

# NATIONAL ASBESTOS MANAGEMENT STRATEGY FOR SOUTH AFRICA

## Project Update

Asbestos and Land Remediation Workshop

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Prepared By:



**environmental affairs**

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

### Project Background

- The 2015 Chemicals and Land Remediation Summit resolved that a National Asbestos Dialogue be held where asbestos challenges and potential solutions would be discussed. One of the resolutions from the National Dialogue held in 2017 was that a National Asbestos Management Strategy (NAMS) be developed to ensure integrated sustainable management of asbestos in SA.

### Project Objective

- The objective of the NAMS is to ensure integrated sustainable management of asbestos in South Africa.
- The project tasks can be broken down into four main categories:

#### Status Quo and Inventory of asbestos

01

- Situational analysis
- Asbestos water pipes stockpiles
- Inventory of buildings containing asbestos
- Contaminated asbestos land.

#### Stakeholders Engagement

02

- Stakeholder consultation and database development
- Awareness and Education Plan for
- Support required by communities

#### Sustainable Asbestos Management Strategy

03

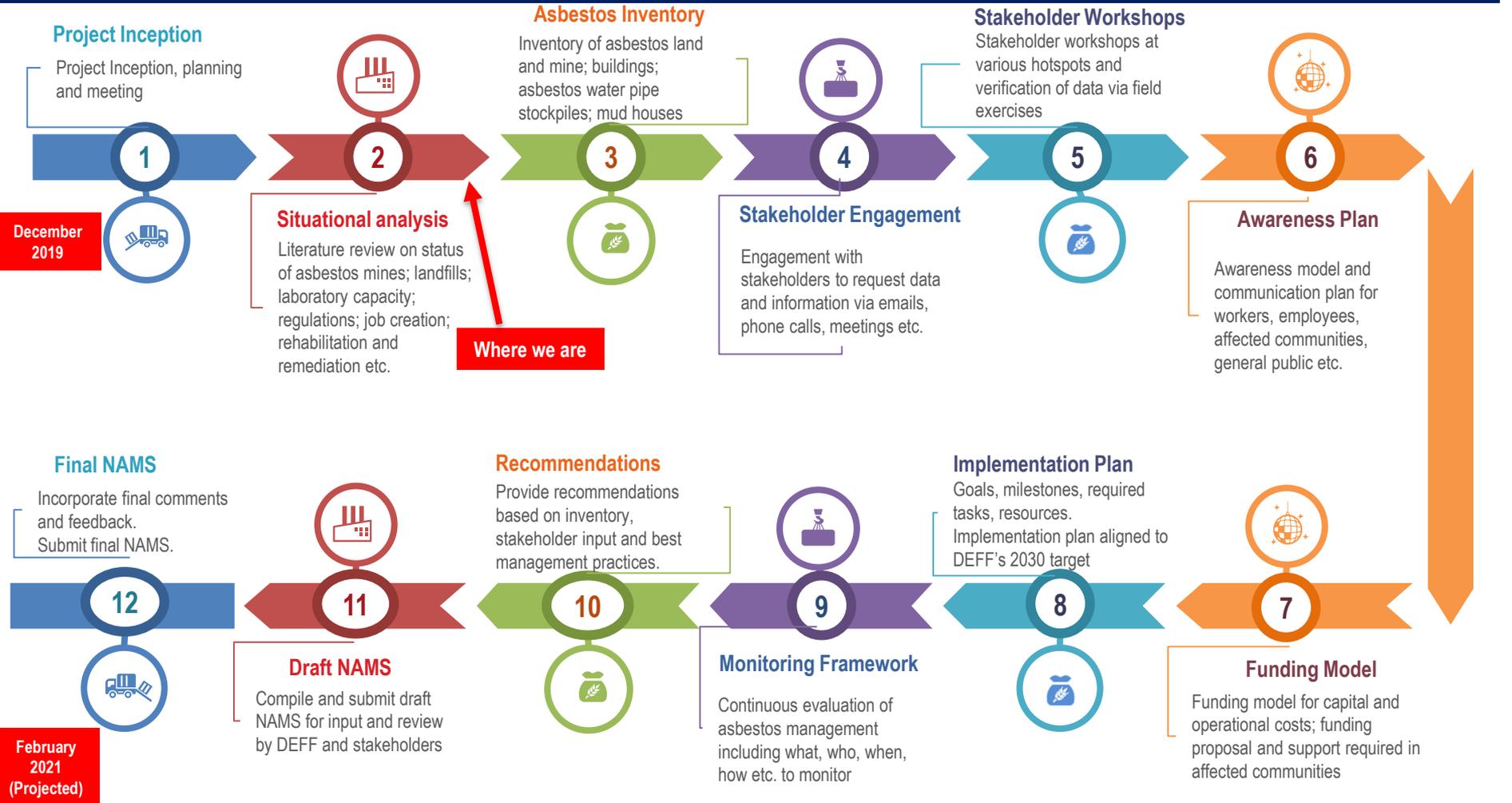
- Short and long-term goals of NAMS
- Funding model and implementation plan for NAMS
- Asbestos mud house eradication plan

