



# Regulating Rehabilitation on Mine Sites in WA



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# Overview

- Overview of DMIRS (environmental) role and influence in *revegetating the regions*
- Mine closure plans
- Compliance work – preparedness for closure scoresheet
- MRF and the rehabilitation of abandoned mines
- Future directions

# DMIRS role

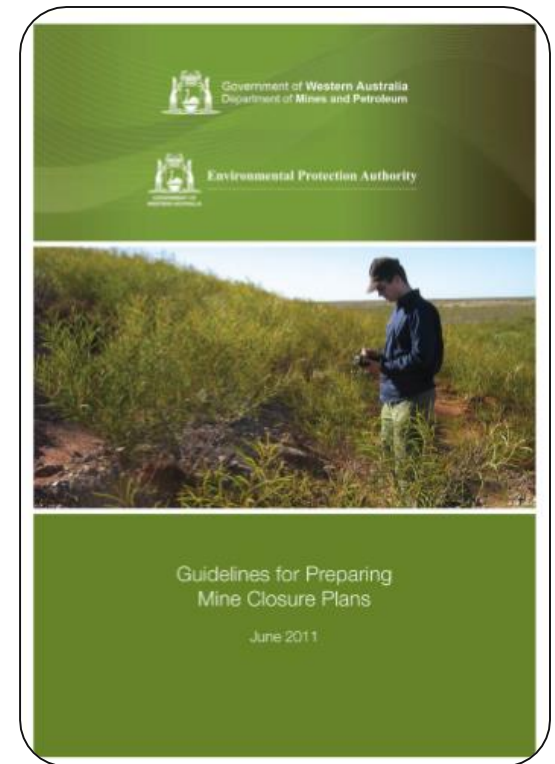
- REC Division – regulate mining and petroleum sites
- Assess proposals and closure plans
- Ensure appropriate management commitments are in place
- Set conditions
- Monitor mines via Annual Environmental Reports
- Conduct compliance inspections
- Undertake enforcement actions

(Also provide guidance)



# Mine Closure Plan

- Project summary
- Legal obligations
- Stakeholder engagement
- Post mining land use
- Completion criteria
- Closure data
- Identification of closure challenges
- Closure implementation
- Monitoring
- Financial provisioning
- Management of information



# Compliance work

- Risk based compliance program




- Clearing controls
- Topsoil management
- Waste management (waste rock, tailings)
- Water management (surface and ground)
- Rehabilitation (optimise progressive rehab opportunities, e.g. research knowledge gaps, trials, implement, weeds)
- Evaluate “Preparedness for Closure”


# Preparedness for Closure

- Tool to communicate regulator's expectations & improve consistency of inspections
- Trialled in 2016, introduced in 2017
- Scoresheet provided with inspection report
- Scoresheet has 14 criteria assessed using AER, MCP & inspection
- DMIRS rates each criteria 1- 4 based on where we think the mine should be given stage of operation (Expected score)
- Next DMIRS provides and Actual score
- Aim is for mine to meet DMIRS expectations – i.e. no difference in Expected and Actual scores

# Preparedness for Closure Criteria

1. Identification of post mining land-use
2. Closure objectives
3. Waste material characterisation
4. Growth media
5. Knowledge gaps
6. Completion criteria
7. Stakeholder engagement
8. Monitoring program
9. Significant risks for closure
10. Constructed landforms
11. Revegetation
12. TSF management
13. Closure strategy for pit
14. Approach to rehab' and closure

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- 1 Identified
  - 2 Progressing closure of gaps
  - 3 Results of studies informing refinement of closure objectives/criteria
  - 4 Knowledge gaps closed

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- 1 Reveg. approach identified
  - 2 Applying reveg. strategy
  - 3 Monitoring reveg. and results informing future reveg. Strategies.
  - 4 Reveg. meets defined completion criteria



# Feedback & Early Trends

- Sites welcomed this type of feedback
- Assisted in identifying areas requiring more focus
- Most sites scored did not meeting regulator expectations
- Key weaknesses included:
  - Not adequately addressing knowledge gaps
  - Completion criteria
  - Monitoring
  - Revegetation (weak on adaptive management)
  - Identification and management of risks
  - Approach to rehabilitation and closure
- Identified some areas we as Regulators need to target



