Hurricane Energy

Lancaster drilling

Testing time for Lancaster

Oil & gas

By the end of 2016, Hurricane should have far greater certainty on the size and potential value of its key asset, Lancaster. If post-drill resource estimates remain in line with the pre-drill forecast at P50 200mmbbls, Hurricane remains well placed to attract partner and debt funding assuming an Edison long-term 70$/bbl Brent oil price. A resource base that only justifies an early production system (EPS) development is still likely to be economically viable, but could prove harder to finance in the current market.

Year end	Revenue (£m)	EBITDA* (£m)	PBT* (£m)	Operating cash flow (£m)	Capex (£m)	Net (debt)/ cash (£m)
12/14	0.0	(8.5)	(9.0)	(4.7)	(36.5)	15.9
12/15	0.0	(5.4)	(5.5)	(2.6)	(3.4)	9.9
12/16e	0.0	(4.6)	(4.5)	(4.4)	(41.2)	13.6
12/17e	0.0	(4.6)	(4.6)	(4.5)	(13.0)	(3.9)

Note: *EBITDA and PBT are normalised, excluding intangible amortisation, exceptional items and share-based payments.

Defining Lancaster resource range

Hurricane spudded the first well of a two-well programme on 6 July 2016. The wells consist of an inclined pilot hole, 205/21a-7, followed by a horizontal sidetrack, 205/21a-7z. A key objective is to locate the Lancaster oil water contact to provide better definition of the Lancaster resource range driving EPS and full-field development design. Submission of the field development plan and final investment decision on the EPS phase of the development is expected in H117.

Upside to Edison EPS valuation

Our EPS valuation remains on the basis of 36mmbbls recoverable, volumes in the Lancaster structural closure that could conservatively be recovered through a two-well development (currently Hurricane's low case). Assuming higher recovery, in line with Hurricane's base case (53mmbbls) and recent company well productivity simulations, would increase our company RENAV from 41p/share to 45p/share. We expect to revisit our valuation post the 2016 well programme when we will have greater certainty on reservoir characteristics and fracture system performance.

Valuation: Significant upside remains

Our updated valuation reflects Hurricane's guidance of lower than modelled costs during the EPS phase and the positive translational impact of a stronger dollar. Our RENAV moves from 34p/share to 41p/share as a result. We estimate that Hurricane will have to farm down 55% of its 100% equity in Lancaster full field development to fund the project through to first oil, assuming access to $250m of RBL debt capacity. This dilution in working interest and cost carry is reflected in our base case valuation.

12 July 2016

Price	**17.25p**
Market cap	**£169m**
	£/US$1.4
Net cash (£m) at end December 2015	9.9
Shares in issue	979m
Free float	88%
Code	HUR
Primary exchange	AIM
Secondary exchange	N/A

Share price performance

%	1m	3m	12m
Abs	(1.4)	68.3	7.8
Rel (local)	(8.1)	58.6	8.5
52-week high/low		18.2p	9.420p

Business description

Hurricane Energy is an E&P focused on UKCS fractured basement exploration. It owns 100% in three licences, including the 200mmbbl Lancaster discovery.

Next event

Lancaster 7 Wells	Q316

Analysts

Sanjeev Bahl	+44 (0)20 3077 5700
Ian McLelland	+44 (0)20 3077 5756
Will Forbes	+44 (0)20 3077 5749
Elaine Reynolds	+44 (0)20 3077 5713

oilandgas@edisongroup.com

Edison profile page

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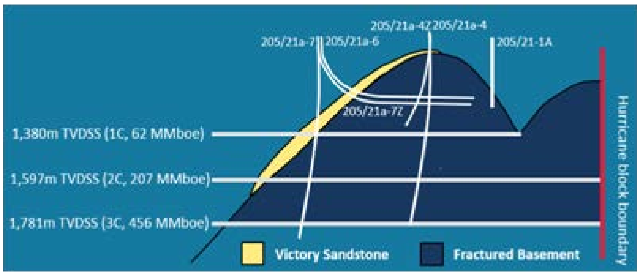
Lancaster: Reducing resource uncertainty

