

Lessons in clever gas extraction

Todd Energy's Mangahewa Expansion Train Two project is the latest innovation of many that has turned a non-commercial discovery into the country's most strategic onshore natural gas resource. By NEIL RITCHIE.

INNOVATION HAS DRIVEN the development of the Mangahewa gas field from the beginning, but particularly since Todd Energy took over as operator in 2006.

The Mangahewa-1 well, drilled north and inland of New Plymouth during 1961, was deemed to be uneconomic to develop with the technology available at that time and it lay dormant for decades. Mangahewa-2, drilled during the late 1990s, found more hydrocarbons, but was not brought into permanent production until 2001.

However, since Todd has taken control, its continued innovation – principally utilising advances in horizontal drilling, hydraulic fracturing and other downhole techniques – has seen Mangahewa move from a small field of little economic significance to become the

country's largest, most strategic onshore gas resource.

An early Todd innovation to extract value from Mangahewa was the construction several years ago of a \$75 million liquefied petroleum gas processing plant, the country's first 'straddle type' LPG facility, with treated gas being chilled to -65°C , enabling a very high recovery factor of the propane-rich product. Other New Zealand LPG plants typically chill their gas to only -35°C or -40°C .

And a more recent innovative gas supply contract means mainly Mangahewa gas is helping fuel the Methanex Motunui methanol plant. That contract is also further increasing the country's production of both LPG and condensate (the light oil associated with gas production).

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extraction

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Motunui methanol train for at least 10 years. And, instead of the strict 'take or pay' provisions of some previous contracts, this arrangement provides flexibility in both the amount and composition of the gas Todd provides to Methanex.

And the \$120 million second Mangahewa processing train, commonly known as MET2, is the latest innovation. It is more than doubling the Mangahewa field gas processing capacity from 20 to 45 petajoules per annum.

World leaders in transportable modular assembly work, Propak Systems of Calgary, fabricated the 'state of the art' main MET2 processing units, but Propak's design was adapted for the field's specific gas composition and to the country's electrical and seismic standards.

Overall New Zealand content was still about \$75 million.

The success of the MET2 development also reflects Todd's geoscience expertise in understanding how to best tap into the field through its decision to invest in the new \$42 million Bentec Euro 450 drilling rig and crew. The "Big Ben" rig is enabling 18 additional Mangahewa wells to be drilled during 2014-15, with 13 of those being new production wells.

And even more innovation is planned, with Todd progressing "detailed screening" of a \$50 million-plus project involving the debottlenecking of the 13-year-old first expansion train, MET1. Additional land has already been acquired for this work, which will involve adding additional compression equipment and low-pressure units. Given a favourable final investment decision, that project is expected to take about 18 to 24 months and will help ensure the field can maintain production rates as the natural reservoir pressure declines.

Economic Development Minister Steven Joyce officially opened MET2 in early May, saying its development is another "clear sign" of the confidence Todd still has in the country's only producing petroleum province after more than 50 years. ○



Todd's Mangahewa gas field