Dams (non acid producing)	10,000-20,000			
Water Dams	2,000-5,000			
Waste Dumps (acid producing)	20,000-30,000			
Waste Dumps (non acid producing)	5,000-10,000			
Open Pits	20,000 per km perimeter			
Strip Mining	15,000			
Alluvial Mining	10,000			
Dredging	5,000			
Shafts	5,000-10,000			
Adits	5,000			
Infrastructure (plant site, workshops etc)	10,000			
Infrastructure (roads, borefields, airstrips etc)	5,000			
ESTIMATED SECURITY				

Extract from "Environmental Securities – Discussion Paper, Draft Policy and Implementation Strategy for Board of Directors," Department of Mines and Energy (NT)

Appendix 2: Typical costings used for bond calculation from New South Wales

and control
 tailings storage facilities
 buildings and concrete footings
 infrastructure (haul roads etc.)
 sealing of shafts and adits
 maintenance of rehabilitated areas
 water management, treatment and control
 works to ensure public safety

Calculation of the security itemises the area of each land category and an estimated unit cost of rehabilitation is applied, based upon industry costs.

In order to estimate rehabilitation cost, it is necessary to

- List the different types of land on the site that will be, or have been, disturbed e.g. pits, waste dumps, infrastructure etc.
- Calculate the maximum area of land for each type of disturbance during the term of the mine's Mining Operations Plan, and
- Calculate the estimated maximum rehabilitation cost for the rehabilitation to the agreed post mining land use.

Typical Unit Costs

Cost categories which are currently being used in the calculation of securities and which are typical of costs being incurred in New South Wales rehabilitation projects today (June 1997) are :

Surface reshaping involving only moderate earth moving, ripping, replacement of topsoil	\$5,000 - \$8,000 /ha
Reshaping of tailings dumps and waste dumps including replacement of topsoil	\$10,000 - \$20,000 /ha
Reshaping, capping, sealing of material presenting environmental difficulties e.g. cyanide tailings, and generating material, contaminating wastes, hydrocarbon contamination	\$35,000 - \$55,000 /ha
Surface reshaping involving heavy earth moving, truck and shovel or dragline	\$9,000 - \$15,000 /ha
Making safe adits, shafts or drifts	\$15,000 - \$25,000
Makings safe access to open pit voids, trench and berm	\$25,000 /ha
Maintenance of rehabilitated areas	\$2,500 /ha

These costs are subject to frequent review, and may be altered at any time to more accurately reflect anticipated costs. As an alternative to these unit costs, the leaseholder may submit to

Extract from "Security deposits for Mining Titles," Department of Mineral Resources (NSW)

Appendix 3: Queensland's performance discount system on mining leases

Attachment 3

Environmental Performance Criteria for Standard Mining Projects

Category/ security required	Performance Criteria	Validated by
Basic Operational Requirements in place		
5 (100%)	<ul style="list-style-type: none"> Code of environmental compliance (CoEC) approved Plan of Operations (PoO) approved Landholder and Native Title agreements in place Other relevant licences and permits applied for. 	
Ability to Comply		
4 (90%)	<ul style="list-style-type: none"> Timeframe for operations submitted Machinery and labour available listed Proof of financial capability submitted Rehabilitation targets set Water management system in place Monitoring systems in place. 	
Satisfactory Performance for Two Years		
3 (70%)	<ul style="list-style-type: none"> Full compliance with CoEC and environmental authority for the previous two years demonstrated by audit statement Rehabilitation targets met. 	
Satisfactory Performance for Five years		
2 (40%)	<ul style="list-style-type: none"> Full compliance with CoEC and environmental authority for the previous five years as demonstrated by audit statement Rehabilitation targets met. 	
Environmental Management System (EMS)		
1 (25%)	<ul style="list-style-type: none"> EMS based on ISO 14000 approved Implementation of EMS demonstrated by audit. 	

Notes:

- Record of satisfactory performance can be transferred from one project to the next new project.
- Discount for implementing EMS (15%) can apply at any time.

Extract from "Environmental Management of Mining: Guideline 17 – Financial Assurances for Mining Activities," Environment Protection Agency (QLD)