



**A COMPARATIVE ANALYSIS OF THE ADEQUACY OF THE CURRENT  
LEGAL AND FINANCIAL SECURITY PROVISIONS GOVERNING  
CLOSURE AND REHABILITATION OF MINES WITH SPECIFIC  
REFERENCE TO SOUTH AFRICA**

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**THIS RESEARCH PROJECT IS SUBMITTED IN FULFILMENT OF THE  
REGULATIONS FOR THE DEGREE OF MASTERS OF ENVIRONMENTAL  
LAW IN THE COLLEGE OF LAW AND MANAGEMENT STUDIES  
UNIVERSITY OF KWAZULU-NATAL**

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## DECLARATION

I, Amin Tanaka-Takunda Matola, hereby declare that:

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As the candidate's Supervisor I agree to the submission of this dissertation.

\_\_\_\_\_

**Date:** \_\_\_\_\_

**Professor Michael Kidd**

**DEDICATION**

To

P.Y Tom

## **ACKNOWLEDGEMENTS**

There are a number of people to whom I am greatly indebted. Above all though, my utmost appreciation goes to ALLAH for the guidance and strength HE gave me to complete this dissertation. I owe it Him.

I express my heartfelt gratitude to my mother Mrs Matola for believing in me and supporting me unconditionally. I wish to express my profound gratitude to my supervisor Professor Michael Kidd who in spite of his tight schedules was able to scrupulously read through my work and offer constructive criticisms, valuable comments and ideas. To Robynne Louw, thank you for your ever obliging assistance, you made the Centre for Post Graduate Legal Studies a home away from home.

Most importantly, A special mention goes to the most amazing lady I ever met who saw me at my best and at my worst during this journey- I am lucky to have a best friend like you in my life. I am indebted to all my friends and colleagues especially those at the Post-Graduate Centre, the likes of Gift Manyika, Jeconiah Ncube, Tafadzwa Dhlakama and Darlington Chidarara. Lastly, I would like to thank everyone I have met in this lifetime who has helped me in the course of my academic career, even in the smallest of ways, thank you all.

## **KEYWORDS**

Financial Security Mechanism, Financial Provisions, Mine Closure, Site Rehabilitation, One Environmental System, Abandoned Mines, Rehabilitation Fund, Derelict and Ownerless Mine

## LIST OF ABBREVIATIONS

AMD	Acid Mine Drainage
DEA	Department of Environmental Affairs (SA)
DMP	Department of Mines and Petroleum (WA)
DMR	Department of Mineral Resources (SA)
EIA	Environmental Impact Assessment
EMP/EMPr	Environmental Management Plans or Programmes
MPRDA	Minerals and Petroleum Resources Development Act (SA)
MRF	Mining Rehabilitation Fund (WA)
NEMA	National Environmental Management Act (SA)
NWA	National Water Act (SA)
UNEP	The United Nations Environment Programme
WA	Western Australia
WWF-SA	World Wide Fund- South Africa

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## Chapter One

### 1. Introduction

South Africa, like many other countries with a long mining history, is faced with a legacy of the negative environmental impacts of mining. Amongst the most outstanding environmental problems related to mining is ‘that of abandoned, ownerless and derelict mine sites, a legacy of centuries old practices of inadequate, insufficient or non-existent mine closure laws, policies, and regulations’.<sup>1</sup> Inadequate and inefficient legislative controls and mine closure policies failed to prevent or minimise the possible long term environmental impacts of mining operations and mine closure.<sup>2</sup> Even though the negative legacy of abandoned and derelict mines is a global concern, ‘the situation in South Africa is particularly severe and the magnitude of the impacts from past mining activities are often considerable as environmental concerns and environmental regulation of mining activities were not always adequately regulated under mining and other environmental legislation in the pre-constitutional dispensation’.<sup>3</sup>

There was little or no concern for the environment and no thought of how mining activities might negatively impact the environment in the coming years.<sup>4</sup> According to Kotze, there are various reasons for this, most of which are political in nature.<sup>5</sup> He gave an example that,

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<sup>1</sup> The United Nations Environment Programme (UNEP) and the Chilean Copper Commission (COCHILCO) ‘Abandoned Mines - Problems, Issues and Policy Challenges for Decision Makers: Summary Report’ (2001) *UNEP Report* at 14, available at [http://www.sosbluewater.org/abandoned\\_report.pdf](http://www.sosbluewater.org/abandoned_report.pdf) (accessed on 15 August 2015).

<sup>2</sup> F Remy and M Gary ‘Large Mines and Local Communities: Forging Partnerships, Building Sustainability’, *Mining and Development* (2002). *World Bank Group Mining Department*, Washington, D.C, available at <http://siteresources.worldbank.org/INTOGMC/Resources/largemineslocalcommunities.pdf> (accessed on 10 June 2015). It can be argued that the past inadequacy or deficiencies of the South African regulatory framework is manifest through the problem of Acid Mine Drainage as well as abandoned mines.

<sup>3</sup> Government of South Africa-Department of Minerals and Energy ‘White Paper on a Minerals and Mining Policy for South Africa’ (1998) (GN R2359 in GG 19344 of 20 October 1998), available at <http://www.dmr.gov.za/publications/summary/125-white-papers/335-white-paper-minerals-and-mining-policy-for-sa-1998.html> (accessed on 10 January 2015). Chapter 4 of the White Paper particularly highlights the relationship between mining and the environment. Swart opined that, ‘Legislation at that time primarily focused on surface rehabilitation and the primary emphasis of mining was focused on its economic gains. With regard to environmental management and rehabilitation, mining companies complied with the absolute minimum requirements and also followed a re-active approach.’ See E Swart ‘The South African legislative framework for mine closure’ (2009) 10 *The Journal of the South African Institute of Mining and Metallurgy*, 489-492.

<sup>4</sup> DJA Van Zyl ‘Long-term liabilities, financial assurance and potential opportunities.’ (2000) *In Southern African Workshop on Sustainable Development and the Mining and Metal Industries*. November 20-22, Pretoria.

<sup>5</sup> LJ Kotzé ‘Judicial enforcement of liabilities and responsibilities for pollution prevention and remediation: No more ‘Business as Usual’ for South African mines’. In L Paddock et al (eds) *Compliance and Enforcement in Environmental Law: Toward More Effective Implementation* (2011) 475.

‘during the reign of apartheid, the South African economy had been dependent on revenue generated by mines because of political and economic isolation from the world’.<sup>6</sup> The importance of this historic aspect of the mining industry is that ‘mining companies have not always been held responsible and liable for the historical consequences of their activities’.<sup>7</sup> This however, has unfortunately left South Africa with enormous negative environmental liabilities for future generations to deal with.<sup>8</sup> This negative legacy also relates to the long term residual effects on the environmental well-being of communities residing in the vicinity of these unrehabilitated mining areas.<sup>9</sup> The latter must ‘ultimately bear the financial burden of ensuring appropriate mine closure and rehabilitation, since mining activities have left a legacy of post closure environmental liabilities for the current and future generations to deal with’.<sup>10</sup>

The potential costs of rehabilitation, the lack of clearly assigned or assumed responsible party or the legal and financial security mechanisms used for guaranteeing mine closure were inappropriate for such mining sites.<sup>11</sup> A further critical complicating factor is that the availability of government funding to address the magnitude of the mine legacy left behind is very limited.<sup>12</sup> The legacy of abandoned, ownerless and derelict mining site, their associated environmental problems, clean-up costs and the post mine land use development has led to an increased emphasis on mine closure planning and rehabilitation as they provide difficult legacy issues for governments, communities and mining companies to deal with.<sup>13</sup> South

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<sup>6</sup> Ibid 475.

<sup>7</sup> L Vorster ‘The liability of mines for the prevention, minimisation and remediation of pollution: a legal analysis’ (unpublished LLM Dissertation (Environmental Law and Governance) Cape Town University, (2012) 6.

<sup>8</sup> AL Clark, K Naito, and JC Clark ‘Legal Framework for Mine Closure’ in T Khanna (Ed.) *Mine Closure and Sustainable Development. Proceedings of a Workshop organised by the World Bank and the Metal Mining Agency of Japan*, Washington, London: Mining Journal Books Ltd (2000) 93.

<sup>9</sup> World Wide Fund for Nature (WWF) - South Africa ‘R30 billion is just the start of South Africa’s mining hangover’ WWF, 15 August 2012, available at: <http://www.wwf.org.za/?6600/acid-mine-draining> (accessed on 17 January 2016) C Colvin (World Wildlife Fund’s Freshwater Programmes Senior Manager, South Africa) had this to say, ‘the impacts of abandoned mines on the environment are often felt by rural communities who do not have access to basic municipal services (such as piped and treated water supply), and are therefore directly reliant on natural resources for their food and water. These communities are the most vulnerable. For these reasons we urge government to act now to prevent further degradation of our rivers and aquifers.’

<sup>10</sup> Ibid.

<sup>11</sup> Abandoned Mines - Problems, Issues and Policy Challenges for Decision Makers: Summary Report (see note 1 above) 14.

<sup>12</sup> E Swart ‘The South African legislative framework for mine closure’ (2003) 103 (8) *South African Institute of Mining and Metallurgy* 489.

<sup>13</sup> ‘Abandoned Mine Sites: Problems, Issues and Options’ (Unpublished agenda note presented at Post-Mining Alliance Priority Setting Workshop hosted by UNEP, Paris), available at <http://www.cepal.org/dnri/noticias/noticias/9/7029/programmeunep.pdf> (accessed on 10 February 2014).

Africa has only recently developed and implemented comprehensive legislation to regulate environmental management and mine closure processes. Consequently, a large number of historical mining operations have been abandoned by their operators with little or no regard to the management of the impacts on the environment.<sup>14</sup>

It is important to note that the consequences of non-compliance and non-existent or inadequate enforcement of mining rehabilitation and environmental legislation will be with South Africa for some time to come. As a result, the country faces many challenges in respect of the remediation of historic and current mining activities as well as the prevention and minimisation of future negative legacy. Comprehensive mine closure for abandoned, presently operating, and proposed mines remains a challenge for the government and mining companies.<sup>15</sup> To accommodate the need to close abandoned mines and to ensure that existing and proposed mines are appropriately closed and rehabilitated will require the cooperation of a diverse stakeholder community, new innovative methods of financing closure and significant policy and legislative amendments to ensure post mining sustainable development and economic viable post mine land use.<sup>16</sup>

### **1.1 Outline of Dissertation Topic, Broad Problems and Issues to be investigated**

South Africa is richly endowed with mineral resources that are a major export and contributor to foreign currency inflows to the economy. The mining industry is central to economic growth as it provides economic opportunities, employment, and a semblance of social and infrastructure development in some areas.<sup>17</sup> Globally, South Africa is also one of the most mineral rich regions, containing more than half of the world's reserves of manganese, chromium and platinum group metals, and 40 percent or more of the reserves of vanadium, gold and vermiculite.<sup>18</sup> As a result, it has attracted the mining industry, which is a long-standing and key driver of South Africa's national economy.<sup>19</sup> However, 'mining and its

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<sup>14</sup> M Makgae 'The Status and Implications of the AMD Legacy Facing South Africa. Proceedings of the International' (2012) *Mine Water Association Symposium, Bunbury*, 29 September-4 October 2012, 327-334.

<sup>15</sup> P Peck 'Mining for Closure; Policies and Guidelines for Sustainable Mining Practice and Closure of Mines', (2005) *The Environment Security* (ENVSEC), available at; <http://www.grida.no/publications/security/book/2367.aspx> (accessed on 20 May 2016).

<sup>16</sup> Ibid.

<sup>17</sup> T Murombo 'Regulating mining in South Africa and Zimbabwe: Communities, the environment and perpetual exploitation' (2013) 9(1) *Law, Environment and Development Journal* 32. In this article Murombo wrote that 'towns like Rustenburg in the North West provinces owe their existence to mining'.

<sup>18</sup> Ibid.

<sup>19</sup> S Malherbe and N Segal 'A Perspective on the South African Mining Industry in the 21st Century.' (2000). *An independent report prepared for the Chamber of Mines of South Africa by the Graduate School of Business*

related operations have significant biodiversity impacts, causing irreversible habitat loss, at times across large areas or in sensitive regions'.<sup>20</sup>

The grave challenges that South Africa currently experiences with respect to acid mine drainage are proof of the destructive consequences of unsustainable mining practices. The court in the case of *Director: Mineral Development, Gauteng v Save the Vaal Environment*,<sup>21</sup> recognised the fact that unsustainable mining activities can cause irreparable damage to the environment when it stated that,

... the application of the [*audi alteram partem*] rule is indicated by virtue of the enormous damage mining can do to the environment and ecological systems. What has to be ensured when application is made for the issuing of a mining licence is that development which meets present needs will take place without compromising the ability of future generations to meet their own needs.<sup>22</sup>

The Supreme Court acknowledged the potential significant environmental damage that can be caused by unsustainable mining activities and this runs parallel to the principle of sustainable development as enshrined in section 24 of the Constitution.<sup>23</sup> Thus, regardless of mining being projected as one of the biggest contributors to job creation and economic growth there are huge environmental repercussions associated with it. The scope and extent of the legacy problems around inadequate regulation of rehabilitation and closure of mines is succinctly described in the extract from a 2012 WWF-SA report below:<sup>24</sup>

Ongoing concerns regarding environmental degradation in mining areas, high numbers of ownerless and abandoned mines, and the incidence of acid mine drainage (AMD) have all highlighted the need for improved environmental maintenance and rehabilitation in the mining sector. It can be argued that a significant portion of current environmental impacts relate to abandoned and derelict mines, thus there is a clear need to also ensure that current and future mining activities do not add to unacceptable environmental impacts and impose costs on

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*of the University of Cape Town in association with Genesis Analytics.* However, 'these economic benefits come at a high price, since mining, by its nature, adversely impacts on the environment. Not only does it lead to the depletion of the minerals that are being mined, but the process of extracting minerals also creates large-scale generation of waste and pollution.'

<sup>20</sup> Government of South Africa-Department of Environmental Affairs 'Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector'. (2013) DEA-Pretoria, available at [https://www.environment.gov.za/sites/default/files/legislations/miningbiodiversity\\_guidelines\\_2013.pdf](https://www.environment.gov.za/sites/default/files/legislations/miningbiodiversity_guidelines_2013.pdf) (accessed on 14 January 2014).

<sup>21</sup> *Director: Mineral Development, Gauteng v Save the Vaal Environment* (1999) 2 SA 719 (SCA).

<sup>22</sup> *Ibid* para 719B-719C.

<sup>23</sup> The Constitution of the Republic of South Africa, 1996.

<sup>24</sup> H van Zyl et al. 'Financial Provisions for Rehabilitation and Closure in South African Mining: Discussion Document on Challenges and Recommended Improvements.' (2012) *World Wide Fund for Nature (WWF)* 1, available at [http://awsassets.wwf.org.za/downloads/wwf\\_mining\\_8\\_august\\_low\\_res.pdf](http://awsassets.wwf.org.za/downloads/wwf_mining_8_august_low_res.pdf) (accessed on 15 February 2014).

society. The harsh lessons of the past need to be applied lest history be allowed to repeat itself...<sup>25</sup>

It is beyond doubt that the bedrock principle of environmental law and regulation is that pollution costs should be borne by their creators.<sup>26</sup> The South African environmental laws that regulate mining activities give this principle form by requiring mining companies to financially guarantee the potential costs for ensuring mine closure and site rehabilitation when operations cease.<sup>27</sup> The purpose of the financial security is to ensure that there will be sufficient funds to pay for mine site rehabilitation and post closure monitoring and maintenance at any stage in the life of the project, including early or temporary closure.<sup>28</sup> In theory, ‘such mining securities ensure sufficient funds are available to a government to rehabilitate mine sites in the event operators fail to meet their mine rehabilitation and closure obligations’.<sup>29</sup>

It is important to note that despite the South African government having the financial security for mine closure in place, there have been questions about their adequacy in covering the potential cost for mine closure in event of the mining company failing to do so. The challenges that has been identified in regards to the financial security mechanisms are that ‘they are commonly insufficient to cover appropriate mine closure activities and environmental remediation in the case of a default and they do not solve the problem of historical abandoned mine sites’.<sup>30</sup> This is because the rates used to calculate the potential amount for mine site rehabilitation are still not adjusted for inflation and this may result in significant under-estimations of adequate financial security provided by the mining company.<sup>31</sup> Also they were not subject to frequent and independent review by a third-party.

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<sup>25</sup> Ibid.

<sup>26</sup> J Boyd, ‘Financial Responsibility for Environmental Obligations: Are Bonding and Assurance Rules Fulfilling Their Promise?’ in T Swason (ed) *An introduction to the law and economics of environmental policy: issues in institutional design (Research in Law and Economics)* (2002) vol 20 417.

<sup>27</sup> Section 24P of NEMA.

<sup>28</sup> Ibid.

<sup>29</sup> Government of Western Australia-Department of Mines and Petroleum ‘The Mining Rehabilitation Fund – The First Two Years’ (2015), available at [http://www.dmp.wa.gov.au/Documents/Environment/MRF\\_The\\_First\\_Two\\_Years.pdf](http://www.dmp.wa.gov.au/Documents/Environment/MRF_The_First_Two_Years.pdf) (accessed on 1 November 2016).

<sup>30</sup> van Zyl et al. (note 22 above).

<sup>31</sup> Ibid. Van Zyl et al observed that, ‘the legal and financial provisions are inadequate in that Master rates contained in the 2005 Department of Mineral Resources (DMR) guidelines (2005 DMR Guidelines) are not adjusted for inflation, resulting in significant underestimations of adequate financial provisions and also the guideline document is not legally binding. There are indications that a number of mines are not making adequate financial provision for closure (uncertainty with regard to the adequacy of financial provisions appears to be greatest in relation to providing for adequate post closure water treatment and management).’

## **1.2 Purpose of the Research**

The above concerns give rise to questions about the adequacy of the financial security provisions made by mining companies for closure and rehabilitation of mines when operations cease. Thus, this dissertation seeks to determine whether the existing financial security provisions framework are ‘adequate, appropriate, flexible and realistic in order to satisfactorily meet the closure and rehabilitation of the mine’.<sup>32</sup> The dissertation will further seek to provide a critical analysis and review of the processes surrounding the financial security provisions for mine closure and site rehabilitation, given the prevalence of abandoned environmental obligations, and further assesses the implementation of the said provisions in South Africa and recommends potential improvements to the financial provisions system.<sup>33</sup> This dissertation endeavours to expose the dangers of the absence of adequate legislative and a regulatory framework specifically created to deal with the adequate closure and rehabilitation of mines. This is appropriate given the important role financial provisions play in ensuring that mines do not leave a negative environmental legacy after closure.

## **1.3 Outline of Research Questions to be answered**

The research questions will provide an indication of the strengths and weaknesses of the current financial security laws and regulations governing mine closure and site rehabilitation.

### **1.3.1 The main research question**

The main research question is:

- a. Whether the South African financial provisions for mine closure and site rehabilitation, specifically the financial security mechanisms, are adequate to guarantee sustainable mine closure and site rehabilitation?

In simple terms, ‘are the current financial provisions adequate, appropriate, flexible and realistic to guarantee mine closure and site rehabilitation when the operator defaults? Whether the government and consequentially the tax payers are protected from footing the bill of rehabilitation of mines in the future?’<sup>34</sup>

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<sup>32</sup> Van Zyl et al. ([see](#) note 24 above). The legal and financial provisions are inadequate in that Master rates contained in the 2005 Department of Mineral Resources (DMR) guidelines (2005 DMR Guidelines) are not adjusted for inflation, resulting in significant underestimations of adequate financial provisions and also the guideline document is not legally binding. There are indications that a number of mines are not making adequate financial provision for closure (uncertainty with regard to the adequacy of financial provisions appears to be greatest in relation to providing for adequate post closure water treatment and management).

<sup>33</sup> Van Zyl et al. (see note 22 above).

<sup>34</sup> AL Feris, and JL Kotze ‘The Regulation of Acid Mine Drainage in South Africa: Law and Governance Perspectives’ (2014) 17(5) *Potchefstroom Electronic Law Journal* 5.

### 1.3.2 Sub-research questions

- a. What is the current South African financial provision framework governing mine closure and site rehabilitation and to what extent do the provisions regulate proper mine closure and rehabilitation?
- b. How can the financial provisions be realistic, flexible, adequate and appropriate to address closure and rehabilitation of mines yet not so burdensome as to push companies into bankruptcy or deter them from investing? This is so because ‘mine legislation development should be a responsive process and avoid the introduction of reactionary and prescriptive legislation that is often a reaction to past practices’.<sup>35</sup>
- c. What is the best way to deal with the legacy of abandoned mines? Can the current financial provisions address the legacy of the past inappropriate, insufficient and non-existent mine closure and site rehabilitation policies?<sup>36</sup>
- d. Whether the One Environmental System,<sup>37</sup> has the potential for improving performance as regards mine closure and rehabilitation?

The development of answers in response to the dissertation questions will provide an understanding of the current mine closure and site rehabilitation legal and policy framework. The dissertation questions will provide an indication of the successes and failures of the current legal framework for mine closure and site rehabilitation within the South African mining industry. The questions will further assist in the development of a suggested best legal framework for mine closure and site rehabilitation standards and provide a comprehensive assessment of the current mine closure and site rehabilitation legislation and control.

### 1.4 What are Abandoned and Derelict Mines

It should be noted that the term ‘derelict and abandoned mines’ is not defined in the Minerals and Petroleum Resources Development Act,<sup>38</sup> (hereafter MPRDA). However, the mine closure provisions in the MPRDA provide some guidance on mine closure processes, which

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<sup>35</sup> The Australian and New Zealand Minerals and Energy Council (ANZMEC) and the Minerals Council of Australia. ‘Strategic Framework for Mine Closure’ (2000) ANZMEC, available at <http://www.sernageomin.cl/pdf/mineria/cierrefaena/DocumentosRelacionados/Strategic-Framework-Mine-Closure.pdf> (accessed on 15 February 2014).

<sup>36</sup> Attempts to assign responsibility of the abandoned mine legacy to the mining sector are met with the response that it was not the present companies that caused the problem, the government has had the benefit of the taxes and royalties from the past activity and as a result, the government should now look after the consequences. The lack of current legal owners of old sites thus seems to place the accountability in the government arena.

<sup>37</sup> The One Environmental System is aimed at streamlining licensing processes for mining, environmental authorisations and water use. Under the system, the minister of mineral resources will be responsible for issuing environmental authorisations and waste management licences for mining and related activities. Read more: <http://www.southafrica.info/business/one-environmental-system-101214.htm#.VaO9j1-qrg8#ixzz3fmJGgVR0>.

<sup>38</sup> Minerals and Petroleum Resources Development Act No. 28 of 2002.



depict that mines are only regarded as closed when the closure certificate is issued in terms of section 43 of the MPRDA.<sup>39</sup> Legally, the owner of a mine remains responsible for all liabilities related to that mine even after a closure certificate has been issued. This is provided for by section 43 of the MPRDA which states that, ‘the holder of a mining right...of works that has ceased to exist, remains responsible for any environmental liability, pollution, ecological degradation, the pumping and treatment of extraneous water...notwithstanding the issuing of a closure certificate’.<sup>40</sup> Derelict and abandoned mines can be defined as, ‘mines whose owners or mining rights or lease holders have abandoned and are not operating nor maintaining to mitigate and manage their associated safety, health and environmental impacts and can no longer be traced’.<sup>41</sup>

Section 46 of the MPRDA, classifies those mines for which a closure certificate has not been issued and no party can be traced to assume responsibility for their liabilities as abandoned and the government may provide funds for their rehabilitation.<sup>42</sup> The other terms used to refer to these mines include derelict mines, orphan mines, unattended mines and inactive mines. According to Mackasey,<sup>43</sup> in the selection of an appropriate definition of abandoned mines, the consideration of public safety and health together with environmental hazards associated with these mines are of greater significance than the ownership aspects.<sup>44</sup> As a result, abandoned mine sites can be precisely defined as ‘mine sites and mineral operations that are no longer operational, not actively managed, not rehabilitated, causing significant environmental and/or social problems, and for which no one is currently accountable for the

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<sup>39</sup> Section 43 of the MPRDA, provides that the holder of a prospecting right, mining right, retention permit or mining permit remains responsible for any environmental liability, pollution, ecological degradation and the management and sustainable closure thereof, until the Minister of Minerals and Energy has issued a closure certificate in terms of this act to the holder concerned.

<sup>40</sup> Ibid.

<sup>41</sup> Department of Mineral Resources ‘The National Strategy for the Management of Derelict and Ownerless Mines in South Africa’ (2009) Department of Mineral Resources, available at <http://cer.org.za/wp-content/uploads/2011/10/The-National-Strategy-for-the-Management-of-Derelict-and-Ownerless-Mines-in-South-Africa-2009.doc>. (accessed on 15 February 2014).

<sup>42</sup> Section 46 (1) of the MPRDA provides that; If the Minister directs that measures contemplated in section 45 must be taken to prevent pollution or ecological degradation of the environment, to address any contravention in the environmental authorisation or to rehabilitate dangerous health or safety occurrences but establishes that the holder of a reconnaissance permission, prospecting right, mining right, retention permit or mining permit, the holder of an old order right or the previous owner of works, as the case may be or his or her successor in title is deceased or cannot be traced or in the case of a juristic person, has ceased to exist, has been liquidated or cannot be traced, the Minister in consultation with the Minister of Environmental Affairs and Tourism, may instruct the Regional Manager concerned to take the necessary measures to prevent pollution or ecological degradation of the environment or to rehabilitate dangerous health and social occurrences or to make an area safe.

<sup>43</sup> WO Mackasey ‘Abandoned Mines in Canada’, (2000) available at <http://www.abandoned-mines.org/pdfs/mackasey.pdf>, (accessed 15 December 2015).

<sup>44</sup> Ibid.

site's remediation or rehabilitation'.<sup>45</sup>

#### **1.4.1 Main Causes of Abandoned and Derelict Mine Sites**

The mining-related elements that created the legacy of abandoned and derelict mines are held to include:

- a. The general absence of mine closure and site rehabilitation legal framework, policies and regulations until the latter part of the twentieth century;
- b. Ineffective enforcement of mine closure and site rehabilitation legal framework, policies and regulations if, and where in existence;
- c. The absence of appropriate, realistic and flexible financial security mechanisms to ensure funds for parties such as governments to conduct remediation in the event a mining company going bankrupt and being unable to cover the costs of rehabilitation;
- d. Inadequate financial security to address remediation if, and where such funds were set aside.
- e. Unforeseen economic events that caused early cessation of activity or left companies bankrupt, such as a sudden drop in metal prices, insurmountable difficulties with mining/milling, and/or infrastructure problems.<sup>46</sup>

#### **1.5 Mine closure and site rehabilitation**

Mine closure and site rehabilitation refers to the period of time when the operational stage and economic viability of a mine has ceased or ended, and the final decommissioning has commenced.<sup>47</sup> If a mine ceases to operate, it is only regarded as closed if a closure certificate has been issued in terms of section 43 of the MPRDA.<sup>48</sup> Mine closure in some instances may only be temporary, or may lead into a program of care and maintenance.<sup>49</sup> Mine completion is the overall objective of mine closure and rehabilitation. Mine site rehabilitation is the process used to repair the impacts of mining on the environment. The long-term objectives of mine site rehabilitation include 'the conversion of a mine site and disturbed mine land to an

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<sup>45</sup> SE Mhlongo and F Amponsah-Dacosta 'A review of problems and solutions of abandoned mines in South Africa.',(2016) 30 (4) *International Journal of Mining, Reclamation and Environment*, 280.

<sup>46</sup> Peck (note 15 above).

<sup>47</sup> B Smith 'Mining for Closure: Sustainable Mine Practices, Rehabilitation and Integrated Mine Closure Planning' 6, available at [https://www.be.unsw.edu.au/sites/default/files/upload/pdf/schools\\_and\\_engagement/resources/\\_notes/5A3\\_16.pdf](https://www.be.unsw.edu.au/sites/default/files/upload/pdf/schools_and_engagement/resources/_notes/5A3_16.pdf) (accessed on 20 May 2016).

<sup>48</sup> MPRDA (note 31 above).

<sup>49</sup> HWB Lacy and KE Benett 'Updating the Leading Practice Sustainable Development (LPSD) Mine Closure Guide Australia 2015' *Presented at Goldfields Environmental Management Group Workshop 2016, May 18-20th Kalgoorlie Western Australia* 1-13, available at [http://au.mwhglobal.com/wp-content/uploads/2016/05/Lacy.H-Bennett.K-2016-Updating-the-Leading-Practice-in-Sustainable-Development-LPSD-Mine-Closure-Guide-Australia-2015\\_GEMG-Submission.pdf](http://au.mwhglobal.com/wp-content/uploads/2016/05/Lacy.H-Bennett.K-2016-Updating-the-Leading-Practice-in-Sustainable-Development-LPSD-Mine-Closure-Guide-Australia-2015_GEMG-Submission.pdf) (accessed 20 January 2016).

environmentally safe and sustainable landform, and the restoration of the pre-mining conditions as closely as possible to support future sustainability of the site'.<sup>50</sup>

The current mine closure and site rehabilitation practices focus on the concept of avoiding future abandoned and derelict mines, which occurred as a result of previously poor mine planning and rehabilitation practices.<sup>51</sup> The dissertation is developed in response to existing mine closure and site rehabilitation practices, and legislative framework which fail to ensure and recognise the need for an integrated approach to mine closure and site rehabilitation planning. The premises of the dissertation are based on the assumption that mine closure and site rehabilitation requires the recognition that mining is a temporary use of the land; however 'the manner in which mine closure and site rehabilitation is planned can have a significant influence on the magnitude and duration of impacts during mine operations and after mine closure'.<sup>52</sup>

### **1.6 Financial Provisions for Mine Closure and Site Rehabilitation**

The financial provisions for mine closure and site rehabilitation give rise to a set of design issues such as choices open to mining companies with regard to making financial provisions, inadequate funding levels for rehabilitation and closure being maintained and secured.<sup>53</sup> It has been argued that there is,

limited auditing of the adequacy of financial provisions by the mining companies and the government, and the interaction of financial provisions rules with other areas of law most importantly the tax, insolvency and company law. There can be inadequate protection of financial provisions in the event of insolvency or sale, also establishing whether the financial provisions system and/or the provisions themselves that exist at present are insufficient or inadequate to adequately address current and future environmental rehabilitation.<sup>54</sup>

It is important to recognise that each mine is unique, meaning that some flexibility will be required as the mine operates. This dissertation highlights the above issues and identifies a set of correctable weaknesses present in the said provisions as this is where the problem is at its most intractable, where the need for new action is greatest, and where the challenges of innovation and new action frameworks still need to be met.

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<sup>50</sup> Van Zyl et al. (see note 24 above)

<sup>51</sup> B Smith 'Mining for Closure: Sustainable Mine Practices, Rehabilitation and Integrated Mine Closure Planning' 6, available at [https://www.be.unsw.edu.au/sites/default/files/upload/pdf/schools\\_and\\_engagement/resources/\\_notes/5A3\\_16.pdf](https://www.be.unsw.edu.au/sites/default/files/upload/pdf/schools_and_engagement/resources/_notes/5A3_16.pdf) (accessed on 20 May 2016).

<sup>52</sup> M Carley and I Christie *Managing Sustainable Development* 2<sup>nd</sup> ed (2000) 173.

<sup>53</sup> Van Zyl et al. (see note 24 above)

<sup>54</sup> Ibid.

## **1.7 Classification of Impacts Relating to Derelict, Abandoned and Ownerless Mines**

It is trite that mining operations and activities are ‘by nature, detrimental to the environment and if not managed properly and effectively governed can have disastrous effects for the local.’<sup>55</sup> The detrimental effect of mining on the environment is not a new phenomenon and the negative effects have existed since time immemorial as opined by Agricola;<sup>56</sup>

...the fields are devastated by mining operations... further, when the ores are washed, the water which has been used poisons the brooks and streams, and either destroys fish or drives them away. Therefore, the inhabitants of these regions, on account of the devastation of their fields, woods, groves, brooks and rivers, find great difficulty in procuring the necessaries of life... Thus it is said, it is clear to all that there is greater detriment from mining than the values of the metals which mining produces.<sup>57</sup>

### **1.7.1.1 Public Health and Safety**

Some of the most significant impacts related to derelict and ownerless mines are those relating to public health and safety. These are particularly high when the public has direct access to sites, as is the case in most areas in South Africa where mining occurs within close proximity to communities and in the case of old mine dumps or residues in urban areas where people are resident within proximity to such.<sup>58</sup> The risks include, but are not limited to, ‘cavities and subsidence features, human and animals falling into shafts, illegal and unsafe mining on derelict and ownerless mine sites, contamination of surface water bodies and groundwater which the public depends on for their domestic use or for their irrigation needs’.<sup>59</sup>

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<sup>55</sup> Human Rights Watch ‘Out of Control: Mining, Regulatory Failure and Human Rights in India,’ (The 70-page report,) available at <https://www.hrw.org/report/2012/06/14/out-control/mining-regulatory-failure-and-human-rights-india> (accessed on 02 February 2016).

<sup>56</sup> Agricola, G, *De re metallica*, Trans. from the first Latin edition of 1556 by Herbert C. Hoover and Lou H. Hoover, (1950 [1912]), In Lottermoser, B *Mine Wastes: Characterization, Treatment and Environmental Impacts* (2010) 3<sup>rd</sup> ed. 23.

<sup>57</sup> *Ibid* at 8.

<sup>58</sup> ‘The National Strategy for the Management of Derelict and Ownerless Mines in South Africa’ (see note 41 above) 11.

<sup>59</sup> *Ibid*.

