



# WATER MANAGEMENT

## Thunderbird Mineral Sands Project

Kimberley Mineral Sands (KMS) operates the Thunderbird Mineral Sands Project (Thunderbird) which is located mid-way between Derby and Broome in the Kimberley region of Western Australia and is one of the largest and highest grade zircon mineral sands deposits in the world.

Thunderbird is being developed by Kimberley Mineral Sands Pty Ltd (KMS), a joint venture company equally owned by Sheffield Resources Pty Ltd and YGH Australia Investments Pty Ltd (Yansteel).

## Mineral Sands Mining Background

Mineral sands mining uses wet physical and magnetic separation processes to extract valuable heavy minerals (mainly zircon and ilmenite) from waste sand materials (mainly silica and iron oxides).

Ore is excavated, screened, slurried and then pumped to a nearby processing plant.

At the plant, the valuable heavy minerals are separated by wet gravity with spirals and wet magnetic separation methods.

Waste sand materials are then returned as a slurry to the tailings storage facility.

As the waste sand material settles, excess water is recovered and reused. Some additional water is required due to water remaining in the waste sand materials and water lost to evaporation.

## Where does the project get its water from and how much is used?

Water for the Project is extracted from the Broome Sandstone Aquifer, which is more than 20m below ground level.

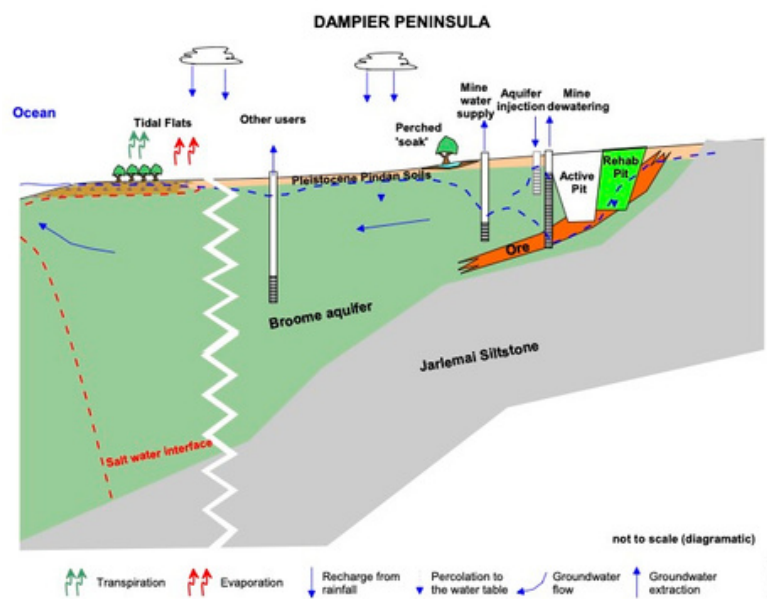
Whilst Thunderbird has a licence from the Department of Water and Environment Regulation (DWER) to extract up to 13GL of groundwater per year, the water required for the Project is estimated to be 5GL per year during steady state operations.

Usage will be higher during the commissioning and start-up period. The water is extracted from a production borefield at Thunderbird.

As the ore body extends below the water table, dewatering of the mining area will be required from roughly year 16 of operations onwards.

The water extracted for pit dewatering will be used in ore processing and the surplus will be reinjected to the aquifer outside of the mining area.

This dewatering and reinjection model ensures that no more than the licenced extraction volume of 13GL is used for ore processing.



Conceptual diagram of hydrogeological setting

## Who regulates and monitors water use?

The Department of Water and Environmental Regulation (DWER) regulates and monitors groundwater use across the State.

DWER determines water allocations for the Dampier Peninsula to protect water resources and water-dependent environments. These allocations are the maximum amount of water that is permitted for use in a particular area.

The Project is approved to extract 13GL of groundwater per year from the Canning-Kimberley Area, specifically the Canning Pender Sub Area of the Broome Aquifer.

Prior to the Thunderbird 13GL licence, 2.3GL of the 50GL (5%) per annum Canning Pender Sub Area allowance had been allocated (the majority being pastoral use), leaving 34.7GL available for use.

Water supplied to Broome is extracted from the Broome Groundwater Area of the Broome Aquifer which is outside the Project's allocation and is not predicted to be impacted by Project water use.

## Will the project affect nearby groundwater users?

Over the 36 year life of mine, the level of the aquifer will gradually drop with the drawdown concentrated around the mining area. As groundwater abstraction stops, levels will slowly return to pre-mining levels.

Hydrogeological studies have been conducted to understand drawdown impacts over time from Project water use.

These indicate that water levels in the Broome Sandstone Aquifer may temporarily drop by up to 2m at the Fraser River South valley located about 8km from the mine.

No impacts are predicted on wetlands or soaks. Modelling has shown that pastoral bores, existing soaks and local water supplies, including the Bidan Aboriginal Community supply, will not be affected by Project water use.

## What monitoring will be done to make sure local water isn't impacted?

The Thunderbird groundwater monitoring program was approved in 2018 and subsequently amended in 2023. The program monitors and measures both existing water quality and groundwater levels.

Implementation of the groundwater monitoring program will continue during operations to measure groundwater levels and quality compared to the modelled predictions. The monitoring results are required to be submitted annually to the Department of Water and Environmental Regulation and shared with stakeholders.

If monitoring shows drawdown greater than that predicted by the modelling, this will trigger a review by authorities of groundwater management and licence allocations.

In the unlikely event that adverse impacts are observed, corrective actions will be implemented to minimise damage to the environment and potable water resources.

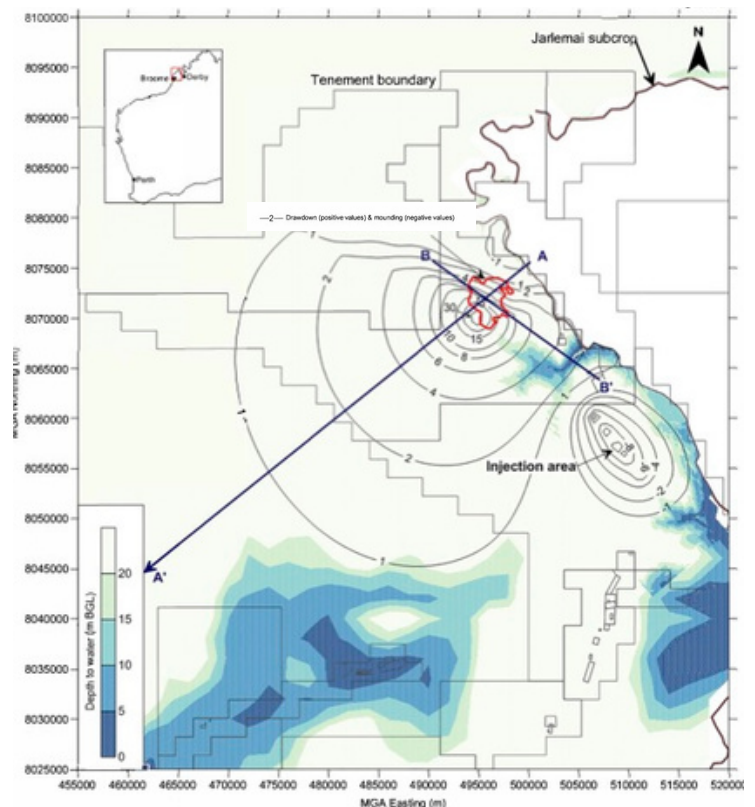


Diagram showing hydrogeological modelling and estimated drawdown profiles