# Enhancing the future

- Clear need for improved mine closure in WA
- DMIRS initiated a project with WABSI to develop framework to assist industry in the development of Completion Criteria and risk based monitoring programs
- Working group co-ordinated by WABSI includes industry, regulators, universities and consultants
- Elements include literature review, surveys, case studies, development of framework
- Project due to be completed in late 2018



# Safeguarding WA Community

- Mine Rehabilitation Fund
- Abandoned Mines Register
- Case study – Collie Coal mine

- Collie, south west of WA (~200km south of Perth)
- Black Diamond pit – part of former coal mine mined late 1940's – 1950's
- Close to town site (population of 7,000)
- Addressed safety risks associated with steep southern pit wall in 2016



Government of Western Australia  
Department of Mines and Petroleum

## Improving Community Safety at the Black Diamond Pit Lake



*Sleep unstable pit wall around Black Diamond Pit Lake. Source: DMP 2015*

### History

The historical abandoned mine site Black Diamond is located within the Allanson town site boundary in the Shire of Collie, approximately 5 kms west of Collie in Western Australia (WA).

Black Diamond is adjacent to a number of private land lots to the north east, as well as the crown reserves to the west.

One public road provides access to Black Diamond, Ferguson Road.

Black Diamond was mined for coal between the late 1940s and early 1950s by Amalgamated Collieries Pty Ltd. Since mining ceased, the pit has filled with water creating a pit lake.

Black Diamond has been selected as a pilot site for the Abandoned Mines Program, using funds from the WA Government's Mining Rehabilitation Fund (MRF). More information on the Abandoned Mines Program can be found via the following link: <http://www.dmp.wa.gov.au/Environment/Abandoned-Mines-Project-15518.aspx>.

A map illustrating the site layout and proposed works for Black Diamond is provided on page 4 of this factsheet.

### Community Concerns at Black Diamond

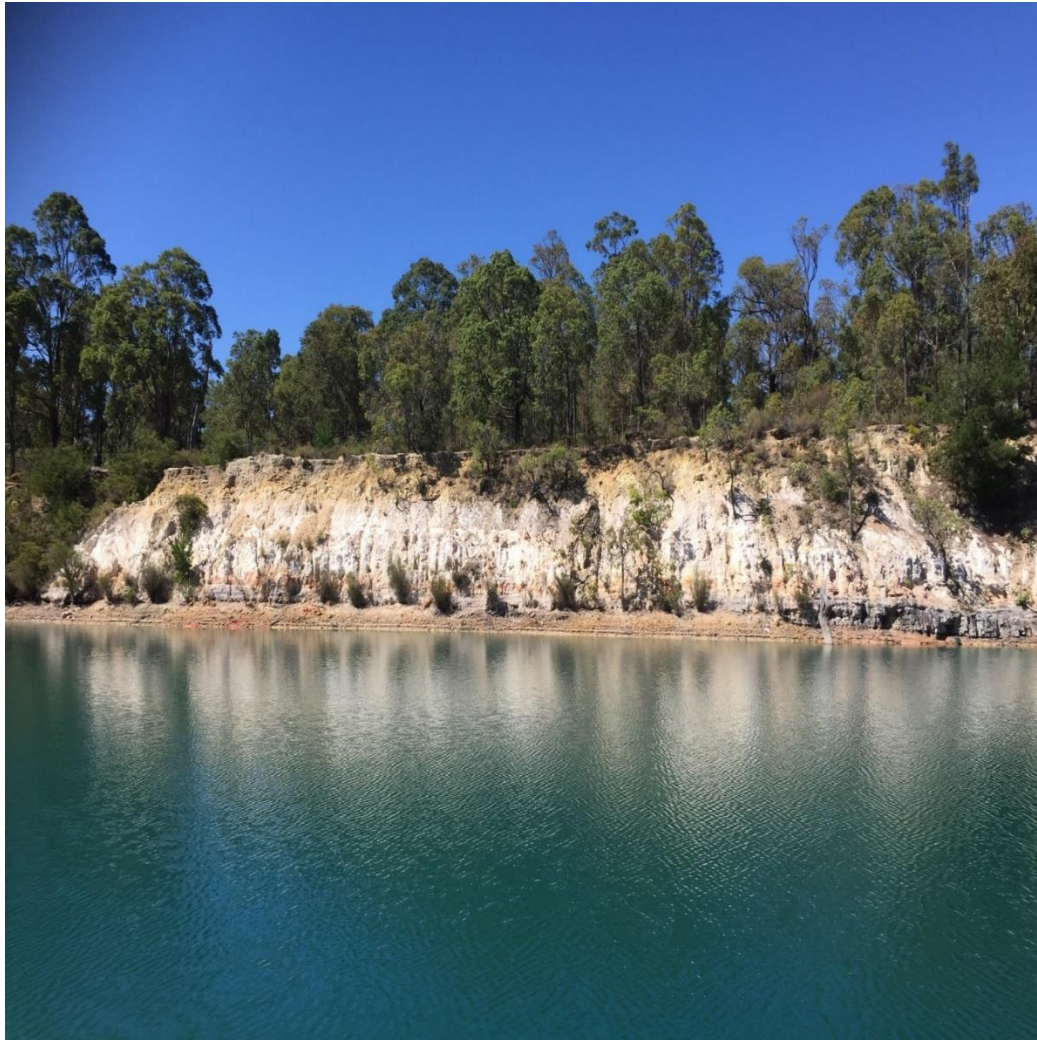
The community has raised a number of safety concerns in relation to Black Diamond which has become an unmanaged recreation area.

