On the South Pacific's wild frontier

Papua New Guinea is now firmly on the industry's radar – the island nation is emerging as a liquefied natural gas producer, it has both substantial reserves and upside potential. But, as Damon Evans finds out, political wrangling over InterOil's Gulf LNG plans could dampen investors' enthusiasm

All dressed up: Papua New Guinea wants investment but problems remain

PAPUA New Guinea (PNG) offers exciting frontier opportunities and is fast emerging as a major liquefied natural gas (LNG) player in the Asia-Pacific region. But the South Pacific nation has been making the headlines for all the wrong reasons.

Political turmoil, as well as wrangling over InterOil's proposed Elk-Antelope LNG development, Gulf LNG, threaten to damage the gas-rich nation's reputation as an investment destination.

The country is mired in political turmoil – Peter O'Neill and Sir Michael Somare both claim to be prime minister; as *Petroleum Economist* went to press, PNG was heading into a two-week general election which many hope will resolve the crisis.

However, it's the intrigue surrounding InterOil's gas assets that has sparked speculation about the future of the Gulf LNG blueprint, as well as curiosity in the country's wider hydrocarbon potential.

Majors, national oil companies (NOCs), as well as utilities, have all been circling US-listed InterOil's assets in an effort to capture what could be one of the largest non-dedicated gas supplies available in Asia at a time when LNG prices have been hitting four-year highs above $18 per million British thermal units (Btu). InterOil's onshore Elk and Antelope fields in Gulf province are estimated to hold more than 8 trillion cubic feet (cf) of gross contingent gas resources, as well as 129 million barrels of condensate, according to third party assessments. But the real bonus for InterOil is the quality and associated low development costs of its resources.

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The Elk-Antelope fields are potentially prolific, especially the larger Antelope area.

The Antelope-1 gas and condensate discovery well, spudded in late 2008, flowed at 382 million cubic feet per day (cf/d) with 5,000 barrels a day (b/d) of condensate, giving a total flow of 68,700

Tensions bubble under surface at PNG LNG

Damon Evans, SINGAPORE: Tensions continue to simmer at the ExxonMobil-led Papua New Guinea liquefied natural gas (PNG LNG) project. Both ExxonMobil and the landowners involved with Papua New Guinea's biggest resource development want the country's incoming government to deliver on its commitments made under key agreements.

Nearly three years after work began on the development, in remote Hela province in the PNG Highlands, many local people are both frustrated and suspicious about the $15.7 billion project, which was, they say, supposed to benefit their community.

A new academic report carried out for Oxfam by James McIlraith, a research fellow at the New Zealand National Centre for Peace and Conflict Studies, at the University of Otago in Dunedin, identifies a number of potentially damaging developments. McIlraith said failures to better inform the Hela community about the project, together with flaws in the critical processes to identify landowners entitled to a share of cash payments as well as concerns about how benefits from the project will ultimately be divided among the community are identified as possible triggers for further conflict in Highlands province, already plagued by internecine conflict between local groups.

McIlraith's report, tabled in Australia's federal parliament at the end of May, by Richard Marles, parliamentary secretary for Pacific Island affairs, says that although the LNG project represents a significant opportunity for PNG – having already created some local jobs, boosting the regional economy – these gains will be lost if local disillusionment with the project grows. The report added this could exacerbate tensions in the already volatile province.

Under benefits sharing agreements concluded as part of the LNG development's community benefits package, the PNG government promised to help with business development, education, health care and infrastructure in the isolated region. But Libe Parindali, chairman of the Hides Gas Development Company, the main landowner firm working with the PNG LNG project, claims the government has failed to deliver on those promises.

In the past, PNG has struggled to capitalise on its abundant natural resources, not always successfully. The Bougainville uprising, which began in 1988 in protest at mining company Rio Tinto's operations on the island and escalated into a civil war (Bougainville became an autonomous region of PNG in 2005, a move which has essentially ended the conflict) is an extreme example; pollution along the Ok Tedi and Fly rivers from the open-cast copper mine at Ok Tedi is another. In his report, McIlraith suggests that poor governance and the vulnerability of fragile indigenous populations, many of whom struggle with the pace and scope of social change that often comes with natural resource developments, make such projects problematic.

Meanwhile, Parindali told ABC Radio Australia that police are expressing concern about the growing trade in weapons in the Highlands. He added that over the past year various landowner groups have warned that the area has the potential to become " a new Bougainville".

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Earlier this year, the government deployed troops to quell landowner protests that halted work at the PNG LNG project.

Work ground to a standstill for at least two weeks at ExxonMobil sites as landowners demanding additional compensation threatened workers at the project.

Parindali blames the problems the sector is experiencing on the failure of the Petroleum Department led by Minister William Duma. He hopes that the country's incoming government will name a new minister, "one who has a heart for both the project as well as the people", he says.

