TUTT BRYANT HEAVY LIFT & SHIFT

A Member of the Tutt Bryant Group

CASE STUDY

Relocating the Mining of the Future

The Mining Tunnel Machine: An integral part of "Mining of the Future"

With a plan to change the face of Australian mining productivity and efficiency, our client along with a prominent German mining manufacturer has developed a new, innovative tunnel boring system for use in their "Mine of the Future" programme. Shipped from Dusseldorf, Germany, the mining tunnel machine (MTM) was put through its paces undertaking extensive testing at a Central NSW mine facility cutting through 600 metres of rock below the surface.

At the conclusion of the MTM's testing, it was our client's intention to retain the MTM and have it transported to a storage facility where it would be housed until they decided where it would be utilised next. Considering the equipment sits at over 64 metres long and weighs in at an excess of 250 tonnes, the brief required a very unique solution to achieve their objectives.

Tutt Bryant Heavy Lift & Shift were contacted to assist in planning and executing the heavy lift & shift of the MTM to its new storage facility. Our client's brief was for Tutt Bryant to receive the dismantled machine components, lift for cleaning and packaging, load and transport the MTM to its storage facility and unload into the storage area. As simple as it sounds, attempting to achieve these tasks with machinery totalling over 250 tonnes involved hours of meticulous planning and preparation prior to the project's start.

Tutt Bryant's extensive fleet of trailer, heavy haulage, gantry lifting equipment and experienced crew provided our client with a single, unique solution in turn saving them time and resources in the process.

This satisfied our client's brief and Tutt Bryant was engaged to undertake the lifts and transportation.

Above - The 4 Point Lift System in operation preparing to lift the undercarriage of the MTM for cleaning.

Above - The main section of the MTM loaded for its 650km trip to Tutt Bryant, Muswellbrook.

Above - The Main section navigating through Central NSW on its way to the Tutt Bryant Muswellbrook facility.

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Let the lifting and moving begin

Following the dismantling of the MTM, our client's project team considered the use of large crawler or hydraulic cranes to lift the machines main components for the cleaning of the undercarriage, the lower sections of the back-up trailers and the main MTM. Taking into account the work environment and the impact cranes would have onsite, Tutt Bryant engineered an alternative solution in the form of their gantry lift system. The 4 Point Lift gantry system is capable of lifting up to 400 tonnes, offers minimal footprint and disruption to the site and is priced at a significant saving to our client. The gantry solution was approved and was brought into operation successfully completing the dismantling, cleaning and dispatch phase.

Prior to the transportation of the MTM, discussion took place with our client regarding the housing and storage of the MTM. Our client's requirement was to find a suitable location with ample storage space and importantly, within close proximity to a suitable port should the need arise to have it transported overseas. After much research, the idea of utilising Tutt Bryant's Muswellbrook location was raised. The idea had merit with the location meeting suitable storage facility requirements and located within 1hr of the Newcastle port. The solution was presented and formally approved by our client.

In for the long haul

Transportation of the MTM was carried out in two stages: The first stage was the transportation of the MTM's backup components. Weighing 33, 42.5 & 54 tonnes and the accessories, the components were transported using single prime movers and 8 axle dolly trailers. The second and more difficult stage was moving the main MTM which weighed 165 tonnes. A prime mover-trailer configuration of two prime movers - MTM - two prime movers was considered the best approach to have the main MTM safely transported to Tutt Bryant's Muswellbrook facility. Miscellaneous containers and break bulk components were also transported by Tutt Bryant using standard semi-trailers.

Due to the load's weight, Tutt Bryant also devised a full transport plan as required for NSW Roads & Maritime Services (RMS) as part of the permits approval process. In some locations, this required escorts by company pilots, NSW Police Officers, Rail Safety Officers (for access to level crossings) and local council staff. Major civil works were conducted on the Dartbrook Rd near Scone as the flood-way at Sandy Creek was too steep for the trailer configuration to traverse without causing damage to the equipment and load. Following the successful navigation through Central NSW, the main MTM and its components were safely delivered and unloaded at Tutt Bryant, Muswellbrook completing a trip of approximately 650km via Narromine, Coonabarabran, Gunnedah, and Scone.

Given a brief in which traditional methods as per usual practice were originally envisaged, Tutt Bryant's ability to engineer and offer an innovative and comprehensive alternate solution allowed our client to achieve its objectives safely, efficiently and in a cost effective manner.

Key Equipment - 4 Point Lift System

The 4 Point Lift System is a Modular Hydraulic Jacking System (MHJS), commonly referred to as a 'Gantry System'.

This gantry uses header beams on the top of the jacks, from which rigging or specialised attachments are suspended. As a safer, cheaper and more controlled way to lift and place heavy items compared to mobile cranes, the MHJS really comes into its own when performing in tight spaces and when greater capacity is required. Add to this the fact tracks are available to move the load, the gantry is able to lift and move items at will.

Above - Tutt Bryant's 4 Point Lift Jacking System

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