Company Profile – Advent Energy

Gas flowing during production testing at Advent's Waggon Creek 1 well in EP 386
(Photo courtesy of Advent Energy)

Advent Energy's Bonaparte Basin gas project joins the Australian shale gas revolution

Unlisted oil and gas company Advent Energy is increasingly positive about its strategy to develop its unconventional shale and conventional gas assets in the Bonaparte Basin.

The Bonaparte Basin is a proven producing petroleum basin which previously had been estimated to contain 19 per cent and 17 per cent of Australia's conventional liquids and gas, respectively. Production to date has all been from the offshore.

The basin extends from the Timor Sea through to onshore northern Australia.

Immediately within the southern onshore extension of the basin, which covers adjacent areas of the Western Australian and Northern Territory border, is the Ord-East Kimberley Expansion Project (Figure 1), on which the Australian and Western Australian Governments are spending over $500 million to develop road works and infrastructure.

This infrastructure development for Advent was the first of three key contributors to making Advent's project a game changer. The second was the changed price for gas in Western Australia, and the third and critical development was the results from Advent's study of 17 wells drilled in the onshore Bonaparte area to determine the potential for a shale gas project.

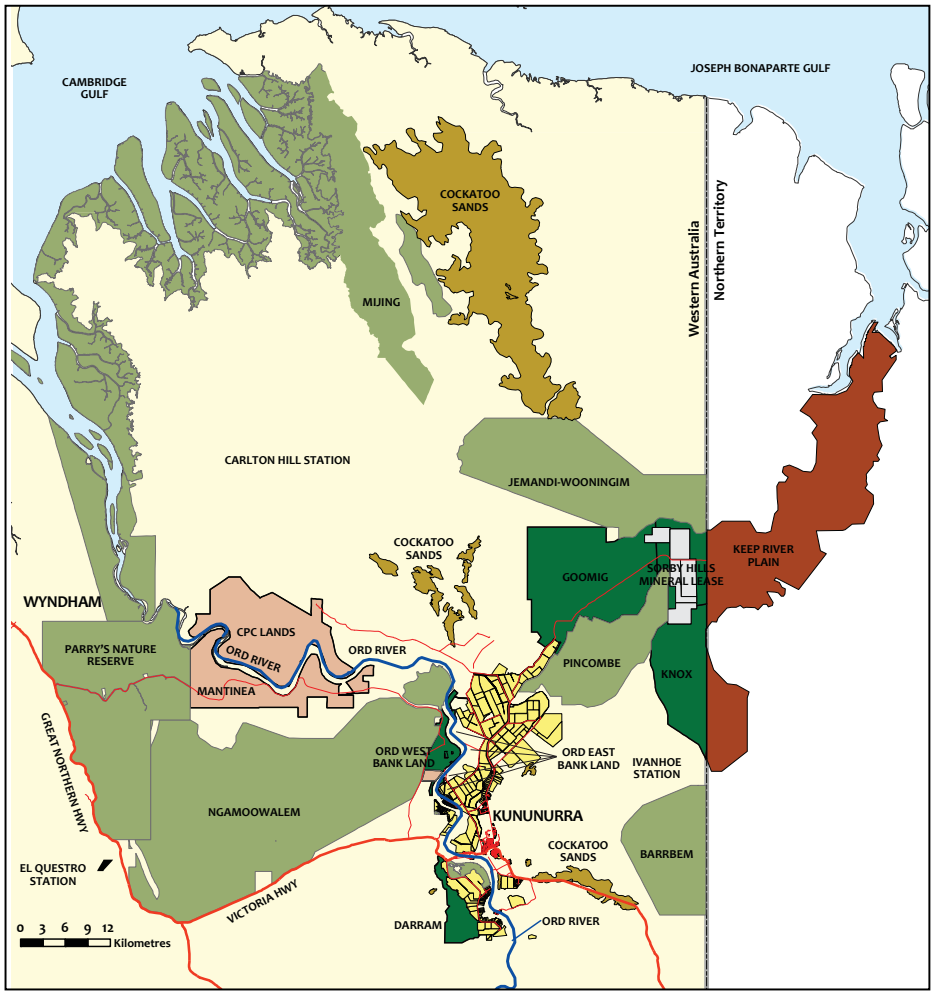

Figure 1 | **Location map of the Ord River region in the East Kimberley where over $500 million is being spent on roads and infrastructure, which can only benefit petroleum projects in the vicinity**

