

FACT SHEET – PASTORAL December 2016

Thunderbird Mineral Sands Project

The Thunderbird Mineral Sands Project, located on the Dampier Peninsula between Broome and Derby, is being developed by Western Australian company Sheffield Resources Limited.

Thunderbird is a large-scale, mineral sands mining and processing project with low environmental impacts and long term economic and community benefits. Sheffield proposes to undertake mining of mineral sands for more than 40 years from the Thunderbird deposit.

Sheffield is undertaking a Bankable Feasibility Study (BFS) and Public Environmental Review (PER) of Thunderbird, scheduled for completion in 2017. Start of construction is planned to follow with first exports through the ports of Derby/Broome targeted for 2019.

Sheffield believes that Thunderbird can help transform the community through the creation of 140 permanent and many indirect local jobs. Income would stay in the region supporting families, business, cultural values and lifestyle.

How will the new mine site affect fires in the future?

Development of the mine site will reduce intentional burning in the area, but mining activities can provide additional ignition sources which may increase accidental bushfires. To counter this, Sheffield will manage mine site activities to reduce the risk of ignition and spread of fires. Sheffield will have an Emergency Response Plan that includes mobilisation of people and equipment for fire response, and will work co-operatively with pastoralists, traditional owners, Department of Fire and Emergency Services, and regional groups involved in fire management.

What is the environment like where the mine will be constructed?

The project is within Mt Jowlaenga Station, and most of the site is covered in low, sparse eucalypt woodlands, with acacia shrubs and grasslands beneath. The topography is flat with a gentle fall to the southeast. Rocky hills occur as outcrops to the north and east of the project area, however these will not be impacted by the project. The deposit is on Pindan red soil country with no defined watercourses.

How will the environment be restored after mining?

The mine site will be rehabilitated progressively over its 40+ years of operation, to pastoral land use. The remaining parts to be rehabilitated at closure are roads, processing plant, accommodation village. These areas will be rehabilitated after the infrastructure has been decommissioned and removed.



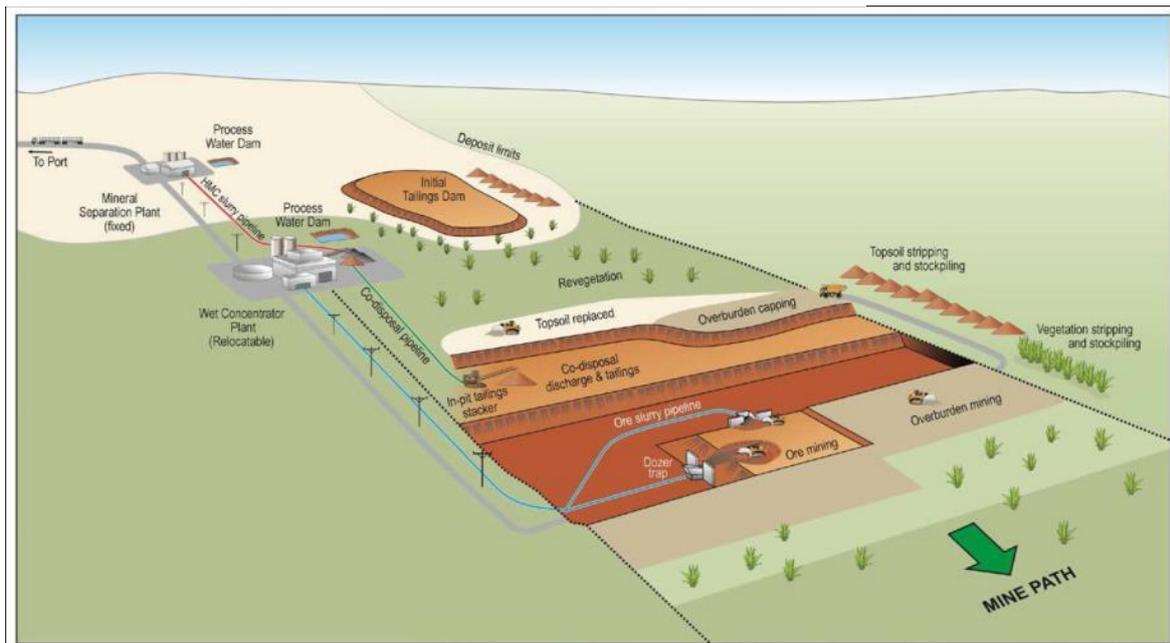
“Australia is a major producer of mineral sands. Non-reactive and non-toxic, mineral sands products are used in paints and artificial joints, in toothpaste, crockery and porcelain, medicines, food colouring and sunscreen.”

How does progressive rehabilitation work?