#### Monitoring the effectiveness of NAMS

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- Monitoring framework for the NAMS - detailing resources, activities, roles and responsibilities etc.
- Recommendation on sustainable asbestos management

# NAMS Roadmap – from Inception to Completion

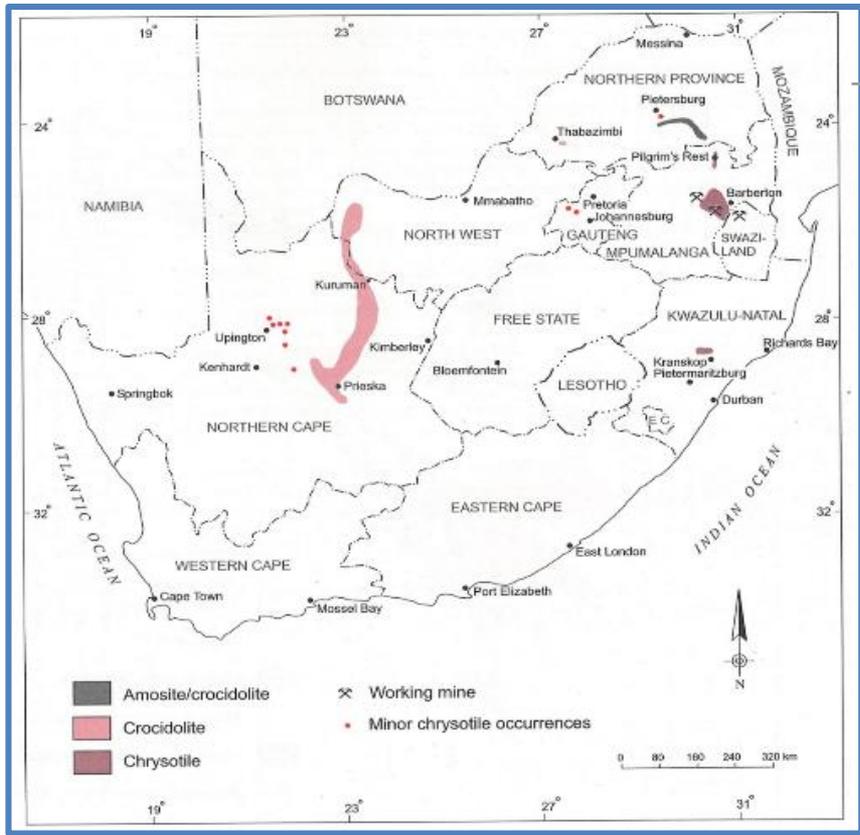


# Situational Analysis of Asbestos in SA



# Asbestos Deposits in South Africa

Location of main asbestos fields in South Africa  
Source: (Wilson & Anhaeusser, 1998)



## Asbestos mining

Asbestos prospecting began on isolated farms in the Northern Cape Province during the early 1880s.



