Rio Tinto - Western Turner Brockman Syncline No. 4 Project Phase I and II

**Client**  
Rio Tinto

**Location**  
Pilbara, Western Australia

**CAPEX**  
Phase I US$1.52 billion  
Phase II US$1.2 billion

**Project Duration**  
2008 - 2012

**PROJECT NARRATIVE**

The Western Turner Brockman Project consists of the Brockman 4 and Western Turner Syncline mines. The first phase included the Brockman 4 mine expanded from an annual capacity of 22 million tonnes (Mt/a) to 40 Mt/a. The Western Turner Syncline mine expanded from 6 Mt/a capacity to 15 Mt/a.

The second phase of the Brockman 4 project included an expansion of the village, additional mine fleet and construction of a primary crusher and a 4km overland conveyor to increase the Brockman 4 operation from its scheduled 22 Mt/a to 40 Mt/a capacity in the first half of 2013. The Western Turner Syncline expansion incorporated the construction of a primary crusher and a 20km overland conveyor to deliver ore to the Tom Price primary stockpiles. Existing Tom Price infrastructure will be utilised, including the high grade and low grade processing plants, stockyards, train load-out and on-site facilities. The first phase will provide 15 Mt/a capacity from the second half of 2013.

**SCOPE OF WORK**

PDC’s scope consisted of the 3D modelling and shop detailing of mechanical and structural steel and associated plate work. Areas listed below.

The Phase I project areas:
- Primary and secondary crushing facility,
- Product screening facility,
- Product sampling stations,
- Stacker,
- Reclaimer,
- Stockpiles
- Train load out bin
- Ten (10) interconnecting conveyors and transfer stations

Phase II consisted of modifications to:
- Bin located on Phase I
- Overland conveyors
- Overland Conveyor Drive station
- Primary crusher
- Take up Tower

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PROJECT CHALLENGES / HIGHLIGHTS

The major project goal was to ensure Clients Schedule Milestones were achieved whilst ensuring the highest level of accuracy in the provision of all client deliverables including:

- Mine Information Modelling (MIM) Systems
- Fully intelligent 3D Review Models including vendor items
- Integrated and collaborated systems between engineering and detailed design
- 2D Shop Detailing Drawings (Total of 42,000 drawings and fittings, with additional 4 corresponding MIM reports per drawing)
- Electronic Fabrication Data
- Detailed Material Take Off’s

PDC integrated solutions provided Geospatial/Mapping, Mine, Civil Utilities, Mechanical and Structural disciplines to ensure multi-disciplinary interface checks were conducted, assisting in the project design and ensuring accuracy of the fabrication drawings.

Project Statistics

Phase I
- No. of Phases – 398
- No. of fitting details - 46,120
- No. of shop detail instructions from client – 36
- No. of active 3D models – 121
- No. of transmittals issued - 1,122
- Requests for information - 952
- No. of detail drawings -15,699 excluding fittings
- No. of variations - 350
- No. of resources at peak – 75
- No. of conveyors – 10

Phase II
- No. of Phases - 115
- No. of fitting details - 16,807
- No. of shop detail instructions from client – 137
- No. of active 3D models - 57
- No. of transmittals issued -740
- Requests for information - 228
- No. of detail drawings - 6800
- No. of variations - 53
- No. of resources at peak – 21
- No. of conveyors - 2

Resolution of Problems

The major project obstacle was the interfacing of various models across multiple facilities and disciplines. PDC Consultants overcame this by utilising its advanced 3D modelling and technology processes by combining the completed Prosteel 3D models and other software models with Navisworks proprietary software to provide a powerful intelligent viewing tool and Mine Information Modelling (MIM) solution. The project was primarily modelled utilising Prosteel 3D software and in particular the software was used to model and detail the more complex mechanical items, including bins, curved trusses, transfer chutes and their liner systems.

CLIENT TESTIMONIAL

“PDC’s services meant a three to four month improvement on our overall schedule” Brockman 4 Project Team