**Figure 1:** Correlation between abandoned mines in South Africa and population density<sup>60</sup>

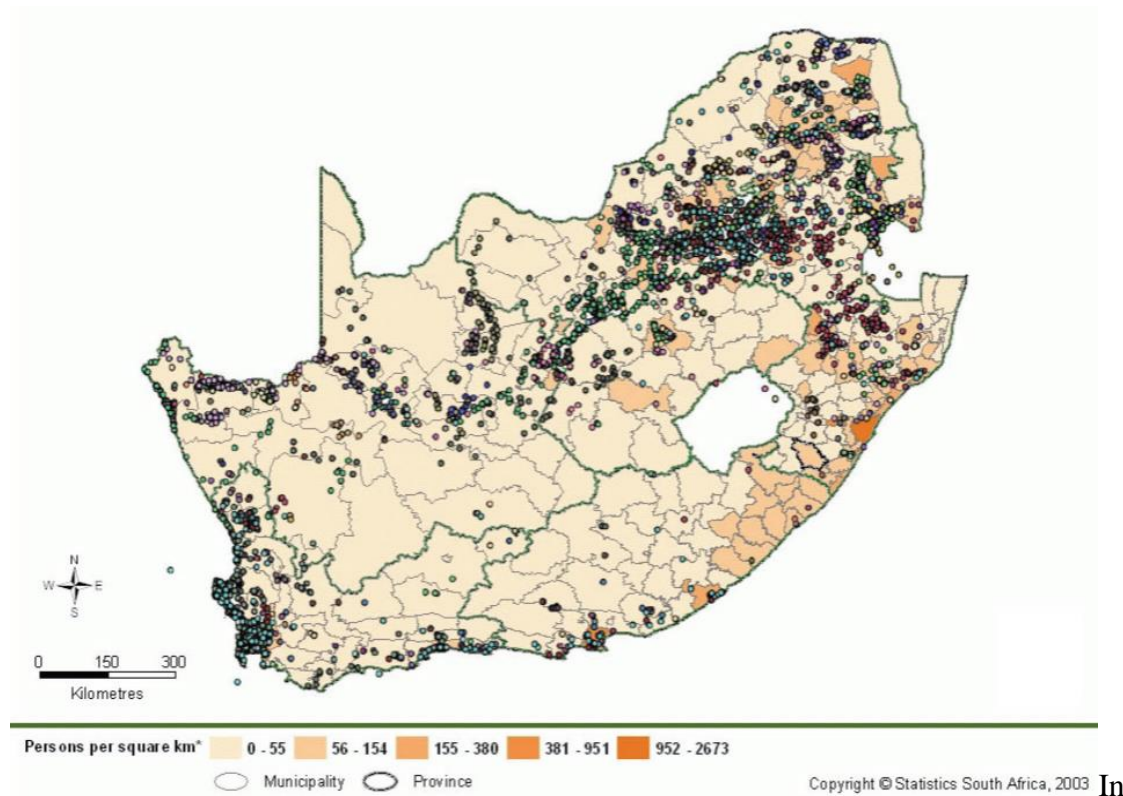


Figure 1 above, the link between the location of abandoned mines and high population densities in South Africa is evident, indicating that abandoned mines pose a huge health risk to a large section of the South African public.<sup>61</sup>

### 1.7.1.2 Environmental factors

It is common cause that all unsustainable mining activities detrimentally affect environmental quality, especially that of water.<sup>62</sup> The South African Courts in the three cases of *Minister of Water Affairs and Forestry v Stilfontein Gold Mining Co Ltd and Others*,<sup>63</sup> *Kebble v Minister*

<sup>60</sup> Government of South Africa-Department of Environmental Affairs '2nd South Africa Environment Outlook: A report on the state of the environment. Executive Summary' (2012) DEA, available at [https://www.environment.gov.za/sites/default/files/reports/environmentoutlook\\_executivesummary.pdf](https://www.environment.gov.za/sites/default/files/reports/environmentoutlook_executivesummary.pdf) (accessed on 1 December 2016).

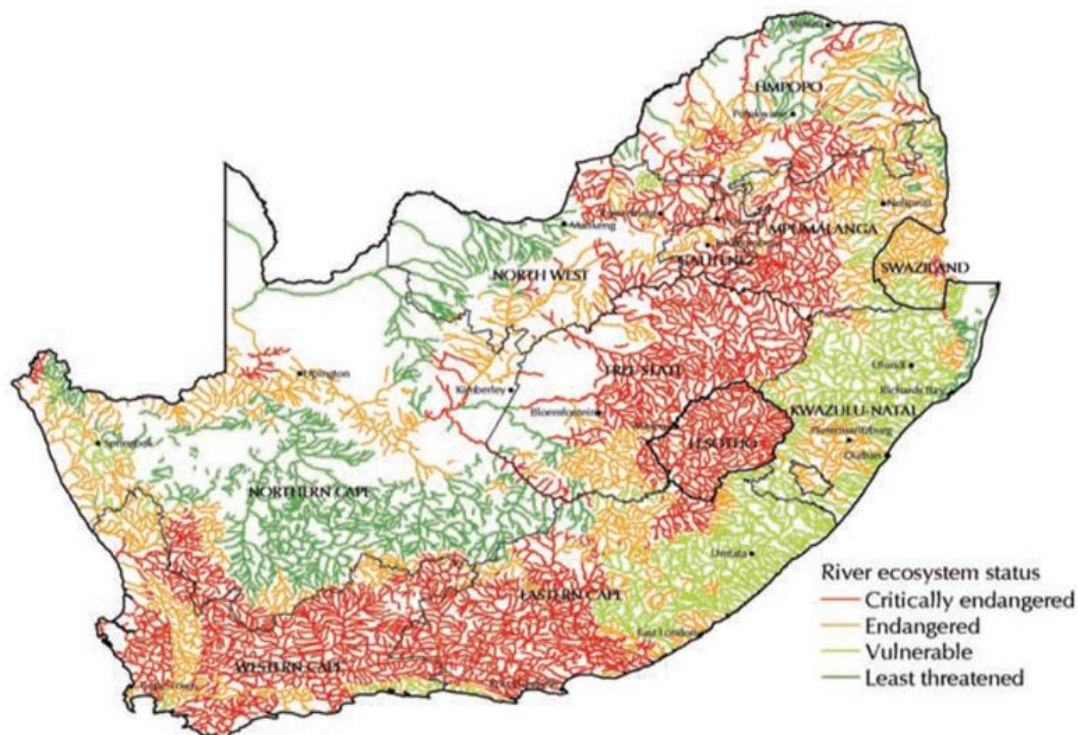
<sup>61</sup> The Auditor-General of South Africa 'Report of the Auditor-General of South Africa to Parliament on a performance audit of the rehabilitation of abandoned mines at the Department of Minerals and Energy' (2009) Auditor-General at 4, available at [http://cer.org.za/wp-content/uploads/2011/10/AG\\_Report\\_on\\_abandoned\\_mines-Oct-2009.pdf](http://cer.org.za/wp-content/uploads/2011/10/AG_Report_on_abandoned_mines-Oct-2009.pdf), (accessed on 18 July 2014).

<sup>62</sup> H Thompson 'Water law: a practical approach to resource management and the provision of services' (2006) 4-5 In LJ Kotze and N Lubbe 'How (not) to silence a spring: The Stilfontein saga in three parts' (2009) 16 *South African Journal of Environmental Law and Policy* 50.

<sup>63</sup> *Minister of Water Affairs and Forestry v Stilfontein Gold Mining Co Ltd and Others* 2006 (5) SA 333 (W). This case involved water pollution caused by mining by means of water coming into contact with mined-out reefs. The cause of the water pollution is because the mined-out reefs contain iron pyrite which oxidises when exposed to air and water, causing the total dissolved solids content of the water to rise. This leads to groundwater with low pH and high sulphate or heavy metal content.

of Water Affairs,<sup>64</sup> and *Harmony Gold Mining Co Ltd v Regional Director: Free State, Department of Water Affairs and Forestry*,<sup>65</sup> highlighted the devastating environmental effects of mining on water resources. The above court decisions considered, among others, ‘the broader obligation on mining companies to prevent, minimise and remedy water pollution’.<sup>66</sup> It is beyond doubt that South Africa’s natural resources, especially water, are scarce and under severe pressure.<sup>67</sup> This is highlighted in Figure 2, indicating the extent to which river ecosystems are endangered. The environmental impact of abandoned and derelict mines puts a further strain on vulnerable ecosystems, with the current number of abandoned mines to be rehabilitated clearly emphasising the significance and urgency of the matter.<sup>68</sup>

**Figure 2:** *Ecosystem status of South African rivers*<sup>69</sup>



<sup>64</sup> *Kebbe and Others v Minister of Water Affairs and Forestry* [2007] SCA 111.

<sup>65</sup> *Harmony Gold Mining Company Limited v Regional Director Free State Department of Water Affairs and Forestry and Another* [2006] SCA 65.

<sup>66</sup> LJ Kotze and N Lubbe (see note 62 above) 50.

<sup>67</sup> *Ibid.*

<sup>68</sup> Report of the Auditor-General of South Africa (see note 61 above).

<sup>69</sup> South Africa Environment Outlook (see note 60 above).

### **1.7.1.3 Surface Water**

It is important to note that,

Open water bodies for example storm water storage systems, return water dams which are unlined, natural and anthropic mine depressions, open canals and any other place where surface water can accumulate and which are close to or in direct contact with the mine residue areas, pose high risk to the environment and humans due to the pollution of such water resources. If these open water systems get their water from mine dumps, it contains soluble heavy metals and high acidity and salinity as a result of chemical reactions in the process.<sup>70</sup>

Also, water flowing from the dumps or decanting from underground also has an impact on natural wetlands which are close or adjacent to such mine dumps or underground water decant points.<sup>71</sup> If this happens, the wetlands get polluted and cease to be functional. In addition to the risk of pollution, some mining activities could also result in the disturbance and diversion of river courses.<sup>72</sup> This can result in silting up of streams or dams, as well as significant soil erosion.

### **1.7.1.4 Groundwater**

The pollution in underground or deep open pit mining is often facilitated by the dewatering of mine workings.<sup>73</sup> This can lead to the localised depression of the water table and a reduction in the availability of groundwater.<sup>74</sup> However, in many cases, after mining, the groundwater levels recover to their pre-mining levels or levels close to these, but the groundwater is polluted due to chemical reaction in the mined out areas.<sup>75</sup> In the gold and coal mining areas, this results in the formation of acid mine drainage which as it rises over time to fill the mine voids underground, sometimes decants onto the surface thus polluting surface water bodies and in some cases land suitable for irrigation.<sup>76</sup> Pollution of groundwater resources is also evident in areas where there is seepage or ingress of polluted water to the underground aquifers from the surface.<sup>77</sup>

### **1.7.1.5 Acid mine drainage (AMD)**

AMD is one of the most serious and potentially enduring environmental problems for the mining industry. If left unchecked, it can result in such long-term water quality impacts that it

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<sup>70</sup> 'The National Strategy for the Management of Derelict and Ownerless Mines in South Africa', (see note 33 above) 14.

<sup>71</sup> Ibid.

<sup>72</sup> Ibid 15.

<sup>73</sup> Ibid 16.

<sup>74</sup> Ibid.

<sup>75</sup> 'The National Strategy for the Management of Derelict and Ownerless Mines in South Africa' (see note 33 above) 16.

<sup>76</sup> Ibid.

<sup>77</sup> Ibid.

could well be this industry's most harmful legacy.<sup>78</sup> The South African environment, including its water resources, soil and people, are now threatened by pollution stemming from AMD, which is a legacy left behind by abandoned, derelict and defunct mines, and a continuing by-product of existing mining activities.<sup>79</sup> The detrimental effect of AMD lies in the environmental impact of the elevated levels of heavy metals, which are often toxic to fauna, flora and human health.<sup>80</sup> Parallel to AMD and with further implications to health and the environment are sulphates, metals,<sup>81</sup> radioactivity and biodiversity.<sup>82</sup>

#### **1.7.1.6 Air Quality**

Two major impacts on air quality have been identified namely windblown dust and, in the case of some coal mines, combustion gases arising from the spontaneous reaction of coal both in underground mine workings and in discard and spoil heaps.<sup>83</sup> Dust from uncovered mine dumps causes visual pollution, inconvenience and discomfort, and could have serious health implications.<sup>84</sup> Unconsolidated discarded dumps can also cause spontaneous combustion. Coal, coal discard and other carbonaceous material produce heat when exposed to air. If they are put in a heap which is porous enough to let air in but also large enough to prevent the heat escaping, the heat builds up and the material ignites on its own. Localised acid rain occurs as a result of rain washing these gases from the air. One other big commodity easily transported by air is asbestos, it can be transported over long distances resulting in people contracting non-occupational asbestosis.<sup>85</sup>

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<sup>78</sup> International Network for Acid Prevention 'Acid Drainage' (2016) INAP, available at <http://www.inap.com.au/>. (accessed on 15 January 2017) 'Whilst AMD carries a potential threat to the environment as a whole, it poses a particular threat to the country's water resources which will have severe consequences for the health and well-being of people.'

<sup>79</sup> L Feris & LJ Kotzé 'The regulation of acid mine drainage in South Africa: law and governance perspectives.' (2014) 17(5) PER: *Potchefstroomse Elektroniese Regsblad*, 2105-2163.

<sup>80</sup> Wells et al 'Terrestrial Minerals' (200) 535-536.

<sup>81</sup> Vorster (see note 7 above) 7. Metals contained in AMD; such as aluminium, iron, nickel, etc.; may be toxic and are linked to cancer, necrosis, tumours and even death.

<sup>82</sup> Vorster (see note 7 above) 7. 'AMD leads to the decimation of aquatic life in the water bodies into which mine effluent is discharged. Metals and other pollutants are accumulated in organisms during the food chain. During the process of bio-accumulation, some toxins become more concentrated as they travel up the food chain and have a detrimental effect on higher tropic levels'.

<sup>83</sup> The National Strategy for the Management of Derelict and Ownerless Mines in South Africa', (see note 33 above) 20. 'Secondary effects include spontaneous combustion of the coal worked, as air has been provided with ready access to the mine, accelerated subsidence due to the strength of many pillars being reduced by burning. Spoil heaps also form blemishes on the landscape. These contain significant amounts of coal and have undergone spontaneous combustion'.

<sup>84</sup> J Glazewski *Environmental Law in South Africa* 2<sup>nd</sup> ed (2005) 458.

<sup>85</sup> Vorster (note 7 above) 9. 'The harmful effects of mining activities, and more specific air pollution, have been illustrated in the judgment of *Bareki NO v Gencor Ltd* (2006) 1 SA 432 (T), where a mine was not rehabilitated and asbestos dumps, a beneficiation plant and a haul road remained on the land. Mining activities relating to asbestos, negatively affect the health of people (asbestosis) and the natural environment, due to asbestos fibres that have been dislodged, exposed and relocated due to mining operations'.



### **1.7.1.7 Radiation**

Radioactivity is a health risk and is associated with gold tailings, dumps and dams. Some of the metals contained in AMD such as uranium, thorium, radium, polonium, and some isotopes of lead are, in addition to being chemically toxic, also radioactive.<sup>86</sup> Uranium is identified as the principal contaminant of concern emitted by the gold mining industry. Uranium is radioactive and chemically toxic with an extremely long half-life of 1010 years. Its impacts, after mine closure, on persons, property, and the environment are, therefore, long term and of appreciable magnitude.<sup>87</sup> Uranium and its daughter products have a long-term impact on the environment due to the fact that these elements accumulate in the sediments and will continue to leach out of the mine tailings and slimes dams for centuries to come.<sup>88</sup> Plants absorb these metals readily through their roots, and from there, they are passed on into the rest of the food web.<sup>89</sup>

### **1.7.1.8 Land Use and Availability**

Due to a long history of mining, a significant portion of South Africa's land is locked up in mine dumps. This is one of the biggest negative impacts particularly on economic development. It is estimated that 45 million cubic meters of underground mine excavations exists between Crown and Carletonville on the West Rand and that there are three billion cubic meters of gold tailings in South Africa.<sup>90</sup> These mining activities and tailings occupy a large area without any proper development or land use.

## **1.8 Environmental Principles upon which this Dissertation will be based**

### **1.8.1 Sustainable Development**

The question is, 'how far does the obligation to protect the next generation from the legacy of abandoned, derelict and ownerless mine extend?' The emphasis and importance of sustainable development and improved mine closure and site rehabilitation planning is accredited to the United Nations World Commission on Environment and Development. The conference defined sustainable development as, 'a system of development that meets the basic needs of all people without compromising the ability of future generations to meet their

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<sup>86</sup> ES Van Eeden, M Liefferink, and JF Durand 'Legal Issues concerning mine closures and social responsibility of the West Rand' (2009) 5(1) *The Journal for Transdisciplinary Research in Southern Africa* 55.

<sup>87</sup> Ibid.

<sup>88</sup> Ibid.

<sup>89</sup> Ibid.

<sup>90</sup> 'The National Strategy for the Management of Derelict and Ownerless Mines in South Africa' (see note 33 above) 16.

own life-sustaining needs.’<sup>91</sup> However, for the purpose of this dissertation sustainable development will be defined as, ‘the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations’.<sup>92</sup>

The South African Constitution,<sup>93</sup> whilst it does not contain specific provisions for rehabilitation, does enshrine the right of every citizen to an environment that is not harmful to health or wellbeing.<sup>94</sup> The inclusion of environmental rights as part of fundamental human rights ensures that environmental considerations are recognised and respected during the administrative and legal processes and implemented during the closure and rehabilitation of mined land. The wording of section 24,<sup>95</sup> specifically suggests that sustainable development is an explicit constitutional objective to the extent that it is inherent in the environmental right. This means that government must achieve, advance, respect, protect and promote the ideal of sustainable development as set out in the environmental right.<sup>96</sup>

The landmark case of *Fuel Retailers Association of Southern Africa v Director General: Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province*,<sup>97</sup> in its interrogation of sustainable development, the Constitutional Court found that;<sup>98</sup>

... development cannot subsist upon a deteriorating environmental base. Unlimited development is detrimental to the environment and the destruction of the environment is detrimental to development. Promotion of development requires the protection of the environment. Yet the environment cannot be protected if development does not pay attention to the costs of environmental destruction. The environment and development are thus inexorably linked.<sup>99</sup>

The court also added that;

The idea that development and environmental protection must be reconciled is central to the concept of sustainable development. At the core of this Principle [sic] is the principle of

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<sup>91</sup> GH Brundtland, and World Commission on Environment and Development. *Our Common Future: Report of the World Commission on Environment and Development*, (1987) 45.

<sup>92</sup> National Environmental Management Act 107 of 1998, Section 1.

<sup>93</sup> The Constitution of the Republic of South Africa.

<sup>94</sup> *Ibid*, Section 24.

<sup>95</sup> *Ibid*.

<sup>96</sup> Feris & Kotzé (see note 79 above) 2116.

<sup>97</sup> *Fuel Retailers Association of Southern Africa v Director-General: Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province* (2007) 6 SA 4 (CC).

<sup>98</sup> *Ibid*, 21 para C.

<sup>99</sup> *Ibid*, 21 paras E-H.

integration of environmental protection and socio-economic development ... The practical significance of the integration of the environmental and developmental considerations is that environmental considerations will now increasingly be a feature of economic and development policy.<sup>100</sup>

The national environmental management principles contained in section 2 of NEMA<sup>101</sup> is the corner stone of environmental governance and liability in South Africa and is based on the foundation of sustainable development.<sup>102</sup> These principles all apply directly to mines by virtue of the MPRDA which provides that regard must be had to the NEMA principles by stipulating that the principles set out in section 2 of NEMA:<sup>103</sup>

- a. Apply to all prospecting and mining operations, as the case may be, and any matter or activity relating to such operation; and
- b. Serve as a guideline for the interpretation, administration and implementation of the environmental requirements of this Act [MPRDA].

### **1.8.2 Polluter Pays**

It is now trite law that the pollution costs should be borne by their creators. South African environmental laws and regulations give this principle form through the polluter pays principle (PPP). The assertion that taxpayers ought not to be burdened with these costs relies on the polluter pays principle. This concept has been accepted by the South African government as a fundamental environmental law principle and is reflected in section 2 (4) (p) of NEMA in particular, which provides that the costs of remedying pollution, environmental degradation and consequent health effects must be paid for by those responsible for environmental pollution.<sup>104</sup> This principle is now one of the bedrock principles of environmental law and regulation and was included in the Rio Declaration..<sup>105</sup> Conceptually the principle is nearly unassailable as a guiding principle for environmental regulation. The costs of remedying pollution, environmental degradation and consequent adverse health effects and of

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<sup>100</sup> *Fuel Retailers* supra, 24 paras A, F-G.

<sup>101</sup> NEMA section 2 (see note 92 above).

<sup>102</sup> Glazewski (see note 84 above) 480.

<sup>103</sup> Section 37(2) of the MPRDA, further provides that; 'these principles apply to the private sector and therefore the mining industry must adopt a risk-averse and cautious approach; prevent negative impacts or effects of their activities on the health and well-being of people and the environment; and pay for all their pollution since they remain liable for the effects of their policies, projects, programmes, products, processes, services or activities throughout their life cycles.'

<sup>104</sup> Section 2(4)(p) of NEMA (note 92 above).

<sup>105</sup> Principle 16 of the United Nations Conference on Environment and Development of 1992 (hereafter referred to as the Rio Declaration). The Declaration provides that, 'national authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment'.

preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.<sup>106</sup> This dissertation is premised on the acceptance of the polluter pays principle.

The PPP has been adopted in South Africa in a number of policy documents including the White Paper on Environmental Management in South Africa which states that, ‘Those responsible for environmental damage must pay the repair costs both to the environment and human health, and the costs of preventive measures to reduce or prevent further pollution and environmental damage.’ The PPP means that polluters and users of natural resources (should) bear the full environmental and social costs of their activities.<sup>107</sup> The PPP can also be described as an economic principle that requires the polluter (the mining industry in this instance) to be held liable to compensate or pay for pollution prevention, minimisation and remediation.<sup>108</sup> Therefore, the crux of the principle is to impose economic obligations when environmental damage is caused by a polluter and this is achieved by setting minimum rules on liability for environmental damage.<sup>109</sup>

From the above it can be argued that those who pollute must pay to remedy the effects of that pollution and compensate those, as well as the environment, who suffer the negative consequences of pollution.<sup>110</sup> The principle can thus hold the mining industry financially liable for its activities by establishing liability for environmental damage, internalising the costs of pollution, and also assessing and recovering historical damages in an equitable way.<sup>111</sup>

### **1.8.3 Preventive**

The preventive principle is reflected in the concept that the disturbance of ecosystems and loss of biological diversity are to be “...avoided, or...minimised and remedied.”<sup>112</sup> Furthermore, the principle prescribes that the disturbance of the landscape and the nation’s cultural heritage is to be avoided, and where it cannot be altogether avoided, must be

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<sup>106</sup> Key to the achievement of improved environmental management and rehabilitation were the provisions of the MPRDA and particularly the repealed provisions of section 41 of the MPRDA, which incorporated the ‘polluter pays principle’ into South Africa’s mining legislation.

<sup>107</sup> D Hunter, J Salzman and D Zaelke *International Environmental Law and Policy* 2<sup>nd</sup> ed (2002) 412.

<sup>108</sup> LJ Kotzé and W Du Plessis ‘Absolving historical polluters from liability through restrictive judicial interpretation: some thoughts on *Bareki NO v Gencor Ltd*’ (2007) 1 *Stellenbosch Law Review* 180.

<sup>109</sup> *Ibid.*

<sup>110</sup> Kotzé and Du Plessis (see note 108 above) 180.

<sup>111</sup> Vorster see (note 7 above) 14.

<sup>112</sup> Section 2(4)(a)(ii) of NEMA (see note 92 above).

minimised and remedied.<sup>113</sup> Any negative impacts on the environment and on people's environmental rights should also be anticipated and prevented, and where they cannot be altogether prevented they should be minimised and remedied.<sup>114;115</sup> The principle aims to minimise environmental damage by requiring that action be taken at an early stage of the process, and if possible, before such damage actually occurs.<sup>116</sup> However, Kidd opines that the preventive principle cannot be an absolute principle, since pollution cannot be completely prevented as it is an inevitable side-effect of human life.<sup>117</sup>

### **1.9 Research Methodology**

This is a desktop study. The goal is an exhaustive review of the financial provisions that relate to the closure and rehabilitation of mines from the standpoint of their legal effectiveness, their efficacy, appropriateness, realistic, flexibility, desirability and how these can be improved rather than a synthetic overview of the many general environmental issues and legislation that governs mine closure and rehabilitation. This dissertation is qualitative and descriptive with reference to various pieces of legislation and policy documents as well as regulations. The dissertation will be contextualised through an overview of mine closure and site rehabilitation laws development in South Africa. Thereafter the financial provisions framework for mine closure and site rehabilitation in Canada and Australia will be analysed drawing insights on the difference, adequacy, advancement and efficacy of the said legal provisions.

These jurisdictions were selected because they offer a useful comparison with South African, specifically the financial provisions for mine closure. This will help in assessing whether the existing South African legislative provisions for securing mine closure and site rehabilitation obligations are sufficient and efficient. These were also selected for comparative analysis based on having different levels of experience with mining legacy issues, the on-going and anticipated future development in mine closure provisions. The selected mining jurisdictions are comparatively advanced in mining regulation practice, as they have been engaging in the mining activities for a long time. The ability of the Australian mining industry to recognise and establish improved mine closure practices and mining regulations is the fundamental reason why it was selected as a comparative jurisdiction for this dissertation. The main reason

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<sup>113</sup> Section 2(4)(a)(iii) of NEMA (see note 92 above).

<sup>114</sup> Section 2(4)(a)(viii) of NEMA (see note 92 above).

<sup>115</sup> Glazewski (see note 84 above) 481.

<sup>116</sup> Ibid 18.

<sup>117</sup> M Kidd *Environmental Law* 2<sup>nd</sup> ed (2011)10.

for choosing Ontario as a comparative jurisdiction is to determine whether the decision of the Ontario provincial government to allow the self-assurance of closure obligations pursuant to paragraph five of section 145(1)(5) of the Mining Act,<sup>118</sup> can be feasible in the South African context. This dissertation will be a comparative analysis of the legislation, regulations, policy and guideline documents and systems which were enacted in an attempt to minimise or prevent the legacy abandoned with a specific reference to South Africa. The aim is to examine what lessons South Africa can learn from the other jurisdictions. Various desktop sources will be utilized in writing this dissertation. Relevant South African and international sources will be used.

## **1.10 Structure of Thesis**

### **Chapter One**

#### **Introduction**

- a) Background to the research; research questions
- b) The problem and environmental impact of abandoned mines
- c) Justification for choice of comparative systems
- d) Methodology.

### **Chapter Two**

South African legal framework that governs closure and rehabilitation of mines and the related legislation

### **Chapter Three**

Analysis and review of the current South African financial provisions for mine closure and site rehabilitation

### **Chapter Four**

Selected Foreign Jurisdiction legislative framework

- a) Canada – Ontario
- b) Australia – Western Australia

### **Chapter Five**

- a) Comparative analysis of the different jurisdictions' legislative frameworks.
- b) Comprehensive analysis and review of the legislation framework through identification of strengths, weaknesses, gaps and areas of improvement.

### **Chapter Six**

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<sup>118</sup> Ontario - Mining Act, R.S.O. 1990, c. M.14

Recommendations

Identification of gaps in SA legislative framework and areas of improvement

**Chapter Seven**

Conclusion

## Chapter Two

### 2. Introduction

South Africa has put in place various and far-reaching legislative acts to manage the different aspects of the environment in a sustainable manner. This chapter aims at chronicling the government's effort to develop efficient, adequate, and flexible legislation that deals with the environmental effects of mining. A detailed analysis of the relevant South African mining environmental legislative framework will reveal that there is significant diversity of legal mechanisms and requirements which were enacted and are implemented specifically towards mine closure and rehabilitation.<sup>119</sup> This chapter will be a historical treatment of financial provisions for mine closure and site rehabilitation that were applicable before the introduction and the commencement of the one environmental system. The aim is also to explore, examine and develop a comprehensive understanding of the previous mine closure and site rehabilitation key legislative framework and to consider whether the legal framework was adequate and enforceable to prevent the legacy of derelict, ownerless and abandoned mines.

### 2.1 Background: The History of the Legacy

It is trite that formal mining in South Africa has been happening since time immemorial and for most of its history, the mining industry has not been subjected to comprehensive environmental regulation.<sup>120</sup> This has resulted and continues to result in significant adverse environmental related challenges as previous practises in mine planning, closure and rehabilitation neglected the fundamental concepts of sustainable development. It is important to note that, even where mining operations have been discontinued, environmental problems associated with mining frequently continue.<sup>121</sup> These environmental problems are *inter alia*, acid water which emanates from an abandoned mine which causes the pollution of both surface and groundwater. Dust from mine dumps and soil erosion from opencast mines

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<sup>119</sup> This will be done through a critical assessment of past, present and future of the mining environmental legislative framework and the determination of which controls and policies are most relevant to the improvement of sustainable mine closure and rehabilitation practices.

<sup>120</sup> T Muzoroza 'Mining Laws and Policy: A Comparative Analysis of South Africa and Zimbabwe's Mining Laws and Policy Regimes' (Unpublished LLM Dissertation, University of Pretoria, 2010) 57. 'Mining in South Africa started in 1661 and the first attempts to regulate it only started in 1903, with the Transvaal Mining laws. These only dealt with safety aspects. Between 1931 and 1951, mining was governed by Mines, Works and Machinery regulations.' See also NCOP Economic and Business Development. 'Mining Charter; Derelict and Ownerless mines: progress report by Department of Mineral Resources'. Chairperson: Mr F Adams (ANC, Western Cape), Date of Meeting: 11 October 2010, available at <https://pmg.org.za/committee-meeting/12080/>, (accessed on 15 May 2016).

<sup>121</sup> Kidd (see note 117 above) 225.



constitutes further environmental challenges which exist because of abandoned unclosed and un-rehabilitated mines.<sup>122</sup> As a result, the country is burdened with a negative legacy of abandoned, derelict and ownerless mines.

It is against this background that the United Nations Environment Programme (UNEP) described abandoned mine sites as one of the major outstanding international environmental problems related to mining:<sup>123</sup>

It is a legacy of centuries old practices and of inadequate, insufficient or non-existent mine closure. The potential costs of rehabilitation, the lack of clearly assigned (or assumed) responsibility, the absence of criteria and standards of rehabilitation and other factors have delayed action by all parties - industry, governments, and communities.<sup>124</sup>

Accordingly, the UNEP noted that:

In addition to the obvious problems for a community, most of these situations represent a considerable cost to public authorities which are often expected to make the sites secure and prevent ongoing pollution. The public is increasingly demanding action and this visible legacy of the past is producing growing community opposition to current mining activities. The orphan [abandoned] sites problem therefore continues to cast a shadow over all mining at a time when major operators are improving their operations and are trying to improve the image of their sites and their company.<sup>125</sup>

Thus, it can be argued that issue of mine closure and site rehabilitation have increased in prominence around the world and South Africa in particular due to the legacy of abandoned and derelict mining sites. As a result, the policy and legislative frameworks for dealing and addressing the environmental challenges associated with mine closure and site rehabilitation have been enacted, amended and reconsidered time and again.<sup>126</sup> However, even though that may be the case, the environmental risks associated with mine closure and site rehabilitation plus the potential costs to the government and the society, if they are not performed adequately remain as severe as ever.<sup>127</sup> The severity of many of the negative environmental impacts that were not considered when mines closed in the past are only beginning to emerge

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<sup>122</sup> Ibid 225.

<sup>123</sup> JF Castrilli 'Wanted: A Legal Regime to Clean up Orphaned/Abandoned Mines in Canada.' (2010) 6 *McGill Int'l J. Sust. Dev. L. & Pol'y* 109.

<sup>124</sup> United Nations Environment Programme, Division of Technology, Industry and Economics, *Abandoned Mines - Problems, Issues and Policy Challenges for Decision Makers: Summary Report* (June 2001) at 14 [UNEP Report 2001] as Cited in Castrilli J.F. 'Wanted: A Legal Regime to Clean up Orphaned/Abandoned Mines in Canada.' (2010) 6 *McGill Int'l J. Sust. Dev. L. & Pol'y* 109.

<sup>125</sup> United Nations Environment Programme, Division of Technology, Industry and Economics, *Abandoned Mines - Problems, Issues and Policy Challenges for Decision Makers: Summary Report* (June 2001) at 14 [UNEP Report 2001].

<sup>126</sup> S.B Hewitson 'An assessment of the quantum for financial provision of mine closures: a Monte Carlo approach' (unpublished LLM thesis, UCT 2012) 1.

<sup>127</sup> Ibid 1.

now and the cost of cleaning these impacts are extremely high.<sup>128</sup> The estimated costs for cleaning, closing and rehabilitating abandoned and derelict mining sites,<sup>129</sup> ‘have effectively brought the consequences of inadequate environmental rehabilitation in the mining sector into sharp focus’.<sup>130</sup> It is submitted that;

the size of liability facing government points to a need to improve the system of performing mining closure and rehabilitation so that they not only performed with sustainability in mind, but also, any damage associated with mining is contained to the extent that the rehabilitation required is funded by the mine concerned.<sup>131</sup>

However, to achieve this goal there must be significant improvements in the way mining companies make financial provision for mine closure and, most importantly, the accuracy of their financial provision estimates. Kidd opines that, in order to combat the challenges posed by derelict, ownerless and abandoned mines effectively, especially in the long term, provision should be made for the rehabilitation of the affected surfaces, once mining operations finally cease.<sup>132</sup>

In recent years, however, this has changed significantly and the mining industry is now required to comply with a complex web of mining environmental policies and legislative framework.<sup>133</sup> The realisation that past mining practices failed to plan for mine closure and site rehabilitation prompted an increased awareness and inclusion of environmental issues within mine closure planning and rehabilitation. Mining operations and activities that in the past resulted in legacies of abandoned, derelict and ownerless mine sites, ‘are now unacceptable, and require improved mining environmental legislation and control to ensure mine site closure and rehabilitation is completed successfully, in a sustainable manner’.<sup>134</sup>

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<sup>128</sup> Ibid 1.

<sup>129</sup> Auditor-General Report to Parliament on a performance audit of the rehabilitation of abandoned mines at the Department of Minerals and Energy October 2009. The South African Council for Geoscience estimated that the cost of rehabilitating South Africa’s abandoned mines stood at R30 billion. However, as the 2009 Auditor-general’s report notes, this estimate did not include the long-term treatment of AMD or the construction or operating fees of the plants required to do so, indicating that the figure may well be significantly higher.

<sup>130</sup> Colvin et al. ‘Coal and Water Futures in South Africa: A case for protecting headwaters in the Enkangala grasslands.’ (2011) World Wide Fund For Nature WWF-SA, available at [http://awsassets.wwf.org.za/downloads/wwf\\_coal\\_water\\_report\\_2011\\_web.pdf](http://awsassets.wwf.org.za/downloads/wwf_coal_water_report_2011_web.pdf).

<sup>131</sup> Hewitson. (see note 126 above) 3.

<sup>132</sup> Kidd (see note 117 above) 225.

<sup>133</sup> The Mineral and Petroleum Resources Development Act 28 of 2005 (the MPRDA), the National Environmental Management Act 107 of 1998 (NEMA) and the National Water Act 36 of 1998 (NWA), the National Environmental Management: Biodiversity Act 10 of 2004, the Regulations thereto amongst other Acts regulate the impacts of mining operations conducted in South Africa on the environment and prescribe statutory duties in respect of, *inter alia*, environmental standards, the mitigation of environmental impacts and rehabilitation of the affected environment.

<sup>134</sup> Peck (see note 14 above)

Thus, the concept of rehabilitation during and after prospecting, exploration and mining activities is now well accepted and is entrenched in law.<sup>135</sup>

South Africa has passed a number of environmental laws aimed at, among other things, the sustainable development of the country's natural resources, and there is now a progressive environmental and mining regulatory framework.<sup>136</sup> The introduction of environmental legislative and policy frameworks in an endeavour to regulate the mining industry has enhanced the awareness for improved mine closure and site rehabilitation planning, which is fundamental to the sustainable development of mine operations.<sup>137</sup> This was against the realisation that a clear, consistent and efficient environmental and mining legislative framework which establishes the parameters for mine closure and site rehabilitation is fundamental for the eradication of the negative legacy of ownerless, abandoned and derelict mining sites, thus the government enacted progressive laws.

