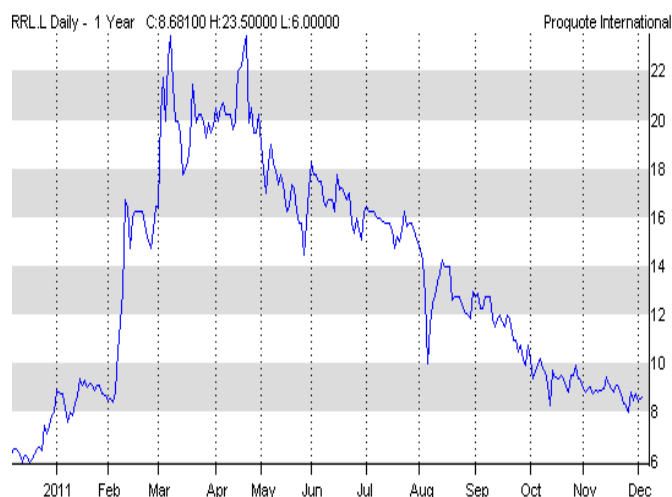


## RANGE RESOURCES LTD

8.75p A\$0.13

Beach Marcelle reserves boost target price

5 December 2011



### Recommendation

**BUY**

Sector:

Oil & Gas

Exchange & Ticker:

AIM: RRL

ASX: RRS

Shares in issue:

1,803m

Fully diluted equity:

2,142m

Market cap:

£158m/A\$234m

**Target price:**

**33p/A\$0.50**

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**On 18 November, Range announced that it had established 12.8mmbbls of additional proved oil reserves on its Beach Marcelle Block in Trinidad. Consequently, the company is instigating a water flood programme to exploit these reserves and anticipates that development activity will commence in early 2012.**

- This proved (P1) reserve upgrade is based on extensive engineering studies of secondary recovery potential and represents particularly good news for Range given that the Beach Marcelle Block previously had negligible reserves attributed to it.
- Range expects that development of Beach Marcelle will commence in early 2012 with a commitment to a \$12m expenditure programme over 12-18 months. We expect production to commence in 2013 using water flood secondary recovery techniques, with peak oil production of almost 5,000bopd within three years.
- We have ascribed a valuation of \$255m to the Beach Marcelle water flood project. This represents a discount to the Forrest Garb and Associates valuation of \$290m. However, this is predominantly as a function of differing oil price assumptions over the life of the project. It should be noted at this preliminary stage that we reserve the right to adjust our valuation upon the formal publication of a Competent Persons Report (CPR)
- In Texas, Range is currently drilling at 13,800ft on the Smith #2 well on North Chapman Ranch with target depth of 14,500ft imminent. Good hydrocarbon shows have been recorded in the Howell Hight section which will be tested following completion. Following on from Smith #2, Range will drill Albrecht #1 to fully appraise the North Chapman field while also testing shallower objectives.
- In Georgia, Range has opted to suspend the Mukhiani-1 exploration well and move the rig to the next proposed site where the Kursebi well will target separate geological structures. Nevertheless, Range intends to conduct additional seismic on Block VIb in Q2 next year in order to complement the drilling of a proposed Mukhiani-1 side track well in the second half of 2012.

**The addition of significant proved reserves in Trinidad further underpins Range's core valuation. We believe that the Beach Marcelle water flood project is worth an additional 7.4p per share on a fully diluted basis. Although we are shaving 1p off our target price to account for a slightly increased risk profile in Georgia, we are increasing our Range target price from 27p to 33p per share.**

# Significant reserve upgrade in Trinidad

On 18 November, Range announced that under the Beach Marcelle Incremental Production Service Contract (IPSC), its wholly owned subsidiary, Los Bajos Oil Limited had established P1 reserves of 12.8 mmbbls of oil on the Beach Marcelle Block. This conclusion followed an extensive engineering study of Range's mature oil fields in Trinidad.

It should be noted that under the IPSC, reserves in the ground belong to Petrotrin. However, they are able to be developed and exploited by the Contract partner (i.e. Range) pursuant to an agreed work programme.

The 12.8mmbbls of additional P1 reserves are attributed solely to the Beach Marcelle field and are in addition to the previously reported reserves and prospective resources inventory that Range currently holds. These original reserves are outlined in the table below and almost all of these reserves are attributed to the Morne Diablo and South Quarry producing oil fields for which we have already ascribed a valuation in our aggregate target price.

