

DZP Environmental Impact Statement (EIS) Explained – Water & Waste

Background

The Dubbo Zirconia Project (DZP) is the mining and minerals processing of the metals zirconium, niobium and rare earths on site at Toongi, located about 25km south of the city of Dubbo in the Central West of NSW.

The EIS prepared for the DZP serves two primary roles. Firstly to describe the nature, extent and impacts of the project and secondly to demonstrate that the project conforms to very strict environmental guidelines, standards and criteria set by the relevant government departments to ensure the safety of communities and the environment.

Water in the Dubbo region

Protecting the purity of groundwater supplies in the Toongi - Dubbo district remains a priority for Alkane. Even after 20 years of mining, the DZP open cut mine will not reach the water table.

To minimise the risk of surface and groundwater contamination, Alkane has adopted industry leading practices for the management of the liquid, solid and salt-based residues that will be the by-products of DZP operations. These practices, outlined in the following sections, are substantially more intensive than the minimum requirements nominated by the NSW Environment Protection Authority (EPA).

Solid residue

Solid residue will be neutralised with limestone prior to discharge from the mineral processing plant and then stored in above-ground storage facilities constructed from low permeability clay. Above the clay two layers of high-density polyethylene (HDPE), a dense, tough plastic that is both water and chemical-resistant. Between the two HDPE liners, a leak detection system will operate such that in the unlikely event the upper liner is breached, any liquid will flow via a permeable layer to a discharge point for containment.

As an additional safeguard, bores will be installed around the storage facilities to monitor for changes in groundwater quality that could indicate the very unlikely occurrence of a leak.

Liquid residue

Water that can no longer be used for DZP activities will be discharged from the processing plant to several HDPE-lined ponds where it will be managed to maximise the evaporation of the liquid residue. These storages would be constructed from low permeability clay, and made watertight by a welded layer of HDPE. Monitoring bores would be installed to detect changes in groundwater quality.

While the likelihood of a leak remains low, should such a leak be detected, the sub-surface flow of any liquid would be restricted by the underlying clay. Temporary measures would be implemented to prevent the further movement of groundwater whilst the location of the leak is identified and repaired.

Salt encapsulation and disposal

As the liquid residue evaporates, a salt residue will remain. Concerns that contaminated salt will contain large concentrations of uranium and thorium are unfounded; while evidence of these elements can certainly be found in the salt, they occur at far lower concentrations than the uranium and thorium that already occur naturally in the ground around Toongi.

While options for re-use, commercial sale or off-site disposal of the residual salt continue to be investigated, Alkane has planned for the on-site disposal of this material in a series of salt encapsulation cells (SECs). Like the facilities constructed to contain the solid residue, the SECs will be constructed from low-permeability clay on which two HDPE liners separated by a leak detection system will be laid. This process will minimise the risk of seepage from the SECs, will ensure the stability of the salt stored within the SECs, and will minimise the risk of contamination of nearby water sources.

Further research and development

In parallel to the EIS process Alkane is currently conducting research and development work on the possibilities of recovering most of the salts for reuse in the process.

Further information

The waste management processes being put in place at the DZP site have been developed in accordance with Alkane's ongoing commitment to preserving the local environment. Further information about the environmental impacts of the DZP can be found on the Alkane website at www.alkane.com.au