## **2.2 Mine Closure and Rehabilitation: The requirements prescribed by legislation**

### **2.2.1 The History of South African mining environmental legislative and policy framework**

#### **2.2.1.1 The Mines and Works Act 27 of 1956**

The requirement for mine closure and the basic requirement for environmental recovery only became a legislative requirement through the promulgation of the Mines and Works Act (MWA) of 1956.<sup>138</sup> The mine rehabilitation was limited to topsoil treatment and vegetation recovery, although in terms of the Water Act<sup>139</sup> some remediation with regards to contaminated water was required.<sup>140</sup><sup>141</sup> The Mining Rights Act<sup>142</sup> which was enacted in 1967

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<sup>135</sup> JP McLean, & P Carrick 'Environmental management and rehabilitation under the Minerals and Petroleum Resources Development Act: A biodiversity outlook' (2007) 14 (2) *SAJELP* 135 – 225.

<sup>136</sup> *Ibid.*

<sup>137</sup> Smith (see note 51 above).

<sup>138</sup> The Mines and Works Act No.27 of 1956.

<sup>139</sup> The Water Act No. 54 of 1956.

<sup>140</sup> The Mines and Works Act entailed 'limited environmental protection measures, namely the filling in of subsided areas, prohibiting the release of water containing injurious matter, and requiring soil cladding of dumps to prevent pollution'. See Chamber of Mines of South Africa, 'Environmental Legislation and Water Management Issues During Mine Closure in South Africa'. *International Mine Water Association Congress* 1999, Sevilla, Spain.

<sup>141</sup> When the MWA was amended in 1977 it enabled 'the Minister to formulate regulations that were aimed at the conservation of the environment at or near mines. These regulations also pertained to the restoration of land on which activities in connection with mines or works were performed or had been performed. The legal requirements regarding the rehabilitation of mines were introduced in 1980 when regulations 5.11 to 5.15 were added to GN R922.119. Regulation 5.12 directly regulated the rehabilitation of mining surfaces and introduced

was also ineffective as far as environmental management was concerned as it gave no consideration for management of environmental impacts of mining.

### **2.2.1.2 Minerals Act 50 of 1991**

The Minerals Act was the first legislation that paid significant attention to the impacts of mining on the environment<sup>143</sup> (hereafter MA). The MA provided a basis for environmental management for the first time, and prior to its passing into law, many mining companies, ‘used irresponsible mining methods with no regard towards protecting the environment and had often shirked their responsibility towards environmental rehabilitation by leaving an area unrehabilitated prior to them being liquidated or leaving the country’.<sup>144</sup> This is so because mining companies that operate in countries with less stringent and consistent regulation plus weak regulatory capacity often capitalise on weak enforcement with regards to their environmental responsibility.<sup>145</sup>

A shift in the closure requirements was realised with the promulgation of the MA, and it addressed the negative environmental consequences of ineffective and inadequate environmental requirements for mining activities and focused on mine environmental management through the introduction of stricter requirements and sound environmental principles for the mining industry.<sup>146</sup> The MA required that environmental impacts assessments be carried out and that mining companies prepare proper closure plans.<sup>147</sup> This act prescribed more comprehensive environmental management and rehabilitation which

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the rehabilitation programme. Regulation 5.12.2 required that the rehabilitation of the surface of an opencast mine was to be an integral part of the mining operations. Mines were obliged to conduct rehabilitation while the mine was in operation and, in certain situations, rehabilitation had to be done in accordance with a programme that was prescribed by the Inspector of Mines after consultation with the manager and after the plan had been approved by the Government Mining Engineer. Regulation 5.13.3 imposed a duty on the owner of a mine to rehabilitate the surface, as far as it is practicable to its natural state, when mining operations ceased. Once the clearance certificate had been issued by the Inspector of Mines in terms of regulation 2.11, the owner or manager could not be held responsible for compliance of the regulations contained in chapter 5.125. Although, in terms of the MWA, liability ended with the issuing of a clearance certificate, an owner could at that time still be held liable for pollution that was caused by mining in terms of then Water Act 54 of 1956 and the Atmospheric Pollution Prevention Act 45 of 1965’.

<sup>142</sup> The Mining Rights Act 20 of 1967.

<sup>143</sup> Minerals Act 50 of 1991.

<sup>144</sup> Swart (see note 12 above) 489.

<sup>145</sup> J Hönke et al. ‘Fostering environmental regulation? Corporate social responsibility in countries with weak regulatory capacities: the case of South Africa’. (2008) *SFB- Governance Working Paper Series*. No 9. Berlin. University of Potsdam and European University Institute. 3.

<sup>146</sup> The object of the Minerals Act was to regulate the prospecting for and the optimal exploitation, processing and utilisation of minerals; to regulate the orderly utilisation of and the rehabilitation of the surface of land during and after prospecting and mining operations and related matters. Thus, while it pays some heed to environmental concerns, this was limited to rehabilitation. Government and the mining industry had accepted the principle that the polluter must pay for pollution or the damage that prospecting or mining actions incur on the environment.

<sup>147</sup> Regional Mining and Closure Strategies.

included providing financially for rehabilitation at the commissioning stage of mining. There had to be consultation on closure and the closure plan had to be managed by the State, and there were life cycle planning guidelines.<sup>148</sup>

In terms of section 38 of the MA, the rehabilitation of the surface of land concerned in any prospecting or mining was to be carried out by the holder of the prospecting permit or mining authorization concerned in accordance with the environmental management programme approved in terms of section 39, and as an integral part of the prospecting or mining operations concerned throughout the life of the operation until closure.<sup>149</sup> In terms of section 12 of the MA,<sup>150</sup> the responsibility to comply with the relevant provisions of the Act remained with the holder of a prospecting permit or mining authorisation until a closure certificate had been issued to the effect that the said provisions have been complied with.<sup>151</sup> Regulations were promulgated to ensure that financial provision was made by a mine in the form of guarantees for the execution of its EMP.<sup>152</sup>

### **2.2.1.3 The Constitution Republic of South Africa, 1996**

In terms of section 24 of the Constitution of South Africa (Constitution),<sup>153</sup> the right to environmental health has been elevated to a basic human right,<sup>154</sup> and since then a series of Acts<sup>155</sup> have been enacted to ensure the realisation of the right and environmental protection. Section 24 of the Constitution grants everyone the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent

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<sup>148</sup> NCOP Economic and Business ‘Development Mining Charter; Derelict and Ownerless mines: Progress Report by Department of Mineral Resources’ (2010), available at <https://pmg.org.za/committee-meeting/12080/> (accessed on 15 December 2016).

<sup>149</sup> Section 38 of the Minerals Act.

<sup>150</sup> Section 12 of the Minerals Act.

<sup>151</sup> Section 12 of the Minerals Act is titled - Continuation of liability until certificate is issued.

<sup>152</sup> Swart (see note 12 above) 490. Regulations for EMP performance assessment and monitoring were promulgated in GG 20219 of 25 June 1999, Notice No. R801. ‘The inclusion of monitoring and performance assessment into the mining environmental management process completed the last link of an integrated, cradle-to-grave environmental management process adopted by the DME. Only when the objectives have been met and all the provisions of the Act, including the EMP, have been complied with, was a closure certificate issued to a mine’.

<sup>153</sup> Section 24 of the Constitution Republic of South Africa, 1996.

<sup>154</sup> In the *BP Southern Africa (Pty) Ltd v MEC for Agriculture, Conservation and Land Affairs* 2004 (5) SA 124 (W) case, the Court stated that ‘By elevating the environment to a fundamental justiciable human right, South Africa has irreversibly embarked on a road, which will lead to the goal of attaining a protected environment by an integrated approach, which takes into consideration, inter alia, socioeconomic concerns and principles.’

<sup>155</sup> The Mineral and Petroleum Resources Development Act 28 of 2005 (the MPRDA), the National Environmental Management Act 107 of 1998 (NEMA) and the National Water Act 36 of 1998 (NWA), the National Environmental Management: Biodiversity Act 10 of 2004, the Regulations thereto amongst other Acts. The environmental right in the Constitution is supported by other environmental legislation to protect the environment while pursuing sustainable economic growth.

pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.<sup>156</sup>

The importance of the protection of the environment and the environmental right was highlighted by the Constitutional Court in the case of *Fuel Retailers Association of Southern Africa v Director-General: Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province and Others*.<sup>157</sup> The Court had this to say,

The importance of the protection of the environment cannot be gainsaid. Its protection is vital to the enjoyment of the other rights contained in the Bill of Rights; indeed it is vital to life itself. It must therefore be protected for the benefit of the present and future generations. The present generation holds the earth in trust for the next generation. This trusteeship position carries with it the responsibility to look after the environment.<sup>158</sup>

It is important to note that the Court in the *Fuel Retailers* case recognised that socio-economic rights that are set out in the Constitution are indeed vital to the enjoyment of other human rights guaranteed in the Constitution but development cannot subsist upon a deteriorating environmental base. Thus, the Court further held that;

The Constitution contemplates the integration of environmental protection and socio-economic development. It envisages that environmental considerations will be balanced with socio-economic considerations through the ideal of sustainable development.... Sustainable development and sustainable use and exploitation of natural resources are at the core of the protection of the environment.<sup>159</sup> That unlimited development is detrimental to the environment and the destruction of the environment is detrimental to development. Promotion of development requires the protection of the environment. Yet the environment cannot be protected if development does not pay attention to the costs of environmental destruction. The environment and development are thus inextricably linked.<sup>160</sup>

It can be argued that the right to environment intersects with a number of other substantive and procedural constitutional human rights.<sup>161</sup> The significance of the environmental right

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<sup>156</sup> Section 24 of the Constitution.

<sup>157</sup> *Fuel Retailers* supra.

<sup>158</sup> Supra at para 102.

<sup>159</sup> Supra at para 45. Thus, Murombo opines that, ‘the Fuel Retailers decision is a landmark development in the implementation of sustainable development in South African law. More importantly, it is the first decision by the Constitutional Court to affirm that the notion of sustainable development underpins the environmental rights enshrined in section 24 of the Constitution.’: T Murombo ‘From crude environmentalism to sustainable development: Fuel Retailers: notes’ (2008) 1253 *SALJ* 488 – 504. .

<sup>160</sup> Ibid (Fuel Retailers) para 45.

<sup>161</sup> Muzoroza (note 108 above) 57.

was highlighted in the case of *Director: Mineral Development, Gauteng Region, and Another v Save the Vaal Environment and Others*,<sup>162</sup> when the court held that,

Our Constitution, by including environmental rights as fundamental, justiciable human rights, by necessary implication requires that environmental considerations be accorded appropriate recognition and respect in the administrative processes in our country. Together with the change in ideological climate must also come a change in our legal and administrative approach to environmental concerns.<sup>163</sup>

The above cases highlight positive significant developments in the South African environmental legal framework and they also highlight the role of the Courts in environmental protection. The courts' role is especially important in the context of the protection of the environment and giving effect to the principle of sustainable development.<sup>164</sup> The decision of the Constitutional Court in *MEC, Department of Agriculture, Conservation and Environment v HTF Developers (Pty) Ltd*,<sup>165</sup> reinforces the Courts' determination to ensure that the right to an environment not harmful to our health and wellbeing is safeguarded through the promotion of the concept of sustainable development.<sup>166</sup>

#### **2.2.1.4 The National Environmental Management Act (NEMA)**

The National Environmental Management Act (NEMA),<sup>167</sup> is the overarching document for environmental governance in South Africa.<sup>168</sup> It represents, arguably, the most significant environmental law reform in South Africa, as it provides the overall framework for the management of all natural resources within the country.<sup>169</sup> It encompasses a comprehensive liability regime and compensation procedure for environmental damage.<sup>170</sup> It is against this background that Soltau<sup>171</sup> opines that;

NEMA as a whole represents a milestone in South African environmental law. Environmental liability rules are crucial in a system of regulation: they concretise the polluter pays principle,

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<sup>162</sup> *Director: Mineral Development, Gauteng Region, and Another v Save the Vaal Environment and Others* 1999 (2) SA 709 (SCA).

<sup>163</sup> *Ibid* at 719C – D.

<sup>164</sup> *Fuel Retailers supra* at 39H.

<sup>165</sup> *MEC, Department of Agriculture, Conservation and Environment v HTF Developers (Pty) Ltd* 2008 (2) SA 319 (CC)

<sup>166</sup> *Murombo* (see note 159 above).

<sup>167</sup> The National Environmental Management Act 107 of 1998.

<sup>168</sup> *Hönke et al.* (note 145 above) 13.

<sup>169</sup> R Peart and K Govender 'Natural Resource policies for the new millennium: Is South Africa moving towards a more sustainable path?' (2001) 8 *SAJELP* 39 – 76.

<sup>170</sup> As an overarching framework, NEMA provides for integrated environmental management; coordinated and sustainable protection of the environment as well as allowing for complementary subsidiary and sectoral laws to be adopted.

<sup>171</sup> F Soltau 'The National Environmental Management Act and liability for environmental damage' 1999(6) *South African Journal of Environmental Law and Policy* 33-51.

serving to put a proper value on the environment in the economic decision-making of polluters. Putting such remedies in the hands of the state should create a tool for the restoration and remediation of polluted environments.<sup>172</sup>

NEMA applies to any activity, including mining that could have significant impacts on the environment.<sup>173</sup> It is based on two guiding principles; The first is to ‘impose a duty of care of the environment prospectively in other words, to ensure that persons take reasonable measures to address environmental harm caused by those persons after the promulgation of the Act. The second is to address historic pollution and degradation of the environment.’<sup>174</sup> This is in line with the best international principles of sustainable development and integrated environmental management. NEMA serves to realise some aspects of the Constitution, by assisting the government to fulfil the duty imposed on the state in terms of section 24(b) of the Constitution to protect the environment through reasonable legislative measures.<sup>175</sup>

This dissertation will focus on some but not all aspects of NEMA, namely the provisions of the Act especially the financial provisions that deal with closure and rehabilitation of mines. Please note that the NEMA financial provisions that are currently applicable to in guaranteeing mine site closure and rehabilitation will be dealt with in the next chapter as this chapter looks specifically at the laws applicable before the one environmental system.

a) Section 28 of NEMA: Duty of care and remediation of environmental damage<sup>176</sup>

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<sup>172</sup> Ibid 34.

<sup>173</sup> Section 2(4)(a) of NEMA requires ‘that sustainable development considers all relevant factors related to the disturbance of ecosystems, the loss of biological diversity, pollution and degradation of the environment, the disturbance of landscapes and sites that constitute the nation’s cultural heritage, the generation of waste, and the use and exploitation of non-renewable natural resources. Overall, section 2(4)(a) recognises that, for development to occur, there will possibly be some negative impacts, however, it calls for a risk-averse approach and for any of these impacts to be anticipated, prevented whenever possible, or otherwise minimised and remedied.’

<sup>174</sup> M Kidd ‘Some thoughts on statutory directives addressing environmental damage in South Africa’ (2003) 10 *SAJELP* 201-211.

<sup>175</sup> Soltau (see note 165 above) 33-51. NEMA, as framework legislation, serves as both enabling legislation for the constitutional right and as a vehicle to realise the constitutional protection afforded to the environment.

<sup>176</sup> ‘This duty of care extends to numerous people including:

- a. The owner of the land or premises;
- b. A person in control of the land or premises; and
- c. A person who has a right to use the land or premises on which the activity was undertaken or situation exists which causes, has caused or is likely to cause significant pollution of the environment.’

‘This duty applies to owners, occupiers and even to mere users of land on which environmental damage can occur. The measures as required by section 28(1) are very broad, and include the investigation, assessment and evaluation of the impact that the pollution has on the environment, the duty to inform and educate employees as to their manner of work and the impact that their conduct can have on the environment, to cease, prevent or modify activity that pollutes or harms the environment, to contain or prevent the movement of pollutants or cause of degradation, to eliminate the source of pollution as well as to remedy the effects of pollution or



NEMA deals specifically with the duty of care to prevent damage and the duty to remedy environmental damage. Thus, section 28 (1) provides that;

Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring or, in so far as such harm to the environment is authorised by law or cannot reasonable be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.<sup>177</sup>

A question arose whether section 28 operated retrospectively. In *Bareki NO and Another v Gencor Ltd and Others*,<sup>178</sup> the court held that the provisions of section 28 were NOT retrospective and, accordingly, the obligation to take corrective measures did not apply where the acts of pollution and degradation complained of were caused or began prior to 29 January 1999.<sup>179</sup> The court held that retrospectivity would entail an unfairness that parliament could not have intended. This was apparent by the duty or obligation created by section 28 is strict.<sup>180</sup> The conclusion was also due to the fact that there is no monetary limit to the liability and no statutory defences in favour of the person who cased the pollution.<sup>181</sup>

It is important to note that the judgement was subsequently overruled by an amendment to NEMA. Section 28 (1A) was inserted which provides that the provisions of section 28(1) also apply to significant pollution or degradation that:<sup>182</sup>

- a. Occurred before the commencement of the Act;
- b. Arises (or is likely to arise) at a different time from the actual activity;
- c. Arises though an act or activity of a person that results in a change in to a pre-existing contamination.

The importance of this duty lies in its very generality in that all conduct, whether past, present or future, which causes pollution or degradation of the environment, is subject to the duty to take ‘reasonable measures’.<sup>183</sup> The duty to take reasonable steps is triggered where a

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degradation. This creates extensive statutory duties for any person who is involved in an activity that has the potential to cause pollution damage or degrade the environment.’

<sup>177</sup> Section 28 (1) of NEMA.

<sup>178</sup> *Bareki NO and Another v Gencor Ltd and Others* 2006 (1) SA 432 (T).

<sup>179</sup> *Ibid.*

<sup>180</sup> *Ibid.*

<sup>181</sup> The Court held that section 28 of the NEMA, ‘which provides for a wide duty of care and remediation of environmental damage, does not have retrospective application. This effectively means that, as a matter of precedent, polluters cannot be held liable for pollution and pollution damage which occurred prior to the promulgation of NEMA in 1999. This creates a problem as a considerable degree of pollution in South Africa is historical and occurred during times when no comprehensive environmental law and liability regime existed or the existing laws had not been enforced.’

<sup>182</sup> The general duty to take reasonable measures in section 28 (1) must in this respect be read with subsections 2, 3, and 4.

<sup>183</sup> Soltau (see note 171 above) 43. The general duty to take reasonable measures in section 28 (1) must in this respect be read with subsections 2, 3, and 4.

person's activities cause, caused or threatened to cause significant pollution or degradation of the environment.<sup>184</sup> What is clear from the above is that our law imposes obligations to remove pollution from the environment, and to rehabilitate affected areas.

#### **2.2.1.5 The Mineral and Petroleum Resources Development Act (MPRDA)**

Mining in South Africa is regulated by the Mineral and Petroleum Resources Development Act (MPRDA),<sup>185</sup> which repealed the MA, which itself consolidated virtually all previous mining legislation.<sup>186</sup> It is evident from the preamble to the MPRDA that the South African government is obliged to protect the environment for the benefit of present and future generations, to ensure ecologically sustainable development of mineral resources.<sup>187</sup> The MPRDA was the principal piece of legislation governing all the mining process in South Africa before the introduction of the One Environmental System or the National Environmental Management Amendment Act.<sup>188</sup> The MPRDA was a key statute, which governed the entire mining cycle, primarily through the granting of regulatory authorisations for mining and mining related activities and it also contained the financial provisions for mine closure and rehabilitation.

The MPRDA forms part of a complex and interlinking network of national legislation geared towards sustainable development and the protection of South Africa's environmental resources.<sup>189</sup> It is argued that, while the MPRDA contained laudable goals for protecting, managing and rehabilitating the environment, there appears to be a stark contrast between overarching, legislated ideals and mining practice.<sup>190</sup> It can be argued that,

while the MPRDA contained some improved mechanisms for environmental protection, management and rehabilitation, the implementation of many of those mechanisms has yet to achieve the environmental ideals now enshrined in South African laws. Moreover, certain fundamental problems and gaps in the legislation mean that *environmental* protection may be given insufficient consideration at various stages of the regulatory process.<sup>191</sup>

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<sup>184</sup> Soltau (see note 171 above) 43.

<sup>185</sup> The Mineral and Petroleum Resources Development Act 28 of 2002.

<sup>186</sup> Kidd (see note 117 above) 221.

<sup>187</sup> Ibid.

<sup>188</sup> This will be discussed in chapter three.

<sup>189</sup> Mclean and Carrick (see note 135 above) 135 - 225

<sup>190</sup> Government of South Africa-Department of Environmental Affairs and Tourism 'South Africa Environmental Outlook. A report on the State of the Environment' (2006) DEA, 42, available at [https://www.environment.gov.za/sites/default/files/docs/message\\_synthesis.pdf](https://www.environment.gov.za/sites/default/files/docs/message_synthesis.pdf), (accessed on 10 May 2014) See also P J Badenhorst and H Mostert *Mineral and Petroleum Law of South Africa: Commentary and Statutes*. (Supplementary Volume, Revision Service 8 (2012)) Part III - New Order, 17 – 2. Thus, the MPRDA seeks to ensure that South Africa's mineral resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development.

<sup>191</sup> McLean and Carrick (see note 115 above)

In an endeavour to meet its environmental objective, the MPRDA introduced more extensive environmental mechanisms than found in previous mining legislation.<sup>192</sup> Section 37 of the MPRDA,<sup>193</sup> confirms the adoption of the principles for sustainable development as set out in section 2 of NEMA, as well as other generally accepted principles of sustainable development by integrating social, economic and environmental factors into the planning, implementation, closure and post closure management of prospecting and mining operations.<sup>194</sup>

Before the commencement of the One Environmental System, section 41 of the MPRDA required the mining company to make financial provision for all mining related environmental liabilities. It provided that, ‘An applicant for a prospecting right, mining right or mining permit must before the approval of the environmental management plan or environmental management programme...make the prescribed financial provision for the rehabilitation or management of negative environmental impacts’.<sup>195</sup> However, this section has since been repealed in the MPRDA and is now included in 24P of NEMA. The Mineral and Petroleum Resources Development Regulations<sup>196</sup> were also used determine the method of financial provisioning<sup>197</sup> and the quantum of financial provision<sup>198</sup>. Regulation 53 provided that;

Financial provision required in terms of section 41 of the Act to achieve the total quantum for the rehabilitation, management and remediation of negative environmental impacts must be provided for by one or more of the following methods:

- a) An approved contribution to a trust fund as required in terms of section 10(1)(cH) of the Income Tax Act, 1962 (Act No. 58 of 1962) and must be in the format as approved by the Director General from time to time;
- b) a financial guarantee from a South African registered bank or any other bank or financial institution approved by the Director-General guaranteeing the financial provision relating to the environmental management programme or plan in the format as approved by the Director General from time to time;

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<sup>192</sup> K Maze, A Driver and S Brownie ‘Mining and biodiversity in South Africa: A discussion paper’ (2003) *National Botanical Institute and Botanical Society of South Africa* 5.

<sup>193</sup> Section 37 of the MPRDA.

<sup>194</sup> “Section 37 of the MPRDA - Environmental management principles

- 1) The principles set out in section 2 of the National Environmental Management Act, 1998 (Act 107 of 1998)-
  - a) apply to all prospecting and mining operations, as the case may be, and any matter or activity relating to such operation; and
  - b) serve as guidelines for the interpretation, administration and implementation of the environmental requirements of this Act”.

<sup>195</sup> Section 41 of the Mineral and Petroleum Resources Development Act 28 OF 2002

<sup>196</sup> Mineral and Petroleum Resources Development Act 28 OF 2002: Mineral and Petroleum Resources Development Regulations Gazette No. 7949 Vol. 466

<sup>197</sup> Mineral and Petroleum Resources Development Regulations 53

<sup>198</sup> Mineral and Petroleum Resources Development Regulations 54

- c) a deposit into the account specified by the Director-General in the format as approved by the Director-General from time to time;
- d) any other method as the Director-General may determine.

Regulation 54 on the other hand provided that;

- 1). The quantum of the financial provision as determined in a guideline ...include a detailed itemization of all actual costs required for-
  - a) premature closure regarding-
    - i. the rehabilitation of the surface of the area;
    - ii. the prevention and management of pollution of the atmosphere; and
    - iii. the prevention and management of pollution of water and the soil; and
    - iv. the prevention of leakage of water and minerals between subsurface formations and the surface.
  - b) decommissioning and final closure of the operation; and
  - c) post closure management of residual and latent environmental impacts.
- 2). The holder of a prospecting right, mining right or mining permit must annually update and review the quantum of the financial provision -
  - a) in consultation with a competent person;
  - b) as required in terms of the approved environmental management programme or environmental management plan; or
  - c) as requested by the Minister.
- 3). Any inadequacies with regard to the financial provision must be rectified by the holder of a prospecting right, mining right or mining permit –
  - a) in an amendment of the environmental management programme or environmental management plan, as the case may be;
  - b) within the timeframe provided for; or
  - c) as determined by the Minister.

Under section 43 the MPRDA,<sup>199</sup> the holder of a prospecting right, mining right, retention permit or mining permit was responsible for any environment liability, pollution or ecological degradation and the management thereof, until a closure certificate is issued by the Minister. However, due to the 2008 MPRDA amendment the mining company will remain liable and continues to be liable for any latent environmental hazards notwithstanding the issuance of a closure certificate. The land must be rehabilitated in accordance with the identifiable land use as specified in the environmental management programme or environmental management plan.<sup>200</sup> It is important to note that section 45 of the MPRDA allows the minister to recover costs in the event of urgent remedial measures. If mining activities cause or result in ecological degradation, pollution or environmental damage, or is in contravention of the conditions of the environmental authorisation, requires urgent remedial measures, the Minister may direct the holder of the relevant right to take certain measures. These are, to investigate, evaluate, assess and report on the impact of any pollution or ecological

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<sup>199</sup> Section 43 of the MPRDA.

<sup>200</sup> Mineral and Petroleum Resources Development Regulations 71.

degradation or any contravention of the conditions of the environmental authorisation; and to take such measures to rectify the problem within a specified time period.<sup>201</sup> If the concerned person does not do the remedial work then the Minister will step in and do the remedial work and claim the costs from the person concerned.<sup>202</sup> In terms of section 46 of the MPRDA, if the mine is derelict and ownerless the Minister has to take remedial measures to close and rehabilitate the mine concerned and this will be funded from the financial provision made by the mining company.<sup>203</sup>

### **2.2.1.6 National Water Act 36 of 1998**

The express objective of the National Water Act,<sup>204</sup> (hereafter NWA) is to, ‘ensure that the nation’s water resources are protected, used, developed, conserved, managed and controlled in ways which take into account - meeting the basic human needs of present and future

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<sup>201</sup> Section 45 of the MPRDA - Minister's power to recover costs in event of urgent remedial measures;

1. “If any prospecting, mining, reconnaissance, exploration or production operations or activities incidental thereto cause or results in ecological degradation, pollution or environmental damage, or is in contravention of the conditions of the environmental authorisation, or which may be harmful to health, safety or well-being of anyone and requires urgent remedial measures, the Minister, in consultation with the Minister of Environmental Affairs and Tourism, may direct the holder of the relevant right or permit in terms of this Act or the holder of an environmental authorisation in terms of National Environmental Management Act, 1998, to-“
  - a. investigate, evaluate, assess and report on the impact of any pollution or ecological degradation or any contravention of the conditions of the environmental authorisation;
  - b. take such measures as may be specified in such directive in terms of this Act or the National Environmental Management Act, 1998; and
  - c. complete such measures before a date specified in the directive.

<sup>202</sup> Section 45 (2)

- a) If the holder fails to comply with the directive, the Minister may take such measures as may be necessary to protect the health and well-being of any affected person or to remedy ecological degradation and to stop pollution of the environment.
- b) In addition to the application in terms of paragraph (c), the Minister may use funds appropriated for that purpose by Parliament to fully implement such measures.
- c) The Minister may recover an amount equal to the funds necessary to fully implement the measures from the holder concerned.

<sup>203</sup> Section 46 of the MPRDA - Minister's power to remedy environmental damage in certain instances

1. If the Minister directs that measures contemplated in section 45 must be taken to prevent pollution or ecological degradation of the environment, to address any contravention in the environmental authorisation or to rehabilitate dangerous health or safety occurrences but establishes that the holder of a reconnaissance permission, prospecting right, mining right, retention permit or mining permit, the holder of an old order right or the previous owner of works, as the case may be or his or her successor in title is deceased or cannot be traced or in the case of a juristic person, has ceased to exist, has been liquidated or cannot be traced, the Minister in consultation with the Minister of Environmental Affairs and Tourism, may instruct the Regional Manager concerned to take the necessary measures to prevent pollution or ecological degradation of the environment or to rehabilitate dangerous health and social occurrences or to make an area safe.
2. The measures contemplated in subsection (1) must be funded from financial provision made by the holder of the relevant right, permit, the previous holder of an old order right or the previous owner of works in terms of the National Environmental Management Act, 1998, where appropriate, or if there is no such provision or if it is inadequate, from money appropriated by Parliament for the purpose.

<sup>204</sup> The National Water Act 36 of 1998.

generations.<sup>205</sup> The Department of Water Affairs and Forestry stated that the NWA is intended to ensure that water resources are conserved and used in a manner which reduces and prevents pollution, protects aquatic and associated ecosystems, and preserves biological diversity.<sup>206</sup> Section 19 of NWA,<sup>207</sup> deals with the prevention of pollution from activities performed on land or any situation which exists on land which causes, has caused or is likely to cause, pollution of water resources. The section permits a water management institution to do whatever is necessary to prevent the pollution and remedy its effects, where it has issued a directive which has not been complied with.<sup>208</sup> All reasonable costs can be recovered from the persons responsible for the pollution, including the owner of the land at the time when the potential for pollution or actual pollution occurred, or any person who was responsible for the pollution or contributed to it.<sup>209</sup>

The detrimental impact of mining on water resources is further regulated by the NWA regulations.<sup>210</sup> In terms of these regulations;

- a. No person in control of a mine or mining activity may place or dispose of any residue or substance which causes or is likely to cause pollution of a water resource, in the workings of any underground or opencast mine excavation, prospecting diggings, pit or any other excavation.<sup>211</sup>
- b. Every person in control of a mine or activity must take reasonable measures to prevent water containing waste or any substance which causes or is likely to cause pollution of a water resource from entering any water resource, either by natural flow or by seepage.<sup>212</sup>

The NWA regulations also provide the regulations for rehabilitation of coal residue deposits by stating that;<sup>213</sup> Any person mining or establishing coal residue deposits must rehabilitate such residue deposits so that-

- a. all residue deposits are compacted to prevent spontaneous combustion and minimise the infiltration of water; and

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<sup>205</sup> Preamble to the NWA.

<sup>206</sup> Department of Water Affairs and Forestry (2000). 'Operational Guideline' No. M6.1. 'Guideline document for the implementation of regulations on use of water for mining and related activities aimed at the protection of water resources'. 2nd ed.

<sup>207</sup> Section 19 of NWA (see note 198 above).

<sup>208</sup> *ibid*

<sup>209</sup> *Ibid*.

<sup>210</sup> Department of Water Affairs and Forestry. 'Regulations on the Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources'. GG 20119 (4 June 1999).

<sup>211</sup> Regulation 4 (c) of the 'Regulations on the Use of Water for Mining and Related Activities Aimed at the Protection of Water Resources'.

<sup>212</sup> Regulation 7(a) of the Regulations on the Use of Water for Mining and Related Activities Aimed at the Protection of Water Resource, - Protection of water resources.

<sup>213</sup> Regulation 8(d) of the Regulations on the Use of Water for Mining.... - Additional regulations for rehabilitation of coal residue deposits.

- b. the rehabilitation of the residue deposits is implemented concurrently with the mining operation.
- c. Every person in control of a mine or activity must take reasonable measures to prevent the erosion or leaching of materials from any residue deposit or stockpile from any area and contain material or substances so eroded or leached in such area by providing suitable barrier dams, evaporation dams or any other effective measures to prevent this material or substance from entering and polluting any water resources.<sup>214</sup>
- d. Every person in control of a mine or activity must protect any existing pollution control measures or replace any existing pollution control measures deleteriously affected, damaged or destroyed by the removing or reclaiming of materials from any residue deposit or stockpile, and establish additional measures for the prevention of pollution of a water resource which might occur, is occurring or has occurred as a result of such operations.<sup>215</sup>
- e. Any person in control of a mine or activity must at either temporary or permanent cessation of operations ensure that all pollution control measures have been designed, modified, constructed and maintained so as to comply with the regulations.<sup>216</sup>
- f. Any person in control of a mine or activity must ensure that the in-stream and riparian habitat of any water resource, which may have been affected or altered by a mine or activity, is remedied so as to comply with the regulations.<sup>217</sup>

#### **2.2.1.7 National Environmental Management: Air Quality Act 39 of 2004**

The Air Quality Act addresses the limitations of the Atmospheric Pollution Prevention Act of 1965. The main objectives of this Act are to protect and enhance the quality of air in South Africa, and to reduce risks to human health and the environment, while taking into account the need for sustainable development. The most important section of this Act that relates to mining activity is Section 5, where it provides that dust must be controlled during mining operations and that rehabilitation measures for the source of dust emission should be in place before and after closure of the mine.

#### **2.2.1.8 Environment Conservation Act 73 of 1989**

The section that relates to the environmental liabilities in terms of the Environment Conservation Act is section 31A.<sup>218</sup> The potential scope of section 31A<sup>219</sup> is very wide, not only may an authority direct a polluter to take steps to prevent or minimise damage to the environment, but it can also direct that person to rehabilitate damage caused to the environment.<sup>220</sup> Upon a failure to rehabilitate any damage as directed, the authority may itself

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<sup>214</sup> Regulation 7(e) of the Regulations on the Use of Water for Mining... - Protection of water resources.

<sup>215</sup> Regulation 8(d) of the Regulations on the Use of Water for Mining... Security and additional measures.

<sup>216</sup> Regulation 8(d) (1) of the Regulations on the Use of Water for Mining - Temporary or permanent cessation of mine or activity.

<sup>217</sup> Regulation 8(d) (2) of the Regulations on the Use of Water for Mining... - Temporary or permanent cessation of mine or activity.

<sup>218</sup> Environment Conservation Act 73 of 1989

<sup>219</sup> Section 31A of the Environment Conservation Act.

<sup>220</sup> M Kidd (note 174 above).

take the necessary steps and recover the cost incurred from the polluter.<sup>221</sup> Prior to the promulgation of NEMA, the Environmental Conservation Act was South Africa's primary piece of legislation dedicated to environmental matters.

#### **2.2.1.9 Nuclear Energy Act 46 of 1999**

South African gold mines are associated with radio-active elements such as uranium and its decay products due to chemical leachates or oxidation of pyrites. In terms of mine closure, radiological requirements in terms of this Act must also be met before a closure certificate is granted.<sup>222</sup>

#### **2.2.1.10 White Paper: A Minerals and Mining Policy for South Africa**

In terms of the White Paper: *A Minerals and Mining Policy for South Africa*,<sup>223</sup> the South African government has an obligation to ensure that the costs of environmental impacts of the mining industry are not passed over to the community. In order for the government to meet this obligation, the government should implement effective and affordable measures and standards for environmental impact management, the prevention or efficient management of water, soil and atmospheric pollution, and the rehabilitation of areas affected by past mining operations.