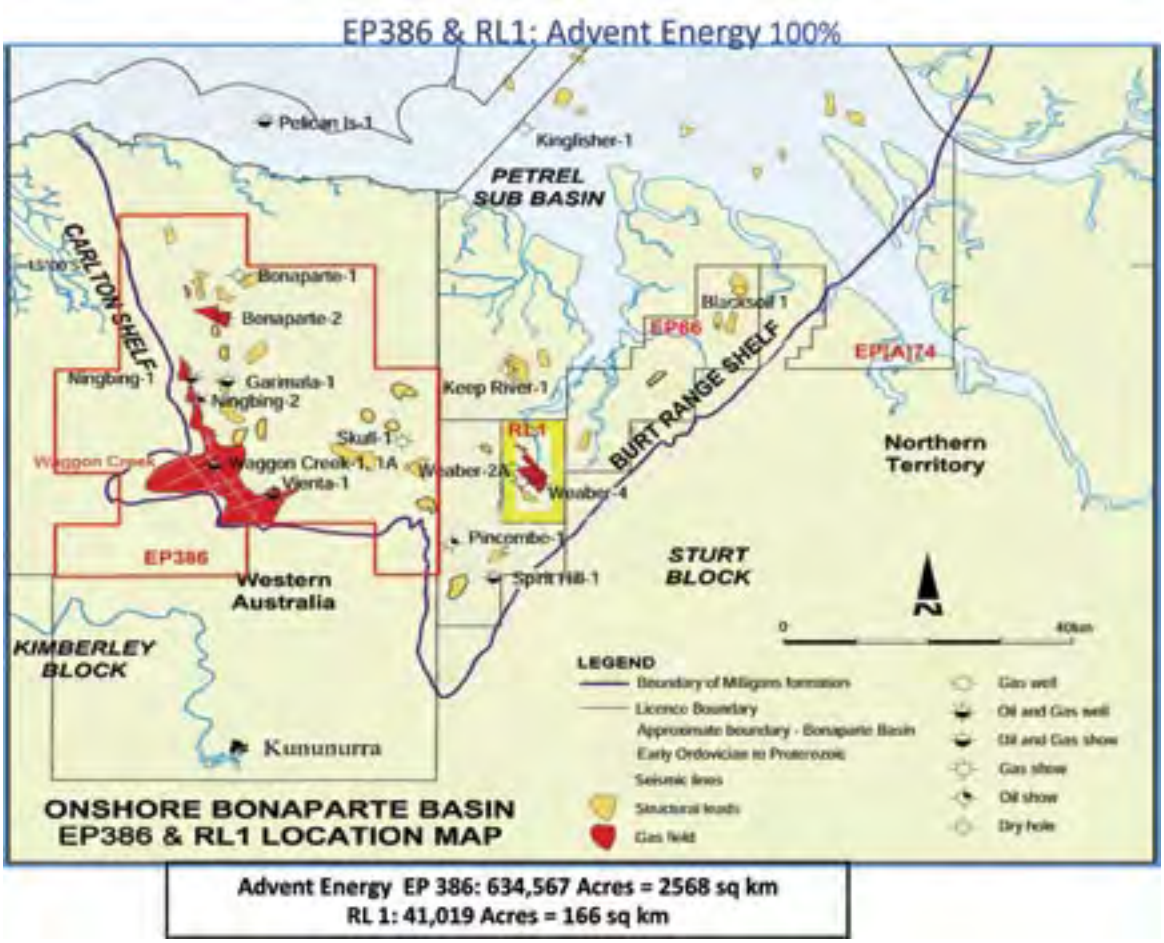

Figure 2 | **Location map of Advent's permits — EP 386 (in WA) and RL1 (in NT)**

The results of the study released by Advent indicate significant potential upside in prospective shale gas resources, with estimated unrisked original gas in place (OGIP) in the range from 538 Gm^3 (19 Tcf) to 3993 Gm^3 (141 Tcf) for the 100 per cent Advent owned EP 386 and RL1 (Figure 2). The thickness of the prospective shale gas play varies from 300 m to over 1500 m. Advent has now calculated a risked recoverable prospective shale gas resource estimate of 272 Gm^3 (9.6 Tcf) for its Bonaparte permits.

Advent, the major shareholder of which is MEC Resources Ltd (ASX: MMR), has 100 per cent interests in EP 386 and RL1 which cover 2568 km^2 and 166 km^2, respectively, in the onshore Bonaparte Basin.

A Geoscience Australia report on the Bonaparte Basin noted the source pod for hydrocarbons as being in the Carlton Sub-basin in the onshore portion of the southern Bonaparte. Analysis of this study by Advent has indicated that the 'postulated higher quality source rocks' contained within the Carlton Sub-basin lies substantially within Advent's permits. Advent is also collaborating with Geoscience Australia in geochemical analysis of Advent's hydrocarbons produced to surface.