## South Africa's Unique Geology

South Africa was the third largest exporter of asbestos globally for more than a century

SA produced most of the world's supply of crocidolite (blue) and amosite (brown) asbestos



## Asbestos Reserves Scattered across SA

Major reserves in Northern Cape, Limpopo and Mpumalanga Provinces

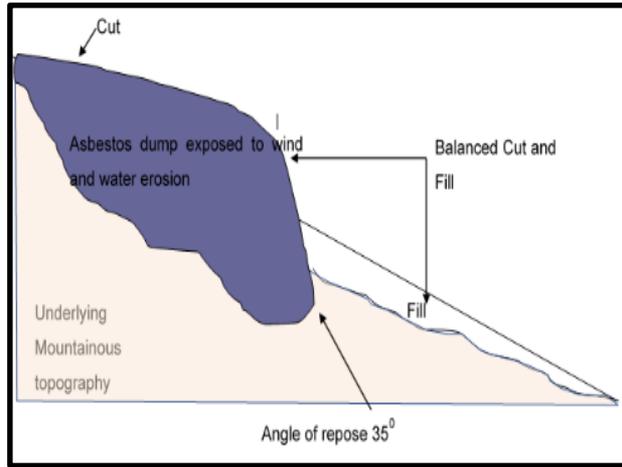
Few reserves in North West and Gauteng

# Asbestos Management Practices (Regulation 12 of the General Safety Regulations)

Scenarios	Description
<b>ALTERNATIVE A: IN RESPECT OF CURRENT USE</b>	<p><b>If the asbestos or asbestos containing substances is currently in use:</b></p> <ul style="list-style-type: none"> <li>a) It MUST be on a <u>register</u> as part of an approved “Asbestos phase-out plan” according to GNR341 (or its successor that repeals it);</li> <li>b) It MUST be inspected to ensure that it is in an acceptable state of repair and does not become a health hazard, according to the Asbestos Regulations, GNR 155 of 10 February 2002 (or its successor that repeals it);</li> <li>c) When it is found to be unacceptable; then</li> <li>d) It MUST be handled according to the Asbestos Regulations, GNR 155 of 10 February 2002 (or its successor that repeals it); and</li> <li>e) It MUST be disposed of as a Hazardous waste</li> </ul>
<b>ALTERNATIVE B: PART OF THE “APPROVED ASBESTOS PHASE- OUT PLAN</b>	<p><b>If the asbestos or asbestos containing substances has been identified</b></p> <ul style="list-style-type: none"> <li>a) It MUST be on a register as part of an approved “Asbestos phase-out plan” according to GNR341 (or its successor that repeals it);</li> <li>b) It MUST have alternatives identified for the manufacture of the product; if there are no alternatives;</li> <li>c) It MUST have reasons why these alternatives do not exist and steps towards the development of such alternatives; and</li> <li>d) The time-period within which the asbestos or asbestos containing substances will be replaced.</li> </ul>
<b>ALTERNATIVE C: NO LONGER IN USE</b>	<p><b>If the asbestos or asbestos containing substances is no longer in use</b></p> <ul style="list-style-type: none"> <li>a) It MUST be handled according to the Asbestos Regulations, GNR 155 of 10 February 2002 (or its successor that repeals it); and</li> <li>b) It MUST be disposed of as a Hazardous waste according to the NEM:WA requirements.</li> </ul>
<b>ALTERNATIVE D: CONTAMINATED LAND</b>	<p><b>If the asbestos or asbestos containing substances occur on contaminated land</b></p> <ul style="list-style-type: none"> <li>a) The land MUST be dealt with according to Chapter 8 of NEM:WA.</li> </ul>