The White Paper<sup>224</sup> also sets out a number of specific points which give substance to sustainable development, namely that:

- a) The rehabilitation of defunct and derelict mines which are a risk to the environment, public safety and human health should be appropriately regulated;<sup>225</sup>
- b) The environmental damage caused by the mining industry should be managed and contained irrespective of the size of the mine;<sup>226</sup>
- c) The rehabilitation of land for post-mine use should be ensured and carried out to standards that permit its use for the purpose set out in the EMPR and closure should only be granted only after satisfying that there are no foreseeable residual impacts that will be inherited by parties acquiring such land.<sup>227</sup>

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<sup>221</sup> Ibid. However, 'the practical usefulness of Section 31A is likely to be limited for a number of reasons. Firstly, it covers both acts and omissions which in the opinion of the relevant authority endanger the environment, but does not operate retroactively. (the section was inserted by section 19 of Act 79 1992 and would only apply to activities endangering the environment after this date). This interpretation is strengthened by the use of the present tense 'performs any activity or fails to perform any activity'. Therefore, it is unlikely to be useful for rehabilitating or remediating old sites'. See E Swart 'The South African legislative framework for mine closure, proceedings of the colloquium on mine closure for sustainable development' (2003)103 *J. South Afr. Inst. Min. Metall.* 489-492.

<sup>222</sup> Swart (see note 12 above)

<sup>223</sup> *White Paper on Environmental Management Policy for South Africa* (see note 3 above).

<sup>224</sup> Ibid.

<sup>225</sup> Ibid.

<sup>226</sup> Ibid.

<sup>227</sup> Ibid.



### **2.3 Environmental Impact Assessment (EIA) for closure and rehabilitation of mines**

Environmental impact assessments (EIA) are the vehicle by which mining companies are required to produce a detailed closure plan. Mine closure process is a ‘cradle-to-the-grave’ concept and states that the closure process must start at the commencement of the operation and continue throughout the life of the operation. This means that mine closure and site rehabilitation plans must be reviewed on a regular basis. All risks must be identified and managed pro-actively, and residual and possible latent risks must be identified and quantified. The planning phase of any proposed mining activity is critical in identifying potential long-term impacts and designing rehabilitation systems that will minimise or prevent those impacts in the long term.

In terms of South African environmental legislation, before a mining company may commence with prospecting, mining, or exploration it is required to produce an EIA in accordance with section 24N of NEMA,<sup>228</sup> its regulations<sup>229</sup> and the MPRDA<sup>230</sup> for approval by the minister responsible for mineral resources and without which mining activities may not commence.<sup>231</sup> This EIA must contain details on how environmental impacts will be dealt with and environmental costs internalised and must include the presentation of a rehabilitation and closure plan.<sup>232</sup> The EIA<sup>233</sup> is regarded as a tool to achieve a comprehensive and accurate environmental management plan (EMP) for mine closure and rehabilitation.<sup>234</sup> Thus, it can be argued that most mining operations require environmental authorisations under NEMA and the Environmental Assessment Regulations,<sup>235</sup> promulgated under NEMA for certain listed activities associated with mining. One of the prerequisites for granting of a prospecting, or a mining right is that the prospecting will not result in unacceptable pollution, ecological degradation or damage to the environment.<sup>236</sup> An applicant for a prospecting right must submit an EMP which has plans to manage and rehabilitate the

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<sup>228</sup> Section 24N (2) (a) and Section 24N (7) of NEMA (as amended by Act 25 of 2014).

<sup>229</sup> NEMA: Environmental Impact Assessment Regulations: Listing Notice 2 of 2014.

<sup>230</sup> Sections 16 and 17 of the MPRDA.

<sup>231</sup> Kidd (see note 117 above) 221.

<sup>232</sup> Section 24N (2) (f) and (g) of NEMA (as amended by Act 25 of 2014).

<sup>233</sup> See M Kidd and F Retief ‘Environmental Assessment’ In HA Strydom and ND King (eds) *Fuggle and Rabbie’s Environmental Management in South Africa* 2nd ed (2009) 971. It has been argued that, “EIA is not a decision-making tool but rather a decision aiding tool that only serves to provide information to decision-makers on the consequences of their decisions thereby authorising actions in the full knowledge of their environmental consequences”.

<sup>234</sup> NEMA: Environmental Impact Assessment Regulations: Listing Notice 2 of 2014.

<sup>235</sup> 2014 (EIA Regulations).

<sup>236</sup> Kidd (see note 117 above) 221. NEMA now expressly provides that “Reconnaissance, prospecting, mining or retention as per the MPRDA, as well as the construction of various mining related infrastructure” are included as listed activities as from April 2006. This means that the legal requirement to obtain an environmental authorisation is applicable to the undertaking of rehabilitation and closure activities at a mine.

environmental impact as a result of prospecting, reconnaissance, exploration or mining operations conducted under the authority of a reconnaissance permission, prospecting right, reconnaissance permit, exploration right or mining permit, as the case may be.<sup>237</sup>

It is important to note that the EIAs under MPRDA were a subject of criticism. Van Zyl et al noted that the mining companies have been providing inadequate EMPs and associated rehabilitation plans.<sup>238</sup> There have been cases where the information contained in the EMP was insufficient and inconsistency both for the Minister to fully evaluate the reported impact of the proposed mining activity, and for the applicant's subsequent actions to be measured against the EMP's contents.<sup>239</sup> This is a major challenge since the EIAs form part of the cradle-to-the-grave approach to closure and rehabilitation of mining sites. Van Zyl et al further submit that the content and quality of EMPs varies significantly in practice. The authors also found a degree of variability in the quality of EMPs with some EMPs not having any rehabilitation plans at all.<sup>240</sup> The authors refer to these types of EMPs as 'black boxes' because of their lack of information and transparency.<sup>241</sup> The authors further noted that the 'EMPs that contain insufficient rehabilitation plans with tenuous links to the calculation of financial provisions. These often contain limited or unclear distinctions between areas that can be rehabilitated concurrent to mining and those that can only be rehabilitated at closure. These can be best described as "grey box" EMPs given their only barely adequate information and low levels of transparency.<sup>242</sup>

The requirement for mines to obtain environmental authorisations for mining and prospecting activities is welcome since NEMA contains far more comprehensive requirements for impact assessments in an application for an environmental authorisation, and mitigation measures to address anticipated environmental impacts.<sup>243</sup> It is submitted that, 'over the last decade, EIAs have shifted to compliance rather than dealing with risk, however with the arrival of the new 2014 EIA regulations, the importance of integrative planning, applying the mitigation hierarchy to

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<sup>237</sup> Kidd (see note 117 above) 221.

<sup>238</sup> Van Zyl (see note 24 above).

<sup>239</sup> Ibid.

<sup>240</sup> Ibid.

<sup>241</sup> Ibid.

<sup>242</sup> Ibid.

<sup>243</sup> P Gorey et al 'Dealing with mining legacies: from bonds to a central mining rehabilitation fund in Western Australia' (2014) In *Mine Closure 2014: 9th International Conference on Mine Closures*, 1 - 3 October, Johannesburg, South Africa, available at [http://researchrepository.murdoch.edu.au/id/eprint/26880/1/dealing\\_with\\_mining\\_legacyes.pdf](http://researchrepository.murdoch.edu.au/id/eprint/26880/1/dealing_with_mining_legacyes.pdf) (accessed on 7 May 2016).

design out impacts and whittling down alternatives to a permissible project has again come full circle, and is encouraged ahead of commencing the permitting process, which is now the only part of the new authorisation system to be regulated'.<sup>244</sup>

It is important to note that the opportunity to bring the environmental authorisations in the mining context under NEMA have allowed a more uniform and stringent EIA regime to be applied in mining. It is submitted that NEMA provided a strengthened, principled basis for EIA, both in terms of the NEMA principles articulated in section 2 which states that 'the environmental impact of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment'. However, despite this, some may argue that overall the basic thrust of the EIA process remains the same as the 2010 EIA regulations, even though there are were textual changes to many of the provisions it does not amount to significant changes of substance.<sup>245</sup>

It should be borne in mind however that 'EIAs have limitations and are not a panacea to the environmental degradation and pollution problem, thus environmental practitioners need to arm themselves with greater range of environmental tools to assist them in understanding the full environmental ramifications of specific development proposals'.<sup>246</sup> This so because, 'knowledge of the environment will never be sufficient to accurately predict the exact nature of project. Assessors are therefore forced to decide on how best to make predictions on future impacts'.<sup>247</sup>

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<sup>244</sup> Notices published in terms of section 24 of NEMA, Listing Notice 1: List of activities and competent authorities identified in terms of sections 24 (2) and 24D of NEMA ("Listing Notice 1").

<sup>245</sup> s 24N (7) of the NEMA largely restated the environmental obligations of the prospecting or mining rights holder, as they had formerly been set out in s 38(2) of the MPRDA.

<sup>246</sup> A Spinks et al 'EIAs as an Obstacle to sound environmental management in South Africa: A practitioners Perspective.' (2003) *IAIASA National Conference South Africa* (23 – 25 September Black Mountain Resort Free State) 315.

<sup>247</sup> *Ibid* 315.

## Chapter Three

### 3. South Africa's current financial provision framework for mine closure and rehabilitation

#### 3.1 Introduction

Van Zyl et al places the prevalent negative legacy of abandoned and derelict mining sites in context:

Ongoing concerns regarding environmental degradation in mining areas, high numbers of ownerless and abandoned mines, and the incidence of acid mine drainage have all highlighted the need for improved environmental maintenance and rehabilitation in the mining sector.<sup>248</sup> These concerns give rise to questions about the availability of funds to manage the impacts of mining and the adequacy of financial provisions made by mining companies for rehabilitation.<sup>249</sup>

The authors further note that:

While there is relatively broad consensus that a significant portion of current environmental impacts relate to abandoned mines, there is a clear need to also ensure that current and future mining activities do not add to unacceptable environmental impacts and impose costs on society. The harsh lessons of the past need to be applied, lest history be allowed to repeat itself.<sup>250</sup>

It is submitted that key to the achievement of sustainable mine closure, rehabilitation and improved environmental management are the provisions of MPRDA and NEMA, particularly the provisions of section 24P of the NEMA<sup>251</sup> that incorporate the polluter pays principle into South Africa's mining legislation.<sup>252</sup> Among other things, section 24P requires applicants for prospecting or mining rights to make financial provision for the rehabilitation or management of negative environmental impacts.<sup>253</sup> It is submitted that the financial provisions as provided for in NEMA and its Regulations,<sup>254</sup> particularly those relating to mine closure and site

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<sup>248</sup> van Zyl (see note 24 above).

<sup>249</sup> Ibid.

<sup>250</sup> Ibid.

<sup>251</sup> Section 24P of the National Environmental Management Act, 1998

<sup>252</sup> Van Zyl (see note 24 above)

<sup>253</sup> Ibid.

<sup>254</sup> National Environmental Management Act: Regulations: Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production operations (2015), Government Gazette No. R. 1147 (No 39425).

rehabilitation are key tools aimed at ensuring that the taxpayer is not burdened with the costs of rehabilitation.<sup>255</sup>

The adequacy and accurate estimation of the financial provisions for closure and rehabilitation, the efficiency and appropriateness of the types of financial instruments that may be used as an incentive to compel mines to undertake concurrent, final and post closure rehabilitation to prevent and mitigate environmental harm and the protection of the provision against claims from other creditors, is the focal point of this dissertation in general and this chapter in particular. This is so because there are challenges with regards to previous financial provisions (as was provided for in MPRDA and its regulations) for mine closure and site rehabilitation which have been identified and raised in previous researches namely,<sup>256</sup>

the inadequate clarity in legislation governing mine closure and rehabilitation, constraints associated with the financial instrument choices open to mines with regard to making financial provisions, inadequate funding levels for rehabilitation and closure being maintained and secured, limited auditing of the adequacy of financial provisions by the mines and the state; and an inadequate protection of financial provisions in the event of insolvency.<sup>257</sup>

It is submitted that even though mining companies are legally obliged to set aside money to be used for closure and rehabilitation of mines in event they default, the system was failing South Africa as it was not achieving the goals of protecting the environment sufficiently. It is against the above challenge that this chapter seeks to, determine whether the current financial provisions as now provided for in section 24P of NEMA<sup>258</sup> and its regulations<sup>259</sup> are sufficient to adequately address the mining companies' liability for present as well as future environmental damage and to suggest recommendations for potential improvements to the financial provisions.

### **3.2 Financial Provision for Closure and Rehabilitation of Mined Land**

This section of the chapter evaluates the use of financial provisions (and the instruments/methods) by looking at their strengths and weaknesses, and their effectiveness as tools to impose liability on the mining companies to close, rehabilitate, and manage the environmental impacts caused by mining activities. As discussed in the preceding chapters,

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<sup>255</sup> Van Zyl (see note 24 above)

<sup>256</sup> As provided for in the MPRDA and Mineral and Petroleum Resources Development Regulations (R.527 in G G 26275, 23 April 2004) discussed in Chapter 2.

<sup>257</sup> Van Zyl (see note 24 above).

<sup>258</sup> Section 24P of the National Environmental Management Act, 1998.

<sup>259</sup> NEMA Financial Provision Regulations (note 254 above).

‘the costs of remedying environmental degradation, pollution, and of preventing, controlling or minimising further pollution, environmental damage must be paid for by those responsible for harming the environment’.<sup>260</sup> As a result, the costs of mine closure and site rehabilitation should thus be internalised and be borne by the mining companies who would have caused environmental degradation and pollution rather than the tax payers.<sup>261</sup> The *White Paper on a Minerals and Mining Policy for South Africa*,<sup>262</sup> acknowledges this by stating that, ‘The polluter-pays principle will be applied in the regulation and enforcement of environmental management. The mining entrepreneur will be responsible for all costs pertaining to the impact of the operation on the environment’.<sup>263</sup> It is therefore submitted that the purpose of the financial provisions is to ensure that there will be sufficient funds to pay for mine closure and site rehabilitation as well as post closure monitoring and maintenance at any stage in the life of the project, including early or temporary closure if the mining company defaults.<sup>264</sup>

The inadequacy and inefficiency of the financial provision estimates as was provided for under the MPRDA pointed to the need to improve the system of determining and making financial provision for closure and rehabilitation. It is submitted that ensuring that adequate financial provision for closure and rehabilitation is made available by a mine is critical because it means that even if the mine is abandoned the government will have adequate funds available to close, rehabilitate and manage the negative environmental impacts that may arise. As with all mining operations, there are real and significant financial considerations with respect to mine closure and site rehabilitation, especially given that closure and rehabilitation occur at a time when an operation is no longer financially viable. This is one major reason why the government is increasingly requiring mining companies to provide adequate financial provision for mine closure and rehabilitation, prior to a commencement of mining activities.

It is trite that mine closure and site rehabilitation activities must be guided by the financial provisions as provided for in many South African mining related legislation and regulations.<sup>265</sup> Section 24 of the Constitution<sup>266</sup> is one such legislation. Although the

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<sup>260</sup> Section 2(4)(p) of NEMA.

<sup>261</sup> Glazewski (see note 84 above) 19.

<sup>262</sup> White Paper: A Minerals and Mining Policy for South Africa (note 3 above).

<sup>263</sup> Ibid.

<sup>264</sup> M Sassoon ‘Guidance notes for the implementation of financial surety for mine closure’ (2009) *A working paper by the World Bank Oil, Gas, and Mining Policy Division 1*, available at [http://siteresources.worldbank.org/INTOGMC/Resources/financial\\_surety\\_mine.pdf](http://siteresources.worldbank.org/INTOGMC/Resources/financial_surety_mine.pdf) (accessed on 7 December 2016)

<sup>265</sup> See NEMA, MPRDA, NWA and Section 24 of the Constitution, 1996.

Constitution does not specifically set out provisions pertaining to the closure and rehabilitation of mined land, it should be noted that section 24 is very relevant within the context of the protection and management of the environment at all stages of the life cycle of a mining project. This is so because mining activities negatively affect the environment and impact adversely on the entire array of interests safeguarded by section 24 of the Constitution,<sup>267</sup> thus it is important that mines be held liable for environmental degradation and pollution caused by the mining activities.<sup>268</sup>

In addition to general obligations for rehabilitation of environmental damage that exist in a number of environmental statutes, certain key environmental legislation expressly provide for the provision of security in relation to other operations and activities which have an environmental effect.<sup>269</sup> <sup>270</sup> Section 30 of the NWA provides that a responsible authority may ‘if it is necessary for the protection of the water resource or property require the applicant for a water use licence to provide security in respect of any obligation or potential obligation arising from a licence to be issued under the NWA’.<sup>271</sup> Section 30(3) provides that the responsible authority must determine the type, extent and duration of any security required,<sup>272</sup> whilst section 30(4) expressly stipulates that the duration of the security may extend beyond the time period specified in the licence in question.<sup>273</sup>

The financial provisions are essentially equivalent to guaranteeing that the mining site will be stabilised and all necessary rehabilitation carried out so that ongoing environmental problems are remediated.<sup>274</sup> By requiring the payment of the financial provision, the government wishes to protect the environment for which it is responsible and avoid the costs of cleaning up abandoned and derelict mining sites.<sup>275</sup> Financial provisions, particularly those relating to mine closure are key tools aimed at ensuring that the taxpayer is not burdened with the costs of rehabilitation. Thus, the government is empowered in terms of section 46 (2) of the MPRDA to use the financial security for mine closure and site rehabilitation if the mining operators fail or unwilling to do so. When one considers that mining activities negatively

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<sup>266</sup> The Constitution of the Republic of South Africa, 1996.

<sup>267</sup> Section 24 of the Constitution. L Vorster *The Liability of Mines for the Prevention, Minimisation and Remediation of Pollution: A Legal Analysis* (unpublished LLM, North-West University, 2011) ii.

<sup>268</sup> Vorster (see note 8 above) ii.

<sup>269</sup> Section 30 of the NWA (see note 204 above).

<sup>270</sup> Section 28 of NEMA.

<sup>271</sup> Section 30 of the NWA (see note 198 above).

<sup>272</sup> Section 30(3) of NWA (see note 198 above).

<sup>273</sup> Section 30(4) of NWA (see note 198 above).

<sup>274</sup> *Ibid.*

<sup>275</sup> *Ibid.*

affect the environment it then becomes imperative that mining companies be held liable for present and future environmental degradation and pollution.<sup>276</sup>

### **3.2.1 Previous financial provision requirements under the MPRDA Regime**

It is beyond doubt that the financial provision for mine closure and site rehabilitation formed an integral part of the MPRDA before the commencement of the One Environmental System. Section 41 of the MPRDA required the mining company to make financial provision for all mining related environmental liabilities. This section provided that, ‘an applicant for a prospecting right, mining right or mining permit must before the approval of the environmental management plan or environmental management programme...make the prescribed financial provision for the rehabilitation or management of negative environmental impacts’.<sup>277</sup> However, this section has since been repealed and superseded by section 24(P) of NEMA.<sup>278</sup> Section 89 of the MPRDA on the other hand prohibits any mining activities from taking place before the financial security has been made which is, ‘acceptable to the designated agency guaranteeing the availability of sufficient funds for the due fulfilment of all exploration and production work programmes by the holder’.<sup>279</sup> Under section 43 the MPRDA,<sup>280</sup> the mining company was responsible for any environment liability, pollution or ecological degradation and the management thereof, until a closure certificate was issued and was not liable for any latent or residual risks that could materialise long after the closure certificate had been issued.

Prior to the commencement of the new NEMA Regulations for Financial Provision and Closure Regulations,<sup>281</sup> the required quantum for financial provision was determined through reference to Regulations 53 and 54 promulgated in terms of MPRDA, which prescribed a payment method and the quantum was assessed through the Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision.<sup>282</sup> These MPRDA regulations have now been superseded by National Environmental Management Act:

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<sup>276</sup> Kotzé and Du Plessis (see note 108 above).

<sup>277</sup> Section 41 of the MPRDA.

<sup>278</sup> 24(P) of NEMA

<sup>279</sup> Section 89 of the MPRDA

<sup>280</sup> Section 43 of the MPRDA.

<sup>281</sup> ‘National Environmental Management Act: Regulations: Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations’ (2015).

<sup>282</sup> Government of South Africa- Department of Minerals and Energy ‘Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision’ (2005) DME, (Official guideline as contemplated in Regulation 54(1) to the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) ) available at

[file:///C:/Users/Phumla%20Tom/Downloads/guideline\\_document\\_for\\_the\\_evaluation\\_of\\_the\\_quantum\\_of\\_closure.pdf](file:///C:/Users/Phumla%20Tom/Downloads/guideline_document_for_the_evaluation_of_the_quantum_of_closure.pdf) (accessed on 15 February 2016).



Regulations: Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations.<sup>283</sup> In terms of the MPRDA financial regulations the amount that was to be paid as financial security determined and compiled in-house or by external consultants. One of the major weaknesses of the financial provisions under the MPRDA related to the calculation of the guarantee amount as there was limited oversight over the provisions' calculations.<sup>284</sup> The latent and residual impacts from mining activities were mainly not considered in the liability estimation and there was also lack of concurrent rehabilitation.<sup>285</sup>

### **3.2.2 The Estimation and Accuracy of the Financial Provision in terms the MPRDA Regime**

The use of financial provision raises some fundamental questions about how to accurately calculate the funds, what assurance mechanisms to use and when to give back the money to the mining company. The determination of the quantum of financial provision with accuracy is very difficult, and has been described as an inexact science.<sup>286</sup> This is due to the fact that mine closures will happen many years down the line, so the accuracy of the closure cost estimates is usually difficult to predict because of inflation, the changing standard of rehabilitation and the escalation of closure and rehabilitation costs on a regular basis.<sup>287</sup> The standard of rehabilitation required of the mining companies will clearly affect the cost of restoration and consequently the amount of financial assurance required. It has been noted that,

the process of actually calculating adequate financial provisions for closure is challenging, as the calculations must provide clarity on what actions must be taken together with the cost estimations in respect of such actions, which are based primarily on experience built up over time.<sup>288</sup>

It is against this background that the government realised that the previous financial provision legislation as was provided for in the MPRDA was inadequate and extended the concept of financial provision much more broadly to include cradle-to-grave environmental performance by specifying the need for and extent of financial assurance.

It is beyond doubt that there were obviously some challenges associated with quantum estimation as observed by van Zyl et al namely; non-inflation of master rates contained in the

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<sup>283</sup> NEMA Financial Provision Regulations (note 254 above).

<sup>284</sup> Van Zyl (see note 24 above) 15.

<sup>285</sup> Ibid.

<sup>286</sup> Van Zyl (see note 24 above) 15.

<sup>287</sup> Hewitson (see note 126 above) 3.

<sup>288</sup> Van Zyl (see note 24 above) 15.

2005 DMR guidelines and the reservations that a number of mines were not making adequate financial provision for closure.<sup>289</sup> Even though the 2005 DMR guidelines made it clear that master rates require annual updating in order to take inflation into account, a number of Environmental Management Programmes were found to still be using the master rates contained in the 2005 DMR guidelines.<sup>290</sup> The 2005 DMR guidelines have not been updated for 11 years now thus there is no factoring in of inflation and escalation of costs. This means almost certain underestimation of the necessary financial provisions, yet financial provision calculations that do not inflation-adjust their numbers have been accepted by the DMR.<sup>291</sup>

AngloGold Ashanti submits that the calculation of environmental liabilities is such that there is currently a shortfall between the presently declared environmental liabilities and the current balance in the company's trust fund.<sup>292</sup> This is concerning as it points to the inadequacy of the financial provision made by mining companies. This risk is not currently adequately taken into account and places severe limitations on the viability of the mine closure process.<sup>293</sup> It is against this background that van Zyl et al submits that the,

EMPs and associated rehabilitation and closure plans that need to be prepared and regularly updated for mines are central to the accurate estimation of appropriate financial provisions. These plans must describe the concrete actions that are required to adequately mitigate environmental impacts and achieve an acceptable closure. Once these actions have been described in detail, they need to be individually and clearly costed allowing for proper calculation of the overall financial provisions.<sup>294</sup>

### **3.3 The One Environmental System**

The One Environmental System (hereafter OES) is intended to streamline the licensing processes for mining, environmental authorisations and for aligning the laws on the environmental management of mining in South Africa. This environmental system replaces the 'fragmented, contradictory and ineffective model constituted by rules and institutional arrangements that developed in separate mineral development and environmental laws'.<sup>295</sup> Humby submits that the OES is, 'framed by the overarching concept of cooperative

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<sup>289</sup> Van Zyl (see note 24 above) 15.

<sup>290</sup> Master rates contained in the 2005 Department of Mineral Resources (DMR) guidelines (2005 DMR Guidelines) are not adjusted for inflation, resulting in significant underestimations of adequate financial provisions.

<sup>291</sup> Van Zyl (see note 24 above) 15.

<sup>292</sup> AngloGold Ashanti *AngloGold Report to Society* (2004) 15, Available at <http://www.anglogoldashanti.com/en/Media/Reports/Sustainability%20Reports/AGA-sustainable-gold-2004.pdf>. (accessed on 10 March 2015).

<sup>293</sup> Hewitson (see note 126 above) 29.

<sup>294</sup> Van Zyl (see note 24 above) 21.

<sup>295</sup> T Humby 'One environmental system': aligning the laws on the environmental management of mining in South Africa.' (2015) 33(2) *Journal of Energy & Natural Resources Law*, 110.

government in the South African Constitution, shifts the statutory authority for environmental management of mining to the environmental laws, but gives effect to a unique splitting of implementing authority between the authorities responsible for mineral resources and environment respectively'.<sup>296</sup>

The OES has given a considerable amount of power to the environmental authorities to make regulations pertaining to mining with respect to mine closure requirements and financial provision amongst other powers. The National Environmental Management Amendment Act<sup>297</sup> (hereafter NEMAA) has strengthened certain of the provisions of the primary Act dealing with financial provision and liability for pollution, ecological degradation and the pumping and treatment of polluted or extraneous water.<sup>298</sup> To support this point Humby submits that when the minister of minerals considers an application for environmental authorisation he must now consider the ability of the applicant to comply with the prescribed financial provision.<sup>299</sup> For mining and prospecting rights the methods of acceptable payment have been limited and the wording of the trust deed and financial guarantee is prescribed in the regulation is also more onerous than before.<sup>300</sup>

The requirements for financial provision for the management of environmental impacts caused by mining operations are now regulated by NEMA and no longer the MPRDA. The NEMA Regulations for Financial Provision and Closure Regulations<sup>301</sup> were effective from 8 December 2014.<sup>302</sup> It is submitted that the NEMA regulations governing financial provisions for closure and rehabilitation, are more detailed provisions than those previously found in the similar MPRDA Regulations.<sup>303</sup> It is important to note that the NEMA regulations have increased the amount of the fine that is payable if the mining company does contravene the

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<sup>296</sup> Ibid.

<sup>297</sup> The National Environmental Management Amendment Act 25 of 2014.

<sup>298</sup> Humby (see note 295 above) 123.

<sup>299</sup> Section 24O (1) (b) (iiiA) of NEMA, (as amended by Act 25 of 2014).

<sup>300</sup> S Gore, T Erasmus T, and T Winstanley 'Progress in the transition of the regulation of mining operations environmental management.' (2015) *Environmental Alert*, available at <https://www.cliffedekkerhofmeyr.com/en/news/publications/2015/environmental/environmental-alert-4-february-.html#practice-areas-menu>, (accessed on 15 May 2015).

<sup>301</sup> 'National Environmental Management Act: Regulations: Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations' (2015).

<sup>302</sup> Government of South Africa – Department of Environmental affairs 'Government's One Environmental System commences' (2014) *DEA*, available at <https://www.environment.gov.za/mediarelease/oneenvironmentalsystem> (accessed on 25 February 2016).

<sup>303</sup> Mineral and Petroleum Resources Development Regulations (R.527 in GG 26275, 23 April 2004).

regulations.<sup>304</sup> The regulations also have a wider scope than just financial provisions as they deal with care and maintenance of mining operations and ‘deemed closure of mines’, which is not currently regulated under the MPRDA. A mine can be deemed to be under closure by the Department of Mineral Resources in specified circumstances.<sup>305</sup> Under the new Regulations, mining companies will have to apply to the Minister of mineral resources to be placed under care and maintenance,<sup>306</sup> which may not exceed a specified period.<sup>307</sup>

### **3.4 Financial Provision for Remediation of Environmental Damage in Terms of Section 24P of NEMA**

The financial provisions are important in the context of mine closure and site rehabilitation because the feasibility of the mine closure rests on the assumption that the financial provision that has been made by a mine is adequate to cover the rehabilitation costs.<sup>308</sup> A question thus arises as to whether the current financial provision as regulated by section 24P of NEMA will be sufficient to adequately address present and future environmental impacts associated with mine closure and rehabilitation. Financial provision is defined by NEMA as;

the insurance, bank guarantee, trust fund or cash that applicants for an environmental authorisation must provide in terms of this Act guaranteeing the availability of sufficient funds to undertake the rehabilitation of the adverse environmental impacts of the listed or specified activities; rehabilitation of the impacts of the prospecting, exploration, mining or production activities, including the pumping and treatment of polluted or extraneous water; decommissioning and closure of the operations; remediation of latent or residual environmental impacts which become known in the future; removal of building structures and other objects; or remediation of any other negative environmental impacts.<sup>309</sup>

Section 89 of the MPRDA<sup>310</sup> provides that, in addition to section 5(4),<sup>311</sup> no mining activities may commence unless the mining company has provided for a financial provision guaranteeing the availability of sufficient funds for the due fulfilment of all exploration and production work programmes by the holder. Whilst financial regulation 4 provides for the determination of the financial provision by requiring the mining company to determine and

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<sup>304</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 18 and 19. The mining company will be liable for a fine not exceeding R10 million or to imprisonment for a period not exceeding 10 years, or to both such fine or such imprisonment.

<sup>305</sup> NEMA Financial Provision Regulations (note 254 above), Regulation 16.

<sup>306</sup> Care and maintenance is a term used in the mining industry to describe processes and conditions on a closed mine site where there is potential to recommence operations at a later date. During a care and maintenance phase, production is stopped but the site is managed to ensure it remains in a safe and stable condition. Care and maintenance is the term used to describe the activities that are ongoing at an abandoned mine site to protect human health, safety and the environment while a remediation (closure) plan is developed and finalized

<sup>307</sup> Ibid. NEMA Financial Provision Regulations (note 254 above), Regulation 16.

<sup>308</sup> Sassoon (see note 274 above).

<sup>309</sup> National Environmental Management Laws Amendment Act 25 of 2014.

<sup>310</sup> Section 89 of the MPRDA.

<sup>311</sup> Section 5(4) of the MPRDA.

make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of prospecting, exploration, mining or production operations, to the satisfaction of the Minister.<sup>312</sup>

Section 24P of NEMA<sup>313</sup> is titled ‘Financial provision for remediation of environmental damage’ as it regulates the financial provision for mine closure and rehabilitation. In terms of this section, ‘before the Minister responsible for mineral resources (hereafter the Minister) issues the environmental authorisation the mining company should comply with the prescribed financial provision for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts’.<sup>314</sup> It is important to note that this section includes financial provision for post closure environmental management, something that was not found in terms of section 41 of the MPRDA.<sup>315</sup> This is welcome as most environmental impacts of prospecting and mining manifest long after cessation of the operations. It is important to note that section 24P(2) further provides that, ‘failure to close, rehabilitate and to manage any impact on the environment by a mining company will result in the Minister using all or part of the financial provision provided by a mining company to rehabilitate or manage the environmental impacts.’<sup>316</sup> It is against this background that it is imperative that the financial guarantee amount should be adequate and calculated accurately so that when a mining company defaults the government and consequently the taxpayer will be protected from footing the closure and rehabilitation costs.

Section 24P(3) obliges the mining companies to annually assess their environmental liability in the manner prescribed by the Minister and must increase their financial provision to the satisfaction of the Minister’.<sup>317</sup> The question that arises in this instance is what the prescribed method is, is it efficient and accurate enough to estimate the exact cost of closure and rehabilitation of the mine. It is submitted that the prescribed manner is expressly stated in the NEMA Financial Regulations,<sup>318</sup> whether this method it is sufficient and accurate remains to be seen. The mining company is further required, ‘to submit an audit report to the Minister

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<sup>312</sup> Ibid. NEMA: Regulations: Pertaining to the Financial Provision, Regulation 4.

<sup>313</sup> Section 24P of NEMA.

<sup>314</sup> Section 24P (1) of NEMA.

<sup>315</sup> Section 41 of the MPRDA. (Repealed).

<sup>316</sup> Section 24P of NEMA.

<sup>317</sup> Section 24P (4)(a) of NEMA. This is a welcome amendment since it allows the Minister to disagree with findings of adequacy assessments and to call for an independent assessment at the cost of the holder.

<sup>318</sup> The prescribed manner is determined through reference to Financial Provisioning Regulations, 2015 (GNR 1147)

on the adequacy of the financial provision from an independent auditor'.<sup>319</sup> This is commendable and is in line with the key recommendations of the report by van Zyl et al that there should be an 'augmented and structured use of the independent review mechanism as a standard, default approach when assessing the adequacy of financial provisions'.<sup>320</sup> The use of an independent auditor is also appropriate as it gives assurance as to the adequacy and compliance of a particular financial provision. The review by an independent auditor could also serve as an opportunity for capacity building and learning since the DMR officials may learn from the auditor's skills.<sup>321</sup>

Another welcome provision is section 24P(5) which provides that, 'the minister may maintain and retain the financial provision notwithstanding the issuing of a closure certificate...such portion of the financial provision may be retained as may be required to rehabilitate the closed mining or prospecting operation in respect of latent, residual or any other environmental impacts, including the pumping of polluted or extraneous water, for a prescribed period'.<sup>322</sup> This section should be read together with section 24R(2) which also provides for the retention of a portion of financial provision, 'for any latent, residual or any other environmental impact, including the pumping of polluted or extraneous water, for a prescribed period after issuing a closure certificate'.<sup>323</sup> This is in line with section 30(4) of the NWA which expressly stipulates that the duration of the security may extend beyond the time period specified in the licence in question.<sup>324</sup> The NWA effectively gives effect to the obligation of mining companies to pump water or treat water post closure and this obligation has now been strengthened. Another further (and new) requirement is that the provision made for latent or residual environmental impact must specifically address the pumping and treatment of extraneous or polluted water. NEMA now specifically provides that liability, including the responsibility for extraneous or polluted water, continues after closure.

Section 24P(5) can be read together with section 43(6) of the MPRDA which provides that when the minister, 'issues a closure certificate he or she must return such portion of the financial provision as may be deemed appropriate to the mining company but may retain any

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<sup>319</sup> Section 24P (3) (b) of NEMA.

<sup>320</sup> Van Zyl (see note 24 above) 5.

<sup>321</sup> Ibid 27.

<sup>322</sup> Section 24P(5) of NEMA.

<sup>323</sup> Section 24R(2) of NEMA.

<sup>324</sup> Section 30(4) of NWA.

portion of such financial provision for latent<sup>325</sup> and residual<sup>326</sup> safety, health or environmental impact which may become known in the future'.<sup>327</sup> Section 24R(1) of NEMA also provides for the continuation of liability notwithstanding the issuing of a closure certificate when it provides that the mining company, 'remain responsible for any environmental liability, pollution or ecological degradation, the pumping and treatment of polluted or extraneous water, the management and sustainable closure thereof notwithstanding the issuing of a closure certificate...'<sup>328</sup> The requirement to maintain and retain the financial provision is very important as it provides for the continuation of liability despite the issuance of a closure certificate in terms of section 43 of the MPRDA.<sup>329</sup> The above sections are also aligned with the section 24 of the Constitution, section 19 of the NWA as well as section 28 of NEMA.

