

October 2016

**Leading Practice review of South Australia's mining Laws – Leak detection in large liquid storage facilities**

This submission is raised in reference to section eight in the Leading Practice Review of South Australia's mining Laws, which deals with reinforcing leading practice environmental protections offered under the Mining Act 1971 (SA).

Current systems in South Australia preventing the introduction of harmful substances into the water table as a result of mining practices can be significantly improved using new technologies.

Well-established engineering tools such as fluid return systems are available to detect leaks within water storage ponds. However the systems are costly with no retrofitting capabilities to existing facilities, and have low assurance levels of a pond liner's integrity. The alternative option is to use electronic leak detection systems (ELDS), which use geophysical techniques to locate leaks based on the electrical properties of a lined system. The principle of the system is to generate an electric current using a transmitter circuit established through the use of electrodes that are placed in different locations relative to the liner. In the presence of a leak, the current will flow more readily, as the current should not be transmitted through a non-punctured liner. ELDS have been proven to be the most effective method for leak detection.

Current practices do not embrace movements forward in leak detection technology, and the current legislation does not accommodate the improvements in this field. The monitoring and detection methods with which a mine or hazardous storage facility are approved should be updated with industry best practice to ensure the safety and well-being of those living and utilising the area is maintained. If current leak detection methods were introduced across old HDPE lined dams and hazardous storage facilities and future facilities it would ensure the environmental compliance and safety of the local population and environment, and enable any breaches to be immediately rectified. Under current practices, by the time a contaminant or leak is detected, it is highly probably that significant damage has already been inflicted on the environment and its residents. With proactive management of these facilities, early detection can enable early action to occur before the leak causes any harm to surrounding residents or the environment.

The latest Electronic Leak detection systems can actively manage leaks and breaches in HDPE lined dams. The systems can be installed as a permanent leak detection system, or can be installed on a temporary basis for adhoc inspections. It could be retrofitted to current facilities to ensure compliance with environmental requirements, or it could be installed during construction of new facilities. The system will survey the facility as frequently as several times a day for the life of the facility. It is solar powered and will automatically report if there is a leak in the facility and where it is located so that action can be taken immediately to rectify the issue. By taking this step of maintaining best practice for responsible management of mine waste, South Australia will become a leader in responsible and sustainable mining practices. By proactively seeking out leaks and sources of contamination, and providing rectification before the issues become disasters, South Australia can empower mining companies to become market leaders in waste management and enable further operations to be sustainable in the future.



We believe the review of the legislation requirements around liquid waste storage leak detection would assist our state, specifically addressing the key agenda items as below:

- 1 Improvement to economic and social benefit with improved environmental assurance, reduced risk for stakeholders.
- 2 Proposed changes provide easy to understand and interpret immediate results reducing legislative requirements. Recent changes in compliance from Department of Environment & Heritage Protection Queensland government manual for assessing consequences categories and hydraulic performance of structures EM635 V.4 requires that all facilities "have a system that will detect any passage of the wetting front or entrained contaminants through the floor or sides of the dam and enable the repair of the containment system containment or its decommissioning and rehabilitation".
- 3 Proposed change would have easy to install stand-alone systems which can be designed to suit current and future storage facilities.
- 4 Promote economic and innovative solutions to long term leak problems.
- 5 Immediate results emailed directly to stakeholder via skada system or other specific requirement, significant improvement over current systems deployed.
- 6 Proposed changes can assist open discussion with transparency of results and sharing of pond integrity.
- 7 Proposed changes would provide options in a variety of models from permanent to temporary models, offering a cost efficient alternative which can therefore improve stakeholder and community confidence.
- 8 Innovative system would strengthen South Australia as best practice state.

Thank you for your time in considering our input into the review of the current mining laws. Please do not hesitate to contact us for further information or discussion regarding our submission.

Kind Regards,

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