

■ QMM awarded

Hatch's involvement in Rio Tinto's QIT Madagascar Minerals (QMM) ilmenite project saw its wet plant team of design engineers clinching first place in the export category of the 2009 South African Institute of Steel Construction (SAISC) Awards. The project was executed by the Mandena Joint Venture (JV), Hatch and Fluor were partners in this JV.

As a direct result of the work done by the Hatch civil- and structural-engineering team, the QMM ilmenite project overcame logistical problems, as well as various wet- and dry-plant design challenges. "Owing to the remote location of the project, every single component that was used in the development and construction of the mine had to be imported," says structural lead engineer Morné Fourie. "Everything that needed to be on site had to be sent either by ship or plane."

What's more, the absence of a commercial port required dredging and deepening of the existing port. The pier and quayside also had to be modified; allowing barges to enter. Hatch logistics controller Esté Visser explains that cyclones in the region resulted in the loss of two barges; forcing the company to mobilise additional barges in an effort to minimise impact on the project schedule. In addition, the size of the available runway only accommodated small aircraft and landing could only take place during daylight.

The condition of the roads, from the port and the airstrip to the site of the project, posed yet another serious challenge. The first available route ran straight through the middle of Tôlanaro (formerly Fort Dauphin) – a major town with an estimated population of 45 944 people. Route surveys were carried out, which resulted in a deviation of the road around the town. "Due to an agreement between Rio Tinto and the Madagascar government, which stated that all activities revolving around the project must be sustainable, the areas where roadwork took place had to be rehabilitated upon completion," says Visser. "Part of the project construction phase also fell in Madagascar's rainy season so it was a three-week trip for trucks travelling from the port of Toliara to the site. In the dry season, this journey would normally average seven days."

Before construction of the mine could commence, the Mandena JV was required to design and build extensive ancillary services and infrastructure, including a power station, housing estates, construction villages, road network, and



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water-supply and communication networks. Fourie notes that the team was also commissioned to design and build a wet plant with a floating platform and a dry plant with drainage bays, dry-mill buildings and a filter building. The initial amount of fabricated steel, equipment and other material shipped was 154 000 freight tons.

In addition to the SAISC award, the project won the Rio Tinto Global CEO Safety Award for completing the project with more than 12-million lost time-injury free man hours.

Hatch's engineering team improved workflow and reduced costs with various computer-aided engineering programs. "Streamlining the 2D drawing delivery process also expedited steel fabrication and improved the critical path schedule for construction," Fourie adds. "As a result, the Hatch engineering team won a Bentley Award for this project."

For Hatch's structural engineering team, quality and client expectations are not mutually exclusive terms. "In order to meet our client's expectations upfront, we need to understand them explicitly," says Fourie. "Computer-aided engineering products facilitated this communication through visualisation of the design."

Through several years of planning and interaction with this community prior to project commencement, QMM was able to develop a profound understanding of its responsibility to the region. Today, this project adds value to the people of

Tôlanaro and Madagascar through the inclusive vision of the Rio Tinto subsidiary. The most beneficial improvement to the local infrastructure has been the construction of a new port with extensive load-out facilities to replace the underdeveloped Tôlanaro port, Visser adds. The port is a multi-user facility and the national government will take full ownership of the facility upon closure of the mine.

Furthermore, a network of haul roads for the mine has been constructed, and is already used by the local population. The residents of Tôlanaro will also enjoy the benefits of constant power supply from the new power station on the mine. Community impact has, however, not only come in the form of infrastructure improvements. The construction phase brought thousands of Malagasy to site during the recruitment drive.

The mine has since moved into its operational phase and 550 permanent staff have been retained on the project – 505 Malagasy people. These individuals have received more than 12 000 man hours of training and now retain specialised skills for Madagascar.

In addition, the project has indirectly resulted in a number of spin-off industries with 300 new businesses registering in the area since construction commenced. Tourist visits to the area have also increased since 2005. Other spin-off effects include improvements to the state of local health and education.