A number of environmental issues have also been highlighted by the community, including illegal dumping and poor water quality in the pit.

Signage warning of the dangers associated with recreating on the site has previously been installed. A cyclone fence was also installed along the edge of Ferguson Road to restrict public access to the lake. Vandals have destroyed the fence and it does not currently prevent public access to the site.

Recent water tests undertaken by the Shire of Collie also indicated evidence of potential dangerous amoeba in the pit lake.

# Black Diamond pit wall before rehabilitation





# During Rehabilitation



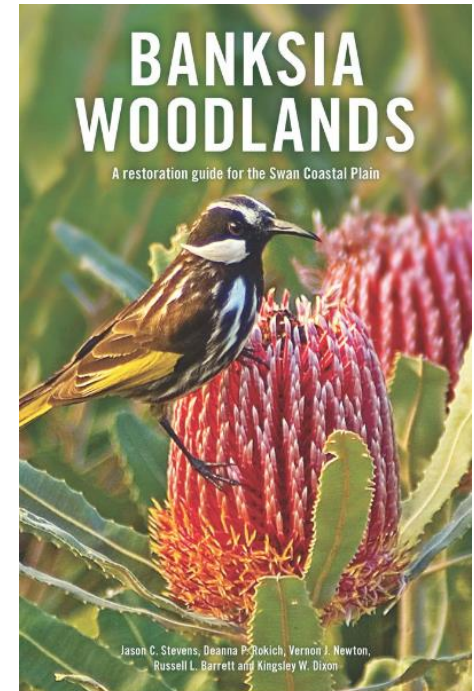
# Final landform





# Encouraging environmental leading practice

- 2018 marks the 27<sup>th</sup> year of the Golden Gecko Awards for Environmental Excellence
- One of the highest environmental accolades achievable for the Western Australian resources sector
- Awarded annually to companies in WA who demonstrate excellence in environmental management practices
- 2017 : *Banksia Woodlands - A Restoration Guide for the Swan Coastal Plain*, Hanson Construction Materials and Kings Park Botanic Gardens



# Summary

- Regulating rehabilitation of mine sites is a challenging job
- Most effective when we work with industry to encourage leading practice
- Mine closure planning is an integral element in rehabilitating mine sites (revegetating the regions)
- DMIRS encourages innovation in environmental practices in the resource sector
- Always looking to enhance our effectiveness in responsible resource development in WA