OIL & GAS

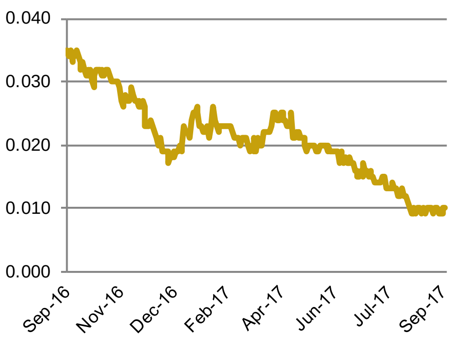
Melbana Energy (MAY AU)

18 September 2017



Stock Data	
Share Price:	A$0.01
Market Cap (M):	A$14.9m
EV (M):	A$8.9m
Free float	85%
Liquidity (30 day ave)	4.2m

Price Chart



52 Week Range

A$0.01	A$0.01
A$0.04	

Company Summary

Melbana Energy

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Initiating coverage

Investment case

As the only listed oil & gas junior with acreage in Cuba, Melbana Energy ("Melbana" or the "Company") provides investors with exposure to a unique exploration opportunity and has the potential to become one of the most exciting emerging exploration plays in the market. The acreage, despite being located on trend with existing producing fields, is largely untested and offers large prospects and significant running room. With plans to drill up to three high impact exploration wells in 2018, the Company has several transformational near term catalysts.

Background

Melbana Energy is a small cap ASX-listed exploration company with acreage in Australia, Cuba and New Zealand. Formerly known as MEO Australia, the Company restructured its board and leadership team in 2015 and has since high graded its licence portfolio, exiting less prospective acreage and significantly reducing cash burn. Progressing the Cuban acreage is now the strategic focus.

Cuba exploration

Melbana holds a 60% working interest in Block 9, which is located in northern Cuba and on-trend with the 11Bn barrel oil-in-place Varadero field. Existing 2D seismic has been reprocessed and several large prospects have been mapped. Analysis of existing wells de-risk key elements of the play and has given Melbana sufficient encouragement to accelerate drilling plans. Subject to financing, two wells are planned in 2018 targeting 202mmbbl of P50 gross prospective resources. The chance of success ("CoS") for individual objectives are estimated at 17% to 32%.

New Zealand drilling

While no-longer a core asset, Melbana has a 30% interest in the upcoming low cost/high impact Pukatea-1 well. The well, due to be drilled in January 2018, will target 12.4mmbbl of gross P50 prospective resources and has a 19% CoS.

Investment case

New leadership team is focusing on Cuba exploration strategy

During the past few years Melbana Energy has undergone a significant transformation and is now prioritising its highly prospective Cuban exploration acreage. Non-core licences have been exited and its financial exposure to the remaining legacy acreage in Australia and New Zealand will be minimised. A new leadership team, brought in to oversee this change has lowered overheads, leaving the Company on a stronger foundation to pursue its growth strategy.

Prospective resources in Cuba estimated at 12.7Bn barrels of oil-in-place

Since securing its acreage in Cuba in late 2015, significant technical progress has been made and the Company is now advancing plans to drill two high impact exploration wells in 2018. The wells will test a variety of objectives in a proven oil trend, which in Block 9 is estimated by Melbana to contain 12.7Bn barrels of oil-in-place. Drilling is anticipated to commence mid-year and based on conceptual economics each prospect could be worth more than 10x the current share price in a success case.

New Zealand exploration well offers significant upside potential

Prior to this, the Company is also set to participate in an exploration well in New Zealand in early 2018. While considered non-core, drilling costs are low and in a success case offers considerable upside potential and the possibility of early production. In line with its strategy to control costs and mitigate risks, the Company is seeking partners for all its upstream licences.

Melbana Energy is the only listed junior with acreage in Cuba

As the only listed upstream junior with acreage in Cuba, we believe Melbana provides a unique exploration offering for investors. In challenging times for the sector, the Company has rightly sought to minimise overheads and focus its spending on its highest potential acreage. While financing remains a material risk, both to the number and timing of wells, we believe the programme proposed highlights Melbana as one of the most exciting emerging exploration plays in the market.

Key catalysts

Three high impact wells to be drilled in 2018

With three planned wells, Melbana has a number of important events in 2018, which in a success case could be material catalysts for the share price. Ahead of this, the conclusion of farm-out processes initiated on key assets will provide valuation read across and technical validation for these projects. Furthermore, attracting partners will reduce the financial exposure for Melbana (and minimise equity dilution), which we believe is a factor currently weighing on the share price. The bullet points below provide a summary of the three planned wells.

- With planned civil works completed, drilling operations on the Pukatea prospect are expected to commence in mid-January 2018. The 30 day well is targeting a highly productive fractured carbonate reservoir located up-dip from oil shows encountered in a previously drilled well. Gross P50 prospective resources for the Pukatea prospect are estimated at 12.4mmboe and the well has a 19% CoS.
- In Cuba, the Alameda prospect is expected to be the target of the first well drilled by Melbana. Detailed well planning is underway and the current indicative schedule, subject to financing, is targeting a mid-2018 spud date. The Alameda-1 well will target three independent objectives with gross P50 prospective resources estimated at 2.6Bn barrels oil-in-place. Based on a conservative 5% recovery factor, recoverable resources are estimated at 130mmbbl. Drilling is expected to take approximately 80 days and individual objectives have a 17% to 32% CoS.
- Following completion of the Alameda-1 well and subject to financing, the second planned well in Cuba is likely to target the Zapato prospect. The Zapato prospect is a single objective target, similar to the primary objective in the Alameda prospect, with gross P50 prospective resources estimated by Melbana at 71mmbbl. The well has a 25% CoS.