It is acknowledged that environmental impacts of prospecting and mining may only become known many years after cessation of the operations and the mining company will remain liable for the damage or degradation caused by its activities throughout the life cycle of the mining operations until decommissioning, rehabilitation and post closure. This is so because the environmental degradation and pollution are part of the life cycle of a mine, that is, from the identification, exploration phase through project planning, implementation, operations and post-operational closure, decommissioning and rehabilitation.<sup>330</sup> This is thus in line with the PPP and it protects the government from incurring costs of remedying the negative environmental impacts caused by mining companies that emerge long after the mining company is closed. It should be noted that due to the absence of the maximum retention period, the retention period could be for the predicted life of the impacts (i.e. the expected time of mine decant) as assessed on cessation of the mining operation and annually thereafter, until the impacts have been remediated.<sup>331</sup> This is commendable given the Acid Mine

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<sup>325</sup> 'Latent environmental impact' is defined in Regulation 1 to mean "any environmental impact that may result from natural events or disasters after the closure certificate has been issued",

<sup>326</sup> Residual environmental impact' is described as "the environmental impact remaining after a closure certificate has been issued".

<sup>327</sup> Section 24P (5) of NEMA.

<sup>328</sup> Section 24R(1) of NEMA.

<sup>329</sup> Section 24R of NEMA which creates an incentive for mining companies to rehabilitate properly and to mitigate environmental damage caused by the operation. The incentive exists because the Minister may use all or some of the financial provision to rehabilitate disturbed land and environmental degradation, should the mine fail to do so satisfactorily, and it is therefore in the financial interest of the mine to maintain and rehabilitate the area themselves, in order to get the performance bond back.

<sup>330</sup> Vorster (see note 7 above) 17.

<sup>331</sup> If there is a stipulated period the period may be too long or too short, due to the fact that the impacts of the mining operation will differ from one mineral to another, one environment to another and one operation to another.

Drainage (AMD) challenge, which can start over 40 years after the mine has closed as was the case with the Blesbokspruit in Gauteng.<sup>332</sup>

Another commendable amendment is section 24P(6) of NEMA which provides that the Insolvency Act<sup>333</sup> does not apply to any form of financial provision provided by a mining company and all amounts arising from that provision.<sup>334</sup> It can thus be argued that the gap that existed in terms of MPRDA has been filled as the financial provision is now ring-fenced in event of insolvency of the mining company and it's protected from other creditors.

### **3.5 NEMA: Regulations for Financial Provision for Mine Closure and Rehabilitation<sup>335</sup>**

In order to better understand the estimation and accuracy of the financial provision, reference should be made to the NEMA: Regulations for Financial Provision for Mine Closure and Rehabilitation. In terms of section 24(5)(b)(ix) of NEMA,<sup>336</sup> the Minister is empowered to make regulations consistent with subsection (4),<sup>337</sup> laying down the procedure to be followed in respect of, among other matters, financial provision. On the other hand, section 24(5)(d) of NEMA<sup>338</sup> empowers the Minister to make regulations requiring the provision of 'financial or other security to cover the risks to the State and the environment of noncompliance with conditions attached to environmental authorisations'.<sup>339</sup> It is important to note that the above obligation is explicitly cross referenced to the financial provision in section 24P of NEMA and this determines the extent of overlap or the extent to which they complement each other.

The regulations are used for determining the method of making financial provision for the costs associated with the management of environmental impacts caused by mining activities and operations. The purpose of the regulations is

to regulate the determine and making of financial provision for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, exploration, mining or production operations through the lifespan of such

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<sup>332</sup> Van Zyl (see note 24 above).

<sup>333</sup> The Insolvency Act No. 24 of 1936

<sup>334</sup> Section 24N (6) of NEMA.

<sup>335</sup> NEMA Financial Provision Regulations (note 254 above).

<sup>336</sup> Section 24 (5) (b) (ix) of NEMA.

<sup>337</sup> Section 24 (4) of NEMA deals with procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment.

<sup>338</sup> Section 24(5) (d) of NEMA.

<sup>339</sup> Ibid.



operations and latent or residual environmental impacts that may become known in the future.<sup>340</sup>

It is important that the regulations recognise the cradle-to-the-grave principle of mine closure and site rehabilitation as they provide for the determination of the financial provision for closure and rehabilitation during all stages of mining. The scope of financial provision provided for by the NEMA regulations is now very wide and this is commendable. In terms of Regulation 5, the mining company must provide financial provision for

‘(a) rehabilitation and remediation; (b) decommissioning and closure activities at the end of prospecting, exploration, mining or production operations; (c) and remediation and management of latent or residual environmental impacts which may become known in future, including the pumping and treatment of polluted or extraneous water.

There is now certainty with regard to the availability of financial provisions in relation to providing for adequate post-closure water treatment even though the adequacy of the financial provision is still debatable since the costs associated with treatment can be particularly high.<sup>341</sup> At least there is now consideration of water related impacts in closure liability estimation. This is welcome since the guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine was inadequate as it has not been updated for at least 11 years and there was limited consideration of water related impacts in closure liability estimation.<sup>342</sup>

It is important to note that the financial provision is now to be determined through a detailed itemisation of all activities and costs, calculated according to the actual costs of implementation of the measures required for closure and rehabilitation of the mine as well as post closure environmental management.<sup>343</sup> In this regard Regulation 6 provides that,

An applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for—

- (a) annual rehabilitation, as reflected in an annual rehabilitation plan;
- (b) final rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations, as reflected in a final rehabilitation, decommissioning and mine closure plan; and

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<sup>340</sup> National Environmental Management Act: Regulations: Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production operations (2015).

<sup>341</sup> Van Zyl (see note 24 above).

<sup>342</sup> Incorporation and reference to other relevant sources not included, such as: Chamber of Mines of South Africa (CoM) & Coaltech Research Association ‘Guidelines for the Rehabilitation of Mined Lands’ (2007); Department of Water Affairs (DWAF) ‘Best Practice Guideline Series for Water Resource Protection in the South African Mining Industry’ (2008).

<sup>343</sup> NEMA: Regulations for financial provision; Regulation 6.

- (c) remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report.

The inclusion of the financial provision for annual rehabilitation helps if the mine is to close prematurely as there will be enough money to fund rehabilitation as well as remediation of the environmental degradation. Regulation 7 commendable though onerous in that it provides for the availability of the financial provision which the mining company must ensure is always, 'at any given time equal to the sum of the actual costs of implementing closure, rehabilitation as well as remediation of the mine'.<sup>344</sup> Another notable regulation is regulation 9 which provides that, 'the determination, review and assessment of the financial provision must be undertaken by a specialist or specialists'.<sup>345</sup> This regulation should be read with regulation 11 which provide for the review, assessment and adjustment of financial provision by the mining company. On the other hand, regulation 11 (3) provides that, 'The results of the assessment of the adequacy of the financial provision including proof of payment or arrangements to provide for any adjustments to the financial provision, must be audited by an independent auditor'.<sup>346</sup>

Regulation 11(1) provides that; 'The holder of a right or permit must ensure that a review is undertaken of the requirements for (a) annual rehabilitation, as reflected in an annual rehabilitation plan, and (e) remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report'.<sup>347</sup> This encourages concurrent rehabilitation which greatly reduces the costs the government will have to incur in even of mine site abandonment.

### **3.6 Payment Method of the Financial Provision**

#### **3.6.1 The choice of financial provision instrument**

Financial provision instruments may be chosen from a number of options. Different instruments may be appropriate depending on the financial strength of the mining company, the amount of the potential environmental liability, the time frame over which the liability is to be extinguished and so on.<sup>348</sup> It is submitted that the financial provision instrument used

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<sup>344</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 7.

<sup>345</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 9.

<sup>346</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 11(3).

<sup>347</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 11(1).

<sup>348</sup> CG Miller *Financial Assurance for Mine Closure and Reclamation* (2005), (A study prepared for the International Council on Mining and Metals (ICMM)) available at <http://www.icmm.com/en->

should meet two tests: (a) it should be effective in assuring the government that the operator can take all necessary and reasonable measures to protect the environment (or that another party is enabled to do so if the operator fails) and (b) it should be the least costly of all the effective instruments available.<sup>349</sup> The NEMA regulations essentially provides for three different formats in terms of which the financial provision may be made, either one or a combination of: a cash deposit, bank guarantee, or trust fund.<sup>350</sup> Regulation 8 provides that,

(1) An applicant or holder of a right or permit must make financial provision by one or a combination of a—

- (a) financial guarantee from a bank registered in terms of the Banks Act, 1990 (Act No. 94 of 1990) or from a financial institution registered by the Financial Services Board as an insurer or underwriter;
- (b) deposit into an account administered by the Minister responsible for mineral resources; or
- (c) contribution to a trust fund established in terms of applicable legislation.<sup>351</sup>

It can be argued that the choices open to mining companies in South Africa for making financial provisions introduce flexibility, which offers mining entities choices among financial service providers that would in all probability provide for more cost effectiveness in making the financial provision.<sup>352</sup> The risk of default is spread and diversified among more entities, thereby lowering the risks of default.<sup>353</sup> This raises a question on how should financial surety instruments be established to ensure they are used for their intended purpose? Van Zyl et al however note that the main disadvantage of the flexibility is that alternatives can introduce a degree of financial complexity that may not be commensurate with the level of financial expertise or capacity at the DMR, which is of major concern.<sup>354</sup> It is against this background that the World Bank notes that;

The 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. Financial failure of the mining company and organisations involved in the financial guarantee resulting in a failure to provide funding for mine closure can be mitigated by:

- (a) Establishing non-accounting provisions monitoring financial performance;
- (b) Separating the financial structure for the closure fund from that of the company;

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[gb/publications/guidance-paper-financial-assurance-for-mine-closure-and-reclamation](http://gb/publications/guidance-paper-financial-assurance-for-mine-closure-and-reclamation) (accessed on 20 November 2015).

<sup>349</sup> Ibid.

<sup>350</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 8.

<sup>351</sup> Ibid.

<sup>352</sup> Van Zyl (see note 24 above) 31.

<sup>353</sup> Ibid.

<sup>354</sup> Ibid.

- (c) Allowing only investments of closure funds in financial instruments providing ‘assured’ future payment;
- (d) Spreading the risk to a combination of financial vehicles to jointly secure closure funds.<sup>355</sup>

Although the need for financial provision is clear, there is a challenge in choosing the best form of financial instrument to be used as a vehicle for financial provision. The financial instruments to be used by mining companies should be realistic, flexible and sufficient to address mine rehabilitation yet not so burdensome as to push companies into bankruptcy or deter them from commencing operations by unduly depressing capital availability or damage the investment climate.<sup>356</sup> This entails agreeing on the appropriate financial instruments.

#### **3.6.1.1 Cash deposit**

A deposit can be made for a financial surety as cash. The cash option of placing an amount of cash on deposit into an account specified by the Minister is the least used instrument due to the constraints it places on the working capital requirements of the mining entity. Significant capital is tied up for the duration of the mine’s life, especially for large mining projects, and the government may be tempted to use the deposited cash for purposes other than securing the mining project.<sup>357</sup> It does, however, present a low risk subject to the proviso that the quantum of such cash is sufficient to undertake the requisite remedial work and is ring-fenced from other creditors in the event the mining company becomes insolvent. The advantages of a cash deposit are that cash is readily available for mine closure and site rehabilitation and it helps public acceptance due to the visibility of the guarantee.<sup>358</sup>

#### **3.6.1.2 Bank guarantee**

This can be defined as an agreement between a banking institution and a mining company whereby the bank will provide funds to a third party (the beneficiary, which in this case would be the government), under specific terms contained in the letter of credit.<sup>359</sup> This guarantee is unconditional, irrevocable and must be paid on demand. Therefore, the issuing bank must honour all legitimate claims i.e. those in compliance with the terms of the letter of credit presented by the beneficiary.<sup>360</sup> Any changes to the letter of credit require the consent of all parties involved. Since rehabilitation funding is a long-term commitment, the normal practice is to issue a letter of credit in the amount of the estimated cost of rehabilitation, with

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<sup>355</sup> Ibid.

<sup>356</sup> Hoskin (see note 46 above).

<sup>357</sup> Sassoon (see note 274 above).

<sup>358</sup> Ibid.

<sup>359</sup> Miller (see note 348 above) 48.

<sup>360</sup> Ibid.

a one year term which is then automatically extended each year, based on an annual financial review of the company by the bank.<sup>361</sup> The advantages of a bank guarantee are that the costs associated with opening a letter of credit are expensed as a tax deductible item, it is usually cheap to set up as such and some mines turn to bank guarantees for financial provision because of the smaller degree of responsibility required, no capital is tied-up.

The disadvantage of using the guarantee mechanism is the cost involved to the mining entity; as such guarantees are typically renewable annually and attract a fee calculated as a percentage of the guaranteed amount.<sup>362</sup> As a result, mines that claim to use bank guarantees for financial provision for closure may avoid the cash flow issues that a trust fund presents but there is an incentive to understate the size of the rehabilitation cost as the guarantee incurs a fee based on the size of the provision.<sup>363</sup> Also the availability of a bank guarantee may be restricted by a company's credit.<sup>364</sup>

Van Zyl et al submit that the Minister should only accept a bank guarantee after identifying the creditworthiness of the banking institution or guarantor.<sup>365</sup> This is so because the banking institution may become insolvent or be placed under a business rescue. The other issue with a bank guarantee is that it relies on the closure cost estimate made by the mine. Thus, it can be submitted that given the high likelihood that the cost estimated by the mine will not be correct at closure, the bank guarantee will not be adequate if it is based on the mine's original estimate. There will therefore be a larger than anticipated liability on the part of the bank at the time of the mine's closure.<sup>366</sup>

### **3.6.1.3 Trust fund**

A trust fund is a fund set up by a mining company for an amount that is determined to be sufficient to cover specific costs of closure and rehabilitation which are contained in the closure plan.<sup>367</sup> Trust funds are preferred to bank guarantees for a number of reasons such as the fact that they allow the mine to make financial provision on its own accord.<sup>368</sup> A trust fund is set up independently of other liabilities of the mining company so that debtors do not have a claim against the trust fund in the event of insolvency. Trust funds are also regarded as

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<sup>361</sup> Sassoon see (note 274 above).

<sup>362</sup> Ibid.

<sup>363</sup> Hewitson (see note 119 above) 70.

<sup>364</sup> Sassoon '(see note 274 above) Obtaining an LOC may reduce the borrowing power of the mining company.

<sup>365</sup> Van Zyl (note 24 above).

<sup>366</sup> Hewitson (see note 119 above) 71.

<sup>367</sup> Miller (see note 348 above) 50.

<sup>368</sup> Hewitson (see note 119 above) 71.

the most desirable type of financial instrument from the point of view of regulators and society because they force the mine to assume responsibility for funding its rehabilitation at closure.<sup>369</sup>

In order to improve the efficacy of a trust fund there is a need to ensure that the trustees who have been made responsible for the trusts funds become personally liable themselves if adequate provisions are not met. Improved and greater provision for liability of trustees needs to be aligned with section 34 of NEMA, section 43 of the MPRDA as well as section 77 of the Companies Act and section 9 of the Trust Property Control Act. In addition, trustees should become personally liable if the provisions of the trust deed are not complied with.

The size of the trust fund at closure will only be adequate if the closure cost estimation is correct. The accuracy of current closure cost estimates is questionable. This needs to be addressed by assessing the quantum for financial provision on a regular basis so that the size of the trust fund contributions increases as the rehabilitation costs of closure increase. The fund must be structured in such a way as to give the government "reasonable assurance" that sufficient funds will be available to meet expected reclamation costs.<sup>370</sup>

### **3.7 Conclusion**

As alluded to above, before the implementation of the OES, the MPRDA was the primary legislation governing the environmental regulation of mining, and provided the most specific provisions on financial provision for rehabilitation of mining areas. However, this has since changed, and NEMA is currently the primary legislation regulating the environmental regulation of mining especially the financial provision for closure and closure of the mine.<sup>371</sup> It is argued that the promulgation of the Financial Regulations in terms of NEMA is in line with a move towards 'One Environmental System', and the transfer of all environmental governance law out of the domain of the MPRDA. The Regulations now provide more certainty on how to calculate the financial provision required of all mining and prospecting rights. It is submitted that the required financial provision will necessarily increase in light of the requirement of a very detailed itemisation of the cost of carrying out all planned rehabilitation and remediation, the annual rehabilitation requirements, that sufficient funds must be in place to cover the implementation of plans for 10 years and the express

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<sup>369</sup> Ibid.

<sup>370</sup> Sassoon (see note 274 above).

<sup>371</sup> Ibid.

requirement for post-closure provision for the treatment and pumping of polluted or extraneous water. The same will also apply for the existing provision because such provision must also be reviewed and re-assessed in order to ensure that it complies with the Regulations. Financial provision will also have to be re-assessed annually, and may therefore increase annually.

The NEMA Financial Regulations requires that a final rehabilitation, decommission and mine closure plan is developed which includes the determination of financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts of mining. The new regulations are far more stringent in terms of the financial provisions required for rehabilitation and the financial vehicles allowed to provide for the rehabilitation liabilities. It is important to note that the financial provision now expressly extends to the ongoing post-decommissioning management of negative environmental impacts in addition to rehabilitation and closure.<sup>372</sup> The fact that a mine's date of closure is often only in a decade or longer means that correctly estimating costs now can be incredibly difficult, even with the most effective systems in place.

Thus, the adequacy of the financial provision at closure ultimately depends on the accuracy of the closure cost estimate, irrespective of how the provision has been made. It is therefore important that mines first correctly estimate the cost of closure. In light of the above background a concerted effort needs to be made to regularly assess whether the financial provision made is accurate. The first step in the process through which financial provision is made is the accurate estimation of the amount of money necessary to undertake the required environmental rehabilitation and mine closure. The manner in which the amount is determined is therefore critical to the overall success of the financial provisions system.

A key requirement of NEMA is for mining companies to make an accurate determination of the quantum required for the rehabilitation or management of impacts, and to make sufficient financial provision for these in event that they default on their obligations of repairing the environment. By requiring that mining companies make financial provisions for closure and rehabilitation of mines is effectively giving effect to section 24 of the constitution. At least there will be some guarantee that the environment will be protected for the future generations as well. The legislation requires sufficient funds to be provided to achieve closure and to provide for any latent impacts. The main challenges are therefore to determine the extent of

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<sup>372</sup> Section 24P (1) of NEMA (as amended by Act 25 of 2014).

liability, predict the latent and residual impacts and calculate the amount required.<sup>373</sup> In regards to the funding of residual and latent environmental effects, there is no prescription about how the Minister should calculate the amount of the financial provision to be kept in order to cover the future costs of latent or residual environmental impacts, apart from the environmental risk report submitted by the holder. While residual impacts can be planned for in the environmental risk report, latent impacts can clearly not be accurately forecast, and it is therefore unclear exactly how the Minister calculates how much of the financial provision to retain in order to make provision for this eventuality.<sup>374</sup>

One of the shortfalls of the NEMA financial provisions regulations is that they do not make reference to the Guidelines Document nor do they specify that the Guidelines Document should be reviewed and updated, and the first document released by the Department has also been the last. Therefore, the quantum calculations remain at 2005 levels, without provision being made for inflation, and although some of the major mines have built inflation into their calculations, many others have not.<sup>375</sup> This creates the possibility that the government could have to bear the financial responsibility of rehabilitating mines where operations are closed and the companies are unable to raise enough capital to carry out the rehabilitation themselves.<sup>376</sup> Van Zyl et al reported relatively high levels of variability with regard to the perceived adequacy of financial provisions.<sup>377</sup> The authors note that uncertainty with regard to the adequacy of financial provisions appears to be highest in relation to providing for adequate post-closure water treatment.<sup>378</sup> The costs associated with treatment can be particularly high and combined with uncertainty about what is strictly required can lead to mines effectively trying to downplay or even ignore unacceptable risks.<sup>379</sup>

The new regulations take a much broader view of the lifecycle of the mine, including annual rehabilitation, rehabilitation at closure at the end of life of mine, and rehabilitation of latent or residual impacts that may arise long after mining has ended. The regulations are more specific about the accurate calculation of financial provision, and importantly now require mines at any time to have funds available to pay for rehabilitation costs within a 10-year

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<sup>373</sup> Ibid.

<sup>374</sup> K Swart 'The Mining Legacy in South Africa – A Superfund Sized Problem or a Trust Fund Baby? A critical analysis of the market-based instruments applicable to mining, with specific focus on financial security mechanisms and suggestions for a new approach'. (Unpublished LLM Thesis, UCT, 2012) 45.

<sup>375</sup> Van Zyl (see note 22 above) 23.

<sup>376</sup> Hewitson (see note 318) 3.

<sup>377</sup> Van Zyl (see note 22 above) 23.

<sup>378</sup> Ibid.

<sup>379</sup> Hewitson (see note 119 above).



timeframe (mining companies traditionally hold far less funds in trust for rehabilitation). The regulations also require involvement of more independent specialists, regular review and audits, and publication of financial provision and audits on mining companies' websites. Financial provision must also be signed off by the Chief Executive Officer of the mining company to ensure accountability at the highest level. The use of an independent auditor is also appropriate as it gives assurance as to the adequacy and compliance of a particular financial provision. The review by an independent auditor could also serve as an opportunity for capacity building and learning since the DMR officials may learn from the auditor's skills.<sup>380</sup> This also helps in adjusting the financial provision to be in line with the escalating costs and inflation. In essence, 'the system is now geared towards guaranteeing that adequate funds are available for planned or premature closure at all times and in all possible circumstances'.<sup>381</sup>

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<sup>380</sup> Ibid 27.

<sup>381</sup> Van Zyl (see note 24 above) 19.

## Chapter Four

### 4. Mine Closure Planning Provisions from other Jurisdictions

#### 4.1 Introduction

The prevalent negative legacy of abandoned, derelict and ownerless mining sites around the world has compelled governments of major mining jurisdictions to strengthen their requirements for financial security to guarantee rehabilitation upon mine closure. It is beyond doubt that, ‘in the past, mining companies used irresponsible mining methods with no regard towards protecting the environment and had often shirked their responsibility towards environmental rehabilitation by leaving an area unrehabilitated’.<sup>382</sup> Mining activities that have left negative environmental legacies, ‘are now unacceptable, and require improved mining legislation and control to ensure mine site closure is completed successfully, in a sustainable manner’.<sup>383</sup> Governments of traditional mining jurisdictions around the world have progressively enacted legislation, regulations, adopted policies and guideline documents that oblige mining companies to provide financial security to guarantee the costs of mine closure and site rehabilitation when mining operations cease.<sup>384</sup> It is now an increasingly accepted practice that when mining activities cease for whatever reason the mining company will be responsible for carrying out the rehabilitation of that mining site before they leave.<sup>385</sup>

The first part of this chapter will examine the different types of financial security mechanisms that are in place in different mining jurisdictions, for mine closure and rehabilitation. There is a need to examine ways in which the South African mine closure provisions could be improved along with a range of other measures to deal with the ever-present environmental risk due to mine site abandonment. The second part of the chapter will assess other traditional mining jurisdictions’ on-going innovation in mine closure and rehabilitation. The aim is to determine what legislation, regulations, policies, financial securities and guideline documents exists for managing mine site closure. This will help in assessing whether the existing South African legislative provisions for securing mine closure and site rehabilitation obligations are sufficient and efficient.

Two traditional mining jurisdictions namely Australia and Canada were selected for comparative analysis based on having different levels of experience with mining legacy

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<sup>382</sup> J Allen, and B Briggs ‘Development of a National Mine Closure Strategy’ (1999).

<sup>383</sup> Peck (see note 14 above).

<sup>384</sup> Miller (see note 348 above).

<sup>385</sup> Sasson see (note 274 above).

issues, and the on-going and anticipated future development in mine closure provisions. The selected mining jurisdictions are comparatively advanced in mining regulation practice, as they have been engaging in mining activities for a long time. This chapter does not comprehensively discuss their entire mining laws, as that would be beyond the scope of this dissertation. Rather, its focus is on the laws relating to mine closure, specifically the financial security provisions in major mining jurisdictions.

#### **4.2 Financial Security Mechanisms for Mine Closure<sup>386</sup>**

The governments in major mining jurisdictions have recently recognised the need for guaranteeing that the taxpayers are not left with the financial responsibility of mine closure, environmental clean-up and rehabilitation of mining sites, as has often been the case in the past. Thus, governments now require financial security to guarantee the costs of preventing or repairing environmental damage when mining operations cease, which are to be lodged by the prospective mining company before the beginning of mining activities.<sup>387</sup> Miller describes financial security instruments as, ‘guarantees issued by a bonding company, an insurance company, a bank, or another financial institution which agrees to hold itself liable for the acts or failures of a third party’.<sup>388</sup> The main objective of the financial securities is ‘to ensure that sufficient funds are available to government to rehabilitate mine sites in the event of operators not fulfilling their mine rehabilitation and closure obligations’.<sup>389;390</sup> The financial security mechanisms are crucial in ensuring that mine closure and site rehabilitation is completed in accordance with state requirements without the use of taxpayers’ money.<sup>391</sup>

It is important to note that laws, policies and regulations may require mine closure and rehabilitation, but in the end it is the financial security mechanisms that guarantee the completion of rehabilitation activities.<sup>392</sup> Government departments should therefore ensure

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<sup>386</sup> Please note that the words ‘financial security’ will be used interchangeably with the words ‘financial surety’ or ‘financial guarantee’.

<sup>387</sup> European Commission .Directorate-General for the Environment ‘Guidelines on Financial Guarantees and Inspections for Mining Waste Facilities’ (2007), available at [http://ec.europa.eu/environment/waste/mining/pdf/EUFinalReport\\_30.04.08.pdf](http://ec.europa.eu/environment/waste/mining/pdf/EUFinalReport_30.04.08.pdf) (accessed on 1 November 2016)

<sup>388</sup> Ibid.

<sup>389</sup> ‘The Mining Rehabilitation Fund – The First Two Years’ (note 26 above).

<sup>390</sup> P Gorey et al ‘Dealing with mining legacies: from bonds to a central mining rehabilitation fund in Western Australia’ (2014) In *Mine Closure 2014: 9th International Conference on Mine Closures*, 1 - 3 October, Johannesburg, South Africa, available at [http://researchrepository.murdoch.edu.au/id/eprint/26880/1/dealing\\_with\\_mining\\_legacyes.pdf](http://researchrepository.murdoch.edu.au/id/eprint/26880/1/dealing_with_mining_legacyes.pdf) (accessed on 7 May 2016).

<sup>391</sup> Commonwealth of Virginia-Department of Environmental Quality and Department of Mines, Minerals and Energy ‘Uranium Study: Assessment of Financial Assurance Mechanisms’, (2012), available at [https://www.dmme.virginia.gov/ Uranium/pdf/Exhibit\\_I\\_Financial\\_Assurance\\_Final.pdf](https://www.dmme.virginia.gov/ Uranium/pdf/Exhibit_I_Financial_Assurance_Final.pdf) (accessed on 8 November 2015).

<sup>392</sup> Ibid.

that there is an appropriate mechanism in place that will guarantee that funds are readily available to complete mine closure and site rehabilitation in the event that a mining company becomes unwilling or unable to complete the required rehabilitation activities.<sup>393</sup> Financial security mechanisms can be used to guarantee both ongoing environmental performance during a mining operation's lifetime and to guarantee environmental performance after closure. However,

'the most common use of financial security mechanisms is to guarantee environmental performance after closure through the funding of mine site rehabilitation. This is essentially equivalent to guaranteeing that the site will be stabilised and all necessary rehabilitation carried out so that ongoing environmental problems are avoided'.<sup>394</sup>

It is therefore beyond doubt that the 'responsible management of the rehabilitation and closure mine sites and the affected environs requires an effective regulatory, policy, and financial securities framework in place'.<sup>395</sup> The financial security mechanism must therefore be robust, up to date, and legally sound to protect the taxpayers.

### **4.3 Types of Financial Security Mechanisms**

It is trite that there are several financial security mechanisms available and the choice is dependent on the financial strength of the mining company, the amount of surety required and the timeframe over which the fund will need to be in place.<sup>396</sup> This section discusses the most frequently used types of surety instruments for guaranteeing mine closure and rehabilitation. The most common form of financial security mechanism currently in use in different mining jurisdictions is the letter of credit even though surety bonds, trusts funds and cash may be also an option. Due to the limited scope of this dissertation only selected financial security mechanisms which are frequently used will be reviewed.

#### **4.3.1 Letter of Credit**

A letter of credit 'is an unconditional agreement between a banking institution and a mining company whereby the bank will provide funds to a third party, under specific terms contained in the letter of credit'.<sup>397</sup> The third party in this case would be the relevant government department. A letter of credit is also known as a Bank Guarantee and is irrevocable. It includes the terms and conditions of the agreement between the mining company and the government,

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<sup>393</sup> *ibid.*

<sup>394</sup> Sasson (see note 264 above).

<sup>395</sup> Gorey (see note 243 above).

<sup>396</sup> Sasson (see note 264 above).

<sup>397</sup> Miller (see note 348 above) 50.

regarding the rehabilitation program and the agreed costs. Any changes to the letter of credit require the consent of all parties involved.<sup>398</sup> Since rehabilitation funding is a long-term commitment, ‘the normal practice is to issue a letter of credit in the amount of the estimated cost of rehabilitation, with a one year term which is then automatically extended each year, based on an annual financial review of the company by the bank’.<sup>399</sup> The government will usually specify from which banks it will accept a letter of credit.

#### **4.3.2 Performance Bonds/ Surety Bonds**

A performance bond is ‘an agreement between an insurance company and a mining company in order to provide funds to a third party under certain circumstances’.<sup>400</sup> In this instance, the third party is the relevant government department. A performance bond will include the terms and conditions of the agreement between the mining company and the government, regarding the rehabilitation program, the agreed costs and the conditions for the release of the bond.<sup>401</sup> Under the performance bond agreement,

the insurer agrees to act as surety for the company and makes a commitment to be financially responsible for all claims and expenses arising out of the decommissioning plan up to a certain limit. The government is the beneficiary under the bond and any changes to the bond would have to be agreed to by all three parties to the transaction.<sup>402</sup>

The operation of a performance bond is similar to that of a letter of credit. The performance bond is issued for a specific time period at the face amount of the cost of carrying out the rehabilitation work under the mine closure plan and is renewed for a further time period based on a credit review of the company.<sup>403</sup> If the performance bond is not renewed, then the government has the option of drawing the full amount.

#### **4.3.3 Trust Fund**

A trust fund ‘is an agreement between a trust company and the mining company for the sole purpose of funding the rehabilitation of a mine site’.<sup>404</sup> In addition to a trust fund, ‘there should be a signed agreement between the mining company and the government, administered by the trust company that stipulates the mining company’s responsibility with regard to the trust. This agreement should specify that a trust fund is to provide security for

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<sup>398</sup> *ibid.*

<sup>399</sup> Sasson (see note 264 above).

<sup>400</sup> *Ibid.*

<sup>401</sup> *Ibid.*

<sup>402</sup> *Ibid.*

<sup>403</sup> Miller (see note 348 above) 50.

<sup>404</sup> Miller (see note 348 above) 50.

the rehabilitation costs for a particular site, the total amount required and an outline schedule of payments'.<sup>405</sup> Trust fund contributions are typically a series of payments scheduled over a specific time period and are typically called an incrementally funded trust fund. A percentage of the total may be required as an initial deposit to lower the risk of insufficient funds if the project is abandoned before adequate payments are made.<sup>406</sup>

#### **4.3.4 Cash/ Bank Draft**

A deposit can be made for a financial surety as cash or a bank draft. 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.<sup>407</sup> Alternatively, the cash can be used to purchase a certificate of deposit that can be pledged to the relevant government agency.<sup>408</sup> Most commercial banks would charge nominal fees for setting up such accounts and the money would attract interest that would accrue to the fund.

#### **4.3.5 Company Guarantee / Corporate Financial Test**

A company guarantee 'is based on an evaluation of the assets and liabilities of the company and its ability to pay the total rehabilitation costs'.<sup>409</sup> 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'.<sup>410</sup> A company guarantee that may also be called a Corporate Financial Test, a Balance Sheet Test or a Self-Guarantee.<sup>411</sup>

### **4.4 Mine closure and Site Rehabilitation Provisions from Other Jurisdictions**

It is beyond doubt that almost every country that has been involved in major mining activities has been burdened with a legacy of abandoned, derelict and ownerless hazardous mine sites,

which have occurred as a result of inefficient or non-existent mining legislation which has failed to prevent or minimise the possible long term environmental impacts of mining operations. These mining sites that have not been rehabilitated to standards that would be

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<sup>405</sup> Ibid.

<sup>406</sup> *ibid.*

<sup>407</sup> *ibid.*

<sup>408</sup> Sasson (see note 274 above).

<sup>409</sup> Miller (see note 348 above) 51.

<sup>410</sup> *Ibid.*

<sup>411</sup> *Ibid.*

considered appropriate or acceptable in the mining industry's current context, are a direct result of such insufficient mine regulations and specific mine closure best practice standards.<sup>412</sup>

It is to avoid such challenges in the future that government agencies in several jurisdictions have adopted legislation and policies that require mining companies to provide environmental financial security to guarantee the costs of preventing or repairing environmental damage at the end of a mine's life.<sup>413</sup>

#### **4.4.3 Australia<sup>414</sup>**

The ability of the Australian mining industry to recognise and establish improved mine closure practices and mining regulations is the fundamental reason why it was selected as a comparative jurisdiction for this dissertation.<sup>415</sup> A key factor of the Australian mining industry has been the systematic development of a legal framework that aims to protect the environment, the mining company, the government, the taxpayer and secure their interests.<sup>416</sup> Australia, like South Africa, has been burdened with a legacy of unrehabilitated abandoned, derelict and ownerless mining sites.<sup>417</sup> Past mine closure practices,

which have often resulted in abandoned unrehabilitated mines, were a result of inefficient mining legislation and control. Until recently, mine site closure was not a requirement of mine closure practices and procedures, since the Australian states had either ineffective or non-existent mine site closure provisions.<sup>418</sup>

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<sup>412</sup> Smith (see note 51 above).

<sup>413</sup> Ibid.

<sup>414</sup> Australia is the world's largest exporter of coal, accounting for approximately one-third of the world trade, and the largest exporter of iron ore, lead, diamonds, zinc and zirconium, and the second largest exporter of gold and uranium. The value of Australia's mineral and energy exports was forecast to be in the order of \$110 billion in 2006-2007. See Australian Government, 'Department of Industry, Tourism and Resources' Annual Report for 2006', available at <https://www.industry.gov.au/AboutUs/CorporatePublications/AnnualReports/Pages/AnnualReport200607.aspx> (accessed on 10 January 2016).

<sup>415</sup> Australian Government, 'Department of Industry, Tourism and Resources' Annual Report for 2006', available at <https://www.industry.gov.au/AboutUs/CorporatePublications/AnnualReports/Pages/AnnualReport200607.aspx> (accessed on 10 January 2016).

