



# Case Study: Derelict Mine Western Australia Black Diamond Rehabilitation Project



*Black Diamond Pit Lake. Source DMP 2015*

## History

The historical abandoned mine site known as Black Diamond is located within the Allanson town site boundary in the Shire of Collie, approximately 5 kilometres west of Collie in the South West of Western Australia. Black Diamond was mined for coal between the late 1940s and early 1950s by Amalgamated Collieries Pty Ltd. Since mining ceased, the pit filled with water creating a pit lake.

The community had raised a number of safety concerns over the years in relation to Black Diamond which had become an unmanaged recreation area. One fatality and a number of injuries have occurred at the site.

To address these concerns, the site was selected by the Department of Mines and Petroleum (DMP) to be rehabilitated as a pilot project through the Abandoned Mines Program, using funds from the Mining Rehabilitation Fund (MRF).

Funds from the MRF can be used to rehabilitate future abandoned mine sites, when all other avenues to ensure rehabilitation have been exhausted.

Interest generated from the MRF can be used to rehabilitate legacy abandoned mine sites (sites that have not had an MRF reporting obligation), through the Abandoned Mines Program.

## Approach to Rehabilitation

In September 2015 a stakeholder identification workshop was undertaken by DMP to identify potential stakeholders with an interest in the site. Given the complexity of the site, DMP decided to approach representatives from regulatory bodies, interest groups, land owners, local government and members of the public to form a Working Group for the project.

Following the workshop a stakeholder engagement plan was prepared and a Working Group was formed in March 2016. The Working Group's purpose was to provide advice on possible rehabilitation works to be undertaken to reduce safety and environmental risks at the site, as well as future land use options. Terms of Reference were developed as it was critical that this group understood its advisory, non-decision making role in providing local community stewardship of the site.

The overall approach was conceptualised in 4 stages:

1. Stakeholder engagement;
2. Site assessment and identifying necessary on-site works;
3. Completion of on-site works; and
4. Ongoing monitoring and stakeholder support for future land use options.

Stage 2 of the project involved undertaking a detailed site assessment to identify the type and degree of safety and environmental issues at the site and possible solutions. Stage 2 also involved further consultation with the Working Group and the broader community via a Community Forum held in May 2016, to ensure that the associated works proposed would achieve a long term solution which was supported by the community.

As part of the project plan and to estimate the cost associated with rehabilitating Black Diamond, the Rehabilitation Liability Estimate (RLE) was calculated using the category rates in the MRF regulations. These rates are an average estimate of rehabilitation costs used to calculate the levy payable by the mining and exploration industry.

With the MRF only being established in 2013, the RLE calculated for the site was not fully available in the first year, so the plan for rehabilitating the site was re-scoped, with the focus to address only the major safety risks associated with the site. The project leaders carefully negotiated the outcomes that could be achieved and reframed the stages of rehabilitation consistent with the funding available to ensure stakeholders continued to support the project.

The funding available was still not likely to be adequate to address the key safety and environmental concerns of this first stage of rehabilitation which included reducing the southern pit wall from its former 90 degree angle (see Figure 1), to a safer 22-26 degree angle (depicted in Figure 2), as well as carrying out erosion management on the western and northern ends of the pit lake.

Being a legacy site from the 1950s, Black Diamond is adjacent to a number of private land lots to the north, as well as Shire managed land (where the southern pit wall once was) and vacant crown reserves to the west. As part of Stage 2 DMP worked through these complexities and commissioned a detailed engineering design plan which was approved by the landowners, and endorsed by the Working Group, in July/August 2016.

### Importance of Partnerships

Development of partnerships is a key feature of the Abandoned Mines Policy. DMP recently released a draft Partnership Guideline to provide stakeholders with a framework for how DMP may approach a range of partnership opportunities to achieve multiple outcomes from the rehabilitation of abandoned mines. Accordingly, partnerships were formed with the Shire of Collie and Department Lands for in-kind services and contributions to make the Black Diamond site safe and stable.

A partnership has also been formed with the University of Western Australia (UWA), which involved a lecture provided by members of the Abandoned Mines Team and a field trip to Black Diamond where students undertook water sampling, soil sampling and vegetation surveys as part of their semester assessment. Additional services were provided by a range of providers at close to cost price to assist the project.

It is anticipated that results acquired from the UWA field trip and other data provided by providers will assist DMP in compiling a Mine Closure Plan for the site, which is planned for release on DMP's website in 2017 consistent with industry best practice. It is also anticipated that the partnership with UWA will continue with potential ongoing monitoring at the site.

### Completion of on-site works

After 6 months of extensive consultation, works to batter the southern pit wall and manage erosion on the western end and northern side of the pit lake as part of Stage 3 were carried out successfully and to the specifications in the engineering design plan in October this year (2016).

### Where to from here

The rehabilitation works undertaken to date have been successful in achieving their objective; to remove the immediate safety risk associated with the southern pit wall, as well as managing some of the heavily eroded areas. These works have provided a strong foundation in improving the safety and stability of the site.

Consultation with the community has indicated a preference for the site to become a managed recreation area, and future works to revegetate the southern pit wall and create a wetland at the western end will ensure that the site remains stable. DMP will be supporting the Working Group in applying for applicable grants and forming additional partnerships to achieve an agreed future land use for the site (Stage 4 of the project).

### How to find out more

DMP will provide regular updates regarding Black Diamond project on the Abandoned Mines webpage: <http://www.dmp.wa.gov.au/Environment/Abandoned-Mines-15518.aspx>.

Further information on the Black Diamond project is available from the Abandoned Mines Team on:

Ph: (08) 9222 3162

Email: [abandonedmines@dmp.wa.gov.au](mailto:abandonedmines@dmp.wa.gov.au)



Figure 1. Southern pit wall prior to earthworks



Figure 2. Southern pit wall post earthworks

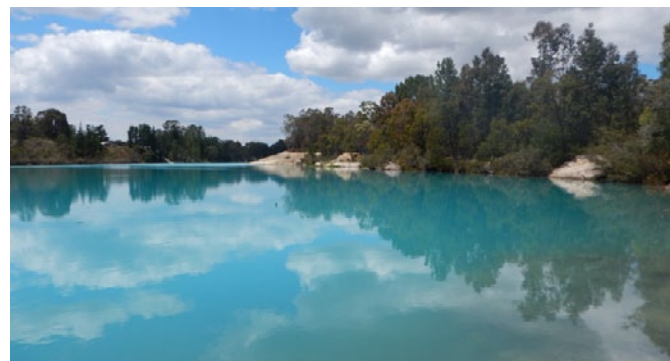


Figure 3. View of Black Diamond from the western end