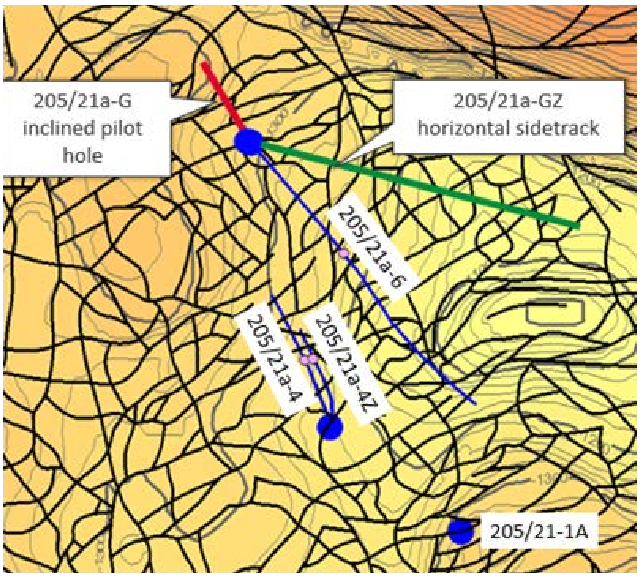
Hurricane is planning to drill two wells on Lancaster in Q316 with a view to obtaining sufficient data to be able to make a final investment decision on the EPS phase of the development by H117. The wells will consist of an inclined pilot hole, 205/21a-7, followed by a horizontal sidetrack, 205/21a-7z.

Exhibit 1: Lancaster well locations



Source: Hurricane Energy

Exhibit 2: Lancaster top basement fault map



Source: Hurricane Energy

Pilot hole objectives – confirming oil water contact

The pilot hole will be drilled off the crest of the structure and is designed to reach total depth in the water leg. To ensure this is achieved, the well will be drilled to around 100m below the deepest point at which the presence of oil has been established to date in Lancaster (ie 1,781m based on oil cuttings in the 205/21a-4 well). The key objective of the well will be to confirm the oil water contact (OWC), which would then allow the current resource range of 62-456mmboe to be refined. Further objectives are to evaluate the properties of the basement aquifer and to refine the company's understanding of the overlying Victory sandstone (formerly known as the Commodore sandstone).

Hurricane is planning to acquire a comprehensive set of data in the pilot well. Advance gas chromatography, logging while drilling (LWD) and a full suite of wireline logs will be taken across the Victory sandstone and fractured basement. In addition, an open-hole DST will be carried out over the entire fractured basement section of the well and will include production logging (PLT) and downhole fluid sampling.

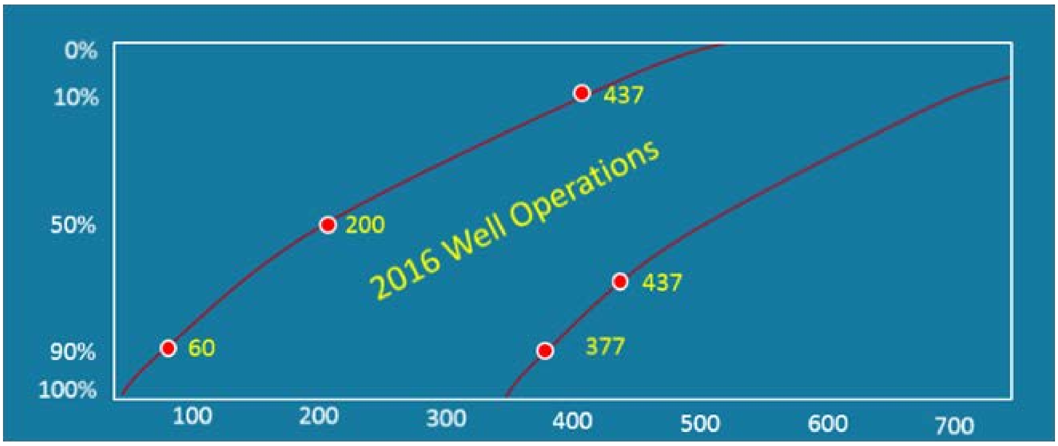
Confirmation of OWC will reduce resource uncertainty