Exhibit 1: Near term work programme

Licences	Country	Operator	Melbana working interest	Partners	2017-18 work programme
Block 9	Cuba	Melbana Energy	60%	--	Well planning, farm-out process, drill up to two wells
PEP51153	New Zealand	TAG Oil	30%	Tag Oil	Farm-out process, drill Pukatea-1 well
WA-488-P	Australia	Melbana Energy	100%	--	Seismic reprocessing and interpretation, farm-out process
AC/P50 AC/P51	Australia	Melbana Energy	55%	Rouge Rock	Seismic interpretation, farm-out process

Source: Brandon Hill Capital

Funding

Farm-out processes have been initiated to fund future drilling activity

Following the recent share placement and entitlement offer (including proceeds from underwriting), we estimate Melbana will have approximately A$6m of available cash at the end of September 2017. This is sufficient for short-term working capital requirements, the net cost of drilling the Pukatea well and pre-drilling exploration expenditure in Cuba (including a bank guarantee required in November 2017 for entering the next exploration phase). Additional funding will be required for the two planned wells in Cuba in 2018.

Committed capex in Cuba is low

Based on current interests, net drilling capex for the two wells in Cuba is estimated at approximately A$12-22m, although the committed expenditure during the next licence phase is significantly less than this. In line with its strategy to reduce its financial exposure and manage risk, Melbana has initiated farm-out processes on all its assets where future drilling is either planned or envisaged.

Shortfall shares could raise a further A$1.4m

The Company also has authority for the next three months to place shortfall shares from the entitlement offer. The shortfall shares can be issued at a price of 1.0 cents/sh and if fully placed, could raise an additional A$1.4m.

Valuation

Our valuation is derived using a net asset value approach taking into account a risked value for the upstream assets adjusted for balance sheet items (net debt, working capital and options/warrants) and corporate overheads (five year PV of G&A). Upstream assets sanctioned for development are included within core NAV, with earlier stage projects included within risked NAV. We apply both geological and commercial risk factors for each project and, in line with industry practice, we use a standard 10% discount factor and a fully diluted number of shares (we exclude options and warrants from this calculation that we consider unlikely to be exercised). As shown in Exhibit 2 below, we use the forward curve (as at 31 August 2017) for our near-term oil price assumptions. Beyond 2023 we assume oil prices increase at 2% per annum.

Exhibit 2: Oil prices

YE June	2018	2019	2020	2021	2022	2023
US$/bbl	52.46	53.67	54.44	55.27	56.34	57.49

Source: Brandon Hill Capital, Bloomberg

Total NAV of 6.21 cents/sh

Based on this approach, our total NAV for Melbana is 6.21 cents/sh with core NAV contributing 0.31 cents/sh (net cash of 0.35 cents/sh, potential proceeds from options of 0.25 cents/sh, less 0.29 cents/sh for PV of G&A) and risked NAV 5.90 cents/sh. Within risked NAV we include all three prospects due to be drilled in 2018, but have excluded the Australian assets as these are considered non-core and there are no firm drilling plans. Our valuations for each of the three prospects do not adjust for future dilution at either the asset or corporate level. Assumptions underlying these valuations are discussed in more detail on pages 8-11.

Exhibit 3: Net asset value

Project	Country	Gross unrisked resources (mmboe)	Working interest (%)	Overall commercial CoS (%)	NPV (US$/boe)	Risked NPV (US$m)	Risked NPV (cents/sh)	Unrisked NPV (cents/sh)
Financial adjustments and other business activities								
- Net cash						4.7	0.35	0.35
- Options and warrants						3.3	0.25	0.25
- PV of corporate overheads						-3.9	-0.29	-0.29
Core financial adjustments and other business activities						4.1	0.31	0.31
Core NAV						**4.1**	**0.31**	**0.31**
Exploration prospects								
- Alameda (U1 objective)	Cuba	25.0	60.0%	9%	4.1	5.3	0.39	4.63
- Alameda (N objective)	Cuba	41.0	60.0%	11%	4.1	11.2	0.83	7.59
- Alameda (Primary objective)	Cuba	65.0	60.0%	16%	4.1	25.8	1.92	12.03
- Zapato	Cuba	71.0	60.0%	13%	4.1	22.1	1.64	13.14
- Pukatea	New Zealand	12.4	30.0%	19%	21.0	14.8	1.10	5.81
Risked exploration NAV		214.4	58.3%	13%	4.9	79.2	5.90	43.19
Risked NAV		**214.4**	**58.3%**	**13%**	**4.9**	**79.2**	**5.90**	**43.19**
Total NAV		**214.4**	**58.3%**	**13%**	**5.1**	**83.3**	**6.21**	**43.50**

Source: Brandon Hill Capital

Cuba

Overview

Cuba has a long history of oil exploitation

Cuba has a long history of oil exploration and production, with the first discoveries made in the nineteenth century. Most early activity exploited surface oil seeps and tars, but the onset of shallow drilling resulted in a number of small discoveries. By the early 1960's all private production assets were nationalised and operations ceased. Subsequent assistance from the Soviet Union lead to a number of larger, high sulphur, heavy oil discoveries in the 1970's, including the 11Bn barrel Varadero field in 1971. These fields are typically located in central Cuba and in coastal areas to the north of the country.