<sup>416</sup> RH Chambers, 'An Overview of the Australian Legal Framework for Mining Projects in Australia' Conference paper, available at <http://www.chamberslawyers.com/wp-content/uploads/downloads/2013/10/060518-Presentation-Eng.pdf> (accessed on 07 January 2016).

<sup>417</sup> See 'Abandoned Mines - Problems, Issues and Policy Challenges for Decision Makers: Summary Report' (note 124 above) 'Large areas of dryland forest in Australia that were dug over in the gold rush in the 1860s have still not recovered. There is virtually no topsoil, and the land is covered only with sparse vegetation and stunted trees. It is estimated that more than 150 tonnes of mercury were lost from the diggings into the environment due to inefficient gold recovery processes. On the coast, elevated mercury levels from the contaminated sediments are still found in fish and health authorities have counselled a limitation on consumption of fish caught locally.'

<sup>418</sup> Smith (see note 51 above).

It is important to note that,

the Australian mining industry has identified the importance of improved legislative control in the development of a sustainable mining industry. Issues related to mine closure and site rehabilitation are now identified as an important consideration in the assessment process for mining proposals in Australia.<sup>419</sup>

The management of the mining cycle especially with respect to mine closure and legacy issues in Australia is now an important component of the regulatory system.<sup>420</sup> As a result, the states have developed comprehensive regulatory schemes to ensure the costs of rehabilitation are met by mining companies. This is not to say that ‘the current legislative control of mining operations within Australia does not contain deficiencies and inconsistencies.’<sup>421</sup>

This section seeks to provide an overview of key legal features of one of Australia’s state’s mine closure provisions and aims to demonstrate the advantages of such a system. It is important to note that the individual states and territories of Australia have the power to regulate the mining activities that take place within their borders, including enactment of individual legislation, regulations and guidance.<sup>422</sup> While there are obviously differences between each state’s mining laws, there are several common features between each of the regimes’ mine site closure provisions. All states and territories have mine closure policies which require mining companies to develop site specific post mining rehabilitation plans for approval by the relevant organisation as part of the development assessment process.<sup>423</sup> It is beyond the scope of this dissertation to provide an account of each jurisdiction’s mine closure provisions here, thus only the mine closure provisions of Western Australia are discussed below. The emphasis is on examining and explaining the policy and regulatory provisions within the Western Australia mining industry. Underpinning this section is the assumption that recent regulatory developments for mine closure and site rehabilitation in Western Australia may be of value for adaption and application in South Africa.<sup>424</sup>

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<sup>419</sup> Ibid.

<sup>420</sup> Ibid.

<sup>421</sup> Ibid.

<sup>422</sup> Gorey (see note 243 above).

<sup>423</sup> Chilean Copper Commission ‘Research on mine closure policy’ (2002) Paper 44 *Mining for the Future*, *International Institute for Environment and Development* 1.

<sup>424</sup> Ibid.



#### 4.4.4 Western Australia<sup>425</sup>

Even though mining activities have been taking place in Western Australia since the 1880s, the consistent application of mining securities in Western Australia did not commence until the late 1980s.<sup>426</sup> A negative result of this is that there was, and is, a legacy of more than 17,000 abandoned mine sites, which are a result of more than a century of mining prior to the introduction of appropriate legislation and regulation.<sup>427</sup> It is against this background that the Western Australian government has prioritised reforms which are specifically targeted to ensure that these environmental risks are adequately managed and mitigated. In addition to comprehensive and clear legislation, the policies and guidelines for mine closure and site rehabilitation re comprehensive and up-to-date. What remains to be seen however, is whether the initiatives have strengthened the regulatory framework for addressing potential long term environmental risks posed by mining activity.

It is important to note that, ‘mining activities in Western Australia are regulated under a number of different pieces of environmental legislation in addition to the provisions of the Mining Act,<sup>428</sup> including the Environmental Protection Act,<sup>429</sup> the Conservation and Land Management Act 1984,<sup>430</sup> and the Contaminated Sites Act’.<sup>431</sup> Morrison- Saunders opined that,

while these legislations, regulations and policies can assist in the enforcement matters of pollution, environmental harm, the mining securities system is a key mechanism by which the government can be guaranteed access to funds to complete rehabilitation works rather than through protracted court action (which may be an issue with some of the other legal mechanisms).<sup>432</sup>

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<sup>425</sup> The Department of Minerals and Petroleum (DMP) (2012) reported that ‘it represented ninety five per cent of the State's total export of goods and that mineral exploration reached a record level of \$1.6 billion (Australian dollars - AUD) which accounted for fifty four per cent of total exploration expenditure in Australia. DMP (2012) also reported that at the end of the financial year an estimated \$138 billion (AUD) was invested in resources projects under construction or in the committed stage of development with a further \$169 billion of planned or possible projects’. See A Morrison- Saunders, and J Pope, ‘Mine closure planning and social responsibility in Western Australia – recent policy innovations’, (2013) In J Wiertz, *Proceedings of SRMining 2013: 2nd International Conference on Social Responsibility in Mining*, Nov 5-8 2013, pp. 211-219. Santiago, Chile: SMICSRM, 212.

<sup>426</sup> A Morrison- Saunders, and J Pope, ‘Mine closure planning and social responsibility in Western Australia – recent policy innovations’, (2013) In J Wiertz, *Proceedings of SRMining 2013: 2nd International Conference on Social Responsibility in Mining*, Nov 5-8 2013, pp. 211-219. Santiago, Chile: SMICSRM, 212.

<sup>427</sup> *Ibid.*

<sup>428</sup> Western Australia, Mining Act, 107 of 1978.

<sup>429</sup> The Environmental Protection Act, 87 of 1986.

<sup>430</sup> The Conservation and Land Management Act, 126 of 1984.

<sup>431</sup> The Contaminated Sites Act, 60 of 2003.

<sup>432</sup> A Morrison- Saunders, and J Pope (see note 426 above).

## 4.4.5 Types of Financial Security Mechanisms Used in Western Australia

### 4.4.5.1 Performance Bond System

Prior to 2013, the Western Australian government used a bank-guaranteed unconditional performance bond as a financial security mechanism to guarantee mine site closure and rehabilitation.<sup>433</sup> The Western Australian Department of Mines and Petroleum (hereafter DMP) defines an Unconditional Performance Bond as,

a contract between the Minister for Mines and Petroleum and a third party of a financial standing that is acceptable to the Minister, providing the third party to unconditionally pay an agreed sum to the Minister upon his request following the failure of the tenement holder to meet with the environmental conditions imposed on a mining tenement.<sup>434</sup>

Although the unconditional bonds did not reflect the estimated cost of rehabilitation,

the size of the bond was expected in principle to be based on the amount it would cost for the government to rehabilitate the mine site and would be reviewed periodically, taking into account the amount of work required in the next phase of mining and rehabilitation already undertaken.<sup>435</sup>

Under the performance bond system, all mining companies were required to provide unconditional bonds as security to ensure that they fulfilled their environmental obligations of rehabilitating mine land.

Section 26 (a) of the Mining Act provides that, ‘any person carrying out mining operations on the land shall make good injury to the surface of the land or injury to anything on the surface thereof’.<sup>436</sup> Furthermore, section 26 (d) provides that, ‘the person carrying out such mining operations shall lodge with the Minister, within such period as the Minister specifies in writing, a security to cover the probable cost of the work’.<sup>437</sup> Section 60 requires, ‘an applicant for an exploration licence to lodge a security for compliance with the conditions to which the exploration licence will be subject’<sup>438</sup> and section 126 (c) established that such securities could be ‘bonds for an amount as approved by the Mining Minister’.<sup>439</sup>

It is important to note that no mining operation could commence or expand until the government agencies held a satisfactory unconditional bond. In the event of mine

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<sup>433</sup> N Sommer and A Gardner, ‘Environmental securities in the mining industry: A legal framework for Western Australia’, (2012) 31 *Australian Resource and Energy Law Journal* 242-262.

<sup>434</sup> G Cobby ‘Review of Environmental Performance Bonds in Western Australia’ in A Fourie and M Tibbett (Eds.) *Mine closure* (2006) 75-80.

<sup>435</sup> *Ibid.*

<sup>436</sup> Western Australia, Mining Act, 107 of 1978.

<sup>437</sup> *Ibid* section 26 (d).

<sup>438</sup> *Ibid* section 60.

<sup>439</sup> *Ibid* section 126 (c).

abandonment or other failure by a mining company to manage their mine-site in accordance with conditions established under the Mining Act, the Western Australian government could in principle take possession of the bond and assume responsibility for rehabilitation works.<sup>440</sup> The final stage of bond retirement and mine site relinquishment would occur when it could be satisfactorily demonstrated that the rehabilitated area was safe and stable, where erosion is comparable to the natural landscape and biological systems are sustainable under a range of seasonal conditions representative of the local climate.<sup>441</sup>

The reform of the performance bond system was necessitated by a number of factors, chief amongst them being that, ‘the level of security provided by the unconditional bonds did not keep pace with the increasing costs and standards of rehabilitation’.<sup>442</sup> Their value was insufficient to cover appropriate mine closure activities and environmental remediation in the case of a default by a mining company.<sup>443</sup> Thus, it is argued that the unconditional performance bond was significantly less than the potential environmental clean-up, mine closure and site rehabilitation costs. It was estimated that, ‘the unconditional bonds represented approximately 80 per cent of the total cost of rehabilitation and by 2008, this had dropped to around 25 per cent.’<sup>444</sup> In support of the estimation Fulcher and Franz also noted that the bonds could ‘cover only 25-30 percent of Western Australia's contingent liability, thereby making government and wider community vulnerable in the event of unplanned mine abandonment’.<sup>445</sup> It is against this background that it was reported that, ‘the bonds system does not cover the true cost of rehabilitating abandoned mines.’<sup>446</sup> The DMP further noted that,

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<sup>440</sup> The Mining Rehabilitation Fund–The First Two Years’ (see note 29 above).

<sup>441</sup> Department of Industry & Resources ‘Environmental Branch Bond Guideline – Environmental Performance Bonds’ (2007) available at [www.doir.wa.gov.au](http://www.doir.wa.gov.au) (accessed on 3 January 2015).

<sup>442</sup> The Mining Rehabilitation Fund–The First Two Years’ (see note 29 above).

<sup>443</sup> Gorey et al. (see note 243 above).

<sup>444</sup> Western Australia - Department of Mines and Petroleum, ‘Mining Rehabilitation Fund – Guidance’ (2015), available at <http://www.dmp.wa.gov.au/Documents/Environment/ENV-MEB-382.pdf> (accessed on 05 January 2016). Department of Mines and Petroleum and Environmental Protection Authority ‘Guidelines for Preparing Mine Closure Plans’(2011)available at <http://edit.epa.wa.gov.au/EPADocLib/Guidelines-for-preparing-mineclosure-plans-210611.pdf> (accessed on 7 May 2016).In a 2011 policy paper, ‘the State estimated that bonds secured less than 25 per cent of the total potential rehabilitation liability for mines in Western Australia’.

<sup>445</sup> J Fulcher and M Fanz ’ Western Australian Tenement Holders Liable for Mining Rehabilitation Fund Levy’ (2013) available at <http://www.findlaw.com.au/articles/5045/resources-andenergy-alert-western-australian-tene.asp> (accessed on 19 August 2013).

<sup>446</sup> Western Australia - Department of Mines and Petroleum, ‘Mining Rehabilitation Fund – Guidance’ (see note above).

Bonds discourage investment by tying up significant funds that could be used for developing a mining project and also have to be applied to the specific mine for which the security is held, they cannot be used to address the problem of legacy abandoned mines.<sup>447</sup>

The above weaknesses necessitated a change of the performance bond system and it resulted in the evolution of the mining rehabilitation fund approach since, ‘increasing bonds to cover the full rehabilitation costs would impose a significant financial impact upon the mining industry’.<sup>448</sup> The Western Australian government had to consider other alternative models that have the potential to provide a similar level of financial security to the government at a lower cost to industry.<sup>449</sup>

#### **4.4.5.2 Mining Rehabilitation Fund Act 2012**

The continual underestimations in financial provisioning and the inadequacy of the bond system meant a high probability of continual abandonment of mining sites.<sup>450</sup> To address this challenge, government implemented the Mining Rehabilitation Fund Act<sup>451</sup> (hereafter MRF) which aims to be an antidote to the above challenges. On 1 July 2013, Western Australia introduced a new form of mining security to replace a system of unconditional performance bonds, which were not considered to be providing an adequate level of surety to government in the event of a mine being abandoned prior to rehabilitation. The MRF is unique to Western Australia, and possibly the world for this type of application to the mining sector. In terms of section 6 of the MRF, ‘the main purpose of the Fund is to provide a source of funding for the rehabilitation of abandoned mine sites and other land affected by mining operations carried out in, on or under those sites’.<sup>452</sup>

The Mining Rehabilitation Fund Regulations<sup>453</sup> in terms of section 4, establishes a one per cent contribution levy based on the rehabilitation liability estimate per tenement to be paid annually into the fund.<sup>454</sup> This is so because section 13 of the MRF provides that, ‘the amount

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<sup>447</sup>Department of Mines and Petroleum ‘Mining Rehabilitation Fund Fact Sheet’ (2013), available at [http://www.dmp.wa.gov.au/documents/Mining\\_Rehabilitation\\_Fund\\_Fact\\_Sheet.pdf](http://www.dmp.wa.gov.au/documents/Mining_Rehabilitation_Fund_Fact_Sheet.pdf) (accessed on 25 June 2013).

<sup>448</sup> Ibid.

<sup>449</sup> Morrison- Saunders and Pope (see note 426 above).

<sup>450</sup> D Janse van Rensburg ‘Investigating Western Australia’s Rehabilitation Fund as a Fiscal Policy Solution for South African Abandoned Mines’ (Unpublished Thesis, North-West University 2015).

<sup>451</sup> Western Australia, Mining Rehabilitation Fund Act, 33 of 2012.

<sup>452</sup> Ibid Section 6.

<sup>453</sup> The Mining Rehabilitation Fund Regulations, 2013.

<sup>454</sup> Ibid section 4. Section 4 provides that;

- 1) For the purposes of section 13 of the Act, the amount of levy payable in respect of a mining authorisation in a year is the amount worked out in accordance with the following formula —  $RLE \times FCR$  where — FCR is the fund contribution rate of 1%; and RLE is the rehabilitation liability estimate for the mining authorisation for the year worked out under sub regulation (2).

of levy payable is the amount that is specified in, or worked out in accordance with, the regulations'.<sup>455</sup> It is important to note that the existence of the MRF does not alter the legal obligations of mining companies for the management of abandoned mine sites, nor does it demand that all abandoned sites will be rehabilitated with funds from the MRF as provided for by section 8 of the MRF Act.<sup>456</sup> Only in the event of the mine undergoing premature mine closure and is unable to complete closure as planned due to lack of financing, will the capital held in the fund be accessed to assist in the rehabilitation of these abandoned sites.<sup>457</sup> Section 8 (1) (a) (i) - (ii) of the MRF Act establishes that the interest earned would be used to fund rehabilitation of legacy-abandoned mine sites pre-dating establishment of the fund while the capital only would be used to rehabilitate mine sites levied through the fund.<sup>458</sup> Money standing to the credit of the Fund (whether or not it consists of or includes investment income), may be applied for these purposes to fund the rehabilitation of (i) abandoned mine sites that are, or have been, the subject of mining authorisations in respect of which the levy is, or has been, payable; and (ii) any affected land relating to those sites'.<sup>459</sup>

It is important to note that the interest from the investment of the MRF can be used to fund the rehabilitation of abandoned sites (legacy sites) unlike the performance bonds that were used solely to rehabilitate the site for which they were created.<sup>460</sup> This enables legacy abandoned mine sites to be rehabilitated 'whilst overcoming any perception a mining company might have that the fund would be a kind of tax or revenue earning mechanism for government'.<sup>461</sup> As noted by the DMP, money in the fund will be used for rehabilitation 'where the operator fails to meet rehabilitation obligations and every other effort has been used to recover funds from the operator'.<sup>462</sup> Thus, the MRF will only finance rehabilitation on those abandoned mine sites where reasonable compliance options have been explored and

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- 2) For the purposes of sub regulation (1), the rehabilitation liability estimate for a mining authorisation for a year is the amount obtained by —
    - (a) for each rehabilitation liability category —
      - i. working out the total area of land (expressed in hectares and rounded to at least 2 decimal places) in the area of the mining authorisation that was in that category on the assessment day in that year for the mining authorisation; and
      - ii. multiplying the figure worked out under subparagraph (i) by the unit rate that applies to that category; and
    - (b) adding together all of the amounts worked out under paragraph (a).

<sup>455</sup> Section 13 of the MRF Act.

<sup>456</sup> Section 8 of the MRF Act.

<sup>457</sup> Section 9A of the MRF Act.

<sup>458</sup> Section 8 (1) (a) (i) - (ii) of the MRF Act

<sup>459</sup> Ibid.

<sup>460</sup> Ibid.

<sup>461</sup> Morrison- Saunders and Pope (see note 426 above).

<sup>462</sup> Mining Rehabilitation Fund Fact Sheet (see note 447 above).

another operator cannot be found to take over the liability.<sup>463</sup> The MRF provides excellent backup financing if mining operations cease and the company is unable to cover the entirety of the rehabilitation costs, as well as providing financing for the persistent problems caused by abandoned mines.<sup>464</sup>

#### 4.5 Canada

It is beyond doubt that mining activities have been one of the pillars of the Canadian economy for over a century. This long history of mining activities has resulted in the negative legacy of more than 10,000 abandoned, derelict and ownerless mining sites.<sup>465</sup> The legacy of the abandoned mining sites which exists in all Canadian mining jurisdictions, with the associated environmental liability, and the financial costs of clean up, is a serious issue facing Canada.<sup>466</sup> The Commissioner of the Environment and Sustainable Development reported that:

hundreds of thousands of tons of highly toxic chemicals such as arsenic and cyanide are found at northern abandoned mine sites. These chemicals, the result of past mining operations, have accumulated to hazardous levels. Indian and Northern Affairs Canada estimates that the clean-up and closure of these complex contaminated sites will cost Canadian taxpayers at least \$555 million. In many cases, long-term site management will be needed because complete and definitive clean-up will not be possible.<sup>467</sup>

The above environmental affairs are a result of a legacy of centuries old practices of inadequate, insufficient or non-existent mine closure policies and provisions.<sup>468</sup> It is against this background that the Canadian Whitehorse Mining Initiative suggested that the mining industry should aim, ‘to ensure that comprehensive rehabilitation plans that return all mine sites to viable, and, wherever practicable, self-sustaining ecosystems are developed, and are adequately financed, implemented, and monitored in all jurisdictions’.<sup>469</sup>

Just like South Africa, the approach to mine closure is that the mining company is responsible for rehabilitating a mine site in an environmentally responsible manner at its own cost. The Canadian government also subscribes to the principle of polluter pays as evidenced by its

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<sup>463</sup> Gorey et al. (note 390 above).

<sup>464</sup> Ibid.

<sup>465</sup> Castrilli (note 123 above).

<sup>466</sup> Ibid.

<sup>467</sup> Commissioner of the Environment and Sustainable Development *Abandoned Mines in the North: Report to the House of Commons* (2002) 3.

<sup>468</sup> WR Cowan, WO Mackasey and JGA Robertson ‘The Policy Framework in Canada for Mine Closure and Management of Long-Term Liabilities: A Guidance Document’ (2010) National Orphaned/Abandoned Mines Initiative (NOAMI – Canada), available at <http://www.abandoned-mines.org/pdfs/PolicyFrameworkCanforMinClosureandMgmtLiabilities.pdf> (accessed 15 June 2015).

<sup>469</sup> Government of Canada ‘Whitehorse Mining Initiative’ Natural Resources Canada, available at <http://www.nrcan.gc.ca/mining-materials/policy/government-canada/8698> (accessed on 05 January 2017).

signing of the Rio Declaration.<sup>470</sup> Principle 16 of the declaration,- which captures the principle of polluter pays - provides that,

National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.<sup>471</sup>

Thus, the government has been taking measures to ensure that presently operating and new mines do not leave behind environmental problems whose clean-up will be paid for by Canadian taxpayers.<sup>472</sup> Canada has instituted,

a series of legislative initiatives designed to create procedural and enforcement mechanisms support of mine closure planning, implementation and subsequent outcomes across all provinces. In Canada, the government requires that companies secure the necessary funding by providing guarantees for mine-closure funds prior to mine construction and operation.<sup>473</sup>

It is important to note that Canada like Australia uses the federal system, and under the Canadian federal system responsibility for mining falls within the exclusive domain of the provinces.

#### **4.5.1 Ontario Mine Closure Provisions**

This section provides Ontario's legislative, regulatory and policy framework governing mine closure and rehabilitation. The section seeks to determine whether the legal and policy framework in relation to operating mines is adequate to address concerns that current mining activities do not add to the legacy of abandoned mines in future.<sup>474 475</sup> This section details the

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<sup>470</sup> Rio Declaration on Environment and Development (1992), UN Doc. A/CONF.151/26 (vol. I) / 31 ILM 874 (1992), available at <https://cil.nus.edu.sg/rp/il/pdf/1992%20Rio%20Declaration%20on%20Environment%20and%20Development-pdf.pdf> (accessed on 05 January 2017).

<sup>471</sup> Ibid, Principle 16.

<sup>472</sup> Cowan et al. (see note 468 above).

<sup>473</sup> SM Zobaidul Kabir, F Rabbi and MB Chowdhury 'Mine Closure Planning and Practice in Canada and Australia: A Comparative Review' (2014) *Proceedings of 11th Asian Business Research Conference* 26-27 December, 2014, BIAM Foundation, Dhaka, Bangladesh, available at [http://www.wbiworldconpro.com/uploads/dhaka-conference-2014/economics/1419496645\\_221-Rabbi.pdf](http://www.wbiworldconpro.com/uploads/dhaka-conference-2014/economics/1419496645_221-Rabbi.pdf) (accessed on 24 December 2016).

<sup>474</sup> According to a study conducted by Hamblin, 'Ontario has about 6,000 abandoned, derelict and ownerless mining sites, many of which are in the public domain. These legacy mines contain approximately 18,500 individual hazards. The study further states that the cost to rehabilitate all of the abandoned sites in Ontario has been estimated at approximately \$300 million (CAN). The cost to rehabilitate the 30 – 40% of sites that have reverted to the Province has been pegged at approximately \$120 million (CAN). According to a 2004 report, mines abandoned by bankrupt operators represented 67 of the sites on the EPA 'Superfund National Priorities List' and it was estimated that the federal government would be responsible for bearing \$2.4 billion of costs associated with their clean-up'. See CD Hamblin 'Ontario Leads the Way in Abandoned Mines Rehabilitation' (2003) In *Proceedings of the Sudbury 2003: Mining and the Environment Conference*, Sudbury, Ontario, May 25 – 28, 2003.

mine closure provisions under Ontario's Mining Act, specifically the relevant provisions regarding financial security mechanisms. This section seeks to examine the financial security mechanisms that are used in Ontario and the role they play in protecting the government, and likewise the taxpayers from being compelled to incur costs related to the closure and rehabilitation of mining sites. This involves asking how Ontario's provincial government translated the polluter pays principle into a practical regulatory framework for the mining industry.<sup>476</sup>

#### **4.5.2 Ontario's Financial Security Mechanisms**

A central element in Ontario's mine closure and site rehabilitation regulation is that mining companies are required to provide some form of financial guarantee to the government to cover estimated mine closure costs.<sup>477</sup> It is important to note that Ontario's Mining Act<sup>478</sup> defines a closure plan as including financial security to the government for the performance of the plan's requirements.<sup>479</sup> This is so because financial security is the cornerstone of mine closure planning in Ontario and the rest of Canadian jurisdictions. In addition to ensuring that a closure plan accurately follows the requirements of the Mining Act, a mining company must 'ensure that a closure plan specifies the form and amount of financial assurance to be provided by the prospective mining company in respect of the project.'<sup>480</sup> The Mining Act and its Closure Regulations<sup>481</sup> also set out the type of acceptable financial security mechanisms. Section 145 (1) of the Mining Act details the specific forms of financial security mechanisms that may be accepted by the director and these are:

- 1 Cash. Section (8) of the Mining Act provides that, 'the amount of any cash provided as financial security shall be paid into a special purpose account'.<sup>482</sup>
- 2 A letter of credit from a bank named in Schedule I to the Bank Act (Canada).
- 3 A bond of a guarantee company approved under the Insurance Act to write surety and fidelity insurance.

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<sup>475</sup> J Castrilli 'Report on the Legislative, Regulatory, and Policy Framework Respecting Collaboration, Liability, and Funding Measures in relation to Orphaned/Abandoned, Contaminated, and Operating Mines in Canada' (2007) 5.

<sup>476</sup> M Hawkins 'Rest Assured? A Critical Assessment of Ontario's Mine Closure Financial Assurance Scheme' (2008) 26(4) *Journal of Energy & Natural Resources Law* 499-525.

<sup>477</sup> *ibid*

<sup>478</sup> Mining Act, R.S.O. 1990, c. M.14.

<sup>479</sup> Mining Act, R.S.O. 1990, c. M.14.

<sup>480</sup> Section 13 (1) of the Ontario Regulation 240/00 Mine Development and Closure Under Part VII of The Mining Act.

<sup>481</sup> Mining Act, R.S.O. 1990, c. M.14 and Ontario Mining Act Regulation 240/00 - Mine Development and Closure under Part Vii of the Act.

<sup>482</sup> Section (8) of the Mining Act.



- 4 A mining reclamation trust as defined in the Income Tax Act (Canada).
- 5 Compliance with a corporate financial test in the prescribed manner.
- 6 Any other form of security or any other guarantee or protection, including a pledge of assets, a sinking fund or royalties per tonne, that is acceptable to the Director.<sup>483</sup>

In order to determine the financial guarantee amount, ‘a mining company is obligated to (a) engage certain qualified professionals in the course of preparing a closure plan; and (b) estimate the costs of complying with its obligations based on the market value cost of the goods and services required by the work’.<sup>484</sup> The mining company must certify that, ‘the amount of financial assurance provided for in a closure plan is adequate and sufficient to cover the cost of rehabilitation work required in order to comply with the Mining Act and Closure Regulations’.<sup>485</sup> If the mining company does not rehabilitate the mining site, the ‘Crown may use any cash, realize any letter of credit or bond or enforce any other security, guarantee or protection provided or obtained as financial assurance for the performance of the rehabilitation measures and may carry out those measures, or appoint an agent to do so, as the Director considers necessary’.<sup>486</sup> Any rehabilitation costs incurred by the director over and above the amount of any financial security provided will constitute a debt due to the director secured by a lien against the mine property in question.<sup>487</sup> This lien may be registered by the

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<sup>483</sup> Section 145(1) of the Mining Act. For an informative discussion of some technical distinctions between the varying types of assurance listed, see Miller (note 440 above) 48–56.

<sup>484</sup> Section 12 (2)(a) – (b) of the Ontario Mining Act Regulation 240/00 - Mine Development and Closure under Part VIIi of the Act provides that; A closure plan filed under Part VII shall contain the following certificate signed by the proponent where the proponent is an individual, or the chief financial officer and one other senior officer where the proponent is a corporation: I (We) hereby certify that,

- (a) the attached closure plan complies in all respects with the *Mining Act* and this Regulation, including the Code;
- (b) the proponent relied upon qualified professionals in the preparation of the closure plan, where required, under the *Mining Act* and this Regulation, including the Code;
- (c) the cost estimates of the rehabilitation work described in the attached closure plan are based on the market value cost of the goods and services required by the work;
- (d) the amount of financial assurance provided for in the attached closure plan is adequate and sufficient to cover the cost of the rehabilitation work required in order to comply with the *Mining Act* and this Regulation, including the Code;

<sup>485</sup> Section 12 (2) of the Ontario Mining Act Regulation 240/00 - Mine Development and Closure Under Part Vii of The Act.

<sup>486</sup> Section 145(5) of the Mining Act.

<sup>487</sup> Section 151(1) of the Mining Act which provides that; If the Crown or an agent of the Crown carries out rehabilitation measures under subsection 147 (2) or does any work under subsection 148 (5), the resulting cost to the Crown is a debt due to the Crown by the proponent that,

- (a) forms a lien and a charge on the site in favour of the Crown, realizable by action for sale of any part or all of the land or lands subject to it, including any buildings, structures, machinery, chattels or personal property situate in, on, over or under the land or lands; and
- (b) is recoverable by the Crown in any court in which a debt or money demand of a similar amount may be collected.

Crown in a land registry office, and will thereafter effectively encumber the mine property until the debt is paid and the lien discharged.<sup>488</sup> Section 151 of the Mining Act provides a mechanism for the director to secure closure claims against a given proponent by way of a lien against a mine property.<sup>489</sup>

It is important to note that Ontario's Environmental Protection Act<sup>490</sup> also applies to mining activities as it is the province's most comprehensive environmental law. The Act allows the government department to impose financial security obligations in three circumstances namely;

- a. to ensure performance specified in the legal instrument;
- b. to provide alternate water supplies if the director has reasonable and probable grounds to believe primary water supplies are likely to be contaminated; and lastly
- c. to provide appropriate measures to prevent adverse effects post closure.<sup>491</sup>

To show the government commitment to ensuring the rehabilitation of the environment failure to provide financial security is the ground for refusal or termination of the approval. In this regard the Ontario's Environmental Protection Act provides that,

Failure to provide financial assurance specified in an approval or in accordance with a stage specified in an approval is grounds for revocation of the approval and for an order in writing by the Director prohibiting or restricting the carrying on, operation or use of the works in respect of which the financial assurance is required.<sup>492</sup>

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(2) The cost to the Crown of carrying out the rehabilitation measures under clause 153.2 (4) (b) is a debt due to the Crown by the proponent recoverable by the Crown in any court in which a debt or money demand of a similar amount may be collected.

(3) If the Crown or an agent of the Crown carries out rehabilitation measures under subsection 145 (5) and the financial assurance held by the Crown is insufficient to cover the total cost incurred by the Crown in completing the rehabilitation measures, the extra cost not covered by the financial assurance is a debt due to the Crown by the proponent that,

- (a) forms a lien and a charge on the site in favour of the Crown realizable by action for sale of any part or all of the land or lands comprising the site subject to the lien, including any buildings, structures, machinery, chattels or personal property situate in, on, over or under the land or lands; and
- (b) is recoverable by the Crown in any court in which a debt or money demand of a similar amount may be collected.

<sup>488</sup> Ibid, ss 151(1)–(4).

<sup>489</sup> Ibid, s 151(1).

<sup>490</sup> Environmental Protection Act, R.S.O. 1990, c. E.19.

<sup>491</sup> Ibid., ss. 132(1) (approval or order), 132(1.1) (certificate of property use).

<sup>492</sup> Ibid section 133(1).

The financial security provisions of the Ontario's Environmental Protection Act<sup>493</sup> also apply to the approvals issued under the Ontario Water Resources Act.<sup>494</sup> It is important to note that The Mining Act,<sup>495</sup> the Ontario's Environmental Protection Act,<sup>496</sup> and the Ontario Water Resources Act<sup>497</sup> all contain authority to require different financial securities, and recover government costs.

### 4.5.3 Corporate Financial Test

The main reason for choosing Ontario as a comparative jurisdiction is to determine whether the decision of the Ontario provincial government to allow the self-assurance of closure obligations pursuant to paragraph five of section 145(1)(5) of the Mining Act,<sup>498</sup> can be feasible in the South African context. A corporate financial test allows a company to self-bond if they can pass certain financial tests that measure the financial strength of the company. Under section 16 of the Closure Regulation,<sup>499</sup> a mining company that can comply with one of two corporate financial tests does not need to provide any other form of guarantee to the government department.<sup>500</sup> Other criteria include having a minimum tangible net worth, minimum value of fixed assets in the particular jurisdiction, and require several years of annual financial statements audited by an accredited accounting firm.<sup>501</sup> It is important to note that if the mining company fails the corporate financial test, it will be required to provide other means of financial security, if it

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<sup>493</sup> Environmental Protection Act, R.S.O. 1990, c. E.19.

<sup>494</sup> Ontario Water Resources Act, R.S.O. 1990, c. O.40.

<sup>495</sup> Ontario - Mining Act, R.S.O. 1990, c. M.14.

<sup>496</sup> Environmental Protection Act, R.S.O. 1990, c. E.19.

<sup>497</sup> Ontario Water Resources Act, R.S.O. 1990, c. O.40.

<sup>498</sup> Ontario - Mining Act, R.S.O. 1990, c. M.14.

<sup>499</sup> Ontario Mining Act Regulation 240/00 - Mine Development and Closure under Part VII of The Act.

<sup>500</sup> Section 16. (1) If a proponent's credit rating meets or exceeds two of the following credit ratings from the stated credit rating services, the proponent complies with the corporate financial test for the entire life of the mine:

- 2 A (low) from the Dominion Bond Rating Service Limited.
- 3 A3 from Moody's Investors Services Inc.
- 4 A- from Standard and Poor's Inc.

(2) A proponent that provides financial assurance by complying with the test under subsection (1) shall, in the closure plan,

- a) name the rating services whose ratings are being relied upon;
- b) submit confirmation from those services of their credit ratings for the proponent; and
- c) identify the form and amount of financial assurance that the proponent will provide if the proponent ceases to comply with the test under subsection (1) or ceases production from the mine. O. Reg. 240/00, s. 16 (2).

(4) If, as a result of a downgrading under clause (3) (a), the proponent no longer complies with the corporate financial test under subsection (1), the proponent shall, within 30 days, provide the Director with financial assurance in the form and in the amount identified in accordance with clause (2) (c).

<sup>501</sup> Hawkins (see note 475 above).

fails to comply in the prescribed manner with a corporate financial test, the Director may require, in the prescribed manner, that the proponent forthwith provide cash, a letter of credit, a bond or other security, guarantee or protection acceptable to the Director or that the proponent make provision for a mining reclamation trust.<sup>502</sup>

#### **4.6 Conclusion**

It is beyond doubt that the prevalent negative legacy of abandoned, derelict and ownerless mining sites around the world has compelled governments of major mining jurisdictions to strengthen their requirements for financial security to guarantee mine closure and rehabilitation. Until recently, mine closure and site rehabilitation was not ‘a requirement or regulated within the mining industry and the environmental impacts even though identified were not considered within the initial mine site development’.<sup>503</sup> Mining activities that have left negative environmental legacies, ‘are now unacceptable, and require improved mining legislation and control to ensure mine site closure is completed successfully, in a sustainable manner’.<sup>504</sup> The question that remains to be answered is whether the new laws, regulations, policies and guideline are adequate and efficient to combat mine site abandonment.

Governments have also recently recognised the importance of guaranteeing that the taxpayers are not left with the financial burden of environmental clean-up and rehabilitation of mining liabilities, as has often been the case in the past. Thus, governments now require a financial security to guarantee the costs of preventing or repairing environmental damage at the end of a mine’s life to be lodged by the prospective mining company prior to the commencement of mining activities.<sup>505</sup> In theory, ‘such mining securities ensure sufficient funds are available to a government to rehabilitate mine sites in the event operators fail to meet their mine rehabilitation and closure obligations’.<sup>506</sup> It is important to note that laws, policies and regulations may require mine closure and rehabilitation, but in the end it is the financial security mechanisms that guarantee the completion of rehabilitation activities.<sup>507</sup> The government agencies should therefore ensure that there is an appropriate mechanism in place that will guarantee that funds are available to complete closure and rehabilitation activities in the event that a mining company becomes unwilling or unable to complete the required

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<sup>502</sup> Section 145(6) of the Mining Act.