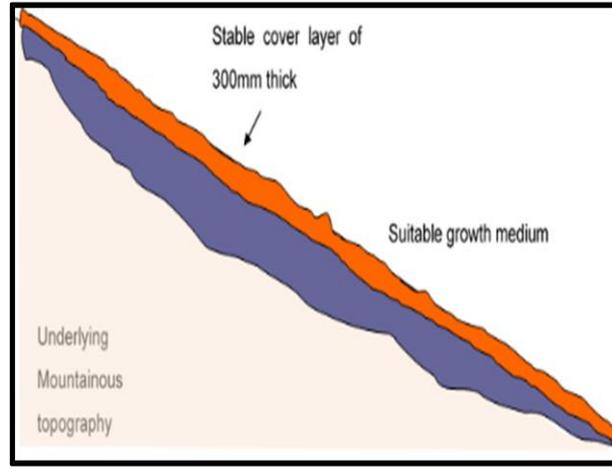


# Rehabilitation Procedure for Asbestos Contaminated Land



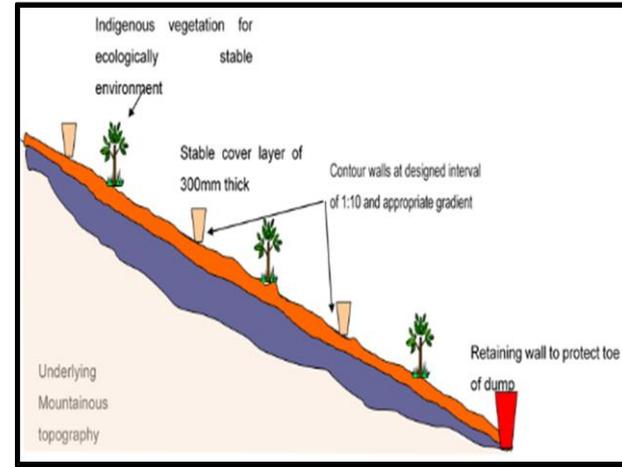
## Step 1: Grading and Shaping

Grade and shape the heap to an acceptable angle. Alternatively: If the topography allows it, dig trenches and fill the trench with asbestos residue



## Step 2: Apply Cover Layer

Cover the heap with 300 – 500mm clean soil;



## Step 3: Erosion Control

Construct appropriate erosion control measures; and Establish vegetation that naturally occur in the area on the topsoil covered heap

Best Practice to rehabilitate exposed asbestos dump

As per Department of Minerals Resources and Energy in their standard protocol and guidelines for the rehabilitation of derelict/ownerless asbestos mine residue deposits in South Africa

# Treating Asbestos-containing Materials

## Thermal Treatment



Modification and alteration of the crystal-chemical structure of the mineral which occurs at high temperatures

## Chemical Treatment



Addition of chemicals to break down the chemical bonds of the mineral

E.g. alkali treatment; hydrofluoric acid; sulfuric Acid etc.

## Mechano-chemical Treatment



Mechano-chemical treatment requires the physical breaking of asbestos bonds by high energy or ultra fine milling

**These techniques are employed to achieve stabilisation and inertization**

# Employment / Laboratory Capacity

Scenarios	Types of Jobs to be Created
<b>ALTERNATIVE A: JOBS CREATED IN RESPECT OF CURRENT USE</b>	<ul style="list-style-type: none"> <li>• SANAS accredited Occupational Hygiene inspectors</li> <li>• Personal Protective Equipment (PPE) manufacturers / PPE importers</li> <li>• PPE distributors</li> <li>• Safety officers</li> </ul>
<b>ALTERNATIVE B: PART OF THE “APPROVED ASBESTOS PHASE-OUT PLAN</b>	<ul style="list-style-type: none"> <li>• Manufacturers producing identified asbestos containing product according to the registered activity in Regulation 4 of GNR341</li> <li>• Safety officers</li> <li>• Distributors of identified asbestos-containing product according to the registered activity in Regulation 4 of GNR341</li> <li>• PPE manufacturers / PPE importers</li> <li>• PPE distributors</li> </ul>
<b>ALTERNATIVE C: NO LONGER IN USE</b>	<ul style="list-style-type: none"> <li>• Waste Management Control Officer and other semi-skilled personnel</li> <li>• Approved Asbestos Waste Transport contractor</li> <li>• Approved landfill site manager and personnel</li> <li>• Departmental official to assess application</li> </ul>
<b>ALTERNATIVE D: CONTAMINATED LAND</b>	<ul style="list-style-type: none"> <li>• Environmental Assessment Practitioner with asbestos experience</li> <li>• SANAS accredited Occupational Hygiene inspector sampling and monitoring exposure risk</li> <li>• Accredited laboratory to assess samples</li> <li>• Departmental official to assess application</li> </ul>