Parindali added that the government's failure to act over locals' concerns at PNG LNG could result in a serious backlash from landowners.

barrels a day of oil equivalent (boe/d), setting a new record for PNG.

Later the Antelope-2 appraisal well achieved even greater flow rates of 705 million cf/d of gas, plus 11,200 b/d of condensate, totalling 129,000 boe/d.

Deep resources

The Antelope-1 and -2 wells hit net pay of 2,277 feet and 1,175 feet respectively. By any measure, they are big wells, but the quality of the reservoir is rather unique too, with average porosity of 8.8% and 14% respectively.

While some analysts caution that further appraisal is needed, InterOil is confident the fields can be completely developed with six to 10 wells, meaning the unit cost benefit per thousand cubic feet would be one of the best so far achieved in the Asia-Pacific region. As far as a cost-effective development scheme goes, there is clearly a $3-6 advantage per '000 cf, InterOil chief executive, Phil Mulacek, told *Petroleum Economist*. And to top it all off, the onshore assets lie just 75 kms from the coast, giving the development a clear logistical advantage when compared with other current gas supplies in the market, he added.

And with InterOil's share price trading around $70 at the end of June, only about $13 less than US supermajor ExxonMobil's stock price, it is clear investor confidence in the junior outfit remains high.

Needless to say, the Elk-Antelope fields are a big prize. Big prizes attract big investors, but can also spark disputes.

Recently InterOil's ambitions to develop PNG's second LNG project appeared close to collapse after a rise in tensions with the state over the structure of its venture. In May, PNG's Petroleum Minister William Duma issued a notice setting a 180-day termination trigger for the 2009 LNG project agreement signed by the state and the Canadian firm.

The agreement calls for the delivery of a 7.6-10.2 million tonnes per year (t/y) LNG project using feedstock from Elk and Antelope, using internationally recognised technology and operators with experience of similar-sized assets. Instead, InterOil has proposed a phased development and does not have what Duma calls a "recognised operator" on board yet.

Duma said the PNG government has worked with InterOil with a view to ensuring that Elk-Antelope was monetised in a manner consistent with the standard set by the $15.7 billion PNG LNG plant, which is being built by ExxonMobil and its partners.

Duma claimed that InterOil has "for too long insisted on a development structure which is designed to only meet its objectives of controlling the asset and the pace of developing it". This, he added, has led to a proposal calling for a "piecemeal, incremental and fractured development implementation" operated by InterOil and its affiliates, rather than by large-scale international operators with experience and capital.

He has called on InterOil to sell – immediately – a minimum 50.5% stake in Elk-Antelope to a major international petroleum company. Duma added that the upstream activities at the fields must be operated by the international operator, not by InterOil or its affiliates.

Duma's stance is at odds with comments made by Prime Minister Peter O'Neill, who has publicly urged support for InterOil's Gulf LNG project. Duma only just hung on to his seat during the constitutional crisis, which started last August when O'Neill took office. O'Neill replaced Somare, who was, at the time, in Singapore

Hopes are high, but dangers still lurk

Damon Evans, SINGAPORE: While the general election looks set to restore calm to Papua New Guinea's (PNG) business environment, dangers remain for the incoming government and, possibly, the industry.

Landowners and communities living near the ExxonMobil-operated Papua New Guinea liquefied natural gas (PNG LNG) development have already disrupted the scheme's progress, prompting the US supermajor to voice grave concerns over safety and security.

Three years after construction work began on the project's infrastructure – pipeline and extraction facilities to carry the gas from the remote Highlands – many local people remain suspicious about the PNG LNG development. PNG's next government must ensure landowners and local communities receive the benefits of large-scale development. If not, future investment by those waiting in the wings is at risk.

A host of international firms, both big and small, have been keenly eyeing PNG. Opportunities exist in terms of established projects and known fields, but the country also hosts vast swathes of unexplored acreage, which has good hydrocarbon potential.

Matt Howell, Australasian upstream analyst at Wood Mackenzie, says that three of the biggest discoveries, Hides, P'nyang and Elk-Antelope, lie in three different areas of PNG, indicating there is definite potential for further multi-trillion cubic feet (cf) discoveries elsewhere in the country.

PNG LNG, which is due to start production in 2014, is the furthest advanced of all PNG's proposed developments. Most of its output is already fully committed to Asian buyers, with China's Sinopec signed up for 2 million tonnes a year (t/y), Japan's Tepco taking 1.8 million t/y, Osaka gas receiving 1.5 million t/y and Taiwan's CPC buying 1.2 million t/y. The US supermajor's partners include Australian firms Oil Search and Santos, as well as JX Nippon Oil & Gas Exploration, local landowners, plus state-run Petromin. The consortium is currently exploring for further gas supplies to underpin a proposed third train with a decision expected by early 2013.