The volumes of hydrocarbons trapped in fractured basement reservoirs can exceed the volume that is trapped in the mapped structural closure. For Lancaster, the recoverable volume in structural closure is 61mmbbls, based on a spill point depth of 1,380m true vertical depth subsea (TVDss), and this is the volume that will be targeted in the EPS. If this low case is confirmed by the EPS, then no further development would take place. However, if the OWC is established to be consistent with or deeper than the 2C case of 1,597m TVDss, Hurricane believes that a continuous oil column can be assumed across the reservoir based on current reservoir simulations incorporating results from the 205/21a-6 well. This would positively affect the resource range, as shown in Exhibit 3. The

2C OWC is currently based on oil recovered from a drilling swab and MDT analysis from the 205/21a-4 well, while the 3C case of 437mmbbls is based on oil recorded to 1,781m TVDss in the 205/21a-4 well in post-well analysis.

The ability of the pilot well to determine the OWC is therefore crucial to the future development concept for Lancaster. In addition, the extensive data gathering should allow more certainty around the water saturation in the reservoir, which will assist in establishing the extent and continuity of the aquifer.

Exhibit 3: Conceptual impact to resource range by confirming CPR 2C ODT



Source: Hurricane Energy

Horizontal sidetrack objectives

After data gathering of the pilot well has been completed, it will be abandoned and the top hole section used for the horizontal sidetrack. 205/21a-7z will be drilled at a similar depth to the existing 205/21a-6 well and around 140m above the shallowest estimated OWC. The well will have a 1km horizontal section and is expected to intersect 13 fault zones. It will be positioned close enough to 205/21a-6 to monitor interference between the wells during the EPS, while remaining far enough away to allow for reservoir drainage. Data gathering will be similar to that in the pilot hole, although wireline logging and PLT cannot be taken in a horizontal section. Once the drilling and testing programme is completed on the two Lancaster 7 wells, the company plans to move rapidly into FEED, with FID by the end of H117 and first oil by H119.

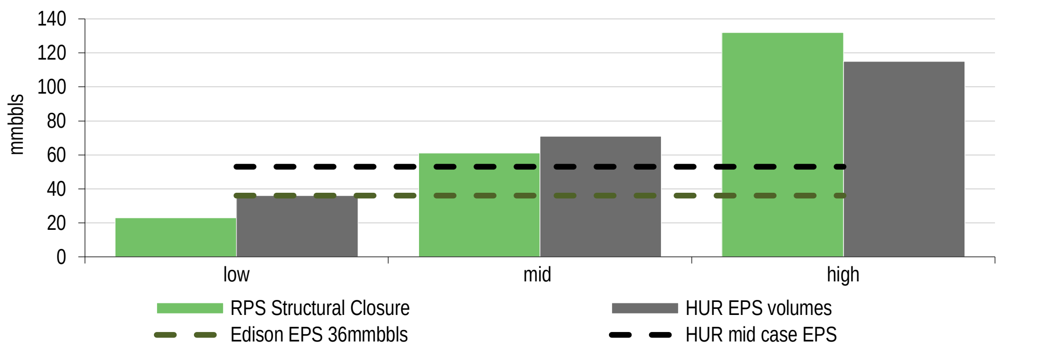
EPS development: Conservative estimates

A successful outcome from Hurricane's 2016 well programme has the potential to materially de-risk EPS development, providing greater certainty on the overall Lancaster resource, as well as volumes recoverable under a two-well EPS.

Our conservative EPS asset valuation stands at 12p/share, with potential to rise to 18p/share if higher per-well recovery is proven (Hurricane base case). Hurricane's capital markets day (CMD) pointed to slightly lower fixed opex than we had estimated in our standalone EPS valuation. Adjusting our estimates to reflect company guidance and including the translational effect of a stronger dollar increases our risked EPS asset valuation from 8p/share to 12p/share and Hurricane RENAV from 34p/share to 41p/share.

We note that our EPS valuation remains on the basis of volumes recoverable in structural closure at EUR of 36mmbbls (in line with a per-well EUR of 18mmbbl as per RPS Energy's CPR for full field development). Recent well simulation work being carried out by Hurricane and confirmed by a third party suggests upside to our EUR assumptions, with producers showing no immediate decline and an extended plateau response – an additional 10mmbbls recovered per well compared to RPS's 2013 CPR assumptions.

