Brukunga Mine Technical Advisory Group: a fresh approach to an old problem

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Background
The Brukunga pyrite mine is located in the Mount Lofty Ranges and operated from 1955 to 1972 to supply feedstock for sulfuric acid production for the South Australian fertiliser industry. Shortly after mining commenced acid began draining from the mine site, including from the waste rock dumps and tailings dam. Water was affected for up to 22 km downstream of the mine site and was unsuitable for livestock or irrigation use. Although the mine was closed in 1972, impacts to Dawesley Creek continued.

The South Australian Government began remediation of the mine site and surrounds in the mid 1970s and an acid neutralisation plant was installed in 1981. A drain was constructed in 2003 to divert water from Dawesley Creek upstream of the mine to reduce contamination with acid and heavy metals. The existing treatment plant was also upgraded to treat the increased capacity of contaminated water captured from the mine site, in addition to seepage from the tailings dam.

The Brukunga mine site and the associated acid neutralisation plant are listed as an activity of environmental significance in the Environmental Protection Act 1993. A licence is therefore required from the Environment Protection Authority (SA).

Current strategy
PIRSA is currently implementing a process for determining the most effective long-term solution for remediation of the site. This includes the formation of a technical advisory group to assist in the process.

The government’s overall remediation objectives for the Brukunga mine site include:
- substantially limiting or avoiding the need to intercept and treat acid waters indefinitely
- returning all or part of the site back to productive use(s) or for environmental/eco-system value(s)
- applying leading practice to site management and the remediation option(s) and solution(s).

In alignment with the above objectives, the role of the technical advisory group is “To provide independent assessment, opinions and recommendations to effect a cost-effective final solution that meets or exceeds all of the overall project objectives”.

An expression of interest was called by PIRSA in May 2007, inviting leading experts in the field of acid mine drainage and mine site remediation to participate in the technical advisory group. The former Australian Centre for Minerals Extension and Research, an independent body, provided assistance in selecting the final makeup of the group.

The technical advisory group comprises some 120 years of combined experience.
experience in mine site remediation. Members include individuals from the private sector working for companies providing services to the mining industry, while others are from research organisations leading in the field of acid mine drainage. Members and their areas of specialisation are:

- Dr Peter Scott and Dr Jeff Taylor — geochemical aspects and water treatment
- Mike O’Kane and Prof. David Williams — geotechnical aspects and soil covers
- David Brett — remediation options and costing.

The PIRSA Project Manager for the Brukunga mine site is coordinating the process to ensure the government objectives are met, while the private sector individuals are engaged for their high-level technical input. Rural Solutions SA is filling the role of group facilitator.

The group is following a series of agreed phases to complete the project. These are:

- context establishment — familiarisation with the site
- review constraints and opportunities, including data gap analysis and critical data
- develop, populate and refine the conceptual model that represents a realistic description of the site and surrounding inputs and outputs
- conduct an environmental risk assessment on the site to prioritise remediation options
- control scoping — brainstorm potential remediation options
- assessment of alternatives — including sensitivity analysis and preliminary costings
- optimising alternatives — including a residual risk assessment, refinement of costs to ± 30% and measuring against the ‘do nothing’ option
- recommend up to six remediation options that reflect the highest technical and scientific standards and represent current leading practice trends, nationally and internationally, in the management of acid mine drainage.

The final report, expected to be completed in November 2008, will summarise the decision-making process and recommend the most suitable cost-effective technical solution in order to effect a successful mine closure and completion strategy for the Brukunga mine site.

For further information contact Molly Carrigan, phone +61 8 8463 3117, email <mignone.john@sa.gov.au>.

PIRSA offers tours of the Brukunga mine site and neutralisation plant for community groups, schools and universities. Tours are arranged through the Mineral Resources Group Education Officer and begin with an introductory presentation on the history of the mine and its rehabilitation, followed by the strategies being employed to address the environmental problems that the site presents.

For bookings contact John Mignone, phone +61 8 8338 6493, email <mignone.john@sa.gov.au>.

Best practice community engagement

The national Ministerial Council for Minerals and Petroleum Resources (MCMPR) has developed and published new Australian Principles for engagement with communities and stakeholders that strongly promote the elements of good communication, transparency, collaboration, inclusiveness and integrity. These principles have been endorsed and adopted by the South Australian Government, and the need for community engagement has been widely and firmly communicated to the minerals industry operating in South Australia. A requirement to undertake community engagement is not legislated in South Australia, but it is strongly encouraged by PIRSA and is likely to be a condition of new mine approvals.

PIRSA is continuing to develop policy, processes, legislation and advisory guidelines to encourage industry towards best practice. Guidelines are now being reviewed and further strengthened, in consultation with the South Australian Chamber of Mines and Energy, to incorporate the principles in the recent publications from MCMPR and from the Commonwealth-sponsored Leading Practice Sustainable Development Program for the Mining Industry.

The minerals industry, through the Minerals Council of Australia, and in parallel to the ministerial process, is promoting best practice principles (Enduring Value) that include community engagement. It is primarily the industry’s responsibility to engage with stakeholders on mining proposals and activities. Community engagement should be carefully structured and managed, in addition to being tailored to meet the particular needs of individual projects. The focus may be on information sharing, consulting with key stakeholders, or even empowering the local community. There is a key role for independent facilitation to ensure that all stakeholders see the process as even-handed and transparent.

Community engagement is fast becoming an essential part of mineral resources operations. In the same way that resource companies have integrated environmental and native title considerations into project planning, they now need to consider community engagement. A failure to engage with the community in an appropriate and timely way can give rise to costly delays or even compromise a project. Appropriate community engagement is cost effective and simply ‘good business’. To meet this growing demand service providers are now offering community engagement specialists.

PIRSA strongly supports the South Australian Chamber of Mines and Energy and the South Australian Farmers’ Federation in their initiative to develop a new code of conduct for explorers that will incorporate principles of best practice community consultation. PIRSA encourages independent community engagement specialists, such as Community Engagement Group Australia Pty Ltd, to develop support services and practical consultation tools for our state’s exploration companies.

Further information on community engagement is available from: MCMPR — see the Australian Government’s Department of Industry, Resources and Tourism website <www.ret.gov.au>.

Community Engagement Group Australia, contact Laura Johnston, phone 0405 425 509, or see the website <www.cega.com.au>.

Additionally, resource companies have an excellent opportunity for discussion with community engagement specialists and government representatives at the South Australian Resources and Energy Investment Conference 2008 and Technical Forum, to be held at the Hilton Adelaide from 30 April to 2 May.