## Pre-upgrade oil and condensate reserves estimates

Reserve category	Original gross reserves (mmbbls)	New gross reserves (mmbbls)
Proved (P1)	3.6	16.4
Probable (P2)	3.0	3.0
Possible (P3)	2.9	2.9
<b>Total reserves</b>	<b>9.5</b>	<b>21.3</b>
<i>Prospective resources</i>	27.4	27.4

Source: Forrest A. Garb & Associates (FGA).

Note: Reserves are stated prior to the payments of a Trinidad government royalty and overriding revenue interests.

The prospective reserves relate predominantly to the deeper Herrera formation which is present throughout Range's acreage. However, to bring them into production would require a significantly larger capital expenditure programme which is not being considered for the purposes of our current valuation.

## The Beach Marcelle licence

Beach Marcelle is a small licence located in the southeast corner of Trinidad covering an area of 0.975 sq miles. Approximately 230 wells have already been drilled on the block to date. As the small size of the block would imply, these wells are closely spaced given that reservoir pressure is low.

It is estimated that over 30mmbbls of oil has already been produced from the field from depths ranging down to 5,000ft. However, at present, production from Beach Marcelle is negligible at less than 20bbls per day. The oil on the block is good quality light crude with a gravity of approximately 34° API.

The primary producing horizons are the Forest and Cruse formations which are prevalent across most of Range's acreage. On Beach Marcelle, two out of six horizons are already water flooded and previous water flooding has increased production by over 80%. This indicates that the licence is highly suitable for further such activity.

**Location of Range's Trinidad licence areas**



South Quarry block

Morne Diablo block

Beach Marcelle block

Source: Range Resources

**Range's work programme**

Range intends to seek all the necessary approvals to commence development of Beach Marcelle in early 2012 and commit to a \$12m development programme over the next 12-18 months. Third party consultant engineer, Forrest A. Garb & Associates has confirmed that significant volumes of crude remain in Beach Marcelle that can be extracted using standard secondary recovery techniques such as water flooding.

Range's water flood programme has been designed to produce between approximately 1.0mmbbls and 1.5mmbbls of oil per year for the first eight years following the commencement of production. Forrest Garb has attributed a valuation of \$290m (PV 10) based on a range of project economics including capital and operating expenditure, taxes, royalties and oil prices.

**What is water flooding?**

Water flooding is a widely used stimulation technique for increasing the flow of oil from relatively mature producing fields. The principal behind the technique is to maintain or reverse the declining pressure in a reservoir by injecting water under pressure into the formation.

To understand the dynamics of water flooding it is important to appreciate the basic dynamics of an oil reservoir. Oil reservoirs are generally 'gas driven', which implies that, as a reservoir starts producing oil, the pressure in the reservoir reduces thus allowing gas in the formation to expand which further drives the flow of oil.

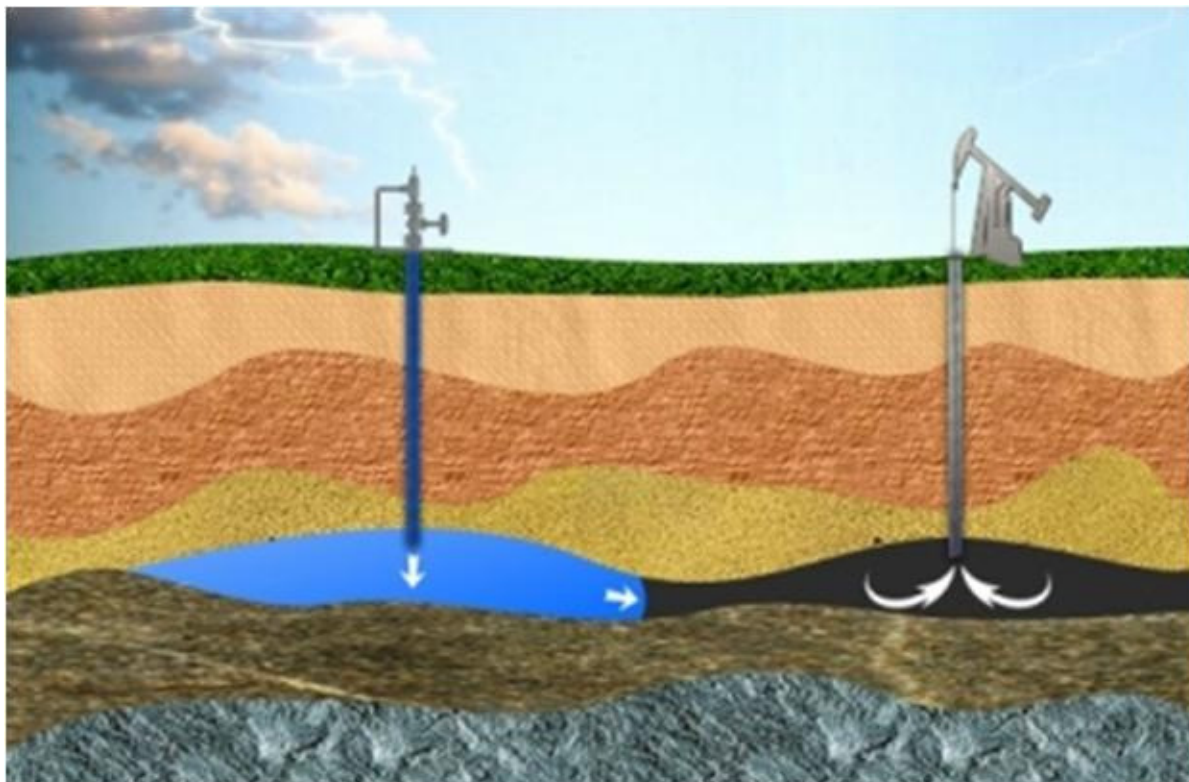
However, the expanding gas in an oil reservoir is also free to flow out of the well and therefore the overall pressure in the reservoir declines until equilibrium is met and hydrocarbons in place will no longer flow under their own natural pressure.