## Laboratory Capacity

Out of 225 SANAS accredited laboratory contacted:

- Only 4 facilities conduct air-borne and bulk material analysis of asbestos in South Africa
- Additional 4 facilities outsource the services



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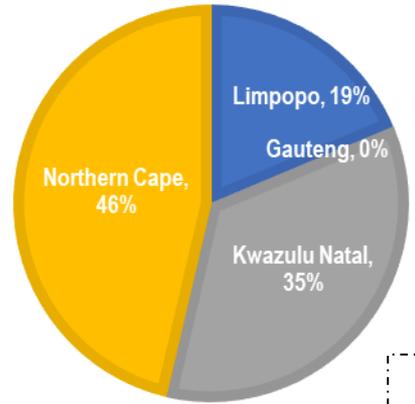
# Status of Asbestos Mine Rehabilitation in South Africa

21% (out of 215) of asbestos contaminated mine in South Africa are deemed completely rehabilitated  
 6% are partially rehabilitated  
 14% of sites are classified as mine sites with no visual indication that mining has ever occurred  
 61% of Sites still to be rehabilitated  
 A timeline must be considered to conduct and finalize rehabilitation at the remaining sites

## % of Provincial Mine Rehabilitation Status

### REHABILITATION STATUS

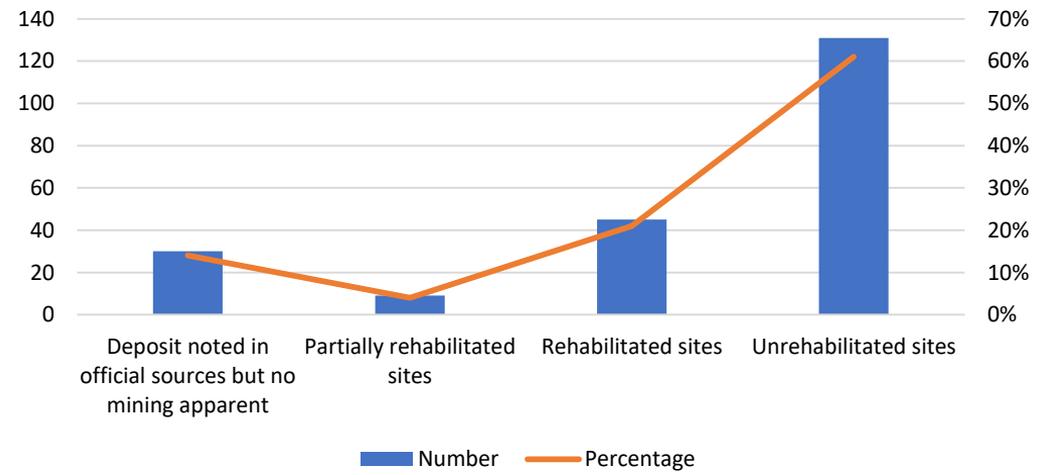
■ Limpopo ■ Gauteng ■ Kwazulu Natal ■ Northern Cape