A previous study by the USGS again showed the "pod of active source rocks boundary" largely covers the Advent onshore permit areas. In that study the USGS gave their estimate for the hydrocarbons in the onshore Bonaparte as an undiscovered conventional resource of 13 Gm^3 (460 Bcf) of gas and 8.9 GL (56 MMbbl) of oil. This study was released in 2000, prior to the commencement of the United States shale gas production revolution.

Advent executive director David Breeze has stated that what attracted the company most to the acreage was the extremely good technical success rate in the drilling that has occurred to date.

"The Weaber field alone has been reported by Geoscience Australia as having a potential of 706 Mm^3 (4.3 MBOE in conventional figures). Virtually every well that has been drilled in the permit areas has demonstrated gas and even some oil shows have been recorded. Gas flows of up to 121.7 m^3/d (4.3 Mscf/d) have been recorded."

Beach Energy Ltd (ASX: BPT) has further reported on the Bonaparte Basin and its shale gas prospectivity. Beach's focus from 2007 has been to find the best shale acreage in Australia, with particular attention given to 'underexplored and highly prospective' areas and 'unconventional areas with infrastructure close to markets'.

Beach has identified key technical contributors to success in shale areas, with shale thickness as a key. The Bonaparte Basin has shale thicknesses of over 1000 m, and Beach is just conducting an Airborne Gravity and Magnetic survey over a large area of the onshore Bonaparte, including over a large area held by Advent. The survey will generate data over RL1, a portion of EP 386 and an intervening space, and an agreement has been entered into for sharing this data.

David Breeze is in no doubt as to the prospectivity of the assets.

"As Beach Energy has noted, the area is highly prospective. What is noted by Beach as one of the key technical contributors is the thickness of the shales along with other characteristics. The Bonaparte has very thick marine shales with thicknesses of between 300 m to over 1500 m, which compare very favourably to the US shale thicknesses", Mr Breeze said.

"Taking all the characteristics of these shales into account, Advent has calculated a potential unrisked unconventional gas in place (GIP) for Advent's EP 386 and RL1 areas' resource estimate of between 538 Gm^3 to 3993 Gm^3 (19 Tcf to 141 Tcf) in the Milligans Formation shales, with additional potential in deeper prospective shales.

"The immediate benefit, however, is in the proved conventional gas reservoirs which Advent can now look to put into production as a result of the Government spending nearly $500 million on road works and infrastructure for the phase two of Ord scheme, which brings the new highway to within 15-20 km of our proven gas wells in EP 386."

Advent's conventional gas assets within EP 386 and RL1 include the Weaber gasfield and the Waggon Creek and Vienta gas discoveries. There have been six conventional gas discovery wells drilled in EP 386 and RL1.

The three main discoveries made in EP 386 so far are Vienta, Waggon Creek and Bonaparte, along with Weaber in RL1 in the Northern Territory. Other wells drilled have been technical successes for both gas and oil. During the testing of wells in EP 386 and RL1, gas flows of up to 127 Mm^3/d (4.5 MMscf/d) have been recorded. Advent recently announced an independently assessed contingent resource for the Weaber field of 1.27 Gm^3 (45 Bcf) (3C).

First production in Advent's 100 per cent owned areas is expected to come from the proven conventional areas onshore Bonaparte Basin as a result of the Ord scheme development and a number of mining projects.

Advent recently released the results of an independent market study showing the Waggon Creek and Vienta gas discoveries are the subject of current appraisal activities for the anticipated commercialisation and supply of natural gas to the local market with possible sales of up to 12 TJ/d from a mini LNG facility.

The local market includes the town sites of Kununurra and Wyndham, currently powered by hydroelectricity and diesel. Resources projects such as the proposed Sorby Hills Pb/Zn/Ag mine, the Argyle diamond mine and numerous other minerals projects are within trucking distance for compressed natural gas (or LNG) from Advent's EP 386 and RL1 conventional gas accumulations.

Should everything go as planned, the path to gas production should be clear.

"The new highway means that we can now evaluate using compressed natural gas equipment or small scale LNG equipment to supply gas from the proven conventional gas areas within our permits to customers who are currently using diesel as an energy source and where there is no clear energy supply alternative", Mr Breeze said.

"The gas price in Western Australia in remote areas is as high as $16 per GJ, but even if you make your calculations using this figure the reality is these users pay up to $26 per GJ for diesel on an energy equivalent basis, so natural gas obviously offers a cost saving as well as being a cleaner energy alternative."

Production testing at Waggon Creek 1 in the Bonaparte Basin produced flow rates of up to 26,370 m^3 (0.96 MMscf) per day without any formation water production
(Photo courtesy of Advent Energy)