Cuba has been open to international companies for more than 25 years

Following the demise of the Soviet Union in 1991, the upstream sector was once again opened to foreign companies leading to significant new investment, particularly targeting offshore areas. While the results from deep water exploration have disappointed, production volumes from existing fields have increased significantly, reaching close to 60mbopd in 2004. Production rates have since declined to nearer 50mbopd, but with typical recovery factors of less than 10% there remain significant long term opportunities to exploit through the application of enhanced oil recovery technologies.

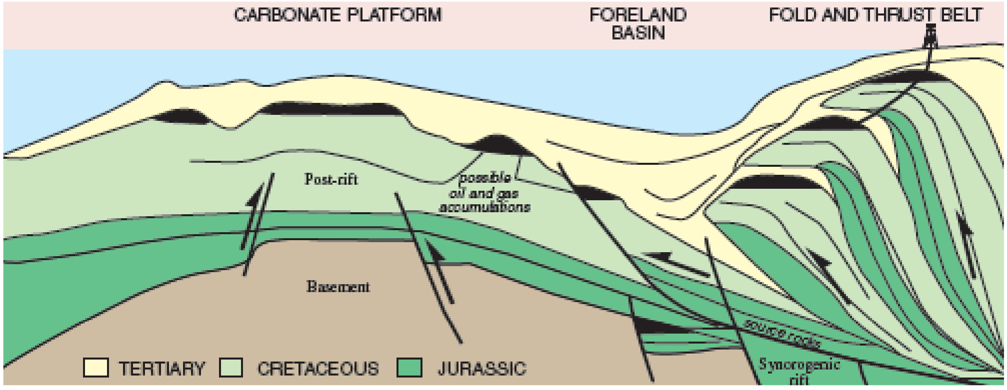
Significant exploration potential remains

One of the early movers in Cuba was TSX-listed Sherritt International. The company has since produced 216mmbbl in the country, and still holds offshore acreage adjacent to Melbana, including part of the Varadero field and exploration Block 10. Located near tourist beaches, exploration or development wells targeting these licences are challenging, requiring long horizontal wells to be drilled from onshore pads. This adds significantly to costs and complexity, with an exploration well currently being drilled by Sherritt on Block 10 likely to cost in excess of US$30m. Results from the well, which may have some read across to Melbana, are due in late 2017.

Melbana to explore untested deeper horizons

Despite the increase in exploration activity since 1991 Cuba remains only lightly explored, with significant untested potential in the North Cuba Basin. The U.S. Geological Society estimate that more than 4Bn barrels of resource potential remains to be discovered. In Block 9, Melbana's strategy is to explore deeper horizons within the fold and thrust belt.

Exhibit 4: Schematic cross section of the North Cuba Basin



Source: U.S. Geological Society

Block 9 background

Block 9 has good infrastructure links

Melbana qualified as an onshore and shallow water operator in Cuba in 2013 and was awarded a 100% interest in Block 9 in September 2015. Block 9 covers approximately 2,380km^2 of low lying farmland, with good access to road, port and airport facilities. The acreage is located on the northern coast and 130km east of Havana.

The licence was pursued in collaboration with Petro Australis, a private Australian company, which retained an option to acquire a 40% non-operating interest. In late August 2017, Petro Australis exercised this option, which remains subject to regulatory approvals, and will be responsible for a pro-rata share of ongoing costs and a share of certain historic expenditures.

Block 9 PSC is in good standing

The PSC term is split into four sub-periods totalling eight and a half years and ending in March 2024. The work programme during the initial 18-month period (subsequently extended by eight months to November 2017), requiring the evaluation of existing exploration data and the reprocessing of selected 2D seismic data, is now largely complete.

Melbana has brought forward the drilling timetable

In preparation for the commencement of the next two-year sub-phase, the Cuban national oil company, Union Cuba Petróleo ("CUPET"), recently approved an amendment to the future work programme to include an obligation to drill a well and deferring a commitment to acquire 200km of 2D seismic until the third phase. The Company has pursued this change as it considers the existing 2D seismic data to be of a sufficient quality and coverage to define drillable structures. Engineering, cost studies and regulatory approvals required to support drilling in 2018 are already underway.

Exhibit 5: Structural trends

Source: Melbana Energy

Hydrocarbon trends

As shown in exhibit 5, Block 9 is located in a proven hydrocarbon province and on trend to existing producing oil fields, including the Varadero field. Similar large fractured carbonate structures are believed to extend into Block 9 and numerous surface seeps have been located.

Evidence of a lighter oil has been found in Block 9

Evidence from existing wells within the acreage suggest oil quality may be superior to the 10-14º API produced from Varadero, with samples recovered from the Marti-5, Bolanos-1 and Guadal-1 wells ranging from 20-24º API. Importantly, the potential for higher quality oil, along with improved access onshore, should enable Melbana to achieve recovery factors far higher than the <10% rates achieved elsewhere in the country.

