



REAL TIME ISSUES

Acid Mine Drainage management Plan

Department not waiting for a horror show!!!



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OBJECTIVES

- Prevention of ingress of surface water and groundwater to underground mine voids (Florida Canal)
- Establishment and recommendation of management solutions to reduce dependency on pumping to manage flooding of mines and spillage to surface (decant)
- Prediction of when and where decant will occur should pumping operations cease
- Prediction of the effects on the environment and the health risks associated with polluted mine water decanting to surface
- Development of management options to avoid uncontrolled decant of polluted mine water onto surface.



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PREVENTION OF INGRESS OF SURFACE WATER AND GROUNDWATER TO UNDERGROUND MINE VOIDS

- What has been achieved?
 - Multiple ingress areas/points identified
 - Florida canal under construction
- What remains to be done?
 - Short-term actions to limit ingress (e.g. cleaning culverts in the Blesbokspruit)
 - Verification of other ingress areas and proposal of solutions
 - Construction of ingress management measures
 - Monitoring of stream flows



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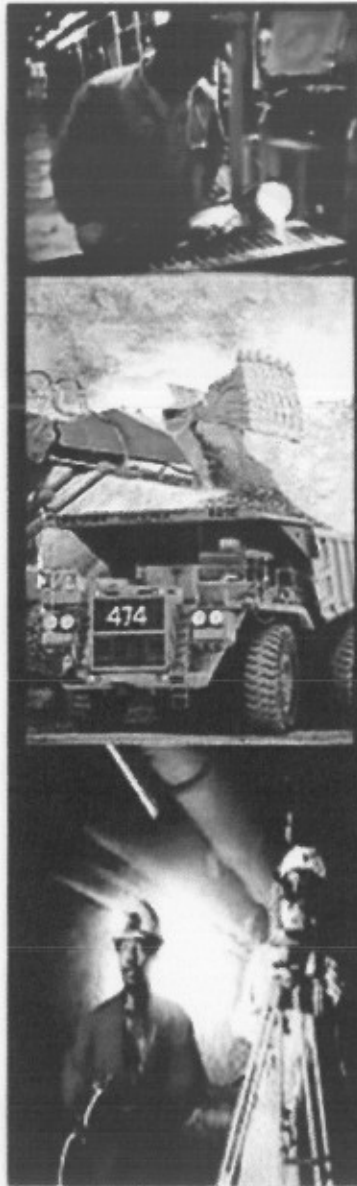
Establishment and recommendations of management solutions to manage flooding of mines and decant

- What has been achieved?
 - Regional closure strategies
 - Ingress management measures proposed
 - Intensive study of decant processes and impacts
 - Investigation of passive treatment technologies
 - Monitoring of water levels and quality
 - Monitoring seismic activities within the area
- What remains to be done
 - Implementation of flooding and decant control measures proposed in Regional Closure Strategies
 - Pilot studies and implementation of passive treatment technology
 - Ongoing monitoring of water levels and decant points to provide reliable information



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DEVELOPMENT OF MANAGEMENT OPTIONS TO AVOID UNCONTROLLED DECANT OF POLLUTED MINE WATER

- **What has been achieved?**

- Studies of ingress and decant have identified management options including
 - Construction of canals
 - Controlled decant points
 - Assessment of treatment options including passive technologies

- **What remains to be done?**

- Assessment of various options
- Implementation of options
- Pilot testing and implementation of treatment technologies



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PREDICTION OF WHEN AND WHERE DECANT WILL OCCUR SHOULD PUMPING OPERATIONS CEASE

- What has been achieved?
 - Decant points and times have been predicted
 - 18 months to environment critical levels (ECLs)
 - 30 months to surface (This will not be allowed to happen)
- What remains to be done?
 - Refinement of predictions as more information becomes available from our continued research



