

TRUenergy Yallourn Morwell River Diversion

Project objective

Design and construct of a 3.5 kilometre diversion of the Morwell River, allowing access to sustainable coal supplies and ensuring the long-term operation of the Yallourn power station to 2032.

Scope of works

Cost	\$122 million
Timeframe for completion	Five years from initial tender
Workforce	150 new jobs for local residents 710,000 man hours of work
OH&S	No Industrial Relations lost days Lost Time Injury Rate–2.8
Completion date	27 May 2005

Background to project

The Yallourn power station and coal mine is located in the Latrobe Valley, 150 kilometres east of Melbourne. The power station supplies around 22% of Victoria's electricity needs as well as energy to the National Electricity Market. Electricity generation at Yallourn dates back to 1921.

The power station's current coal supplies are sourced from the East Field open cut mine and are expected to be exhausted in 2007. With this in mind, Yallourn Energy (now part of TRUenergy) initiated a project to divert the Morwell River, creating access to the nearby Maryvale coal field.

In March 2001, Yallourn Energy entered into an Alliance Agreement with Roche Thiess Linfox (RTL) for the design and construction of the Morwell river diversion. Project partners, SMEC Victoria Pty Ltd (lead design), Golder Associates (geotechnical engineering) and GHD Pty Ltd (project review) were engaged in June 2001.

Engineering an innovative design solution

The original concept for the river diversion recommended the river be redirected around the perimeter of the Maryvale coal field.

In submitting their tender, RTL proposed an innovative alternative solution with the potential to save Yallourn Energy up to \$80 million and reduce the environmental impact on the existing landscape.

The RTL solution involved positioning the river on the top of an embankment to be built through the old mine workings. This plan reduced the length of the diversion by 3 kilometres and provided a final location for the river, preventing the need for further re-diversion.

Project delivery

Yallourn Energy and RTL formed a design team comprising mine planners, geotechnical experts, embankment designs and hydraulic engineers. Scientific studies were then undertaken to prove the feasibility of the alternative design.

Earthworks commenced in June 2001. Specifications for the final design of the diversion channel were as follows:

- 3.5 kilometres long
- 140 metres wide, including embankments
- 70 metres width across river floodplain
- 47 metre high embankments, allowing for 1 in 10,000 year potential for a major flood
- 3 metre deep river channel

RTL's design eliminated the need to relocate existing high-voltage power line towers and enabled the retention of existing conveyor belts used to transport coal to the power station – 1.2 km of concrete arch tunnel was constructed under the diversion embankment for continuous coal conveyance.

Environmental benefits

Yallourn Energy compiled an Environmental Effects Statement and conducted extensive community consultation prior to seeking Ministerial approval for river diversion works.

The open channel river design emulates the natural meander of the existing Morwell River and includes rock pools and submerged tree trunks to regulate flows and provide natural habitats. Furthermore, the design preserves original floodplains, wetlands and hundreds of nationally significant Strzelecki gums.

Embankments were built using 13 million square metres of overburden (the soil that sits on top of the mine's coal reserves) that would have otherwise been dumped.

Native vegetation, including 40 000 plants local to the Latrobe Valley, have been planted along the river's channel to provide erosion protection.

The project also included development of a purpose-built fish ladder so native fish can swim upstream for the first time in 30 years.

Economic benefits

Without access to long-term sources of coal, the Yallourn power station would have had to cease operations shortly after 2007, significantly impacting the local and Victorian economies. Diversion of the river provides local employees with long-term job certainty as well as ensuring the continued, cost effective supply of Victoria's electricity requirements.

Social benefits

The Morwell river diversion provided long-term employment for 150 local construction workers and contributed significantly to the Latrobe Valley economy. Project materials were also sourced largely from Latrobe Valley businesses.