Exhibit 6: Historic wells in Block 9

Objective	Date	Oil quality	Comments
Motembo	1881	50-64º API	5mmbbl recovered
Guadal-1	1970	24º API	30bbls recovered
Marti-5	1991	20-24º API	44bbls recovered and oil shows over a c.800m column
Bolanos-1	1998	22º API	

Source: Melbana Energy

An assessment of the licence, constrained by the current coverage of 2D seismic to the west and central areas, has identified a number of prospective structural trends (labelled by Melbana as the Lower Sheet Play, Upper Sheet Play and Shallow Tertiary Play) and a significant number of leads and prospects within each fairway.

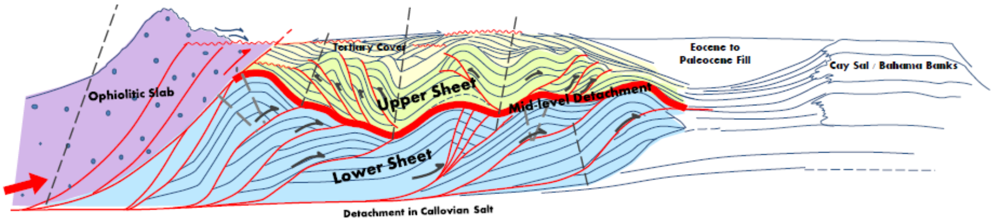
Varadero type structures are the primary targets within Block 9

The Lower Sheet Play is the primary objective for Melbana and is tied to the Varadero and other heavy oil fields in the coastal region. Due to a thickening of the Upper Sheet Play on Block 9, the Lower Sheet Play is found deeper at 2,000-3,500m compared to 800-3,000m to the west. The additional source rock burial, through higher thermal maturity, is believed to be the reason for the superior oil quality found on Block 9, while there is also a lower risk of biodegradation.

Only one deep well has been drilled in Block 9

As most wells have only intersected targets shallower than 2,000m, the Lower Sheet Play is essentially untested within Block 9. The only well to have penetrated these depths, Marti-5, was drilled to 4,000m and provides considerable evidence in support of the Lower Sheet Play, confirming the stratigraphy, including potential seals, and demonstrating oil shows across a 850m interval. Unlike the Upper Sheet Play, which is highly folded and imbricated within Block 9, the Lower Sheet Play is simply deformed into large antiformal duplex stacks and are mappable on existing seismic.

Exhibit 7: Block 9 structural model



Source: Melbana Energy

Resource potential

Prospective resource estimates only include the Lower Sheet Play

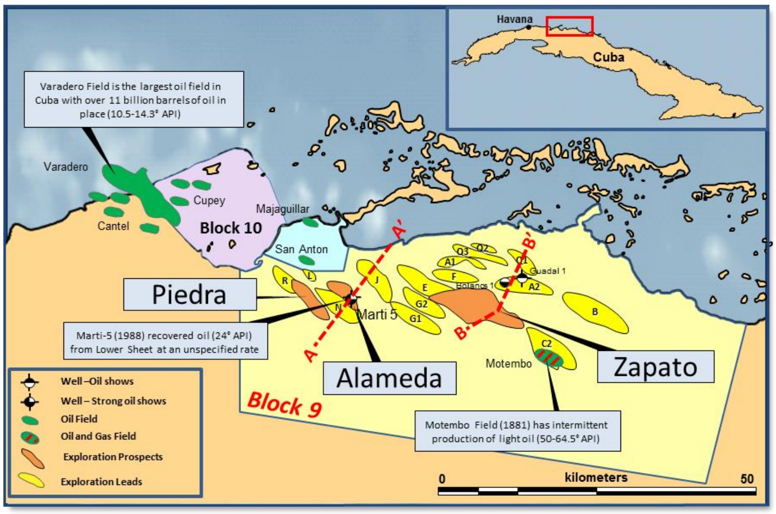
Within the Lower Sheet Play alone, 19 structures have been identified at depths ranging from 2,000-3,500m with an aggregate 12.7Bn bbls in place (P50). Based on a conservative 5% recovery factor, the aggregate P50 prospective resource is estimated by Melbana at 637mmbbl. Analysis of the potential within the Upper Sheet Play and Shallow Tertiary Play is ongoing, but considered lower priority due to smaller prospect sizes, sub-surface complexity, data availability and oil quality considerations.

Exhibit 8: Block 9 prospective resources

	Low	Best	Mean	High
	mmbbl	*mmbbl*	*mmbbl*	*mmbbl*
Oil-in-place	1,181	12,746	18,518	44,151
Recoverable	59	637	926	2,208

Source: Melbana Energy

Exhibit 9: Block 9 prospects and leads

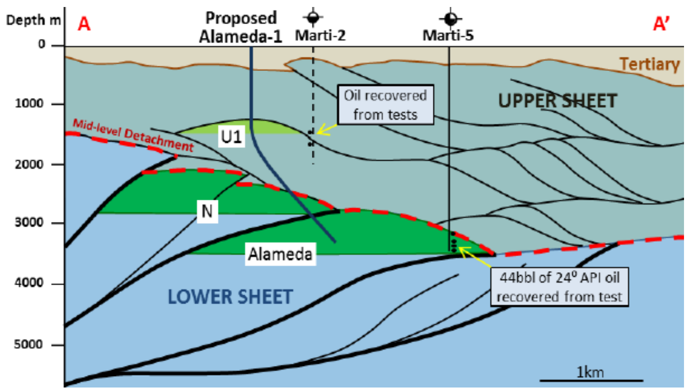


Source: Melbana Energy

The Alameda prospect is the highest ranked target for drilling

The highest ranked exploration target is the Alameda prospect, which is interpreted to be in a similar structural setting to the Varadero field, located 35km away. A deviated well has been designed to test three independent objectives, with two of these positioned up-dip from oil encountered in previous wells. The primary Alameda objective has a depth range of 3,000-3,700m and it is anticipated drilling will take 80 days to reach total depth.

