

Mindarie Mineral Sands Project



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Fact Sheet

The Mindarie Mineral Sands Project is Murray Zircon's primary asset with active mining and ore processing and heavy mineral concentrate production exported to China.



Heavy Mineral Concentrate

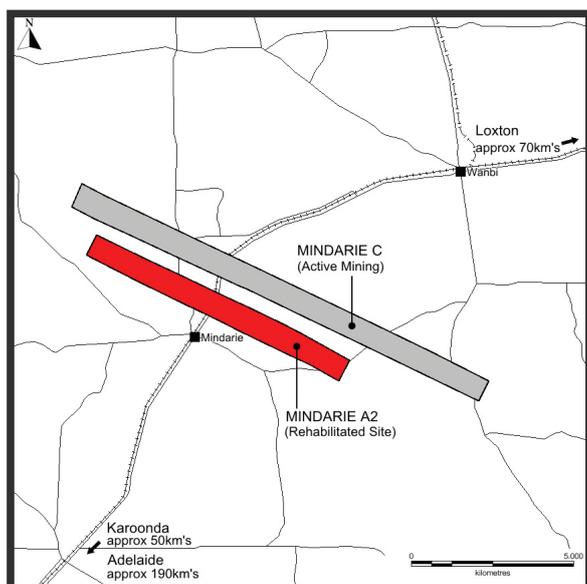
Zircon

Rutile

Ilmenite

Where is the Mindarie Project?

The Mindarie Mineral Sands Project is Murray Zircon's (MZ) flagship mining project. It is located approximately 150km northeast of Adelaide in the Mallee Region of South Australia.



Above: Mindarie Project Location Map in South Australia

Is Mindarie a new mining project?

The Mindarie Project was originally built and operated by Australian Zircon NL (AZC) from 2006 through to 2009. Murray Zircon acquired the project along with AZC's other mining and exploration assets in 2011, through a joint venture between AZC and Guangdong Orient Zirconic Ind Sci & Tech Co. Ltd (OZC). Today Mindarie and all other MZ assets are controlled by OZC. AZC is no longer involved with Mindarie or Murray Zircon.

What does the Project consist of?

When the Mindarie Project was acquired by MZ in 2011 it consisted of several mining licenses and a mineral sands ore processing facility including a primary concentrator plant (PCP) and mineral separation plant (MSP) and associated administration and support buildings and infrastructure.

Following MZ's acquisition of the project the PCP has been substantially refurbished and updated with process control instrumentation; new slurry lines and pumping stations were constructed; a new slurry mining unit (SMU) was acquired and a new mine was developed. In addition, MZ constructed a 55-man mining camp just south of the project.

Mining commenced in October 2012 and ore processing commissioning started in December 2012.



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How is Mindarie mined?

Mining at Mindarie is by open-cut method. The ore is located at 5-15 metres depth and it is located above the water table so dry mining techniques are employed using dozers and scrapers.

Mining is sequential with the removal and stockpiling of topsoil and subsoil using tractors and land planes. Overburden material is removed using scrapers and ore is mined using dozers and/or excavators and trucks. Mined ore is stockpiled in advance of feeding it into a slurry mining unit (SMU) which slurries the ore with water to allow it to be pumped via slurry pipeline to the PCP for processing.

How big is the mine at Mindarie?

Typically mineral deposits at Mindarie exist in long, narrow strands from several to tens of kilometres long. The mine at Mindarie is typically 200 metres wide with approximately 1.5km of strand length opened at any one time.

How is the ore processed at Mindarie?

After the ore is slurried with water at the mine it is pumped through long slurry lines (3-7 kilometres) to the primary concentrator plant (PCP). At the PCP, the ore slurry is screened to remove oversize, then pumped through cyclones to remove fine clay particles before the sands containing 3-10% heavy minerals (HM) are processed through spiral classifiers.

In the spiral classifiers, the HM is gravity separated and removed from the remainder of the ore sands. The recovered HM is then pumped to the product storage pad as heavy mineral concentrate (HMC), where it is stockpiled in advance of trucking to the port for export to China.

What is the production capacity?

The Mindarie Project was designed to process 500 tonnes of ore per hour. Therefore, the capacity of the PCP can range from 3-4 million tonnes of ore per annum depending on operating availability. This can equate to 100,000 to 200,000 tonnes per year of HMC depending on ore grade, recovery, availability and product grade.

What happens after mining?

When mining in any area is completed, the area is rehabilitated by first replacing and contouring the overburden material removed from above the ore, then subsoil and topsoil are replaced and the land is returned to its pre-mining use.

As part of its rehabilitation commitments under a Program for Environmental Protection and Rehabilitation (PEPR), the Company must demonstrate that crop yields are equal to or better than pre-mining crop yields for three of the five years following rehabilitation.



Above: Rehabilitated Mine Area at Mindarie

Community Consultation

As part of its regulatory requirements, MZ willingly and openly embarked on a proactive community consultation programme from the outset of seeking approval to recommence mining. This consultation effort was conducted through the Mindarie Mine Community Consultative Committee (MMCCC) which was facilitated by regulatory officials from the Department of Manufacturing, Innovation, Trade, Resources and Energy (DMITRE).

This consultative approach has been very positive and beneficial and will continue during the active mining and post mining phases of the project.

Environmental Protection

Key environmental protection measures under the Government-approved PEPR include:

- Noise, dust and air quality;
- Site clearance and soil management;
- Visual amenity;
- Effects from mining methodology;
- Effects on ground water and aquifers from mining and processing operations; and
- Impact from transport.

Additional Information

www.murrayzircon.com.au