HEAVY HAUL RAILWAYS

The heavy haul railways are an essential part of the development of iron ore production in the Pilbara. The four original railways connected four mines to ports at Port Hedland, Dampier and Cape Lambert. They were the first standard gauge, heavy haul railways in Australia, and the first extensive privately owned and operated railways. They have since expanded to cover many more mines and continue to be augmented.

The Pilbara railways are considered of international significance, not only for their high capacity and productivity, but also for the technical research and innovation that have been a feature of their operation from the start.

INNOVATIVE ENGINEERING

Opening up the major iron ore mining province in Australia’s remote north-west required action to obtain and develop expertise in heavy haul railway engineering and the safe and economical operation of long, heavy trains. The earliest projects had to overcome high temperatures, tropical weather, remote locations, minimal existing infrastructure, lack of prior design and construction experience in the area, and lack of data on local conditions, particularly rainfall and runoff.

As production rose and planned ore quantities were exceeded, failures and maintenance difficulties arose. Commercial rivals Mt Newman Mining and Hamersley Iron, who were a collaborative programme of engineering and operational research that was initiated by both companies. Innovative developments in coupling systems, driver practices, train control, wheel design and operational research that would benefit both companies.

The evolution of the Pilbara railways has been the catalyst for the development of new towns and ports, leading to major increases in population and local economic activity.

HAMESLER AND ROBE RIVER HEAVY HAUL RAILWAYS

The first section of the Hamersley Iron railway system was built linking Mt Tom Price with a stockpile area and wharf at Parker Point, Dampier, a distance of 283 km. Central Engineering Services, the engineering arm of Consolided Rio Tinto Australia, was appointed overall construction manager for the mine and infrastructure development. A contract for construction was awarded to Morrison-Knudsen-Mannix-McDonald, a US, Canadian and Australian joint venture.

Construction began in September 1964 and the first ore train from Mt Tom Price ran in June 1966. Design criteria were set in 1962 for hauled by two Alco M636 locomotives built under licence by A E Goodwin Knudsen Mannix.

Following approval for the Robe River mine development, the American firm Bechtel Corporation was appointed to undertake detailed design and project planning of the railway. The WA consulting firm Hadjim Glick and Lewis prepared initial plans for the railway. Morrison-Knudsen-Mannix-Oman was awarded a construction contract for the 168 km standard gauge railway from Eastern Deepdale mine near Pannawonica to the port and processing facilities at Cape Lambert.

On 8 August 1972 the first official production ore train ran, with 75 cars carrying 168,000 tonnes of iron ore. This is said to signify the gladness of miners at the opening of a new mine.

For more details of this and other engineering heritage awards, go to www.engineeringheritage.com.au

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