Exhibit 10: Alameda prospect



Source: Melbana Energy

The primary objective in the Alameda well has a 32% CoS

In aggregate, the planned well will test prospective resources estimated by Melbana at 2.5Bn barrels oil-in-place (P50), with 130mmbbl recoverable. The Alameda objective is the largest and lowest risk of the three targets, with a P50 recoverable resource estimate of 65mmbbl and a 32% chance of success.

Exhibit 11: Alameda prospect

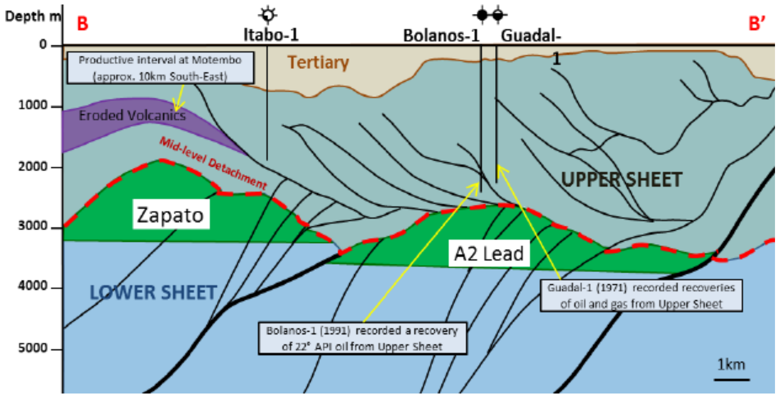
Objective	CoS	Low	Best	Mean	High
	%	*mmbbl*	*mmbbl*	*mmbbl*	*mmbbl*
U1	17%	2	25	38	93
N	22%	4	41	56	129
Alameda	32%	3	65	91	214

Source: Melbana Energy

The Zapato prospect is the second proposed drilling target and has a 25% CoS

The Zapato prospect is the second proposed well target and is located to the east of Alameda. The reservoir target is similar to Alameda, but shallower at 2,000-3,000m. Mid case prospective resources are estimated by Melbana at 71mmbbl with a 25% chance of success. A discovery at Zapato would de-risk the adjacent A2 lead, which is also supported by oil shows encountered in the Bolanos and Guadal wells in the Upper Sheet Play.

Exhibit 12: Cuba



Source: Melbana Energy

Exhibit 13: Zapato prospect

Objective	CoS	Low	Best	Mean	High
	%	*mmbbl*	*mmbbl*	*mmbbl*	*mmbbl*
Zapato	25%	5	71	118	297
A2 Lead	21%	9	69	93	213

Source: Melbana Energy

Fiscal terms

Fiscal terms in Cuba are favourable

The legal framework in Cuba is outlined in the Constitution, Civil Code and Law of Foreign Investment. There is no specific petroleum law in Cuba. Cuba has adopted production sharing contracts for the oil industry, with specific upstream fiscal terms, including production bonuses, cost recovery limits and profit shares negotiated with the commercial division of CUPET. There are no signature bonuses or production royalties. Corporation tax rates for international companies operating in Cuba start at 15% and rise to 22.5% for natural resource companies. There is an eight-year tax holiday.

Work programmes are negotiable

The exploration phase of the contract is divided into four sub-phases, with an option at the end of each to exit or enter into the next period. Work programmes for each sub-phase are negotiated and there are no minimum levels of expenditure. Bank guarantees are required equating to between 25% (offshore exploration wells) and 50% (G&G, seismic and onshore exploration wells) of the budget. The bank guarantee for the next sub-phase of Block 9 is anticipated to be US$2.5m, based on an indicative US$5m minimum work programme.

Oil is valued at international prices

For onshore and EOR/IOR, production licences of 20-25 years are available. For deep water acreage, production licences have a 30-year term for oil developments and 35-years for gas projects. Oil is valued at international prices and the government has first option to acquire. Associated gas, not used for oil operations, is owned by the state.

Economic analysis

To derive a valuation for Cuba we have developed a financial model for a conceptual 50mmbbl onshore development. We have assumed a phased development with first oil three years after discovery, peak production of 20mbopd, capex of US$6/bbl and life of field opex of US$11.1/bbl.

We value undeveloped oil resources in Cuba at US$4.1/bbl

Oil is assumed to be sold at a 20% discount to Brent, which is high by international standards, but lower than the ~35% discount realised for lower quality oil produced by Sherritt International. Based on these assumptions, we calculate an NPV of US$4.1/bbl for undeveloped resources in Cuba. This increases to US$4.9/bbl if the corporation tax holiday is assumed to commence at the start of production rather than on licence award.

