

SAINT ELMO PROJECT

FACTSHEET: GROUNDWATER

OCTOBER 2019

Epic Environmental Pty Ltd (Epic) are working with Multicom Resources Limited (Multicom) on the approvals process for the Saint Elmo Project (the Project), including the Environmental Impact Statement (EIS).



EXISTING GROUNDWATER USERS

The Great Artesian Basin (GAB) is a valuable and strategic water resource. Two hundred and thirty-one registered boreholes have been identified within an approximate 50 km radius of the Project. The EIS estimated that stock and domestic use represents the majority usage of between 65 megalitres per day (ML/day) and 220 ML/day from 122 active bores. The towns of Julia Creek, McKinlay, Kynuna and Nelia have an estimated total usage of approximately 2.2 ML/day from up to eight bores. While outside of the 50 km search radius, a number of surrounding mines are understood to use groundwater in the region, including: Cannington Mine; Osborne Mine; Eloise Copper Mine; and the Ernest Henry Mine.

GROUNDWATER IMPACT ASSESSMENT

The groundwater impact assessment identified that extraction of groundwater from the Hooray Sandstone would not satisfy the water supply requirements of the Project.

Therefore, Multicom has committed to not using groundwater from the Hooray Sandstone for Project purposes due to the predicted magnitude of impacts.

POTENTIAL EFFECTS OF MINING ON GROUNDWATER

The Project has the potential to impact on both groundwater quantity and quality if impacts are not adequately managed. Potential impacts associated with the Project include:

- Water quality;
- Contamination due to spillages from mineral processing facilities;
- Leakage from the hazardous waste facility;
- Seepage from mining activities; and
- Seepage from reject material (waste rock).

CONTAMINATION FROM SPILLS AT THE MINE SITE

The site is directly underlain by low permeability strata, and the processing facilities and storage areas are located where the water table is relatively deep. The potential for groundwater contamination from chemical spills at the mine site is considered low, and the risk can be further mitigated by appropriate surface facility designs and chemical handling procedures.

SEEPAGE FROM MINING ACTIVITIES

The potential for impacts to groundwater quality from seepage due to mining activities, other than reject materials being returned to the pits, are considered to be low and have not been assessed further.

SEEPAGE FROM REJECT MATERIAL (WASTE ROCK)

The reject materials will contain some moisture, which will be deposited above the water table. The moisture will tend to seep downwards until saturated conditions persist, after which lateral groundwater movement will occur. Seepage through the unsaturated zone is highly complex due to multiphase flow (i.e. water, gas, solids). The timing for seepage to reach the water table cannot currently be estimated due to the unquantifiable hydraulic conductivity of the reject material and the variability in the water table depth relative to the mine void base.

GROUNDWATER-SURFACE WATER INTERACTION

The low conductivity material will be mined and progressively backfilled into the mine void. This will increase the hydraulic conductivity of the material in the pit relative to the surrounding rock and any recharge would leak-off laterally at a very low rate. The backfilled pit would fill with water, resulting in the potential inadvertent construction of a "bucket" aquifer, which would be partially perched until the leakage reached the underlying water table.

Because the orebody lies within an anticline, the elevation of the pit floor on the axis of the anticline may be higher than the ground elevation at the edge of pit.

There is potential as the pit fills with water, for springs to develop where the new water level intersects the ground surface, discharging potentially contaminated water. However, with the mitigation measures outlined below this risk is minimised.

CONTROL OF POLLUTANTS AND CONTAMINANTS

The storage and handling of contaminants will include effective means of secondary containment to prevent or minimise releases to the environment from spillage or leaks. The Project will develop and implement appropriate emergency and incident response procedures to ensure that any spills or leaks of contaminated substances do not contaminate surface or ground waters.

For the backfill of the pit with mining and processing waste, the risks of potential groundwater contamination are considered low.

MITIGATION MEASURES

Mitigation measures will include:

- Site-specific Groundwater Monitoring Program and Groundwater Management Plan. Since the Project has committed not to use groundwater supplies from the Hooray Sandstone, and while the risks of impact to sensitive receptors in the water table aquifer, both in terms of quantity and quality have been assessed to be low, the monitoring program will focus on the Toolebuc Formation;
- The Project will develop and implement appropriate emergency and incident response procedures such that any spills or leaks of contaminated substances do not contaminate surface waters. Because of the low permeability of the underlying strata, and the depth to the water table across most of the site, surface control of pollutants will manage impacts to groundwater;
- The storage and handling of contaminants will include effective means of secondary containment to prevent or minimise releases to the environment from spillage or leaks;
- An ongoing geochemical and physical sampling and analysis program will be carried out by Multicom to further define and characterise the reject materials as mining progresses; and
- A waste characterisation sampling program will be developed with the aim of minimising potential groundwater quality impacts by identifying how the reject materials should be placed with respect to depth of the water table. In addition, the adaptive geochemical and physical sampling and analysis program will continue to be completed after material is mined and placed into storage areas.

In accordance with the principles of Adaptive Management, if unexpected impacts are observed, the groundwater risks will be reviewed and the monitoring and management plan will be updated.

Further information

If you would like further information on the Project, please:

- Email saintelmo@epicenvironmental.com.au; or
- Freecall 1800 270 844; or
- Visit <http://saintelmoproject.com.au>