In a major vote of confidence, Anglo-Dutch supermajor Shell last year signed a long-term strategic alliance deal and a joint technical study agreement with Petromin as part of its plan to build an upstream business in the nation.

Shell has not said what its specific aims are, but it is studying the potential of all the major hydrocarbon basins, which it says are underexplored and ripe for development.

Petromin's chief executive Joshua Kalinoe said Petromin is open to work with any majors, but that its newly forged relationship with Shell is special as it forms part of the nascent state outfit's growth strategy. Shell has a credible history raising national oil companies in Malaysia, Brunei, as well as parts of Africa, which inspires confidence, he added.

The pair has recently finished a study of unexplored frontier areas and they are now analysing the data using Shell's expertise at its offices in Malaysia.

In another high-profile move, early this year Talisman Energy reached a $280 million deal with Mitsubishi that will see the Japanese firm enter nine of the Canadian-based outfit's onshore permits in PNG's gas-rich Western province. The pair will aggregate the gas and could potentially export about 3 million t/y, Talisman said. The trading house will get a 20% stake in the licences, leaving Talisman with a 40% interest. Other joint-venture partners include Horizon Oil, New Guinea Energy and Kina Petroleum.

Elsewhere, the owners of the Papua New Guinea floating liquefied natural gas (PNG FLNG) project continue to work on securing feedstock gas. PNG FLNG is owned by Petromin with a 34% stake, Hoegh LNG of Norway on 33% and South Korean fabricator Daewoo Shipbuilding & Marine Engineering with 33%.

The trio already has the approval of the PNG government to build an FLNG vessel with a production capacity of 3 million t/y. However, they have no gas supplies.

They have said they are targeting gas owners in Western province, but the firms operating in that area, including Talisman, Sasol, Horizon Oil, New Guinea Energy and Eaglewood Energy, have their own monetisation ambitions.

Transparency International's 2011 Corruption Perceptions Index rated PNG 2.2 on a 10-step scale, where zero is highly corrupt and 10 squeaky clean

Meanwhile, exploration drilling is continuing outside of the major LNG project areas. But exploration costs remain high, with a well costing in the region of $40-80 million depending on its location. And for the sector to grow, there is an increasing likelihood that bigger players will enter to finance extended drilling programmes, says Howell.

However, one of the major problems for foreign investors is PNG's unenviable reputation for corruption, with *The Economist* claiming the country runs the risk of becoming a fully-fledged kleptocracy. Transparency International's 2011 Corruption Perceptions Index rated PNG 2.2 on a 10-step scale, where zero is highly corrupt and 10 squeaky clean. This put PNG in 154th place in a list of 182 countries, sharing the ranking with Zimbabwe, Cote d'Ivoire, Kenya and Congo (Brazzaville).

Peter O'Neill unveiled a 20-year anti-corruption strategy earlier this year, saying that the impoverished nation could no longer afford to pay the cost of entrenched graft. It is believed an estimated $467 million of public funds are skimmed off every year.

If the country is to attract foreign cash to help it develop its resource base, it is vital this anti-corruption strategy works.

The stakes are high. Wood Mackenzie estimates that PNG holds natural gas reserves of 25.6 trillion cf, with another 5-7 trillion cf of potential. The consultancy estimates the nation's current oil reserves stand at 730 million barrels with a further potential of 460 million barrels. ●

recovering from heart surgery. MPs ousted Somare, claiming he had been outside PNG for too long and was unfit for office. Former businessman O'Neill was named prime minister. However, the move was twice challenged in PNG's Supreme Court by Somare and his supporters. Both times, the court ruled that O'Neill's election was unconstitutional. Since then, both Somare and O'Neill have claimed to be the country's rightful leader.

For Duma, the two-week general election, which got under way on 24 June, may be his best chance to steer the direction Gulf LNG takes. Duma has repeatedly championed supermajor Shell as a suitable partner in the development.

Responding to claims that state ministers were imposing Shell on InterOil, Joshua Kalinoe, chief executive of state-backed Petromin PNG, told *Petroleum Economist* that this was not the case. Kalinoe said that the authorities, "out of sheer frustration with InterOil and its partners failing to find an internationally recognised operator to develop the Elk-Antelope discovery" asked Petromin to find one instead. A closed bidding process ensued and three majors, including Shell, were interested. As a result, Shell was recommended to the government and introduced to InterOil as the preferred operator, he added.

Kalinoe added that InterOil has deviated from the project agreement and the government is merely asking the company to deliver what they agreed.

Paul Barker, executive director of the PNG Institute of National Affairs, stressed that InterOil has made it clear that they are ready to relinquish control to a major entity, but they want to be able to determine who that is themselves rather than have a company imposed on them by the government and Petromin, he told *Petroleum Economist*.