Alameda and Zapato prospects valued at 4.8 cents/sh risked

Using the US$4.1/bbl valuation and applying both geological and commercial risk factors (the geological chance of success is prospect specific and the commercial risk factor is set at 50%), suggests a risked valuation of 3.15 cents/sh for the Alameda prospect and 1.64 cents/sh for the Zapato prospect. This does not adjust for future dilution at either the asset or corporate level.

Sensitivity analysis suggests developments are economically robust

With limited data availability on analogue projects in Cuba and considerable uncertainty regarding oil quality within Block 9, the table below provides a valuation sensitivity to these two factors. This shows a ~US$0.5/bbl valuation variance for every 5% change in the oil price discount, with a 50mmbbl development forecast to remain viable if development costs remain below US$12/bbl and oil prices are no worse than as those realised by Sherritt.

Exhibit 14: Cuba valuation sensitivity

		Development capex (US$/bbl)								
	NPV (US$/bbl)	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Oil price discount	*0%*	7.3	7.1	6.8	6.5	6.3	5.9	5.6	5.2	4.9
	-5%	6.8	6.6	6.3	6.0	5.7	5.4	5.1	4.7	4.3
	-10%	6.3	6.1	5.8	5.5	5.2	4.9	4.5	4.1	3.8
	-15%	5.8	5.6	5.3	5.0	4.7	4.3	4.0	3.6	3.2
	-20%	5.3	5.1	4.8	4.5	4.1	3.8	3.4	3.0	2.6
	-25%	4.9	4.6	4.3	3.9	3.6	3.2	2.8	2.5	2.1
	-30%	4.4	4.1	3.8	3.4	3.0	2.7	2.3	1.9	1.5
	-35%	3.9	3.6	3.2	2.9	2.5	2.1	1.7	1.3	0.8

Source: Brandon Hill Capital

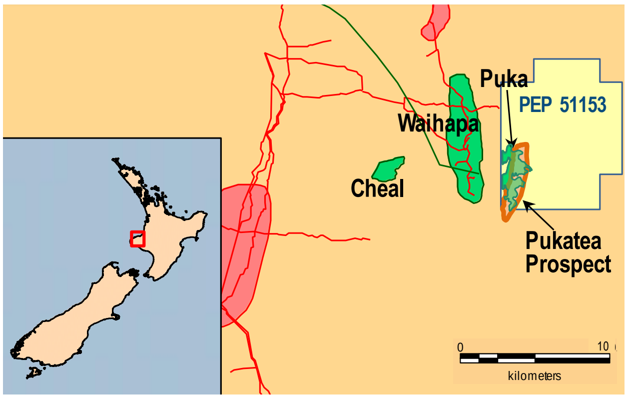
New Zealand

PEP 51153

Production from the Puka field has been shut-in

In April 2014 Melbana announced a staged farm-in with Kea Petroleum to acquire a 50% working interest in PEP 51153. Melbana earned an initial 30% interest by funding 80% of a NZ$5m work programme, including an appraisal well on the 2012 Puka oil discovery and the installation of surface equipment. The second phase of the farm-out was not exercised following disappointing results from Puka and the field has since been shut-in due low oil prices and mechanical issues.

Exhibit 15: PEP 51153



Source: Melbana Energy

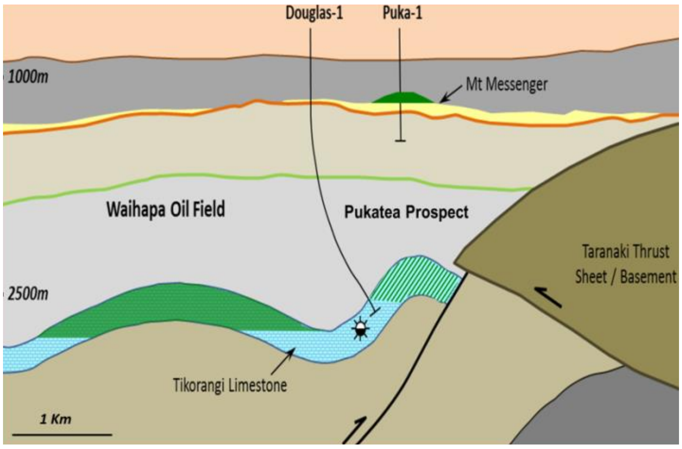
Operator has significant experience in exploiting Mt Messenger sands

Following the bankruptcy of Kea Petroleum, TSX-listed TAG Oil acquired a 70% interest in the licence and assumed operatorship in 2016. TAG Oil also operates the nearby Cheal field so has significant technical and operational expertise in the Mt Messenger formation, which is the oil bearing reservoir in the Puka field. The Puka field was producing at up to 100bopd from two wells prior to suspension and there is a possibility that production can be reactivated and enhanced at a later date.

The Pukatea-1 well is due to be drilled in January 2018

The forward plan is to drill the Pukatea-1 well, targeting a deeper formation below the Puka field. The Pukatea prospect is a Tikorangi Limestone play analogous to the Waihapa field (the field has produced more than 23mmbbl) located just 5km away. The planned well will be drilled up-dip of the Douglas-1 well drilled in 2012, which intersected oil shows in a 145m high quality reservoir section.

