



Portal Establishment

Macmahon Underground Mining



Macmahon has a wealth of experience with the establishment of new underground mining projects. During Macmahon Underground's 24 year operating history the company has excavated no less than 19 portals, with at least nine of these being constructed during active open pit mining operations.

Macmahon's view is that a well constructed portal not only serves to ensure enduring structural integrity of the mine opening, but also sets the tone for the operation to follow. Macmahon ensures the portal is established in strict accordance with geotechnical design and to a high quality and professional finish.

A sample of portals established by Macmahon:

Exploration Decline, Ranger 3 Deeps (NT) – 2013

Development of single heading exploration decline, includes boxcut and Armco tunnel installation, surface infrastructure and 2200m underground development.

Cadia Hill Open Pit, Orange (NSW) – 2011

Establishment of two portals from the Cadia Hill Open Pit to support the Cadia East Underground Development.

Bob Crew Decline, Olympic Dam (SA) – 2010

Establishment of one portal from an existing quarry to open up a new area of the underground mine.

Rasp Decline, Broken Hill (NSW) – CBH Resources 2006

Refurbishment of historic pit operation and scaling and securing of slip and rockfall areas. Extensive use of cablebolting and fibrecreting to secure portal site.

Great Northern Highway and Gibraltar Mines, Meekatharra (WA) – St Barbara 2003

Two portals, both from Macmahon operated surface operations and involving installation of steel sets.

Emily Ann, Lake Johnston (WA) – Lionore 2001

Main decline portal and ventilation decline portals, both involving installation of steel sets.

Leonora (WA) – Sons of Gwalia 1998

Main decline and escapeway portals, each involving installation of steel sets.

Swan Decline, Bendigo (VIC) – Bendigo Mining 1998

Box cut and portal establishment in poor ground, involving installation of steel sets, with initial excavation by roadheader.

Paddington dewatering adit, Kalgoorlie (WA) – Pancontinental Resources 1998

Establishment of portal within operating open pit.

Yilgarn Star decline, Marvel Loch (WA) – Yilgarn Star JV 1996

Establishment of portal within operating open pit.

Westralia and Transvaal portals, Mt Morgans (WA) – Plutonic Resources 1996

Establishment of two portals, with Westralia portal in an operating pit.

Most key personnel involved in the establishment of these portals remain employed by Macmahon today. Macmahon have in-house expertise and equipment to undertake any aspect of portal construction, from fabrication of steel sets through to shotcreting / fibrecreting works, and installation of all types of ground support anchors including cablebolts.

Interaction with open pit mining operations.

Key issues:

- Risk assessment conducted in conjunction with surface mining teams prior to commencement of operation. Outputs include a communication plan, traffic management plan and an operational risk assessment document cross referencing procedures.
- Communication between surface and underground mining teams to promote coordination of activities and cooperation between teams. Daily start up meetings required as a minimum.
- Ensuring safe access for smaller underground equipment amid larger surface fleet.
- Interaction of blasting times.
- Management of noise – ventilation fans, drills.
- Management of flyrock – both ways.
- Lighting.
- Movement of blasted material and interaction between underground loaders and surface load / haul equipment.
- Consideration of surface footprint for infrastructure – fans, header tanks, gensets, lay down area. Macmahon have experience with minimising the extent of this footprint.