Expansion plans

As the plans currently stand, InterOil would act as the upstream field operator. In 2010, InterOil and Japan's Mitsui agreed to develop a $550 million liquids-stripping project at Elk-Antelope that, if approved, would be a precursor to the LNG development and provide early revenue streams.

Early last year, InterOil signed an agreement with niche player, Australia-listed Energy World Corporation (EWC), for a modular LNG plant to be developed in the Gulf province in two phases, an initial phase of 2 million t/y, with a later expansion of 1 million t/y. The agreement provided for a possible expansion up to 8 million t/y.

Previously, InterOil also struck a deal with South Korea's Samsung Heavy Industries and Norway's Flex LNG for the construction and operation of a 2 million t/y fixed floating LNG project to be integrated with the EWC plant, although that proposal has now lapsed. But the scheme is ready to go should InterOil's future partner decide to integrate it, chief executive Mulacek said.

The project agreement with the PNG authorities stipulates that a final investment decision should be reached on the LNG export facility by June 2013.

InterOil insists it is complying with the contract and is actively working to ensure a valuable LNG project for all stakeholders, including its shareholders, Gulf province landowners and the PNG government. But, despite initial government support, the Petroleum Ministry now appears reluctant to consider alternative development approaches, which are technically sound, and might well have merit if they can generate income and state revenue in advance of full production, said Barker. If costs can be brought down somewhat from those of the ExxonMobil-led PNG LNG project, it could not be a bad thing, as long as standards are not jeopardised, Barker added.

Indeed, a standalone LNG complex similar to the 6.6 million t/y PNG LNG scheme would not likely ship any gas before 2018. And such projects are often prone to delays and costs over-runs. Following this route would mean, at best, a three- to four-year delay in first sales, which would, in turn, push back revenue payments to the state. The Gulf LNG venture in its current guise should ensure first revenues from LNG sales by 2015 if the scheme is sanctioned this year.

In fact it is arguable that EWC's modular plant system would be well suited to develop future finds in PNG. The country's remote and rugged, rainforested highlands make large-scale traditional LNG developments extremely challenging, as ExxonMobil has found out.

EWC's turnkey plants are being implemented as a solution in neighbouring Indonesia and the Philippines. In association with US-based Chart Industries and Germany's Siemens, the Hong Kong-based firm says it has pioneered a liquefaction set-up with a relatively small footprint. EWC says its modular system has downsized typical LNG train sizes, likening the result to moving from the grandfather clock to the pocket watch.

InterOil is sitting on what is arguably one of the hottest, as well as, most controversial gas plays seen over the last two decades, lying right on Asia's doorstep, the world's fastest expanding market for LNG. Mulacek has remained sanguine, despite the uncertainty of the past few months, and has opened a bidding process, now in its final stages, to bring a major player into Gulf LNG.

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Aside from the majors, Mulacek said a number of utilities are looking at the resource as a hedge against long-term price volatility. He added that they can afford to pay a much stronger price as they seek to buy intrinsic molecules in the ground rather than buying LNG on a $15/16 slope from Qatar or other similar sources.

For InterOil, finding a partner is all about price and compatibility. Mulacek said he wants a partner that ensures a balanced economic approach. And InterOil is intent on keeping a material portion of the field for its long-term value – unless it receives a material offer it could not possibly refuse.

The waiting game

South Korea's Kogas has publicly said that it has formed a consortium with Japanese trading house Mitsui and Japan Petroleum Exploration Company (Japex) to bid jointly for a stake in the project. Meanwhile, InterOil is understood to have held talks with several international oil companies, including Shell, BG, Chevron, Total, Marathon Oil and Eni.

Clearly InterOil has been trying to bide its time. While the PNG government has the final say on any sell-down, it's difficult to see a scenario in which it would move to expropriate the resource. Anthony Latimer, a partner specialising in PNG at law firm Norton Rose, says the government would be loath to follow the path taken by Venezuela and Argentina. PNG's need for foreign investment is too great.

An announcement on the sell down is expected to be made once a new government is formed. InterOil remains committed to take a final investment decision this year, with a view to shipping first exports by the end of 2015. Under its current format, the Gulf LNG venture already has non-binding heads of agreement for LNG offtake totalling 3.3-3.8 million t/y with trading firms Noble and Gunvor, as well as Chinese end-user ENN Energy.

It's unfortunate for InterOil, and for PNG, that Gulf LNG has found itself buffeted by a political storm. PNG's unprecedented political crisis and the instability that caused has been challenging. But investors hope the constitutional and political uncertainty of the past year, as well as conflicting policy statements, some of which could be seriously damaging to investment in PNG, will be resolved once the result of the general election is clear.

Once the elections are over and a new government – without any doubt about its legitimacy – installed, it should be business as usual for the South Pacific nation. ●