Exhibit 16: Pukatea prospect



Source: Melbana Energy

Even a small discovery is expected to be commercial

Due to a number of uncertainties, the prospective resource estimate is unusually wide ranging from just 1mmboe to 40mmboe, with 12.4mmboe in the mid case. The highly productive nature of the reservoir (flow rates of ~5,000bpd are anticipated), combined with the attractive fiscal terms and available nearby infrastructure suggests that even a small 1mmbbl discovery is likely to be commercial. The geological chance of success is estimated at 19%, with breach risk considered the principal risk.

Exhibit 17: Pukatea prospect

	CoS	Low	Best	Mean	High
	%	*mmboe*	*mmboe*	*mmboe*	*mmboe*
Pukatea	19%	1.3	12.4	17.1	40

Source: Melbana Energy

In preparation for drilling, the operator has completed planned site civil works and upgraded access roads and the existing production pad. Drilling operations are expected to commence in mid-January 2018 and take 30 days. The dry hole cost is A$8.0m (A$2.4m net to Melbana).

Economic analysis

We value Pukatea at US$21/bbl

A commercial discovery at Pukatea is likely to be developed as a tie-back to the Waihapa processing facilities, where we understand spare capacity can be utilised. We have assumed development costs of US$30m, including pipelines and three wells, equating to F&D costs of just ~US$3/bbl. Operating costs are also forecast to be low, averaging US$7.5/bbl, with very low fixed overheads. Based on peak production of 10mbopd and a 5yr field life, these assumptions equate to a risked NPV of 1.10 cents/sh (5.81 cents/sh fully unrisked).

With uncertainty regarding the potential resource size, the table below shows a valuation sensitivity to changes in both resource size and well productivity. While well productivity is not seen as a significant risk, we believe the factor is a key valuation driver. To provide context the P90, P50 and P10 estimates are highlighted.

Exhibit 18: Pukatea valuation sensitivity

		Reserves (mmbbl)									
Well productivity (mbopd)	*cents/sh*	*1.3*	*5.0*	*10.0*	*12.4*	*15.0*	*20.0*	*25.0*	*30.0*	*35.0*	*40.0*
	1.0	0.18	1.64	3.28	3.97	4.66	5.83	6.81	7.66	8.35	8.89
	2.0	0.31	1.98	4.02	4.94	5.84	7.61	9.16	10.57	11.85	13.12
	3.0	0.33	2.16	4.38	5.33	6.40	8.38	10.17	11.95	13.49	15.09
	4.0	0.33	2.23	4.56	5.53	6.77	8.78	10.74	12.54	14.31	16.29
	5.0	0.33	2.26	4.66	5.81	6.88	9.09	11.16	13.22	15.14	17.05
	6.0	0.33	2.35	4.84	5.83	7.14	9.44	11.39	13.53	15.67	17.65

Source: Brandon Hill Capital

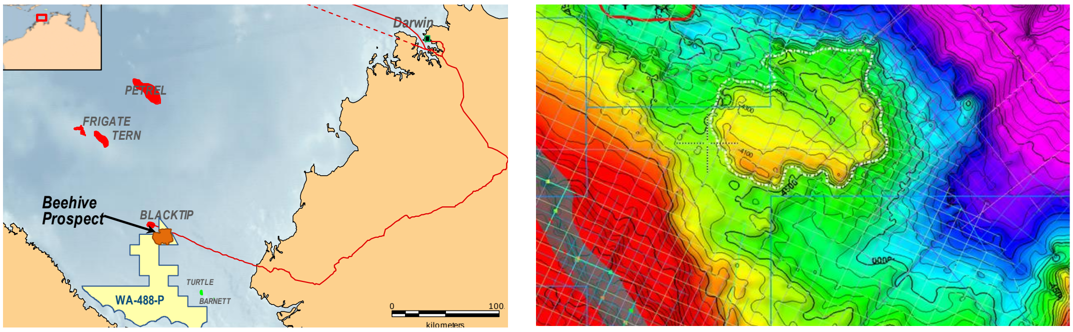
Australia

WA-488-P

Beehive could be one of the largest undrilled conventional structures in Australia

Melbana was awarded a 100% working interest in WA-488-P in May 2013. The licence is located in the Joseph Bonaparte Gulf and contains the giant Beehive prospect, considered by Melbana to be one of the largest remaining undrilled conventional structures in Australia. The carboniferous-aged carbonate feature, is located in just 40m of water and has a reservoir target at a depth of 4,100m+.

Exhibit 19: Beehive prospect



Source: Melbana Energy

The proposed well has a 16% CoS

The Beehive structure is defined by a tight grid of high quality 2D seismic and has a 180km^2 mapped closure and 400m vertical relief. P50 prospective resources in the Carboniferous objective are estimated at 558mmboe, with a 16% geological chance of success.