Mining occurs as a 'moving pit', with previously mined areas being progressively backfilled, the land form reshaped, topsoil applied and vegetation established as the new void areas are opened. Progressive backfilling and rehabilitation is an integral part of the mining process. The return of mineral sands projects to agricultural use is common (e.g. Capel, Waroona).

Will soil or water quality be impacted by the sand being returned?

Extensive analysis has been undertaken to understand the chemical and physical properties of the material to be returned to the void. This has demonstrated they are environmentally benign in the short and long term. Return will not adversely impact soil, surface water or groundwater quality

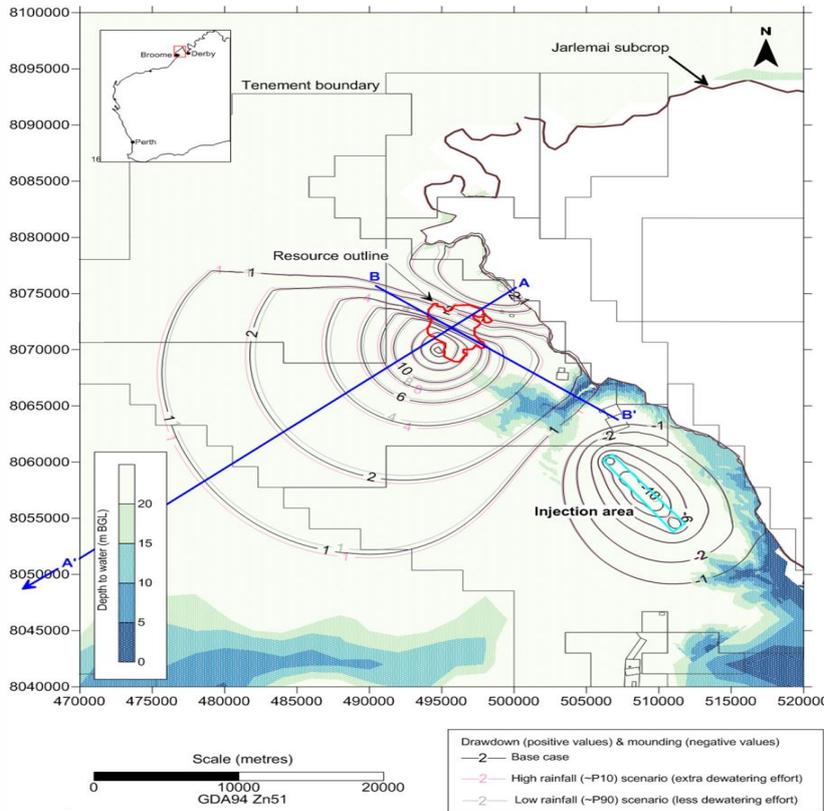


Where will product be exported?

Bulk product will be exported through Derby and packaged product will be exported through Broome. Export through Broome Port will involve 2-3 ships per month with an average load of 5,000t each. No new infrastructure will be needed. Export through Derby will use barges to load 2-4 ships per month with an average load of 15,000t each. A product storage facility will be built at the Derby Port, and existing ship loading equipment will be upgraded.

Will groundwater be monitored?

Sheffield will conduct regular monitoring to measure groundwater levels and quality compared to modelled predictions. Results will be submitted annually to the Department of Water, Environmental Protection Authority and the Department of 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.



Will groundwater levels change?
 Hydrological studies have been conducted by Rockwater to understand drawdown impacts over time from project water use. Modelling has shown that pastoral bores, existing soaks and community water supplies will not be affected by project water use. Groundwater levels will recover rapidly after mine dewatering stops.

Where will the project get its water and how much will it use?

Water will be drawn from the Broome Sandstone Aquifer which is more than 20 m below ground level. The annual water use for the project will be up to 12.2 GL. This will be supplied by a bore field until Year 15, when mining will go below the water table, and the mine must be dewatered. As mine dewatering amounts will be more than the project can use by around Year 32, excess water will be immediately re-injected into the Broome Sandstone Aquifer, down flow of the mine.

		Quantity (GL/yr)		
		Stage 1 (Yr 1-3)	Stage 2 (Yr 4 -15)	Stage 3 (Yr 15+)
Water Abstraction	Mine dewatering	0	0	10.7 - 32.7
	Bore field abstraction	5.2 - 12.2	10.7	
	Total	5.2 - 12.2	10.7	10.7 - 32.7
Excess Water	Aquifer reinjection	0	0	0 to -22
Grand Total Water Use		5.2 - 12.2	10.7	10.7

Sheffield will apply to the Department of Water for a licence to take water from the Canning Pender Sub Area of the Dampier Peninsula. Currently 2.3 GL of the 50 GL (5%) per annum has been allocated (majority being pastoral use), leaving 47.7 GL available for use. END