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IMPLEMENTATION

MEDIUM TO LONG TERM: TEN YEAR IMPLEMENTATION PLAN

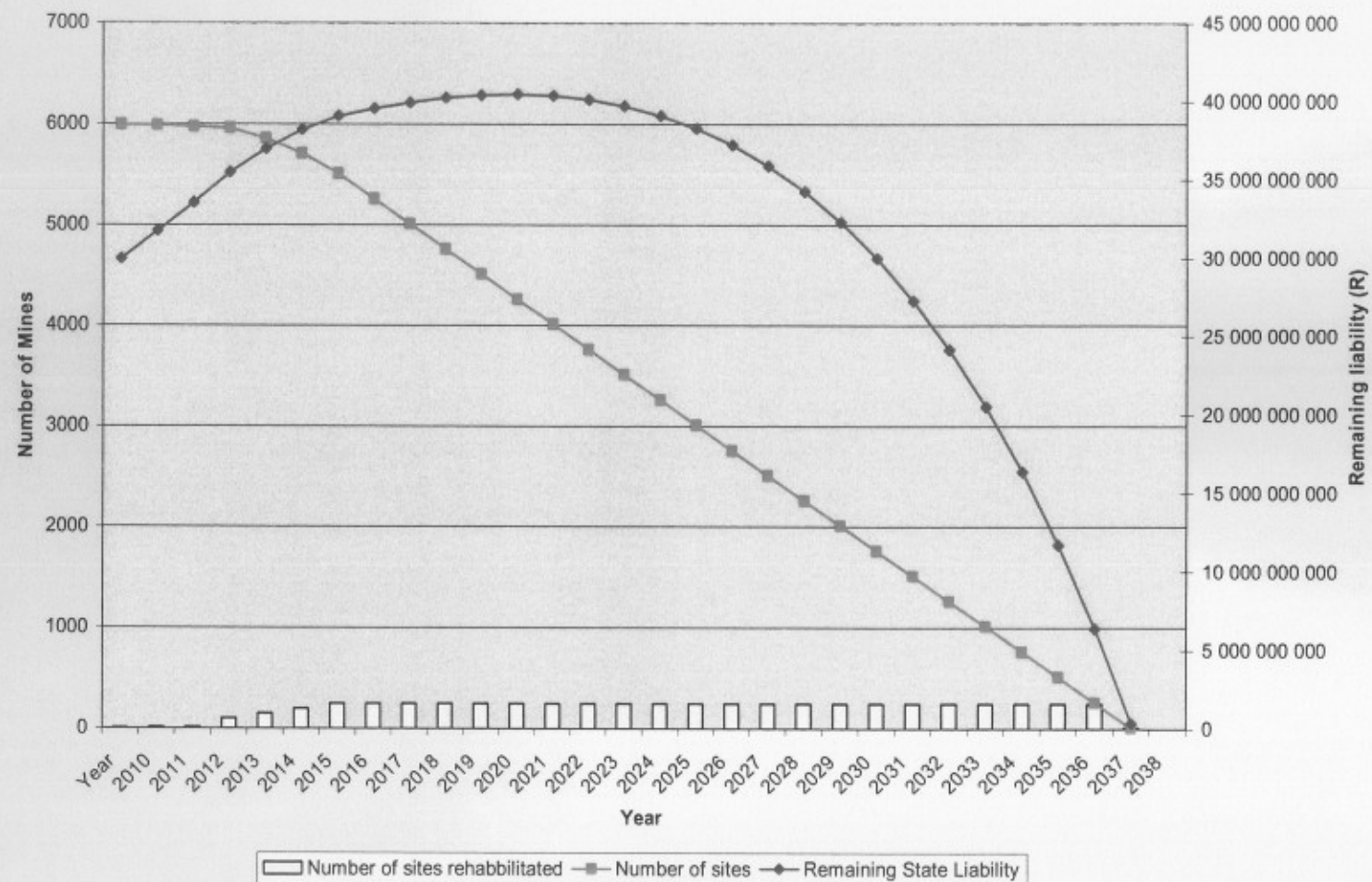


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IMPLEMENTATION



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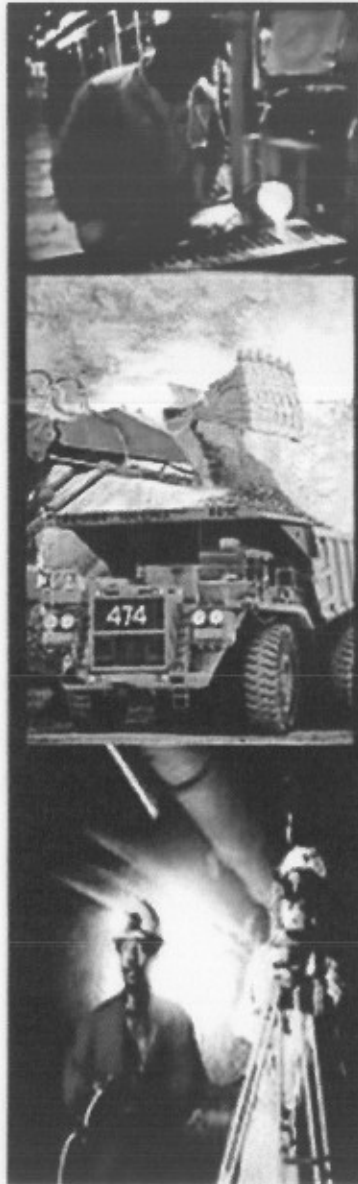
IMPLEMENTATION CONT...

- Medium to long term plan
- Review on MTEF basis
- Review towards end of ten years
- Continuous update on technologies
- Update on best practices



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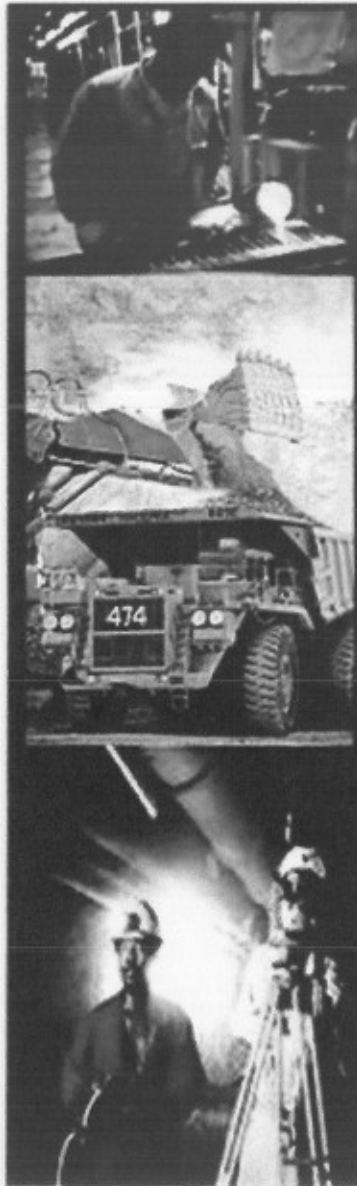
IMPLEMENTATION CONT...

- **Three phases for implementation**
- **Phase one: 2010-2013**
 - Methodological development (Rehabilitation manual)
 - Prioritisation of large scale sites
 - Implementation of projects with greater risks and impacts on society and environment
 - Setting up structures for pumping and treatment (large scale)
- **Phase two: 2013-2016**
 - Rehabilitation of large scale sites with medium risk and impacts
 - Monitoring and evaluation
 - Development of management technologies where larger programmes e.g. pumping and treatment does not balance the economies of scale (passive treatment designs)



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IMPLEMENTATION CONT...

- **Phase three: 2016-2020**
 - Full scale rehabilitation of all sites and management for those requiring management going forward
 - Implementation of other management solutions e.g. passive treatment
 - Monitoring and evaluation
 - Evaluation of latent impacts
- **Review of rehabilitation plan for further long term implementation**
- **Review of budget taking inflation into account**



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FINANCIAL PROJECTIONS..

- Estimated cost for the ten year plan
= R1,456,710,750 bil
- Projection has not considered inflation
- Most large scale projects not included
(one large mine costs **R130,000,000.00**)



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CONCLUDING REMARKS

- D&O challenge bigger than thought
- Creation Dates back to 1600s – first diamond mine in 1661 (Northern Cape)
- **349 years of damage!!!!**
- **Can never be resolved in less than 16 years**
- Nature of mining such that some of the impacts will forever be there – critical question is how to manage them?
- **Famous Rio Tinto river – the red Spanish river**
- **Mining 5000 years ago – AMD still there!!!!**
- Investment in management principles and technologies critical
- Dialogue on funding options
- Proper planning in place
- **No imminent horror show – situation monitored!!**



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