No commercial mining in North West

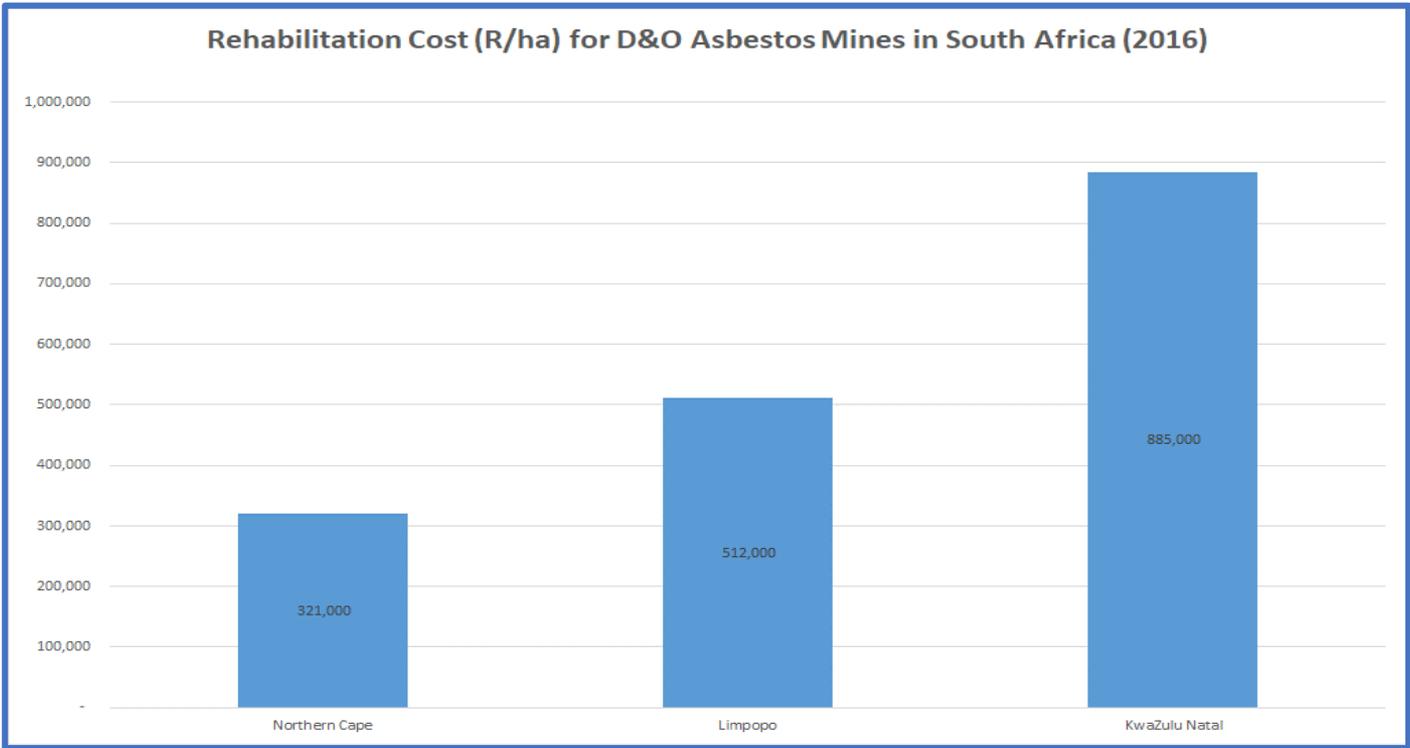
## Mine Deposits with Potentially Exposed Asbestos

### Breakdown of Asbestos Sites in various states of rehabilitation



# Cost of Asbestos Mine Rehabilitation

The cost to rehabilitate disturbed mines varies due to different factors such as size of land and extent of contamination. A large disturbed area can benefit from economy of scale and being able to be rehabilitated using capital equipment, might be done at a lower cost and even with less labour.



**Rehabilitation Cost for Derelict and Ownerless Mines in South Africa (Source: Mintek)**

# What Next????



**Thank you!**

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