



Southdown Joint Venture (SDJV) Southdown Magnetite Project Water Supply Information Sheet

October 2022

The Southdown Project is a joint venture between Grange Resources (70%) and SRT Australia Pty Ltd (30%) – this partnership is known as the Southdown Joint Venture (SDJV). Grange Resources Limited (Grange Resources) is Australia's most experienced magnetite producer with over 50 years of mining and production from its Savage River Mine in Tasmania.

SRT Australia Pty Ltd is jointly owned by Sojitz Corporation, a Japanese global trading company, and Kobe Steel, a major Japanese steel maker.

Water Supply Overview

Water Requirement

The Southdown Magnetite Project requires water for the crushing, grinding, separation and transport of magnetite before it is transported in slurry form from the mine to the Port of Albany and loaded as a magnetite concentrate onto ships.

Recycling of water is a key part of the mining and production process, with water circulating continuously through the processing system. Around 85% of the water in concentrate slurry is filtered and returned to the processing plant via the return water pipeline buried in the same trench as the slurry pipeline.

It is estimated that to produce 5 million tonnes per annum (5mtpa) of concentrate during normal operation, an intake of around 5.3 gigalitres of water per annum (GL/a) is required. Top up water is required to meet water losses in the system including evaporation, dust suppression across the project, the small volume of wet tailings taken to waste storage, and to maintain a moisture target of 9% in the concentrate being loaded onto the ship. This ensures the safety of the vessel while minimising dust.

Water Supply Options

The SDJV has investigated a range of options for water supply to ensure there is a reliable supply of water for the project with no adverse impacts to the environment or the community.

In 2012, the project was granted environmental approvals by the Western Australian government under the *Environmental Protection Act 1986* (EP Act) and by the federal government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to build and operate a 12 gigalitre per year seawater desalination plant for the scaled up production of 10 million tonnes per annum planned at that time.

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An updated pre-feasibility study (PFS) in February 2022 proposed a scaled project development option based on a lower nominal production rate to 5 million tonnes per annum (mtpa) of magnetite concentrate. To meet the water needs of the scaled production rate, alternative water sources are being explored as follows:

- Recycled water Obtain recycled water from Water Corporation's Wastewater Treatment Plant (1.8 gigalitres per year may be available). The water will be treated to ensure it is safe for use in the processing plant. This is being investigated with the Water Corporation, with the potential to inject this water into the return water pipeline which passes nearby on its way from the Port to the processing plant.
- Groundwater The greater part of the top up water can be obtained from several groundwater sources, with investigations underway near Manypeaks, south of Wellstead, and from dewatering of the open pit during mining.
- **Desalination** The existing approvals for the 12 GL/a Cape Riche seawater desalination plant will be maintained to cater for the potential scaling up of the project in the future.

Potential Groundwater Supply

The project has been investigating potential groundwater supply areas for the possible locations of borefields, within known groundwater basins, and have selected the Manypeaks and Wellstead sub basins to progress these investigations (outlined in red in the map below). The investigations have indicated up to 3.5GL/a can be obtained from both borefields without adverse effects to native vegetation and other beneficial users.

The final proposed borefield locations and layouts will be located within these sub basins. When finalised, the specific and significantly smaller locations will be outlined in the referral to the EPA expected to be submitted in late 2022.

Specialised groundwater consultants, Rockwater and GHD, have been engaged by the SDJV to complete thorough technical and environmental investigations to understand the groundwater resources in the region.



Each area has been investigated by geological mapping, geophysics, the drilling of monitoring and test production bores, and undertaking test pumping to understand the hydraulic properties of the target aquifer. To date over 150 bores have been drilled for more than 11,000 metres of drilling. This data has been used to develop groundwater models to run predictions of water level change and, together with the environmental baseline studies, provide the basis for environmental impact assessments and approvals.

Groundwater Sources in the Region

The coastal plain sediments between Albany and the Pallinup River fill in three ancient river valleys, known as sub-basins.

- Each sub-basin contains 2 main aquifers the Upper aquifer (Pallinup Siltstone/ Upper Werrilup) and the Lower Werrilup Formation, as well as some local perched aquifers.
- The target aquifer for the water supply is the Lower Werrilup Formation. The

Lower Werrilup is separated from the Pallinup Formation by the Middle Werrilup Formation which consists of thick beds of low-permeability clay (aquitards) at each proposed borefield location.

- The Middle Werrilup confines the water in the Lower Werrilup under pressure.
- The Lower Werrilup is salty with 5,000 mg/L to >60,000 mg/L total dissolved solids.
- The pressure gradient created by abstraction will draw in water from further up the paleochannel and from the bedrock.
- Overlying Middle Werrilup clays will isolate the shallow Pallinup aquifer from the paleochannel aquifers.
- During the abstraction the Lower Werrilup aquifer will remain saturated. When abstraction ceases, the water levels and pressure will recover.



The Lower Werrilup aquifers have been deliberately targeted as they are confined aquifers and unlikely to be used for agricultural purposes due to their depth and salinity.

The upper aquifer is an unconfined aquifer with a relatively deep water table, generally more than 20m below ground level. It is described as brackish and is used for stock watering. As this aquifer is isolated from the target aquifer by the thick clay layer it will only be impacted very slightly after a long period of time by extraction from the Lower Werrilup.

Locally, perched aquifers are common in the region and host numerous wetlands. These are isolated from and sit above the regional water table in the Upper aquifer and will not be impacted by extraction from the Lower Werrilup.

255mm Production Bore Conceptual Design



Not to scale

Overview of approvals for the Project

The Southdown Magnetite Project has been granted primary environmental approvals by the Western Australian government under the Environmental Protection Act 1986 (EP Act) and by the federal government under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). However, there are some modifications to the project that require further approvals, including the potential borefield areas, and to make the total water limit for the project under Ministerial Statement 816 to 12GL/a, in order to be consistent with the desalination plant approval, Ministerial Statement 904.

Work is underway to obtain environmental approvals for the modified aspects of the project. It is anticipated that referrals will be submitted to the regulators in late 2022.

Contact Information

To stay informed of upcoming engagement opportunities or learn more about the project, visit the Southdown Magnetite Project webpage at www.grangeresources.com.au/operations/southdown.

If you wish to speak with a member of the project team, please email **info@grangeresources.com.au** phone **08 9841 4255** or visit the Albany Project Office at **31 Albany Hwy, Albany, WA** We acknowledge the Noongar Menang people as traditional custodians of this region and recognise their continuing connection to land, water and culture. We pay our respects to Aboriginal communities and cultures, and to their Elders past, present and emerging.