



PROJECT FACT SHEET

Murrin Murrin, WA

CUSTOMER:

Minara Resources

LOCATION:



Murrin Murrin

The Murrin Murrin nickel-cobalt operation is located between Leonora and Laverton in the north eastern Goldfields, WA

STATUS:

Current

Start date: 1999

THE CONTRACT: LOGISTICS AND MATERIALS HANDLING

Bis provides a range of mining and processing services to Minara Resources' nickel mine and processing facility at Murrin Murrin. Key responsibilities across the full value chain include:

- » drilling, blasting, crushing and rehabilitation work
- » off-road load and haul of nickel ore and calcrete
- » on-road load and haul of bulk goods, chemicals and finished product
- » calcrete mining; and maintenance of the haul road and Bis fleet
- » loading and unloading of chemicals, reagents and finished product to and from trains
- » Calcrete milling and processing

Bis has provided services at Murrin Murrin since mining commenced in 1999.

MINING OPERATION:

Minara Resources (Minara) is wholly-owned by Glencore International and operates the Murrin Murrin nickel-cobalt mining and refining project in Western Australia.

Operations at Murrin Murrin commenced in 1999 and are based on the mining and processing of laterite ore.

Conventional open-cut mining techniques are used, followed by ore processing comprising pressure acid leaching; mixed sulphide precipitation; cobalt refining and nickel refining.

The project reportedly has sufficient ore for the next 30 years of operation.



ASSETS ON SITE:

PEOPLE

- » Bis has a workforce of approximately 130 team members supporting the operation at Murrin Murrin.

EQUIPMENT

Our equipment onsite includes:

- » Nickel haulage:
 - / fleet of Series 2 dual powered road train (DPRT) quad combinations (350 tonne per unit)
 - / single-powered off-road road trains (225 tonne per unit)
 - / Komatsu WA900 loaders
 - / CAT 988 loader
 - / road maintenance equipment
- » Minara logistics:
 - / triple road train combinations
 - / ammonia road transport bullets
 - / fixed plant ammonia transfer station at Malcolm Siding
 - / container forklift units
- » Calcrete operations:
 - / fixed-plant crushing circuit
 - / Komatsu WA600, CAT 980 and CAT 988 loaders
 - / CAT 775 dump truck
 - / CAT 740 dump truck
 - / CAT D9 dozer
 - / excavator and rock breaker
 - / 140-tonne pit hauler

KEY ACHIEVEMENTS:

THE POWER OF DPRTS

The site's nickel ore haulage operations were originally performed by eight 225-tonne payload road trains travelling 5km to 52km on a private haul road, crossing over one public road.

Bis introduced purpose-built 350-tonne payload Dual-Powered Road Trains (DPRTs) to replace the 225-tonne fleet and performed upgrade works on the public road crossing to allow for the additional payloads.

PAYLOAD PIT HAULER

To complement the DPRTs, Bis replaced a standard articulated dump truck with a 140-tonne payload pit hauler. With the calcrete mining locations moving further away from the crushing plant, this vehicle removed the need to relocate Bis' crushing plant, delivering a significant cost saving.

REXX SITE TRIALS

Murrin Murrin was the first site to host Bis' innovative new haul truck REXX, as part of its trials at working mine sites across Western Australia. Trials delivered outstanding results and its capacity to deliver significant reductions in operating costs compared with conventional dump trucks

"We were thrilled to be involved with Bis on this exciting project. Outside of autonomous systems, there haven't been many major fundamental design changes in the rigid-frame off-highway game in a long time. The Bis design offers the ability to haul directly from pit-to-plant from a much longer distance, without the need for the rehandle step, which should save costs and reduce ore loss/dilution. REXX solves a niche haul-distance equation."
Murrin Murrin Mining Manager, David Ayres