Exhibit 20: Beehive prospect

Objective	CoS	Low	Best	Mean	High
	%	*mmboe*	*mmboe*	*mmboe*	*mmboe*
Carboniferous	16%	97	558	940	2,033

Source: Melbana Energy

A farm-out process is underway

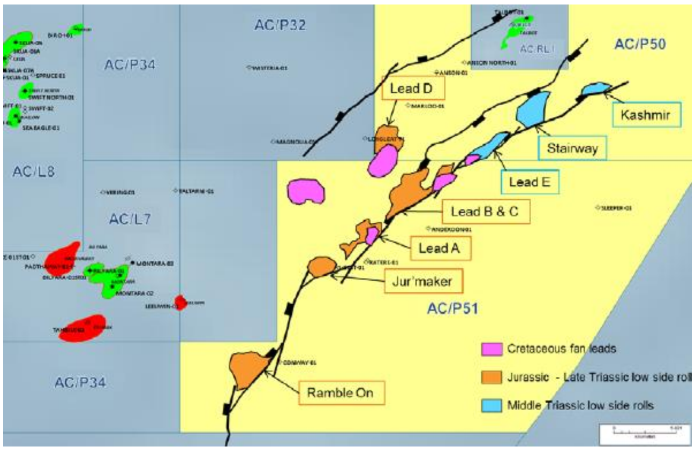
Recent seismic reprocessing and seismic inversion has provided encouragement regarding reservoir quality and seal characteristics. Further de-risking may be possible through additional 2D seismic reprocessing or 3D seismic acquisition, although this is unlikely to be cost effective initially, given the size of the structure. A farm-out process is currently underway to fund a potential well in 2018.

AC/P50 and AC/P51

Multiple leads and prospects have been identified

Melbana acquired 100% interests in the AC/P50 and AC/P51 licences from Silver Wave Energy in November 2010 for US$270k. The licences are located in the Vulcan sub-basin off the North West coast of Australia and adjacent to a number of oil and gas discoveries. Multiple leads and prospects targeting a variety of different Cretaceous, Jurassic and Triassic plays have been identified and recent technical work has helped define key structural elements.

Exhibit 21: AC/P50 and AC/P51



Source: Melbana Energy

The current work programme has been funded by Rouge Rock

In line with its strategy to minimise financial exposure to non-core acreage, Melbana has farmed out a 45% working interest to Rouge Rock in both licences in exchange for completing the minimum work programme, including seismic reprocessing and pre-stack depth migration. The estimated cost of the work is A$1.15m. A farm-out process has been initiated to bring in a partner to help fund a future exploration well.

The Ramble On prospect has a 11% CoS

The high graded Ramble On prospect has been identified as the most attractive drilling target, incorporating proven reservoir, seal and source intervals in a new structural trend. The structure is described by Melbana as a 3-way low side fault trap charged by adjacent late Jurassic source rock. The reservoir target is estimated at 2,800m sub sea and in water depths of 68m.

Exhibit 22: Ramble On prospect

	CoS	Low	Best	Mean	High
	%	*mmboe*	*mmboe*	*mmboe*	*mmboe*
Ramble On	11%	8	38	63	150

Source: Melbana Energy

Directors and management

Andrew Purcell – Chairman

Andrew is the founder of the Lawndale Group, which specialises in the development and management of projects in emerging markets across the heavy engineering, petrochemical, resources and infrastructure sectors. Prior to this, Andrew worked in the investment banking industry for Macquarie Bank and Credit Suisse. Andrew is currently a Non-Executive Director of AJ Lucas Group and Metgasco.

Michael Sandy – Non-Executive Director

Michael is an experience geologist and has held a number of senior management roles in the oil & gas industry including Technical Manager of Oil Search and Asset Manager and Business Development Manager at Novus Petroleum. For the past 12 years Michael has run his own consultancy company providing services to the oil, mining, geothermal and environmental industries.

Peter Stickland – Managing Director and CEO

Peter has more than 25 years experience in oil and gas exploration. Peter was previously CEO of Tap Oil, where he led the evolution of the company into a South East Asia/Australian E&P. Prior to Tap Oil, Peter held a number of senior technical and management roles at BHP Billiton.

Colin Naylor – CFO

Colin has more than 30 years financial experience in the resource sector, including roles with Woodside Petroleum and BHP Petroleum.

Robert Zammit – Commercial & Business Development

Robert has more than 25 years international experience in the oil and gas industry. For the majority of his career, Robert worked at ExxonMobil, where he held a variety of commercial and business development roles in Australia, Europe, Asia and the USA.

Errol Johnstone – Chief Geoscientist

Errol is an industry expert in structural geology, regional geologic synthesis, sequence stratigraphy and seismic interpretation. During his career, Errol worked for more than 29 years at ExxonMobil where he held a variety of exploration and appraisal roles with a particular focus on new ventures, basin analysis and new play generation.

Dr. Rafael Tenreyro – Cuba Representative

Rafael has more than 40 years experience in the Cuban oil industry, working in 14 projects that progress from exploration to development. Most recently Rafael was Exploration Director for Union Cuba Petróleo.

Research Disclosures

William Arnstein

Will is a CFA charterholder and has more than 10 years experience as a sell-side equity research analyst having previously worked at Dresdner Kleinwort, Jefferies International and finnCap. In his last role, he co-founded the Oil & Gas franchise at finnCap and later became Head of Oil & Gas, where he also coordinated corporate finance and corporate broking in addition to his responsibilities as a Research Director. During his career, Will has worked closely with many international E&P companies, both listed and private, evaluating assets across the globe and has developed particular expertise in petroleum economics and asset valuation. In 2010, Will was awarded No.1 stock picker for the European energy sector in the FT/Starmine Awards.

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Research disclosure as of 18 September 2017

Company Name	Disclosure
Melbana Energy (MAY AU)	1,2,8

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