Exhibit 4: EPS volumes – potential upside to estimates



Source: Company data, Edison Investment Research

Hurricane expects to test well productivity through the open-hole drill stem test (DST) of the planned horizontal well and to see if the flow rates of 205/21a-6 can be replicated. We see a further 6p/share upside to our EPS valuation if Hurricane can firm-up recoverable volumes in line with a company base case estimate of 53mmbbl.

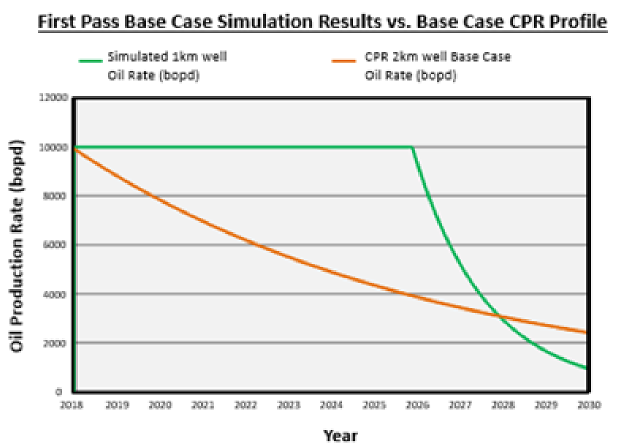
Exhibit 5: EPS – potential upside from Edison 36mmbbl case

	OWC	Porosity	Aquifer support	EPS EUR	Plateau	Gross EPS NPV/boe	EPS IRR % (point forward)	EPS p/share
Edison 36mmbbl case (company low case)	Structural closure only	Low	Passive/weak	36mmbbl	3 years (declining)	10.9	59%	12
Edison 53mmbbl case (company base case)	Structural closure only	Low/Mid	Passive/weak	53mmbbl	5 years	11.3	68%	18
Company EPS mid-case (71mmbbl)	2C depth	Mid	Passive/weak	71mmbbl	7.5 years			

Source: Edison Investment Research

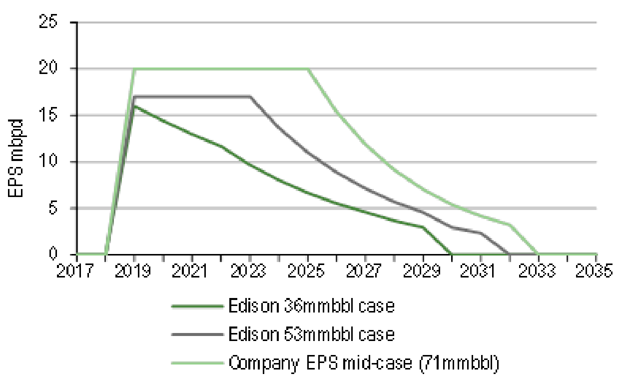
The profiles below help visualise the difference in predicted production between RPS CPR assumptions and more recent well simulation work. If Hurricane can prove up its model of a limited well decline for the first five to seven years of production, there is c 10mmbbls of incremental oil recovery predicted per well, which should lead to better full field development economics driven by a lower well count.

Exhibit 6: Company simulation results vs CPR horizontal production profile



Source: Hurricane Energy

Exhibit 7: EPS production profiles



Source: Edison Investment Research

We model first oil in line with company guidance in H119, giving an unrisked, forward-looking IRR (gross basis) of 59% based on our oil price deck, which assumes Brent long-term at 70$/bbl (real). We note that delivery of first oil in 2019 will depend on EPS FPSO and modification yard availability, successful execution and costs in line with company estimates.

Our unrisked, forward-looking IRR of a combined EPS and FFD development of Lancaster on a gross basis and at an Edison (70$/bbl real long-term Brent) price deck, is estimated at 46%.

Development funding

Hurricane is funded through the 2016 well programme, although further funds will be required to progress Lancaster through to EPS and FFD. We assume Hurricane's net capex through to EPS and FFD first oil is funded via farm-down and an FFD reserve-based lending (RBL) facility (we assume $250m net RBL in our base case). Based on our forecasts, we expect the company to require more funds in 2017. Our financial forecasts assume £3.9m of net debt at year-end 2017. Taking a view on asset dilution through farm-out, our analysis assumes a farminee will require a 25% forward-looking, post-carry IRR to invest. On this basis, we believe that Hurricane will need to farm down a 55% equity interest in Lancaster to fund both EPS and FFD. This dilution is reflected in the working interests we apply in our NAV, with Hurricane retaining a 45% working interest in both EPS and FFD.

