

October 2019

About Doral Mineral Sands Pty Ltd (Doral)

Doral Pty Ltd is wholly owned by Iwatani Corporation of Japan and includes Doral Mineral Sands Pty Ltd (DMS) and Doral Fused Materials Pty Ltd (DFM).

Doral Fused Materials' Rockingham operation is an integrated zirconia producer with downstream processing operations, transforming zircon sand to high value zirconia products utilised in ceramics, colours and industrial refractories.

Doral Mineral Sands produces titanium minerals and zircon sand products at its mineral sands operations in Western Australia's South West and Peel region, which includes the Keysbrook project which Doral recently acquired from MZI Resources in July 2019.

The Keysbrook mineral sands mine, located near the townships of Keysbrook and North Dandalup, approximately 70 kilometres south of Perth, mines and processes high value leucoxene and zircon minerals.



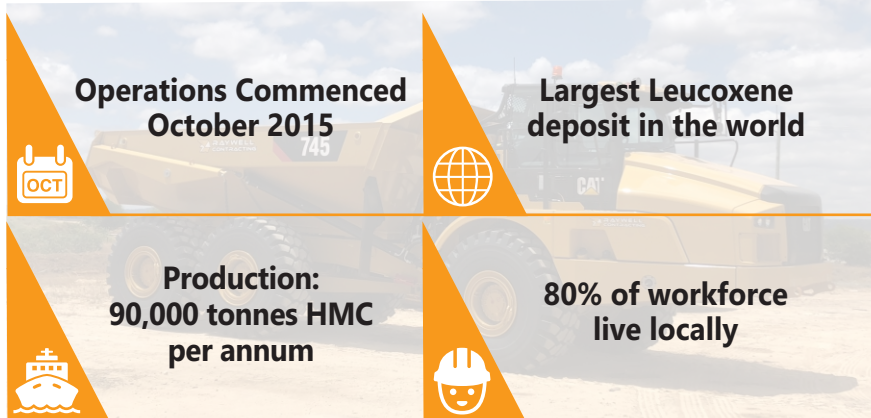
Keysbrook Operations

KEYSBROOK IS A UNIQUE OREBODY

The Keysbrook orebody is widely recognised as a unique deposit containing very high-value minerals of leucoxene and zircon.

Keysbrook has a mine life of 4 – 5 years, together with significant exploration tenements around the Keysbrook project.

KEY FACTS



HOW DOES DORAL MINE AND PROCESS MINERAL SANDS AT KEYSBROOK?

MINING

- The Keysbrook project covers a shallow orebody with an average depth of two metres, making it very simple to mine and rehabilitate.
- Mining involves earthmoving similar to subdivision earthworks, using a small fleet of conventional excavators, front-end loaders, articulated dump trucks, dozers and graders.
- First, top soil is removed and stored for rehabilitation. An excavator then removes the ore and stockpiles it next to the Mine Field Unit (MFU) for processing.
- At the MFU, ore is mixed with water and passed over vibrating screens to remove coarse non-mineralised waste. The remaining mineralised ore is then pumped to the Wet Concentrator Plant (WCP) as a slurry.

PROCESSING

- At the WCP, the ore passes through multiple spirals using water and gravity to further separate heavier minerals from non-mineralised sand. This is a chemical-free process that creates a Heavy Mineral Concentrate (HMC).
- The HMC is stockpiled and transported by road to Doral's Mineral Separation Plant (MSP), located in Picton. Here, the HMC passes through electrostatic and magnetic separators to create the final leucoxene (L88, L70) and zircon concentrate products, which are exported through Bunbury or Fremantle Ports to Doral's customers.
- Surplus sand is returned to Keysbrook and used to backfill mined areas for rehabilitation.



Local children learning about mineral sands at Mine Open Day



Keysbrook employees planting native seedlings in covenant area



Rehabilitated pastoral land, 18 months' post mining

REHABILITATION

- Mining predominantly occurs on cleared agricultural land.
- Once the mined area has been backfilled with sand, it is mixed, contoured, covered with topsoil, and seeded to a combination of pasture and vegetation, such as tree and shrub species local to the area.
- Mined areas are progressively rehabilitated and returned to their pre-mining state within two growing seasons.
- Soil is typically enhanced due to increased clay content, which improves soil and nutrient retention.
- Native vegetation is replaced at a ratio of 1.4 hectares for every 1 hectare cleared.

COMMUNITY

- The Keysbrook Community Consultative Group (CCG), formed in 2012, actively involves nominated representatives in the operation, management and planning of the Keysbrook mine.
- Members include community representatives, Shire Councillors and Doral personnel.
- The CCG guides the Company's community investment of \$50,000 per year in local community groups.
- Doral is committed to ensuring the communities benefit from its presence and stakeholders are engaged on important developments.

ENVIRONMENT

- 75 hectares of native vegetation has been set aside for conservation and enhancement of the local environment.
- 30 artificial cockatoo nesting tubes have been installed in Doral's conservation area on Elliott Road in Keysbrook to provide habitat and nesting areas.
- 85% of the water used on site is recycled.
- No chemicals are used in the mining and processing circuits.
- The site follows a comprehensive Noise Management Plan for its daily operations taking into account types of machinery to be operated on the day and forecast weather conditions.

WHAT ARE HEAVY MINERAL SANDS USED FOR?

- Mineral sands are a key element in many products that are used in everyday life.
- Leucoxene (as titanium dioxide) is commonly used as a whitening agent in products such as paints, plastics, papers, inks, foods, medicine tablets, and most toothpastes. Titanium metal is used for industrial processes, mobile phones, sporting equipment, 3D printing, and more.
- Zirconium based products are used in ceramic tiles, sanitary wares, household crockery, and a range of consumer products.

Doral[®]