Due to declining pressure in a reservoir, the drive from the gas is typically sufficient to recover only 20% - 30% of the total oil in place. Therefore, if it is possible to maintain reservoir pressure, it would be possible to flow more oil from the reservoir.

Injecting water to maintain pressure works for a number of reasons, the primary one being that water and oil do not mix which meaning that injected water will displace the oil in the reservoir.

The picture below outlines a simplified depiction of a water flood unit with the well to the left hand side representing the water injection well and the well to the right representing the oil production well.

### Simplified schematic of a water flood well unit



Source: Amerex

Although we have offered a very simple explanation, water flooding can be a complex engineering solution to enhanced oil recovery. For example, it is understood that the presence of water in oil reservoirs can cause tremendous operational difficulties and increase the complexity of producing oil.

Technical issues include increased lifting costs, increased strain on equipment and the environmentally safe disposal of produced contaminated water (although in many cases the produced water is re-injected back into the well for further flooding).

Before instigating water flooding, the operator will likely consider all aspects of the reservoir to reduce risks and to achieve the best possible flows. Considerations for water flooding include reservoir permeability, fluid saturations, heterogeneity, oil viscosity and gravity, reservoir depth and lifting costs and the availability of a suitable water source.

# OPL valuation assumptions

We have attributed a valuation of \$255m (NPV 10) to Range's 100% interest in Beach Marcelle. This implies a net margin of approximately \$20 per barrel of production on a discounted cash flow basis after the payment of all royalties, capital and operating expenditure and tax.

On a fully diluted basis and assuming an average exchange rate of \$1.60: £1.00, we ascribe a valuation of 7.4p per share to Range's interest in the Beach Marcelle water flood project. We should note that, at this preliminary stage, OPL reserves the right to adjust its valuation of the asset upon publication of additional detail with a CPR.

## Cost assumptions

In line with Range's stated guidance, we have assumed that the company commits approximately \$12m of expenditure to the programme over the next 18 months. Given that we do not anticipate production to commence until mid 2013, this cash will be predominantly capital expenditure, with the majority of this initial tranche of investment committed in 2012. When production is underway, we anticipate continued capital expenditure in 2014 and 2015 in order to drill additional wells and sustain production.

The majority of wells on Beach Marcelle will be relatively shallow and therefore comparatively inexpensive particularly given that Range will be able to convert a large number of existing wells on the property to both water injectors and oil production wells. We expect the cost of this work to be very modest at approximately \$75,000 per well.

For new wells, we estimate that the average capital cost of each producer/injector well pair (as outlined in the earlier picture) will be no more than \$1.8m for the deepest wells over 4,000ft. However, as a result of the existing well workovers likely to be included in the programme, the average cost per well will be significantly less.

This is a largely capital intensive programme and we anticipate that the ongoing operating cost component for each injector/producer well pair will be approximately \$2,500 per month plus a handling fee of approximately \$1.00 per barrel of recycled water.

With regards to other non-operational costs within our assumptions, we have also factored royalties amounting to 27.5%, comprised of a 12.5% Trinidad government royalty and 15% overriding royalty on the gross production. In addition, we have applied a Special Petroleum tax of 18% to revenue net of all royalties, exploration costs and 40% of development costs.