Other forms of funding being considered for the EPS phase of development include export credit finance available to fund yard costs, which we understand make up the bulk of pre-EPS first oil capex.

Valuation and financials

We make a modest change to our valuation at this stage and expect a further update post the Lancaster 7 wells programme. As a result of lower anticipated EPS development costs, as set out at Hurricane's CMD, we see better returns and net NPV for Lancaster EPS development. Our net risked NPV/share for Lancaster EPS rises from 8p/share to 12p/share as result (0.5p/share of this increase is driven by a foreign exchange translation impact as we move from $1.45/£ to $1.4/£).

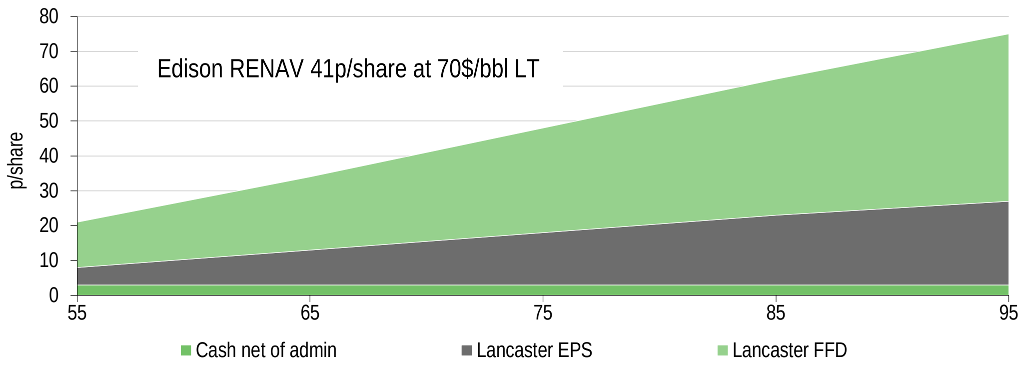
Exhibit 8: Hurricane Energy valuation summary – FFD purchased FPSO (base case)

				Recoverable reserves			Net risked	Value per share
Asset	Country	Diluted WI	CoS	Gross	Net	NPV/boe	value	Risked
NOSH: 979.4		%	%	mmboe	mmboe	$/boe	$m	/share
Net (debt)/cash post fund-raise		100%	100%				51	4
SG&A (2 years)		100%	100%				(11)	(1)
Core NAV							40	3
Contingent								
Lancaster EPS - two wells	UK	45%	70%	36	16	13.9	158	12
Lancaster FFD (post-EPS)	UK	45%	44%	164	74	11.0	359	27
RENAV				200	90		557	41

Source: Edison Investment Research. Note: NPV/boe assumes a farm-out will be full capex carry for Hurricane.

Our RENAV remains highly sensitive to long-term oil price assumptions, with a post farm-down NAV break-even at c 50$/bbl Brent. At higher oil prices, our RENAV is several times the current share price, as shown in Exhibit 9 below.

Exhibit 9: RENAV sensitivity to long-term oil price assumption



Source: Edison Investment Research. Note: Retained working interest adjusts with oil price to ensure farminee achieves a 25% IRR post-carry.

At this stage, we do not include value from other discoveries and prospects, as there is no clarity on when appraisal/exploration wells will be drilled and/or funded. This blue-sky exploration/appraisal portfolio is potentially worth a further 13p/share on our estimates. We have not conducted detailed dilution analysis for this portfolio of assets and as such may be overestimating the commercial chance of success.