<sup>503</sup> AL Clark, K Naito and JC Clark ‘Legal framework for mine closure’, In *Mine Closure and Sustainable Development Workshop*, organized by the World Bank and Metal Mining Agency of Japan, Washington D.C. (2000).

<sup>504</sup> Peck (see note 14 above).

<sup>505</sup> Guidelines on Financial Guarantees and Inspections for Mining Waste Facilities (note 387 above).

<sup>506</sup> The Mining Rehabilitation Fund – The First Two Years (see note 29 above).

<sup>507</sup> Ibid.

rehabilitation activities.<sup>508</sup> Financial security mechanisms are, ‘one of the regulatory mechanisms which provide confidence to both the government and the community that satisfactory rehabilitation and closure will be achieved. An important aspect of the mining industry’s continuing “social licence to operate” is that the government and the community are assured that satisfactory mine closure and site rehabilitation will be achieved.’<sup>509</sup>

The ability of the Australian mining industry to recognise and establish improved mine closure practices and mining regulations is the fundamental reason why it was selected as a comparative jurisdiction for this dissertation. The main reason for choosing Ontario as a comparative jurisdiction is to determine whether the decision of the Ontario provincial government to allow the self-assurance of closure obligations pursuant to paragraph five of section 145(1)(5) of the Mining Act,<sup>510</sup> can be feasible in the South African context. It can be argued that the main reason for the mine closure provisions’ review in Western Australia was to specifically address the financial risk to the Western Australia’s government by ensuring that mining securities provide a high level of financial security that reflects the full cost of rehabilitation for mine sites operating under the Mining Act 1978. It was against this recognition that such a system, particularly if based on the previous system of bank guaranteed unconditional performance bonds, would have a significant financial impact on the industry. It is anticipated that ‘the fund will enhance the State's ongoing capacity to manage and rehabilitate abandoned mines, leading to better environmental and community safety outcomes’.<sup>511</sup>

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<sup>508</sup> Uranium Study: Financial Assurance Mechanisms (see note 391 above).

<sup>509</sup> Sasson (see note 264 above).

<sup>510</sup> Ontario - Mining Act, R.S.O. 1990, c. M.14.

<sup>511</sup> The Mining Rehabilitation Fund—The First Two Years (see note 26 above).

## Chapter Five

### 5. A Comparative Discussion and Evaluation of the Financial Provisions for Closure and Rehabilitation of Mines in South Africa and Western Australia and Ontario

#### 5.1 Introduction

The preceding chapter provided an overview of Western Australia's and Ontario's financial provisions for mine closure and rehabilitation, which although not without challenges, are considerably more comprehensive and progressive than that of South Africa. These jurisdictions were selected because they offer a useful comparison with the South African provisions, specifically the financial provisions for mine closure. This will help in assessing whether the existing South African legislative provisions for securing mine closure and site rehabilitation obligations are up to date and sufficient. The choice of the above mining jurisdictions for comparative analysis was based primarily on their having different levels of experience with mining legacy issues, the on-going and anticipated future development in mine closure provisions. The ability of the Western Australian mining industry to recognise and establish improved mine closure practices and mining regulations is the fundamental reason why it was selected as a comparative jurisdiction.<sup>512</sup> Thus, amongst the aims of this section is that of investigating the viability of Western Australia's MRF as a policy solution for the rehabilitation of South African abandoned mines as there are currently no laws or policy frameworks in place for the maintenance or rehabilitation of abandoned mines.<sup>513</sup> The main reason for choosing Ontario as a comparative jurisdiction is to determine whether the decision of the Ontario provincial government to allow the self-security of closure obligations pursuant to paragraph five of section 145(1)(5) of the Mining Act,<sup>514</sup> is feasible in the South African context.

This section provides a comparison of current mining financial security provisions in the three mining jurisdictions namely South Africa, Western Australia and Ontario. This section aims to complete a review of the policies and processes related to financial provisions in the leading mining jurisdictions of Ontario and Western Australia. This review is mainly focused on the form and scope of the financial security for mine closure and rehabilitation. The

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<sup>512</sup> Australian Government. Department of Industry, Tourism and Resources 'Annual Report for 2006', available at <https://www.industry.gov.au/AboutUs/CorporatePublications/AnnualReports/Pages/AnnualReport200607.aspx> (accessed on 24 December 2016).

<sup>513</sup> van Rensburg (note 450 above).

<sup>514</sup> Ontario - Mining Act, R.S.O. 1990, c. M.14 (note 111 above).

chapter will compare the present regulations and policies on financial security for mine closure and site rehabilitation in Ontario, Western Australia and South Africa. It is important to note that the financial provisions regulations in the selected jurisdictions have some differences and similarities in regulating agency, closure regulation, policy and guidelines governing mine closure and rehabilitation. Therefore, the aim is to determine what the current state of financial security provisions is and the types of financial security mechanisms for mine closure and rehabilitation, with a reference to the major mining jurisdictions like Western Australia, and Ontario.

### **5.2 Comparative Analysis between South Africa, Ontario and Western Australia's Financial Provision for Mine Closure and Rehabilitation**

It is beyond doubt that the financial security provisions for mine closure and site rehabilitation have been widely adopted by governments and mining companies in different mining jurisdictions. The main aim of the financial securities for mine closure and site rehabilitation is to ensure that the government has sufficient funds to rehabilitate mine sites in the event of mining companies failing to do so. These financial securities are one of the regulatory mechanisms which provide confidence to both the government and the community that satisfactory rehabilitation and closure will be achieved.<sup>515</sup> Financial securities are not unique to the regulatory scheme governing mining in South Africa, but are also applied in different forms within different mining jurisdictions. Ontario and Western Australia offer a useful comparison with South African mining and environmental laws governing mine closure and site rehabilitation specifically the financial provisions. It is beyond doubt that financial securities play a pivotal role in the government's efforts to protect the public interest by minimising the governments' financial risk in the event of the mining companies failing to rehabilitate mine sites.

### **5.3 Comparative Analysis of the Financial Provisions for Mine Closure and Rehabilitation**

Table 1 below provides a summary of the comparative analysis of the financial provisions for mine closure for South Africa, Western Australia and Ontario and this is followed by a summary of the legal provisions specifically dealing with the financial security provision for mine closure.

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<sup>515</sup> P Gorey et al 'Critical elements in implementing fundamental change in public environmental policy: Western Australia's mine closure and rehabilitation securities reform' (2016) 23(4) *Australasian Journal of Environmental Management* 370-381.

Comparative Category  Financial Provisions for Mine Closure and Rehabilitation	Comparative Jurisdictions		
	South Africa	Western Australia	Ontario
<p><b>Are there laws requiring financial provision for mine closure and rehabilitation?</b></p>	<p><i>The Constitution of the Republic of South Africa, 1996, Section 24(a), (b)(i-iii) which grants everyone the right to an environment that is not harmful to their health or well-being; and establishes sustainability principles.</i></p> <p><i>National Environmental Management Act (NEMA) 107 of 1998 &amp; NEMA: Regulations for Financial Provision for Mine Closure and Rehabilitation (GN R1147 in GG 39425 of 20 November 2015).</i></p> <p><b>Section 24P of NEMA</b> regulates the current financial provision for mine closure and rehabilitation and the section is titled ‘<i>Financial provision for remediation of environmental damage</i>’.</p>	<p><i>Western Australia’s Constitution Act 23 of 1889 and Commonwealth of Australia Constitution, 1900</i> do not specifically deal with any environmental issues nor does it mention it.</p> <p><i>The Mining Act (MA) 107 of 1978, Mining Rehabilitation Fund Act 2012 and Mining Rehabilitation Fund Regulations 2013</i></p> <p><b>Section 26 (d) of the Mining Act</b> provides that the person carrying out mining operations should provide a security to cover the probable cost of the work.</p> <p><b>Section 124(2) of the Mining Act</b> states that the holder is responsible for surface rehabilitation and should take any possible measures to ensure that environmental damage is minimised as far as is possible and should provide monetary compensation for the rehabilitation of the impacts as a result</p>	<p><i>Ontario’s Constitution Act, 1867</i> does not specifically deal with any environmental issues nor does it mention it.</p> <p><i>Ontario Mining Act, R.S.O. 1990, Chapter 14; Ontario Regulation 240/00 – Mine Development and Closure under Part VII of the Act</i></p> <p>It is important to note that Ontario’s Mining Act defines a closure plan as including financial security to the government for the performance of the plan’s requirements.</p> <p><b>Section 12 (2) of the Ontario Mining Act Regulation 240/00</b> provides that the mining company must certify that, ‘the amount of financial security provided for in a closure plan is adequate and sufficient to cover the cost of rehabilitation work required in</p>



	<p><b>Section 24P (2) of NEMA</b> gives the minister the power to use the financial security when the mining company fails to fulfil its rehabilitation obligations.</p> <p><b>Section 24P(3)</b> obliges the mining companies to annually assess their environmental liability and to increase their financial provision.</p> <p><b>NEMA: Financial Provision Regulation 4</b> provides for the determination of the financial provision by requiring the mining company to determine and make financial provision to guarantee the availability of sufficient funds to undertake rehabilitation and remediation of the adverse environmental impacts.</p> <p><b>NEMA: Financial Provision Regulation 5</b>, provides that the mining company should make financial provision for (a) rehabilitation and remediation; (b) decommissioning and closure activities, (c) and remediation and management of latent or residual environmental impacts, including the pumping</p>	<p>of mining activities</p> <p><b>Section 13 of the MRF</b> provides that the amount of levy payable is the amount that is specified in, or worked out in accordance with, the regulations.</p> <p><b>Section 9A of the MRF</b> provides that the person responsible for the site and rehabilitation thereof at the time of it being declared abandoned, is liable to pay a cost into the MRF as debt due to the state. If it has been established that the liable person is unable to provide for rehabilitation, the MRF comes into effect to provide for rehabilitation.</p>	<p>order to comply with the Mining Act and Closure Regulations</p> <p><b>Section 145(5) of the Mining Act</b> provides that If the mining company does not rehabilitate the mining site, the financial security may be used to fulfil the rehabilitation obligations.</p>
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	<p>and treatment of polluted or extraneous water.</p> <p><b>NEMA: Financial Provision Regulation 9</b> provides that, ‘the determination, review and assessment of the financial provision must be undertaken by a specialist or specialists’.</p>		
<p><b>At what stage of mine life is the financial security required?</b></p>	<p><b>Section 89 of the MPRDA</b> provides that, in addition to <b>section 5(4) of the MPRDA</b>, no mining activities may commence unless the mining company has provided for a financial provision guaranteeing the availability of sufficient funds for mine closure and rehabilitation.</p>	<p><b>Section 60 of the Mining Act</b> requires that financial security be due at issuance of initial permits. Security is recalculated annually and may be adjusted up or down commensurate with rehabilitation obligations.</p>	<p><b>Section 13 of the Ontario Regulation 240/00</b> provides that the financial security is collected at the same time as the Closure Plan is filed. This must be in advance of the commencement of mining activities.</p>
<p><b>Are there laws specifying a requirement that financial security cover be 100% of the potential liability?</b></p>	<p><b>NEMA: Financial Provision Regulation 6</b> provides that financial provisions should be determined through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for— (a) annual rehabilitation, (b) final rehabilitation, decommissioning and closure;</p>	<p><b>The Mining Rehabilitation Fund Regulations, section 4</b>, establishes a one per cent contribution levy based on the rehabilitation liability estimate per tenement to be paid annually into the fund.</p>	<p><b>Section 12 (2)(a) – (b) of the Ontario Mining Act Regulation 240/00</b> provides that; a mining company is obligated to (a) engage certain qualified professionals in the course of preparing a closure plan; and (b) estimate the costs of complying with its obligations based on the market value cost of the goods and services required by the work.</p>

	<p>(c) remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water.</p> <p><b>NEMA: Financial Provision Regulation 7</b> provides for the availability of the financial security which the mining company must ensure is always, 'at any given time equal to the sum of the actual costs of implementing closure, rehabilitation as well as remediation of the mine'.</p>		<p><b>Section 13 (1) of the Ontario Regulation 240/00</b> provides that a mining company must ensure that a closure plan specifies the form and amount of financial security to be provided by the prospective mining company in respect of the project.</p>
<p><b>Are there laws that allow the retention of a portion of financial security for latent or residue liability?</b></p>	<p><b>Section 24P(5) of NEMA</b> governs retention of the financial security for latent, residual or any other environmental impacts, including the pumping of polluted or extraneous water, for a prescribed period'.</p> <p><i>Minerals &amp; Petroleum Resources Development Act (MPRDA) 28 of 2002 and Mineral and Petroleum Resources Development Act 28 OF 2002: Mineral and</i></p>		

	<p><i>Petroleum Resources Development Regulations Gazette No. 7949 Vol. 466.</i></p> <p><b>Section 43(6) of the MPRDA</b> provides for the retention of a portion of the financial provision for latent and residual safety, health or environmental impact which may become known in the future when a closure certificate is issued.</p>		
<p><b>Is long-term water treatment included in financial security cost estimates?</b></p>	<p><b>Section 24R(2) of NEMA</b> which also provides for the retention of a portion of financial provision, ‘for any latent, residual or any other environmental impact, including the pumping of polluted or extraneous water, for a prescribed period after issuing a closure certificate.</p> <p><b>Section 28 of NEMA:</b> Duty of care and remediation of environmental damage,</p> <p><i>National Water Act 36 of 1998</i></p> <p><b>Section 30 of the NWA</b> provides that financial security may be required from a mining company to obtain water license.</p>	<p><b>Section 114B of the Mining Act:</b> provides for the continuation of liability after expiry, surrender or forfeiture of mining license and does not excuse the responsibilities of the previous holder from carrying out closure liabilities.</p>	<p><b>Ontario Regulation 240/00, Parts 3-9</b> requires that long term post closure monitoring and maintenance requirements must be included within the closure plan, and therefore allowances must be made within the associated financial security cost estimate.</p> <p><b>Environmental Protection Act, R.S.O. 1990, c. E.19.</b> The Act allows the government department to impose financial security obligations in three circumstances namely;(a) to ensure performance specified in the legal instrument; (b) to provide alternate water supplies if the director has reasonable and probable grounds</p>

	<p><b>Section 30(3)</b> provides that the responsible authority must determine the type, extent and duration of any security required, whilst <b>section 30(4)</b> expressly stipulates that the duration of the security may extend beyond the time period specified in the licence in question.</p> <p><b>Section 24R(1) of NEMA</b> also provides for the continuation of liability notwithstanding the issuing of a closure certificate.</p>		<p>to believe primary water supplies are likely to be contaminated; and lastly; (c) to provide appropriate measures to prevent adverse effects post closure</p>
<p><b>Are there laws that protect the financial provisions in case of Insolvency?</b></p> <p><b>Are there laws that regulate the closure and rehabilitation of abandoned mining site?</b></p>	<p><b>Section 24P(6)</b> provides that the Insolvency Act does not apply to any form of financial provision provided by a mining company and all amounts arising from that provision.</p> <p>There is no legal document in place which specifically deals with abandoned mines. The legislation</p>	<p><i>Mining Rehabilitation Fund Act 2012</i></p> <p>In terms of <b>section 6 of the MRF</b> the main purpose of the Fund is to provide a source of funding for the</p>	<p><b>Section 151(1) of the Mining Act</b> provides that any rehabilitation costs incurred by the director over and above the amount of any financial security provided will constitute a debt due to the director secured by a lien against the mine property in question. This provides special protection for all environmental claims against a mining company that goes bankrupt</p> <p>The NAOMI policy initiative deals and governs closure and</p>

	<p>does not delegate due-responsibility or have an approved strategic or business plan for the rehabilitation of these sites.</p>	<p>rehabilitation of abandoned mine sites and other land affected by mining operations carried out in, on or under those sites.</p> <p><b>Section 8 (1) (a) (i) - (ii) of the MRF Act</b> establishes that the interest earned would be used to fund rehabilitation of legacy-abandoned mine sites pre-dating establishment of the fund while the capital only would be used to rehabilitate mine sites levied through the fund.</p>	<p>regulation of abandoned and ownerless mines.</p>
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**Table 1: Comparison of financial provisions for mine closure and site rehabilitation in South Africa, Australia and Ontario**

### 5.3.1 Common Strengths, Weaknesses and Similarities

While the South African Constitution clearly outlines the environmental right, and gives effect to the principle of sustainable development,<sup>516</sup> Western Australia's and Ontario's Constitutions<sup>517</sup> on the other hand do not specifically mention the environment but their laws, regulations and policies accord with the principle of sustainability. Even though their laws are not specifically based on sustainable development like those of South Africa, achieving sustainability and environmentally friendly mining is their primary objective.<sup>518</sup> The mining and environmental laws endeavour to achieve sustainable goals and to ensure that the taxpayers are protected, which indirectly supports proper environmental management.<sup>519</sup> As can be deduced from the above comparison, South Africa, Ontario and Western Australia recognise that mining right carries environmental obligations, and the mining company is therefore under a legal duty to fulfil closure and rehabilitation obligations. Like Western Australia and Ontario, South African legislation makes it clear who the responsible parties for mine closure and site rehabilitation are.

One of the common features of the above jurisdictions is the adherence to and application of the PPP through regulatory frameworks, especially the financial provisions for mine closure. Although the PPP is common to all three jurisdictions, it is differentially applied. Western Australia uses the MRF, while Ontario uses self-bonding amongst other mechanisms,<sup>520</sup> and South Africa uses the cash deposit, bank guarantee and the trust fund.<sup>521</sup> South Africa now requires a financial security sufficient to pay 100 percent of the estimated mine rehabilitation which must be undertaken by a specialist or specialists<sup>522</sup> and closure costs for the mine, subject to annual review, including reductions where mines perform rehabilitation concurrent with ongoing mining operations.<sup>523</sup> In Ontario, the amount of financial security is equal to the total estimated cost of closing and rehabilitating the site as well as the subsequent monitoring

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<sup>516</sup> Y Oke 'Africa and the quest for mining sustainability: A comparative evaluation of the mineral law of Nigeria with South Africa and Ghana' (2008) 15(2) *The South African Journal of Environmental Law and Policy* 183. See also Section 24 of the Constitution.

<sup>517</sup> Western Australia's Constitution Act 23 of 1889 and Commonwealth of Australia Constitution, 1900 and Ontario's Constitution Act, 1867.

<sup>518</sup> van Rensburg (note 450 above).

<sup>519</sup> Ibid.

<sup>520</sup> Section 145(1) of the Mining Act (note 440 above).

<sup>521</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 8.

<sup>522</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 9.

<sup>523</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 11(3).

and maintenance that is to be carried out until such long term care is no longer needed.<sup>524</sup> A phased approach may be taken and security may be adjusted up or down commensurate with rehabilitation obligations.<sup>525</sup>

Western Australia is unique as it requires an annual payment into the MRF instead of a 100% rehabilitation security. The other jurisdictions under review do not have the same kind of scheme. The purpose of the MRF is to secure long-term funding for the Western Australian Government to rehabilitate abandoned mine sites within the State. The MRF annual payment is calculated by applying a unit cost to each hectare in the mining lease, based on land use, to generate a liability amount, and then factoring that liability amount by 1%.<sup>526</sup> As a result of this annual payment approach, 100% of the rehabilitation security is not required in Western Australia as it is in other jurisdictions.<sup>527</sup> The MRF funds are to be used to rehabilitate historic-abandoned mines and any new mines that default on their obligation to perform rehabilitation and closure. Operating mines are still expected to pay for their own rehabilitation and closure costs.

In all the jurisdictions under review the rehabilitation security estimate is subject to a review and adjustment process involving the mine company and the regulatory agencies. Rehabilitation security adjustments are made periodically to correspond with permit renewal cycles and/or significant changes in mine operations, except that in Western Australia the payment into the MRF is recalculated annually, even in the absence of any changes to the scope or character of the mine project.<sup>528</sup> Long-term liabilities, including water treatment where it is required, are included in the calculation of the rehabilitation security in all study jurisdictions except Western Australia, where long-term water treatment is not a typical need owing to the arid environment.<sup>529</sup> Both in South Africa and Ontario the government can retain a certain portion of the financial security for residual and latent defects that may arise in future which may not be presently known.<sup>530</sup> The requirement to maintain and retain the financial provision is very important as it provides for the continuation of liability despite the issuance of a closure certificate.

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<sup>524</sup> Stantec Consulting Ltd 'Policy and Process Review for Mine Reclamation Security' (2016), available at: [http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/reclamation-and-closure/stantec\\_report\\_mine\\_reclamation\\_security\\_sept\\_30\\_2016.pdf](http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/reclamation-and-closure/stantec_report_mine_reclamation_security_sept_30_2016.pdf) (accessed on 24 December 2016).

<sup>525</sup> Ibid.

<sup>526</sup> Ibid.

<sup>527</sup> Ibid.

<sup>528</sup> ibid

<sup>529</sup> Ibid.

<sup>530</sup> Section 24R(2) of NEMA, Section 28 of NEMA and Ontario Regulation 240/00, Parts 3-9.



The mining jurisdictions' similarities in financial provisions for mine closure regulations are also noticeable in the laws under review. South African mining companies are now obliged to assess their environmental liability annually, increase the financial provision to the satisfaction of the minister, and submit an independent audit report on the adequacy thereof.<sup>531</sup> The environmental risks assessments and annual rehabilitation plans are now required, with prescribed contents, and must be audited annually.<sup>532</sup> In Ontario, financial security is calculated based on the rehabilitation measures set out in the closure plan. A third-party will typically prepare the closure plan and associated cost estimate, in a form that mirrors the closure plan format set out in Schedule 2 of Ontario Regulation 240/00.<sup>533</sup> Costing of the rehabilitation measures is based on independent contractor rates.

#### **5.4 Evaluation of Commonly Used Financial Surety Instruments**

Financial security is similarly defined in the three jurisdictions as, 'a guarantee provided through an acceptable form of financial instrument or annual payment, that mining companies will perform the rehabilitation and closure activities prescribed in their rehabilitation and closure plans, including monitoring and other long-term obligations where they exist'.<sup>534</sup> Rehabilitation security is also termed financial security in most mining jurisdictions and is often required in policy, statute and regulation for mine development projects. A comprehensive study of the financial provisions reveals that in addition to similarities in the financial provisions regulation, there are also differences in the type and scope of the financial provisions acceptable in the jurisdictions under study. The most common form of financial surety instrument currently in use is the letter of credit, which is accepted by both South Africa and Western Australia but not accepted in Ontario.

Table 2 is a summary of the financial surety and the types of financial instruments that are acceptable for securing mine closure and rehabilitation. The table also looks at the advantages and disadvantages of each financial provision and instrument type. There is also a comparison of the levels of financial security required as well as the calculation method.

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<sup>531</sup> Section 24P (3) of NEMA (as amended by Act 25 of 2014).

<sup>532</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 11 (3)(a).

<sup>533</sup> Schedule 2 of Ontario Regulation 240/00 and Policy and Process Review for Mine Reclamation Security' (note 524 above).

<sup>534</sup> Policy and Process Review for Mine Reclamation Security' (note 524 above).

Form of Financial Security Mechanism	Mining jurisdiction and the financial surety instrument acceptable			Advantages of the Form of the Financial Security	Disadvantages of the Form of the Financial Security
	South Africa	Ontario	Western Australia		
<b>Cash deposit</b>	Yes	Yes	No	<ul style="list-style-type: none"> <li>• Cash is readily available for closure and rehabilitation</li> <li>• Investment-grade securities (treasuries) can be traded with minimal risk of liquidity</li> <li>• High public acceptance ("visibility" of guarantee)</li> <li>• It can be used by smaller companies that may not meet other financial security criteria imposed by the financial institution</li> <li>• Can be dissolved only partly in case of need</li> <li>• Can be transferred in a pooled fund.</li> </ul>	<ul style="list-style-type: none"> <li>• Significant capital is tied up for the duration of the mine life, especially for large mining projects</li> <li>• Some governments may be tempted to use the deposited cash for purposes other than securing the mining project</li> <li>• Cash is more vulnerable to being lost to fraud or theft.</li> </ul>
<b>Letter of credit, bank guarantee</b>	Yes	Yes	No	<ul style="list-style-type: none"> <li>• It is inexpensive to set up (if the mining company meets the bank's requirements) with no tied-up capital</li> <li>• Modest cash outflow from mine</li> </ul>	<ul style="list-style-type: none"> <li>• Surety provider (bank, surety company) itself may fail</li> <li>• Obtaining an LoC may reduce the borrowing power of the</li> </ul>

				<p>operator to maintain the LoC depending on the relationship between the operator and the bank</p> <ul style="list-style-type: none"> <li>• Less administrative requirements</li> <li>• The government can reserve the right to approve banks from which they accept an LOC, thereby minimising the risk of failure of weak banks.</li> </ul>	<p>mining company</p> <ul style="list-style-type: none"> <li>• Availability of bonds depends on state of surety industry and may be negatively affected by market forces outside the mining industry.</li> </ul>
<b>Corporate financial test</b>	No	Yes	No	<ul style="list-style-type: none"> <li>• Most advantageous for mining company</li> <li>• Does not tie up capital</li> <li>• Simple to administrate</li> <li>• Public availability of Annual Reports.</li> </ul>	<ul style="list-style-type: none"> <li>• Even very large companies can fail, no matter what their financial health was when mining project started.</li> <li>• Annual Reports and financial statements are not immune to manipulation (accounting scandals)</li> <li>• Problematic public acceptance.</li> </ul>
<b>Surety bond</b>	No	Yes	Yes	<ul style="list-style-type: none"> <li>• A 100% bond can ensure that the company responsible for mining is responsible for paying for the rehabilitation</li> <li>• Avoids costing the taxpayer money and improves community confidence in mining</li> <li>• A full mine closure cost in bonds could provide a good incentive to</li> </ul>	<ul style="list-style-type: none"> <li>• They can be expensive to set up and maintain for operators, particularly smaller operators.</li> <li>• There are annual fees, legal costs and the requirement to provide either cash or asset guarantees</li> <li>• Some operators have also reported difficulty in</li> </ul>

				rehabilitate <ul style="list-style-type: none"> <li>• Generally low costs</li> <li>• No tied-up capital.</li> </ul>	obtaining a bond facility from banks, (particularly if they are small 'start-up' companies) <ul style="list-style-type: none"> <li>• Bond issuer may fail over the long term.</li> </ul>
<b>Trust fund</b>	Yes	Yes	No	<ul style="list-style-type: none"> <li>• High public acceptance ("visibility" of trust fund)</li> <li>• Trust funds may appreciate in value over time, depending on market trends.</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of bad management of the trust fund (loss of value if fund invests in risky assets)</li> <li>• Trust fund may not have enough value accumulated through annual payments if mining project ceases prematurely</li> <li>• Trust fund management and administration consumes some of the value and income earned.</li> <li>• Trust funds may not be as effective as a financial guarantee from a bank, because money invested in fixed trusts holds back funds which could be used for concurrent rehabilitation or for investments in improved mining practices, ultimately lowering the liabilities at mine closure, whether it is planned or premature.</li> </ul>

<b>Pooled fund\ Mining Rehabilitatio n fund</b>	<p>No</p>	<p>No</p>	<p>Yes</p>	<ul style="list-style-type: none"> <li>• Places the burden of financing rehabilitation work on the mining industry. This presents advantages for industry, the community and the government.</li> <li>• Could potentially fund the rehabilitation of current legacy sites and provide a safety net for the future</li> <li>• A significant financial advantage for operators is that the fund will be open to any mining company (unlike bank guaranteed unconditional performance bonds or insurance policies, where some operators may be refused credit), and</li> <li>• There is no requirement for operators to provide “cash backing” for the equivalent of their full closure costs. This will have a positive impact on the credit available to operators, which is particularly important in the early years of development, before full production is reached.</li> </ul>	<ul style="list-style-type: none"> <li>• Where there is no bond or punitive measures made available to regulators (for example the WA MRF), the levy provides no incentive for meeting mine closure objectives and a lack of consequences for not meeting them</li> <li>• It is unclear how quickly the funds can be generated. There is no clear time frame on investments, returns and the allocation of funds for works. Like other mechanisms for rehabilitating legacy sites, it could simply fail to move into action</li> <li>• The move away from bank guarantees is expected to have a financial impact on those banks which currently gain revenue from providing this service.</li> </ul>
<b>Level of financial security required</b>	<p>100%</p>	<p>100%</p>	<p>MRF Act requires annual payment but not 100% rehabilitation</p>		

			<p>security.  All mining companies under the Mining Act 1978 who have an estimated rehabilitation cost for more than A\$ 50,000 are required to make a non-refundable payment into the MRF each year, with the payment equivalent to 1% of the estimated rehabilitation costs.</p>		
<b>Calculation method</b>	<p>Guideline document for the evaluation of the quantum of closure related financial</p>	<p>Costs are calculated by the mining company based on the market value of goods and</p>	<p>The annual levy (payment) into the MRF is calculated using the formula <math>RLE \times FCR =</math> payment. The formula</p>		

	provision.	services.	considers a rehabilitation liability estimate (RLE) that accounts for the hectares in the mining authorisation and a unit rate per hectare based on the category of land use. FCR is the fund contribution rate and is set at 1% in the same regulation		
<b>Any other form of security or any other guarantee</b>	No	Yes	No		

**Table 2: Financial surety and types of financial instruments for mine closure and rehabilitation**

### **5.5 Evaluation of Commonly Used Financial Surety Instruments**

Western Australia used to allow the unconditional performance bond system which can be described as ‘up-front or gradual set-aside or guaranteeing of expected clean-up cost’.<sup>535</sup> However, the bonds systems have commonly been criticised for falling short of meeting the actual mine closure costs.<sup>536</sup> One of the principle concerns of the bond system in Western Australia was that its value was insufficient to cover appropriate mine closure activities and environmental remediation in the case of a default and there is a significant problem for any regulator who underestimates a bond.<sup>537</sup> The inadequate value for bonds in Western Australia was apparently as a result of the adopted methodology for calculating them. In short, ‘the key policy change was a shift from unconditional performance bonds, which are a globally common mining security mechanism in the form of bank guarantees that approximates the cost of environmental rehabilitation for each mineral tenement being paid by a mining company, to a central MRF’.<sup>538</sup> Current practice, however, is primarily to require unconditional bank guarantees with the amount of security based on a calculation of the estimated cost to government of the full cost of rehabilitation and closure of mine sites.

Every mining jurisdiction identified above seems to have different views about mining legacies, different solutions, and financial security arrangements. It is important to note that Western Australia offers an alternative system to the more common bank guarantee and cash system through its recently implemented MRF Act for the mining industry. As noted in the preceding chapter, ‘the MRF was developed as a way of creating affordability for mining operators as it requires a smaller ongoing annual contribution rate as opposed to the previous system that required one bank guarantee equal to 100% of the total cost to rehabilitate the site’.<sup>539</sup> The accumulated deposits in the MRF will be used for rehabilitation when an operator fails to meet rehabilitation obligations and every effort has been made to recover funds from the operator. The fund will be used as an investment fund, with the profits generated from investments to be used to fund rehabilitation of existing legacy mines. Thus the MRF has been designed to fund any future legacy mine sites this has been part of the justification for removing requirements of bonds. The policy implemented in WA for

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<sup>535</sup> P Peck and K Sinding ‘Financial assurance and mine closure: stakeholder expectations and effects on operating decisions’ (2009) 34(4) *Resources Policy* 227-233.

<sup>536</sup> M Pepper, CP Roche and GM Mudd ‘Mining Legacies – Understanding Life of Mine Across Time and Space’ (2014) Life of Mine Conference/Brisban, QLD 16-18 July 2014.

<sup>537</sup> Gorey et al. (see note 243 above).

<sup>538</sup> Gorey et al (note 515 above).

<sup>539</sup> *Ibid.*



environmental mining securities appears to be globally unique as neither South Africa nor Ontario uses it.

The NEMA regulations essentially provide for three different formats in terms of which the financial provision may be made, either one or a combination of a cash deposit, bank guarantee, or trust fund.<sup>540</sup> As observed from Chapter three above, Ontario uses different types of financial security mechanisms such as ‘a cash deposit, a letter of credit, unconditional performance bonds, a trust, corporate financial test and any other form of security or any other guarantee or protection, including a pledge of assets, a sinking fund or royalties per tonne, that is acceptable to the director to guarantee mine site closure and rehabilitation’.<sup>541</sup>

Both South Africa and Ontario accept Trust Funds as a form of financial security, however Trust Funds may not be as effective as a financial guarantee from a bank, because money invested in fixed trusts hold back funds which could be used for concurrent rehabilitation or for investments in improved mining practices, ultimately lowering the liabilities at mine closure, whether it is planned or premature.<sup>542</sup> Trust Funds ‘make it difficult to provide adequate funding for premature closure as the cost of closure will be higher than the available funds in the trust when a mine closes prematurely’.<sup>543</sup> However, the specific form of financial security mechanism of interest to this discussion is the corporate financial test even though not unique to Ontario but it is not used in the South African jurisdiction. This discussion of the corporate financial test is to determine whether it can also be applied in South Africa as a financial security mechanism. This accords with the aim of this section which is to examine the experience of other jurisdictions that have allowed, or at least considered, similar and different financial security mechanisms.

As described in the mine development and closure regulation,<sup>544</sup> a financial strength test is used to assess the mining company. Financial strength is considered in terms of a number of stated credit rating services, including the Dominion Bond Rating Service Limited, Moody’s Investors Services Inc., and Standard and Poor Inc. By meeting minimum criteria set by two of the abovementioned credit rating services, the proponent may be considered to pass the

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<sup>540</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 8.

<sup>541</sup> Section 145(1) of the Mining Act (note 440 above).

<sup>542</sup> van Rensburg (note 450 above).

<sup>543</sup> Ibid.

<sup>544</sup> O. Reg. 240/00

financial strength test.<sup>545</sup> If a mine company fails to meet the requirements of either tier, or fails to continue to meet the financial strength test at any point, then the mining company must provide a rehabilitation security in the amount described in the closure plan.<sup>546</sup>

## **5.6 Conclusion**

It is trite that there is no regulatory system that is one hundred percent perfect. Though some forms of regulatory inadequacies are noticeable in all the financial provisions considered above, the review undertaken in this chapter shows that the financial provisions of Western Australia and Ontario are filled with useful provisions that, if applied, could impact positively in positioning the South African financial provisions to meet the closure and rehabilitation objectives. The comparison of the legal provisions for abandoned mine sites management in South Africa with that of Western Australia and Ontario, highlighted the jurisdictions that have the noble intention of protecting the environment and while promoting sustainable mining but as can be seen in South Africa, even if the intentions of the legislation are good, they have limited value without proper implementation and enforcement.<sup>547</sup>

This chapter evaluated the use of financial provisions (and the instruments) by looking at their strengths and weaknesses, and their effectiveness as tools to impose liability on the mining companies to close, rehabilitate, and manage the environmental impacts caused by mining activities. The inadequacy and inefficiency of the financial provision estimates pointed to the need to improve the current system of determining and making financial provision for closure and rehabilitation. Whilst mining legislation in South Africa has certainly helped to clarify the obligations of mining companies to set aside funds for closure and rehabilitation of mines there is still much work to be done on the implementation of these laws and regulations.