## Production assumptions

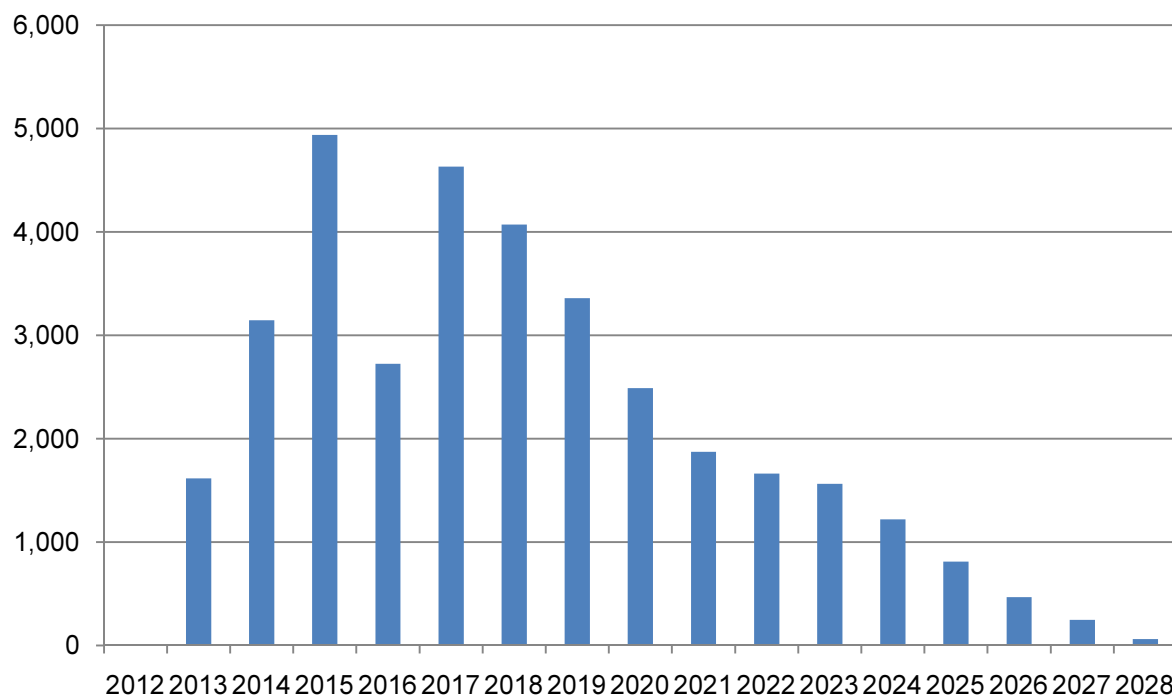
We have assumed that production commences mid way through 2013 after an 18 month drilling and development programme starting in early 2012. We expect that this will lead to a rapid increase in production over the three year period from 2012 to 2015.

We anticipate a dip in production in 2016 before the impact of a second phase of capital investment towards the end of 2015 stimulates further output increases from early 2017. Given that Beach Marcelle is a mature oil field, we have assumed double digit percentage production decline rates thereafter.

Range has stated that this water flood programme is designed to produce between 1.0mmbbls and 1.5mmbbls of oil per annum over the first eight years following the commencement of production. Our production profile largely concurs with this projection although we have shown our assumptions on a barrels per day basis as is standard throughout our research.

We have assumed a small amount of associated gas production within our valuation although it is negligible, amounting to less than 5% of total production on an annual basis. Gas output is not included on our production profile outlined below.

### Beach Marcelle gross oil production, (bopd)



Source: OPLC estimates

### Oil prices

Our main deviation from the Forrest Garb valuation is as a function of our treatment of oil prices. Although our first year assumption of \$85.00 per barrel concurs broadly with Forrest Garb, it is our practise not to escalate our oil price assumptions over the life of a development project. Consequently, we arrive at a slightly more modest valuation compared to the third party valuation.

All onshore production in Trinidad is purchased by the state oil company, Petrotrin and in general, oil produced in Trinidad, which is on trend with Venezuela, is comparatively heavy with an average gravity of 25° API. This would normally command an approximate \$10 discount to WTI pricing. However, production from Beach Marcelle is a lighter crude and under the IPSC agreement with Petrotrin, such a discount does not apply within our assumptions.

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The recommendation system used for this research is as follows. We expect the indicated target price relative to the FT All Share Index to be achieved with 12 months on the date of this publication. A 'Hold' indicates expected performance relative to this index of +/-10%, a 'Buy' indicates expected outperformance of >10% and a 'Sell' indicates underperformance of >10%.

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