Exhibit 10: Hurricane Energy valuation summary – exploration/appraisal portfolio

				Recoverable reserves			Net risked	Value per share
Asset	Country	Diluted WI	CoS	Gross	Net	NPV/boe	value	Risked
		%	%	mmboe	mmboe	$/boe	$m	/share
Discovery - on hold								
Whirlwind	UK	100%	13%	192	192	2.3	59	4
Strathmore	UK	100%	10%	32	32	0.3	1	0
Long-term exploration upside								
Lincoln	UK	100%	7%	150	150	3.6	36	3
Tempest/Typhoon	UK	100%	8%	175	175	2.9	41	3
Lancaster prospective resources	UK	100%	5%	53	53	6.9	18	1
Whirlwind prospective resources	UK	100%	8%	85	85	2.8	19	1
Long-term exploration upside NAV					687		174	13
Total long-term valuation including blue-sky upside					771		735	54

Source: Edison Investment Research

Exhibit 11: Financial summary

£000s	2014	2015	2016e	2017e
Dec	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS				
Revenue	0	0	0	0
Operating Expenses	(8,489)	(5,366)	(4,646)	(4,646)
EBITDA	(8,489)	(5,366)	(4,646)	(4,646)
Operating Profit (before amort. and except.)	(8,584)	(5,448)	(4,741)	(4,741)
Exploration expenses	0	0	0	0
Exceptional	0	0	0	0
Other	0	0	0	0
Operating Profit	(8,584)	(5,448)	(4,741)	(4,741)
Net Interest	(441)	(75)	225	189
Profit Before Tax (norm)	(9,025)	(5,523)	(4,516)	(4,552)
Profit Before Tax (FRS 3)	(9,025)	(5,523)	(4,516)	(4,552)
Tax	19	0	0	0
Profit After Tax (norm)	(9,006)	(5,523)	(4,516)	(4,552)
Profit After Tax (FRS 3)	(9,006)	(5,523)	(4,516)	(4,552)
Average Number of Shares Outstanding (m)	621.4	632.2	979.4	979.4
EPS - normalised (p)	(1.4)	(0.9)	(0.5)	(0.5)
EPS - normalised and fully diluted (p)	(1.4)	(0.9)	(0.5)	(0.5)
EPS - (IFRS) (p)	(1.4)	(0.9)	(0.5)	(0.5)
Dividend per share (p)	0.0	0.0	0.0	0.0
Gross Margin (%)	NA	NA	NA	NA
EBITDA Margin (%)	NA	NA	NA	NA
Operating Margin (before GW and except.) (%)	NA	NA	NA	NA
BALANCE SHEET				
Fixed Assets	177,653	176,231	217,337	230,282
Intangible Assets	177,308	176,012	176,012	176,012
Tangible Assets	215	89	41,195	54,140
Investments	130	130	130	130
Current Assets	17,409	10,771	14,436	830
Stocks	0	410	410	410
Debtors	1,553	420	420	420
Cash	15,856	9,941	13,606	0
Other	0	0	0	0
Current Liabilities	(1,487)	(271)	(271)	(271)
Creditors	(1,487)	(271)	(271)	(271)
Short term borrowings	0	0	0	0
Long Term Liabilities	(7,281)	(3,221)	(3,221)	(7,112)
Long term borrowings	0	0	0	(3,891)
Other long term liabilities	(7,281)	(3,221)	(3,221)	(3,221)
Net Assets	186,294	183,510	228,281	223,729
CASH FLOW				
Operating Cash Flow	(4,677)	(2,558)	(4,421)	(4,457)
Net Interest	0	0	0	0
Tax	0	0	0	0
Capex	(36,542)	(3,407)	(41,201)	(13,041)
Acquisitions/disposals	0	0	0	0
Financing	16,783	22	49,287	0
Dividends	0	0	0	0
Net Cash Flow	(24,436)	(5,943)	3,665	(17,497)
Opening net debt/(cash)	(14,022)	(15,856)	(9,941)	(13,606)
HP finance leases initiated	0	0	0	0
Other	26,270	28	0	0
Closing net debt/(cash)	(15,856)	(9,941)	(13,606)	3,891

Source: Company accounts, Edison Investment Research. Note: Forecasts assume £3.9m of debt at the end of 2017.

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Frankfurt +49 (0)69 78 8076 960
Schumannstrasse 34b
60325 Frankfurt
Germany

London +44 (0)20 3077 5700
280 High Holborn
London, WC1V 7EE
United Kingdom

New York +1 646 653 7026
245 Park Avenue, 39th Floor
10167, New York
US

Sydney +61 (0)2 9258 1161
Level 25, Aurora Place
88 Phillip St, Sydney
NSW 2000, Australia

Wellington +64 (0)48 948 555
Level 15, 171 Featherston St
Wellington 6011
New Zealand