All the mining jurisdictions included in this study require rehabilitation security in some form of financial guarantee to assure that mine rehabilitation is performed in the event that the mine operator fails to perform that work. The jurisdictions in this study have different requirements for the timing and amounts of financial securities for rehabilitation. All jurisdictions require rehabilitation security in advance of the commencement of the mining activities. Western Australia is different from the other study jurisdictions due to the fact that it requires an annual payment into a fund that may, or may not, eventually provide sufficient

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<sup>545</sup> Section 16 (1) Ontario - Mining Act, R.S.O. 1990, c. M.14.

<sup>546</sup> Ibid.

<sup>547</sup> van Rensburg (note 440 above).

financial security for rehabilitation. Significantly, none of the study jurisdictions require a financial security for catastrophic events on, or off, the mine sites.

It is trite that the continual underestimations in calculating financial provisions for mine closure, leads to the continual abandonment of mining sites.<sup>548</sup> To address this challenge, Western Australia implemented the MRF which provides for a government administered pooled fund into which all current mining operators pay an annual levy. The funds are used to rehabilitate abandoned mining areas, alleviating the burden of government to solely fund their rehabilitation.<sup>549</sup> It is important to note that the South African regulatory framework for mine closure does not currently provide funding for cases of abandoned mines nor does the legislation delegate due-responsibility or have an approved strategic or business plan for the rehabilitation of these sites.<sup>550</sup> To address comparable issues, Western Australia has established a rehabilitation fund to deal with abandoned sites and alleviate the financial burden on government and rehabilitate these sites to a sustainable landform. This presents an opportunity for South Africa to learn from a working example on how to deal with abandoned mines.<sup>551</sup>

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<sup>548</sup> van Rensburg (note 450 above).

<sup>549</sup> Ibid.

<sup>550</sup> Ibid.

<sup>551</sup> Ibid.

## Chapter Six

### 6. Recommendations and Conclusion

#### 6.1 Background

It has been established that South Africa, like many other countries with a long mining history, is faced with a legacy of the negative environmental impacts of mining. Even though the negative legacy of abandoned mines is a global concern, ‘the situation in South Africa is particularly severe and the magnitude of the impacts from past mining activities are often considerable as environmental concerns and environmental regulation of mining activities were not always adequately regulated under mining and other environmental legislation in the pre-constitutional dispensation’.<sup>552</sup> The above concerns give rise to questions about the adequacy of the current financial provisions made by mining companies for mine closure and site rehabilitation when operations cease.<sup>553</sup> It is beyond doubt that there is now ‘a pressing need to address the issue of mine closure because the pollution legacy makes difficult the sustainability of the mining activity and it is imperative to set up comprehensive mine closure systems.’<sup>554</sup> This is so because,

there are real and significant financial considerations with respect to mine closure and site rehabilitation, especially given that closure and rehabilitation occur at a time when the operation is no longer economically viable, when cash flow is often severely restricted or negative, and when the value of assets is below the expenditures required to achieve the environmental objective of mine closure. The objective of securing mine closure funding at an early stage is to mitigate against the risk that an enterprise may either be unwilling or unable to undertake mine closure due to lack of funding.<sup>555</sup>

It is important to note that once the mine is exhausted, rehabilitation of the mine site is a cost to the mining company and does not provide any direct benefits to the company. The above is ‘one major reason why governments are increasingly requiring companies to provide guarantees for mine closure prior to a mine opening and it is important that these funds be established in accordance with both best accounting practices and in accordance with the tax provisions in the mine’s jurisdiction’.<sup>556</sup> There has been a general move by governments in

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<sup>552</sup> *White Paper on a Minerals and Mining Policy for South Africa* (note 3 above)

<sup>553</sup> *Ibid.*

<sup>554</sup> Research on mine closure policy (note 423 above).

<sup>555</sup> N Merhdad ‘Financial provisions for Mine Closure’ (1999) *Mineral Resources forum- United Nations Environment Programme* (UNEP) as cited in ‘Research on mine closure policy’ *Ibid* 1.

<sup>556</sup> WM Hoskin ‘Mine Closure: The 21<sup>st</sup> century Approach’ in RC Villas Boas (eds) *Mine Closure in iberoamerica* 113.

recent years to strengthen their requirements for mining financial securities.<sup>557</sup> Government agencies throughout the world have increasingly adopted policies that require mining companies to provide financial securities to guarantee the costs of mine closure and site rehabilitation.<sup>558</sup> Mining companies and governments in mining jurisdictions both have an interest in agreeing on realistic forms and amounts of financial securities.<sup>559</sup> It is generally accepted that ‘these needs to be effective in terms of environmental protection but should not unduly depress capital availability or damage the investment climate’.<sup>560</sup> It is only recently that the South African government came to the realisation that it has the most direct responsibility for ensuring comprehensive mine closure and site rehabilitation within the broader context of sustainable development as required by section 24 of the Constitution.<sup>561</sup> This is because the South African government has had experience of the environmental risk and financial demand that an inadequately rehabilitated mine site can leave as the responsibility of the government.<sup>562</sup>

## 6.2 Introduction

It is trite that the bedrock principle of environmental law and regulation is that pollution costs should be borne by their creators.<sup>563</sup> Conceptually, the PPP is nearly ‘unassailable as a guiding principle for environmental regulation’.<sup>564</sup> The South African environmental laws that regulate mining activities give this principle form by making mining companies liable for environmental damages caused by their mining activities. Financial securities for mine closure and site rehabilitation are a requirement for all mining activities in South Africa, as in many countries, giving governments’ recourse to funds if mining companies do not meet their environmental obligations.<sup>565</sup> The South African government came to the realisation that ‘the then existing financial securities for mine closure and site rehabilitation arrangements were

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<sup>557</sup> S Mackenzie et al. ‘Progressive reduction of liabilities and recovery of financial sureties in recognition of successful rehabilitation in Western Australia.’ (2007) *Mine Closure 2007: Proceedings of the Second International Seminar on Mine Closure, Australian Centre for Geomechanics, Perth, Western Australia* 2.

<sup>558</sup> Ibid 2.

<sup>559</sup> Ibid.

<sup>560</sup> Ibid.

<sup>561</sup> Section 24 of the Constitution, 1996.

<sup>562</sup> H McLeod, ‘A Review of the Bond System in FIJI’ (2000) Technical Report 305 *South Pacific Applied Geoscience Commission (SOPAC)* 4.

<sup>563</sup> Boyd, (note 26 above) 417.

<sup>564</sup> Ibid.

<sup>565</sup> Mackenzie et al (note 557 above) 3.

inadequate and extended the concept of financial security much more broadly to include cradle-to-grave environmental performance'.<sup>566</sup>

Mining operations in South Africa are subject to a range of environmental legislation in addition to the provisions of the MPRDA,<sup>567</sup> NWA,<sup>568</sup> NEMA.<sup>569</sup> While these other mechanisms 'can assist in the enforcement matters of pollution, environmental harm or contamination, the mining securities system is a key mechanism by which the government can be guaranteed access to funds to complete rehabilitation works rather than through protracted court action (which may be an issue with some of the other legal mechanisms).<sup>570</sup> The inadequacy and inefficiency of the financial provision estimates pointed to the need to improve the current system of determining and making financial provision for closure and rehabilitation. Whilst mining legislation in South Africa has certainly helped to clarify the obligations of mining companies to set aside funds for closure and rehabilitation of mines there is still much work to be done on the implementation of these laws and regulations. The review and analysis of the financial security instruments applied in other jurisdictions supports the justification to re-examine the suitability of the financial security mechanisms currently in use in South Africa.

### **6.3 Lessons for South Africa – Recommendations**

The need for financial securities for mine closure and site rehabilitation is beyond doubt. But choosing the best form of financial security mechanisms requires careful consideration.<sup>571</sup> Policies that meet environmental objectives should also be compatible with a healthy investment climate and be financially efficient.<sup>572</sup> This entails agreeing on the appropriate financial instruments and the expected standards of rehabilitation before the commencement of any mining activities.<sup>573</sup> Financial security instruments may be chosen from many options. Different instruments may be appropriate depending on the financial strength of the mining company, the amount of the potential environmental liability, the time frame over which the fund will need to be in place and so on.<sup>574</sup> It is also essential that 'the financial security be

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<sup>566</sup> Miller (see note 348 above) 50.

<sup>567</sup> Mineral and Petroleum Resources Development Act No. 28 of 2002

<sup>568</sup> National Water Act No. 36 of 1998.

<sup>569</sup> National Environmental Management Act No. 62 of 2008.

<sup>570</sup> Government of Western Australia-Department of mines and Petroleum 'Policy Options for mining securities in Western Australia: Discussion Paper' (2010) DMP available at: [http://www.dmp.wa.gov.au/documents/100957\\_Policy\\_Options.pdf?cv=1](http://www.dmp.wa.gov.au/documents/100957_Policy_Options.pdf?cv=1) (accessed on 10 January 2017).

<sup>571</sup> Research on mine closure policy (note 423 above).

<sup>572</sup> Ibid 1.

<sup>573</sup> Ibid 1.

<sup>574</sup> Ibid.

quarantined from other company assets, so that it is still available in the event of bankruptcy and/or government abuse'.<sup>575</sup> The chosen financial security instrument should meet two tests namely:

- a. It should be effective in assuring the government that the mining company can take all necessary and reasonable measures to protect the environment (or that another party is enabled to do so if the mining company fails) and
- b. it should be the least costly of all the effective instruments available.<sup>576</sup>

Even though these financial securities are originally intended to provide sufficient security to cover the cost of rehabilitation, often the level of security has not kept pace with increasing costs and standards of rehabilitation. This has resulted in the amount of financial security held by governments against mine sites being well below actual rehabilitation costs. The continual underestimations in calculating financial security for mine closure and rehabilitation, leads to the continual abandonment of mining sites.<sup>577</sup> The South African regulatory framework for mine closure and site rehabilitation does not currently provide funding for cases of abandoned mines nor does the legislation delegate due-responsibility for the rehabilitation of these sites.<sup>578</sup> To address comparable issues, 'Western Australia has established a rehabilitation fund to deal with abandoned sites and alleviate the financial burden on government and rehabilitate these sites to a sustainable landform'.<sup>579</sup> This presents an opportunity for South Africa to learn from a working example on how to deal with the negative environmental legacies of abandoned mines.<sup>580</sup>

### **6.3.1 Current system of financial security mechanisms for mine closure and site rehabilitation**

The financial securities for guaranteeing mine closure in South Africa are currently applied in the form of bank guarantees, cash deposits and trust funds. NEMA Financial Regulation 8 provides that,

'(1) An applicant or holder of a right or permit must make financial provision by one or a combination of a— (a) financial guarantee from a bank registered in terms of the Banks Act, 1990 (Act No. 94 of 1990) or from a financial institution registered by the Financial Services Board as an insurer or underwriter; (b) deposit into an account administered by the Minister

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<sup>575</sup> Sasson (see note 264 above).6.

<sup>576</sup> Miller (see note 348 above) 7.

<sup>577</sup> van Rensburg (note 450 above).

<sup>578</sup> Ibid.

<sup>579</sup> Ibid.

<sup>580</sup> Ibid.

responsible for mineral resources; or (c) contribution to a trust fund established in terms of applicable legislation.<sup>581</sup>

The above are the financial security mechanisms that are intended to ensure that the government has sufficient funds to rehabilitate mine sites in the event of the mining companies failing to do so. Even though the current financial security mechanisms are progressive and comprehensive certain challenges are often encountered with these mechanisms, ‘they are commonly insufficient to cover appropriate mine closure activities and environmental remediation in the case of a default and they do not solve the problem of historical abandoned mine sites’.<sup>582</sup> The rates used to calculate the potential amount for mine site rehabilitation are still not adjusted for inflation and this may result in significant underestimations of adequate financial security provided by the mining company.<sup>583</sup> Also, the DMR guideline document which was produced in 2005 is still being used as a reference document despite it being generic in nature, thus it cannot deal with all situations relating to financial provisions and mine closure.<sup>584</sup>

In light of the weaknesses present in the current financial provisions concerning the estimation and adequacy of financial security for mine closure and site rehabilitation there should be, ‘The elevation, enhancement and regular updating of the DMR guidelines for the evaluation of the quantum of closure-related financial provisions’.<sup>585</sup> This will entail treating the ‘DMR guideline document as a living document through regular scheduled reviews and updates given the dynamic nature of rehabilitation, and the adjusting the rates used to calculate the amount of the potential environmental liability for inflation every year’.<sup>586</sup>

#### **6.4 Review of the current financial security mechanisms**

Even though the making a cash deposit has certain advantages such as high public acceptance since it is readily available for mine closure and site rehabilitation and that it can be used by smaller companies that may not meet other financial security criteria imposed by the financial institution. The disadvantages outweigh the advantages in that cash is more vulnerable to being lost to fraud or theft as the government may be tempted to use the deposited cash for purposes other than rehabilitating the mine site. The mining company may also be at a

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<sup>581</sup> NEMA Financial Provision Regulations (note 254 above) Regulation 8.

<sup>582</sup> Ibid.

<sup>583</sup> Van Zyl (note 24 above).

<sup>584</sup> Gorey (see note 243 above).

<sup>585</sup> Ibid.

<sup>586</sup> Ibid.



disadvantage in that significant capital is tied up for the duration of the mine life. A bank guarantee as a financial security mechanism has the advantage of being inexpensive to set up with no tie-up capital and has less administrative requirements. However, the major disadvantage is the bank may fail which in turn will have dire consequences for both the mining company and the government. Also, establishing a bank guarantee greatly reduces the borrowing power of the mining company.

A Trust fund is another financial vehicle for securing mine closure and site rehabilitation that seems the most attractive in that just like the cash deposit is has a high public acceptance and the trust funds may appreciate in value over time. The major advantage of using the trust fund option is that section 37A(1)(a) of the Income Tax Act,<sup>587</sup> provides that the purpose of a trust must be, “solely for rehabilitation upon premature closure, decommissioning and final closure, and post closure coverage of any latent and residual environmental impacts on the area... to restore one or more areas to their natural or predetermined state, or to a land use which conforms to the generally accepted principle of sustainable development”.<sup>588</sup> Thus, it is not legally permissible to use or liquidate the trust and use those funds for another purpose, since the funds in a rehabilitation trust fund can only be moved to another fund with a similar purpose.<sup>589</sup> The Trust fund also has its own disadvantages such that the fund may not have enough value accumulated through annual payments if mining project ceases prematurely and that, ‘Trust funds may not be as effective as a financial guarantee from a bank, because money invested in fixed trusts holds back funds which could be used for concurrent rehabilitation or for investments in improved mining practices, ultimately lowering the liabilities at mine closure, whether it is planned or premature’.<sup>590</sup>

### **6.5 Proposed alternative financial security system for mine closure and site rehabilitation**

The aim of the alternative financial security mechanisms is to ensure that the South African government holds sufficient money to guarantee mine closure and site rehabilitation in event of the failure of the mining company to fulfil its closure and rehabilitation obligations. The alternative system should also provide a model that reduces the cost of doing business to the mining company but at the same time giving a sufficient guaranteed for mine closure and site rehabilitation. The goal of this section was not an exhaustive review of all existing financial

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<sup>587</sup> Income Tax Act No. 58 of 1962.

<sup>588</sup> Section 37A(1)(a) of the Income Tax Act.

<sup>589</sup> Ibid.

<sup>590</sup> van Rensburg (note 450 above).

security mechanisms, but rather a focused review of the possible alternatives that the South African government can adopt from the comparative jurisdictions used in this dissertation. This dissertation has identified at least two possible options available as financial security mechanisms in South Africa.<sup>591</sup> The first option is to introduce the bank guaranteed unconditional performance bonds (hereafter UPBs), and the second option is the introduction of a government held Mining Security Fidelity Fund (hereafter MSFF).

### **6.5.1 Option 1 – Introduction of the bank guaranteed unconditional performance bond system (UPBs)**

The first alternative option is to introduce the financial security mechanism for mine closure and site rehabilitation based on bank guaranteed unconditional performance bonds (hereafter UPBs) which covers the full rehabilitation costs. In terms of the application of this option, ‘mining companies will be required to provide the government with UPBs for the full cost of mine closure and site rehabilitation’.<sup>592</sup> The UPBs will be applicable to all mining activities from exploration, prospecting and the actual mining. The amount of the bond to be paid should be sufficient to cover 100 percent of the estimated mine site rehabilitation or equal to the ‘the cost of a third party conducting the rehabilitation works and additional funds to cover contingencies, administrative and monitoring costs.’<sup>593</sup> It will be the responsibility of the mining company to provide updates of closure costs at least once every three years, which will be then used to automatically update the requirement for the bonds.<sup>594</sup>

#### **6.5.1.1 Advantages of the unconditional performance bond system**

The following is the list of the advantages that the South African government as well as the mining industry can derive if the use of the UPBs is adopted;

- a. The UPBs are widely used by the mining industry around the world, therefore they are well understood by the industry as well as the regulators, therefore there is considerable experience in their administration within regulators and the industry.<sup>595</sup>
- b. If the UPBs amounts are set to fully cover the costs of government undertaking rehabilitation and closure, any failure of a mining company to meet their closure obligations is effectively borne by that mining company. This means that any closure

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<sup>591</sup> Please do note that this is by no means an exhaustive list of options but due to the size and scope of the dissertation only the two options will be considered.

<sup>592</sup> Government of Western Australia-Department of mines and Petroleum ‘Policy Options for mining securities in Western Australia: Discussion Paper’ (2010) DMP

<sup>593</sup> Ibid.

<sup>594</sup> Ibid.

<sup>595</sup> Ibid.

liabilities are not subsidised by other mining companies or by the general community at large.<sup>596</sup>

- c. The UPBs offer a continuing, unconditional liability on the part of the mining company as there is essentially no requirement for the regulator to demonstrate specific performance failures prior to exercising the UPB (e.g. demanding that the financial institution pay the sum of the UPB).<sup>597</sup> This means that immediate rehabilitation activity which the regulator has deemed as needed, can proceed without delay or dispute.<sup>598</sup>
- d. The UPBs are enforceable until the bonds are formally retired.<sup>599</sup> UPBs have no time limit, and continue to exist in law until the regulator deems that the UPB is no longer required. This means that once the assurance is in place, a UPB cannot lapse without the express decision of the regulator.
- e. The UPBs are not subject to claims by creditors if the mining company becomes bankrupt or enters liquidation. Operators of mine sites are usually subject to financial exposures (e.g. commodity price fluctuations, currency exchange rates), and there is occasion where operations cease due to financial failure of the operating company.<sup>600</sup>

#### **6.5.1.2 Disadvantages of the unconditional performance bond system**

There are also challenges that are associated with the use and application of the UPBs. Even though this system of UPBs is used in several jurisdictions including Ontario, the system failed to produce desired results in Western Australia. It is because of the failure of the system that the Western Australian government decided to move away from the use of the UPBs. One of the principle concerns for UPBs in Western Australia was that their value was insufficient to cover appropriate mine closure activities and environmental remediation in the case of a default.<sup>601</sup> However, this failure can be attributable to the fact the amount that the mining company made was not equivalent to 100 percent of the potential environmental liability.

- a. A major concern regarding the use of bank guaranteed UPBs is that they can be expensive to set up and maintain for the mining companies, particularly the smaller operators.<sup>602</sup> This is so because there are annual fees, legal costs and the requirement to provide either cash or asset guarantees and some banks may decline to enter business with some operators (particularly if they are small 'start-up' companies).

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<sup>596</sup> Ibid.

<sup>597</sup> Ibid.

<sup>598</sup> Ibid.

<sup>599</sup> Ibid.

<sup>600</sup> Government of Western Australia-Department of mines and Petroleum 'Policy Options for mining securities in Western Australia: Discussion Paper' (2010) DMP

<sup>601</sup> Government of Western Australia-Department of mines and Petroleum 'Policy Options for mining securities in Western Australia: Discussion Paper' (2010) DMP

<sup>602</sup> Ibid.

- b. The UPBs also require considerable set up and maintenance costs for operators (particularly for smaller companies).<sup>603</sup> Companies may be required to provide either cash or asset backing for the full amount of the bond in addition to paying direct costs such as annual fees and legal costs.<sup>604</sup>
- c. As the UPBs only relate to assurance for each specific mining site, any underestimate of the total rehabilitation cost will mean that the rehabilitation will not be able to be completed to the full extent, or funding will have to be provided from another public source.<sup>605</sup>

However, it is submitted that the advantages outweigh the disadvantages therefore the South African government could still adopt the UPBs. Despite their failure in Western Australia, the UPBs are still very common and are in use in major mining jurisdictions such as Canada and United States of America.

### **6.5.2 Option 2 – Introduction of the Mining Security Fidelity Fund (MSFF)**

Another alternative option for the South African financial security system is for the government to adopt and establish a Mining Securities Fidelity Fund<sup>606</sup> (hereafter MSFF). The MSFF will be ‘structured as a fidelity fund whereby the Government is able to claim the cost of rehabilitating a mine site when a company has defaulted on its obligations to rehabilitate, but only after reasonable compliance options have been explored.’<sup>607</sup> In terms of this option ‘mining companies will be required to contribute a non-refundable amount to a central fidelity account (a Mining Security Fidelity Fund) managed by the government.’<sup>608</sup> This model completely replaces the requirement for each mining company to maintain a bank guaranteed UPBs, or to establish a trust fund or to provide a bank guarantee.<sup>609</sup> Each mining company would be required to fund their own rehabilitation and closure costs. Such a fund would accumulate over time and be used by the government to meet the occasional failure by a company to meet its mine rehabilitation and closure obligations, and would also be used to fund the negative legacies of abandoned mining sites. This model will mean that ‘if the government was required to use these funds to undertake closure of a mine site due to the

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<sup>603</sup> Ibid.

<sup>604</sup> Ibid.

<sup>605</sup> Ibid.

<sup>606</sup> This fund is similar to the one that is currently in use in Western Australian (MRF).

<sup>607</sup> Cement Concrete & Aggregates Australia “Submission on the Mining Security System: Preferred Option Paper” (2011) CCAA, available at; <http://59.167.233.142/industry/documents/2011-05-13%20GH%20CCAA%20Submission%20Preferred%20Option%20Paper%20-%20Final.pdf> (accessed on 15 January 2017).

<sup>608</sup> Ibid.

<sup>609</sup> Ibid.

inability of an operator to do so, then the overall industry is funding this cost and not the government'.<sup>610</sup>

#### **6.5.2.1 Advantages of adopting the Mining Security Fidelity Fund**

This option presents advantages for mining industry, the community and the government. The fund will enhance the State's capacity to manage and rehabilitate abandoned mines, leading to better environmental and community safety outcomes.<sup>611</sup> The MSFF will be structured to cover the mine closure and site rehabilitation costs which are likely to be borne by the government.

- a. The advantage of having all resource activity operators participating in the pooled fund means that the money held by the South African government accumulates faster and the risk that an insufficient amount is held in the event of a large claim dissipates more quickly.<sup>612</sup>
- b. It also means that the South African government would administer only one system enabling a more simple and easy to understand process as well as keeping administration costs to a minimum.<sup>613</sup>
- c. The MSFF approach provide a lower cost alternative to UPBs, and will also provide a perpetual fund to address historical abandoned mine sites. Therefore, the MSFF is likely to present cost savings (compared to UPBs) for South Africa as it has a high number of sites and historical legacies.<sup>614</sup>
- d. This option spreads the risk of default across the mining industry. It shares the risk of any one mining company defaulting on its rehabilitation obligations across many contributors.
- e. This option is also cheaper in that the contributions made by mining companies is significantly cheaper than the costs of maintaining a bank guaranteed unconditional performance bond for most operators.
- f. A significant financial advantage for operators is that the fund will be open to any mining company (unlike bank guaranteed unconditional performance bonds or insurance policies,

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<sup>610</sup> Ibid.

<sup>611</sup> "The new system encourages early rehabilitation and will provide a mechanism for the state to rehabilitate abandoned mine sites in the event that a company defaults on its obligations, which is a win-win for the sector and the environment as it frees up valuable funds at the start of projects and encourages ongoing rehabilitation. The new fund provides a more flexible and cost effective system for industry."

<sup>612</sup> Queensland-Department of Environment and Heritage Protection 'Reform of Queensland's Financial Assurance System: Consultation Report on Discussion Paper' (2014) *Department of Environment and Heritage Protection* 5.

<sup>613</sup> Ibid.

<sup>614</sup> South Africa may be an appropriate candidate with a relatively large number of mine sites, and abandoned mines and in 2012 the number of abandoned mines was estimated to be around 6,000 with the South African government left holding the mining rehabilitation legacy.

where some operators may be refused credit), and there is no requirement for operators to provide “cash backing” for the equivalent of their full closure costs.<sup>615</sup> This will have a positive impact on the capital available to mining companies, which is particularly important in the early years of development, before full production is reached.<sup>616</sup>

#### **6.5.2.2 Disadvantages of adopting the Mining Security Fidelity Fund**

It is important to note that there is no regulatory system that is 100 percent perfect and without flaws. Even the Western Australian innovative approach in establish a similar option of the MRF has its disadvantages that should not be overlooked. In deciding whether to adopt the MSFF the government should consider the following disadvantages.

- a. The establishment and adoption of the MSFF can be an open invitation for defaulting mining companies or defaulted companies to cut and run from their closure obligations.
- b. Where there are punitive measures for mining companies that fail to make the required contributions the MSFF will therefore provide no incentive for meeting mine closure objectives and a lack of consequences for not meeting them.
- c. It is unclear how quickly the funds can be generated. There is no clear time frame on investments, returns and the allocation of funds for works. Like other mechanisms for rehabilitating legacy sites, it could simply fail to move into action.

It is important to note that for the MSFF to be effective it must be supported by robust legislated punitive provisions (both criminal and civil) against mining companies who fail to comply with their rehabilitation obligations. The MSFF should be established and adopted as a ‘response to a potential increase in ‘unfunded’ rehabilitation liability for mines that became abandoned, while also providing a funding source to address historical or ‘legacy’ mines in South Africa’.<sup>617</sup> Therefore, the adoption of the MSFF will ensure that the government and the taxpayers will not be called upon to fund the mine closure and site rehabilitation for mining operations that may become abandoned in the future. Also, the interest earned on the fund can be used to rehabilitate historical abandoned mine site as this will be a perpetual and perpetual fund for the rehabilitation and management of historical abandoned mine sites.<sup>618</sup>

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<sup>615</sup> ‘Policy Options for mining securities in Western Australia: Discussion Paper (note 592 above).

<sup>616</sup> Ibid.

<sup>617</sup> Australian Government-Department of Industry, Tourism and Resources ‘Mining Rehabilitation Fund–Yearly Report’ (2016) DMP, available at: [http://www.dmp.wa.gov.au/Documents/Environment/Mining\\_Rehabilitation\\_Fund\\_\(MRF\)\\_Yearly\\_Report\\_2016.pdf](http://www.dmp.wa.gov.au/Documents/Environment/Mining_Rehabilitation_Fund_(MRF)_Yearly_Report_2016.pdf) (accessed on 17 January 2017).

<sup>618</sup> Ibid.

## Chapter Seven

### 7. Conclusion

The legacy of abandoned mining sites, the associated environmental problems, clean-up costs and the post mine land use development has led to an increased emphasis on mine closure planning and rehabilitation as they provide difficult legacy issues for governments, communities and mining companies.<sup>619</sup> A detailed review of the South African provisions for mine closure and site rehabilitation revealed that there is a significant range of legal mechanisms and requirements which specifically pertain to mine closure and site rehabilitation. Thus, this dissertation was developed as a response to the existing financial security provisions which fail to ensure and recognise the need for effective and adequate financial security systems for mine closure and site rehabilitation. It is against this background that this dissertation provided a critical analysis and review of the processes surrounding the financial security provisions for mine closure and site rehabilitation. The research further assessed the implementation of the financial security provisions for mine closure and site rehabilitation in South Africa and recommended potential improvements to the financial security provisions system.<sup>620</sup>

It is beyond doubt that, ‘there is a clear need to ensure that current and future mining activities do not add to unacceptable environmental impacts and impose costs on society’.<sup>621</sup> Mining operations and activities that in the past resulted in legacies of abandoned mine sites, ‘are now unacceptable, and require improved mining legislation and control to ensure mine site closure is completed successfully, in a sustainable manner’.<sup>622</sup> It has been argued that ineffective enforcement of mine closure laws, an absence of effective financial security mechanisms and inadequate financial securities for mine closure can have a significant impact on the success of mine site closure.<sup>623</sup> It is important to note that,

‘Comprehensive mine closure for abandoned, presently operating, and proposed mines remain a challenge for all mining jurisdictions and mining companies. Thus, to accommodate the need to close abandoned mines and to ensure that existing and proposed mines are appropriately closed and rehabilitated will require the cooperation of a diverse stakeholder community, new

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<sup>619</sup> ‘Abandoned Mine Sites: Problems, Issues and Options’ (Unpublished agenda note presented at Post-Mining Alliance Priority Setting Workshop hosted by UNEP, Paris), available at <http://www.cepal.org/drni/noticias/noticias/9/7029/programmeunep.pdf> (accessed on 10 February 2014).

<sup>620</sup> Van Zyl et al. (see note 24 above).

<sup>621</sup> Ibid.

<sup>622</sup> Peck (note 535 above).

<sup>623</sup> Ibid.

innovative methods of financing closure and significant policy and legislative amendments to ensure post mining sustainable development and economic viable post mine land use'.<sup>624</sup>

It is submitted that the substantive content of the financial security provisions for mine closure and site rehabilitation clearly assigns the responsibility to rehabilitate the mine sites to the polluters and it is clear that the legislative provisions for mine closure in South Africa are generally consistent, if not more onerous on paper, with the international expectations internationally.<sup>625</sup> This dissertation has shown that while the South African financial security provisions for mine closure and site rehabilitation contains some improved mechanisms for environmental protection, management and rehabilitation, the implementation of many of these mechanisms has yet to achieve the environmental ideals of sustainability as enshrined in the South African Constitution.<sup>626</sup> The One Environmental System particularly the application of the financial security provisions for mine closure is still new with most of its provisions not yet having been properly tested, applied or understood, it is important to ensure its effectiveness going forward.<sup>627</sup> Although South Africa has a progressive mineral law regime there are evidently some gaps and aspects that are insufficient and need to be updated by embedding the appropriate and adequate financial provisions of closure and rehabilitation of mines. The current provisions are not enough to prevent the future legacy of abandoned, derelict and ownerless mines. The government should formulate the framework that is clear, stable and predictable which can evolve but not fluctuate nor be unequally applied.<sup>628</sup>

It is trite that the purpose of the financial security is to ensure that there will be sufficient funds to pay for mine site rehabilitation and post closure monitoring and maintenance at any stage in the life of the project, including early or temporary closure.<sup>629</sup> These financial securities are one of the regulatory mechanisms which provide confidence to both the government and the community that satisfactory rehabilitation and closure will be

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<sup>624</sup> Ibid.

<sup>625</sup> R. Alberts et al 'Complexities with extractive industries regulation on the African continent: What has 'best practice' legislation delivered in South Africa?' (2016) Article in press, available at <http://www.sciencedirect.com/science/article/pii/S2214790X16301010?> (accessed on 10 January 2017).

<sup>626</sup> Mclean and Carrick (see note 135 above)

<sup>627</sup> R. Alberts et al (note 625 above).

<sup>628</sup> RC Boas, ML Barreto, D Franceschi and JR Kahn 'Mine Closure: Iberoamerican Experiences'. (2000). (Module V, Economy and Finances). 114.

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achieved.<sup>630</sup> Financial securities are not unique to the regulatory scheme governing mine closure and site rehabilitation in South Africa, but are also applied in many mining jurisdictions albeit in different forms.

In theory, such mining securities ensure sufficient funds are available to a government to rehabilitate mine sites in the event operators fail to meet their mine rehabilitation and closure obligations.<sup>631</sup> The financial security mechanisms should be able to specifically address the financial risk to government by ensuring that mining securities provide a high level of financial security that reflects the full cost of rehabilitation for mine sites. Without proper financial security for mine closure and rehabilitation, the costs to the community and country from environmental damage will outweigh the benefits derived from mining. It is against this background that this dissertation considered alternative models that have the potential to provide sufficient and adequate levels of financial security to the government at a lower cost to the mining industry.

It is submitted that the South African financial security mechanisms ‘raise a set of design issues, including the level of security to be required, the financial mechanisms to be allowed, the conditions under which the financial security is released, and the interaction of the financial provisions with other areas of law—most importantly, insolvency law’.<sup>632</sup> This research illustrated those issues and identified a set of correctable weaknesses present in some of the financial provision mechanisms. For example, the failure to adjust the master rates to be in line with inflation and the failure to update the DMR guideline document results in inappropriately and inadequately low levels of financial security.<sup>633</sup> It is argued that ‘from the standpoint of economic efficiency and legal effectiveness, financial security mechanisms for mine closure and site rehabilitation can be improved’.<sup>634</sup>

It is submitted that, ‘financial mechanisms need to be in place to ensure sufficient resources exist at the end of the mine’s life to implement closure plans, and fund appropriate compensation and redundancy schemes.’<sup>635</sup> It is beyond doubt that ‘the responsible

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<sup>630</sup> P Gorey et al ‘Critical elements in implementing fundamental change in public environmental policy: Western Australia’s mine closure and rehabilitation securities reform’ (2016) 23(4) *Australasian Journal of Environmental Management* 370-381.

<sup>631</sup> The Mining Rehabilitation Fund – The First Two Years’ (note 26 above).

<sup>632</sup> Boyd (note 26 above).

<sup>633</sup> Van Zyl (note 24 above).

<sup>634</sup> Ibid.

<sup>635</sup> A Warhurst ‘Planning for Closure from the Outset: Towards Best Practice in Public Policy and Corporate Strategy in managing the Environment and Social Effects on Mining’ in A Warhurst and N Ligia (eds) *Environmental Policy in Mining: Corporate Strategy and Planning for Closure* (1999) 502.

management of the rehabilitation of mine sites and the affected environments requires an effective regulatory, policy, and financial securities framework in place'.<sup>636</sup> The quantum of mining securities should not unnecessarily deter investment, but should ensure that South Africa remains competitive in attracting investment to the resources exploration and development sector.<sup>637</sup> The financial security legal framework should be clear and workable, and be supported by a robust compliance system to ensure operators do not avoid their mine closure obligations.<sup>638</sup> The calculation of a financial security should also be flexible, and be commensurate with environmental risk.<sup>639</sup> The financial security mechanisms should be economically efficient and readily convertible to cash.<sup>640</sup>

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<sup>636</sup> Ibid.

<sup>637</sup> White Paper: A Minerals and Mining Policy for South Africa (note 3 above).

<sup>638</sup> The Mining Rehabilitation Fund – The First Two Years' (note 26 above).

<sup>639</sup> Ibid.

<sup>640</sup> Ibid.