



## AVONBANK PROJECT

# GROUNDWATER

# EXISTING CONDITIONS STUDY

FACTSHEET NO. 8

## GROUNDWATER STUDY

As part of the Environment Effects Statement (EES) process, WIM Resource Pty Ltd (WIM) has undertaken baseline studies to understand the regional groundwater and project scale groundwater characteristics. These include water level in the ore body and other metrics such as groundwater quality and the approximate rate of flow through the ore body.

WIM engaged professional groundwater teams from AECOM and GHD to conduct the studies over the past four years.

## STUDY METHOD

WIM installed over twenty groundwater monitoring bores across the project area and carried out detailed groundwater studies on the test pit which was excavated in 2019/20. The test bores involved installation of slotted PVC pipe into a narrow diameter drill hole to intercept groundwater and measure any fluctuations in the level of groundwater over time.



Figure 1: Groundwater monitoring bore installation at Avonbank Project site

## KEY FINDINGS

- ◆ Two main groundwater systems (aquifers) lie beneath the project area: Loxton Parrilla Sands (LPS) and the deeper Renmark Group system.
- ◆ The two systems are separated by a fine clay layer (Geera clay) known as an aquitard, which allows very little interaction between the two aquifers.
- ◆ One third of the Avonbank deposit (ore body) is below the groundwater level and forms part of the LPS Aquifer.
- ◆ The Remark Group Aquifer (more than 70m depth on average) will not be impacted by the mine, as mining will only occur down to approximately 30m.
- ◆ Groundwater quality within the LPS aquifer is moderately-high saline (up to half sea water) and is not suitable for human consumption or irrigation
- ◆ Groundwater flow rate in the LPS aquifer was very low, largely due to fine grained nature of the ore body

## CONTACT

For more information on WIM's groundwater study, please contact free call 1800 959 298 or visit the website [www.wimresource.com.au](http://www.wimresource.com.au).

## DETAILED SUMMARY – GROUNDWATER FEATURES IN THE PROJECT AREA

Two main groundwater systems (aquifer) that lie beneath the project area and in the region:

- ◆ Parrilla Sands (LPS); and
- ◆ Renmark Group System.

On a regional scale, the flow of the groundwater is to the north-west direction, as determined by regional data and groundwater bore data.

### Parilla Aquifer System

- ◆ The upper-most (shallow system) is on average within the bottom one third of the Avonbank ore body (figure 5).
- ◆ Average depth of the groundwater from surface of the project area is 18-22m.
- ◆ Comprises a range of fine to coarse grained sands that were deposited via marine (beach) processes, over geological time.
- ◆ Groundwater moderately – highly saline (up to half that of seawater) is classified Class C – very limited use, because of the salinity content.
- ◆ Within the project area the LPS aquifer comprises mainly very fine-grained silty sands, that result in an extremely low lateral groundwater flow rate (figure 4).

### Renmark Group Aquifer System

- ◆ This system is not intercepted by the ore body and is separated from the Parilla aquifer system by a layer of fine grained-clay 'aquicard' (Geera Clay), which prevents any significant hydraulic connection between the two systems.
- ◆ The average depth of the groundwater in this system, from surface in the project area is more than 70m from surface.
- ◆ Comprises a range of medium to coarse grained sands, gravels and clay layers that were deposited via river and stream-based systems over geological time.
- ◆ Groundwater in this aquifer is moderately saline and the groundwater has limited use.
- ◆ Within the project area the LPS aquifer comprises medium to coarse grained sands, gravels and clay layers, that result in a moderate to high flow rate (hydraulic conductivity).



Figure 2: Test pit – groundwater confirmation studies



Figure 3: Groundwater monitoring bore installation



Figure 4: Groundwater – intercepted in Avonbank

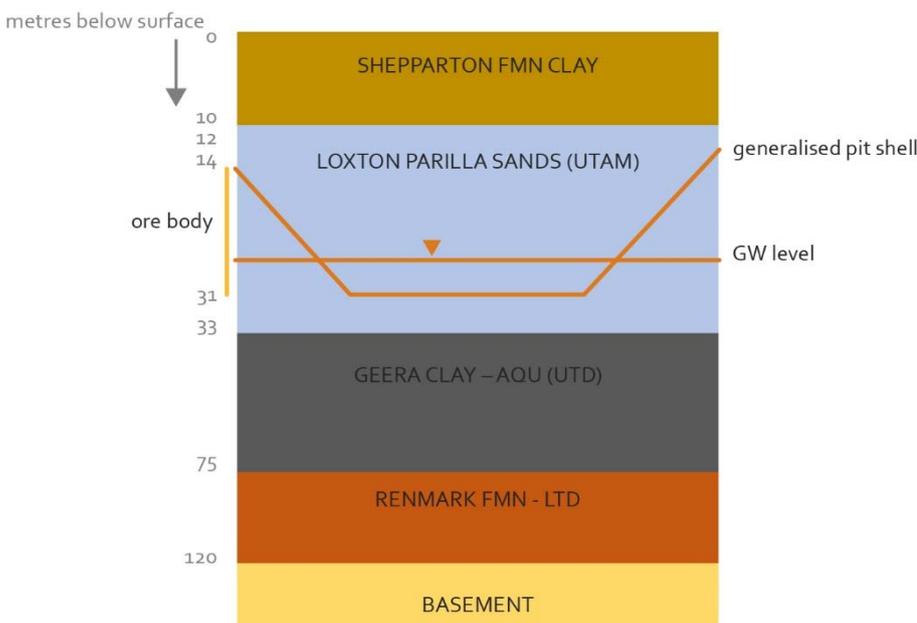


Figure 5: cross section of regional layers – showing the approximate groundwater level beneath the Avonbank Project area

### NEXT STEPS

To assess the potential impacts of the project on groundwater, the next steps in this study program will include:

- ◆ Construct a simulation model to assess the impact of the project on groundwater levels, flows and quality
- ◆ Develop management and mitigation measures to address any negative impacts identified
- ◆ Produce an Impact Assessment and Mitigation report for input in the EES document