

# Hurricane Energy

Company update

## Enhanced EPS returns at current strip

Oil & gas

11 June 2018

**Price** 47.22p  
**Market cap** £925m

Net cash (\$m) at 31 December 2017	158.0
Shares in issue	1,959.6m
Free float	75%
Code	HUR
Primary exchange	AIM
Secondary exchange	N/A

### Share price performance



%	1m	3m	12m
Abs	6.7	39.7	10.5
Rel (local)	5.0	31.3	6.3
52-week high/low	48.3p	24.0p	

### Business description

Hurricane Energy is an E&P focused on UKCS fractured basement exploration and development. It owns 100% of the 523mmbbl (RPS 2P reserves plus 2C resources) Lancaster oil discovery, West of Shetland.

### Next events

Lancaster EPS first oil	H119
-------------------------	------

### Analysts

Sanjeev Bahl	+44 (0)20 3077 5742
Carlos Gomes	+44 (0)20 3077 5700

[oilandgas@edisongroup.com](mailto:oilandgas@edisongroup.com)

[Edison profile page](#)

**Hurricane Energy is a research client of Edison Investment Research Limited**

The development of Hurricane's Lancaster early production system (EPS) remains on track for H119 first oil. We estimate a 1 January 2018 point-forward IRR of 63% for the EPS phase based on current commodity price forecasts. We use the EIA's short-term oil forecast with Brent at \$66/bbl for 2019 and long-term \$70/bbl (from 2022). We believe the market is fully valuing a 10-year Lancaster EPS phase (34.7p/share net of debt), a project that has the potential to significantly de-risk our RENAV of 81.0p/share (increased from 78.4p/share). Our RENAV includes a risked value for Lancaster full field development and two mid-sized field developments (250mmbbl) at Lincoln and Halifax.

Year end	Revenue (\$m)	PBT* (\$m)	Operating cash flow (\$m)	Capex (\$m)	Net cash/ (debt) (\$m)
12/16	0.0	(6.4)	(5.6)	(63.5)	101.5
12/17	0.0	(7.0)	(8.1)	(265.7)	158.0
12/18e	0.0	(25.8)	(25.8)	(191.1)	(58.8)
12/19e	115.0	(28.0)	0.4	(101.1)	(159.4)

Note: \*PBT normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

## Focus shifting to EPS commissioning

Execution of Hurricane's Lancaster EPS development appears to be progressing in line with management's unchanged expectation of first oil in H119. We believe market focus in the coming months will shift to commissioning, data gathering and 2019 production expectations. Management guidance of gross 10kbod per well initial production rate implies low initial draw-down with potential production upside once data gathering objectives have been met. Our 2019 production expectations reflect an end-H119 first oil and slightly more modest 12-month production ramp-up than company guidance. A more aggressive view on first-oil delivery will have a modest positive impact on NAV, but of greater significance will be the data gathered by Hurricane once production has stabilised, which will shape Lancaster's full field development.

## Farm-in value on the rise

The recent rise in Brent crude increases the likelihood and value retained net to Hurricane in the event of a farm-out of its asset base. In our view, a farm-out on the back of supportive data from the Lancaster EPS seems a plausible scenario and Hurricane is keen to ensure that value is ascribed to the all of its Rona Ridge assets through continued appraisal of contingent and prospective resource. We continue to assume a development farm-out in our base valuation using a farminee 20% IRR.

## Valuation: RENAV 81.0p/share

Our RENAV stands at 81.0p/share (up 3% from 78.4p/share) as we mark to market for EIA 2019 oil price assumptions and increase our EPS commercial chance of success from 90% to 100%. We continue to include 10% capex cost contingency, which we expect to release closer to first oil.

## Investment summary

### UKCS fractured basin specialist

Hurricane positions itself as a specialist in the discovery, appraisal and development of fractured basement reservoirs, with an initial focus on UKCS. Over the last eight years the company has discovered 523mmbbbls 2P reserves and 2C resources (RPS 2017 CPR) of recoverable oil at the Lancaster field and is appraising material upside along the Rona Ridge play fairway. Management expects to progress the first phase of development of Lancaster through to first oil in H119.

### Valuation: 63% point-forward IRR for EPS phase

In our base case we use RPS reserve and resource estimates, management estimates of project cost plus a 10% cost contingency and an Edison long-term oil price of \$70/bbl (from 2022). In addition to the Lancaster field development, we include a risked value for resource under appraisal at Lincoln and Halifax in our RENAV of 81.0p/share. Key areas of uncertainty other than commodity prices include the ability to deliver Lancaster EPS in line with management estimates of capital cost and schedule, uptime assumptions and reservoir performance for full field development. We assume first oil in line with management guidance (H119) and an additional 10% cost contingency (c 79% of capex costs are contracted on a lump-sum basis, hence our gross capex contingency of 10% is conservative and would equate to a 48% contingency on reimbursable capex) in our base case. We expect to release this contingency in our capex forecasts closer to first oil.

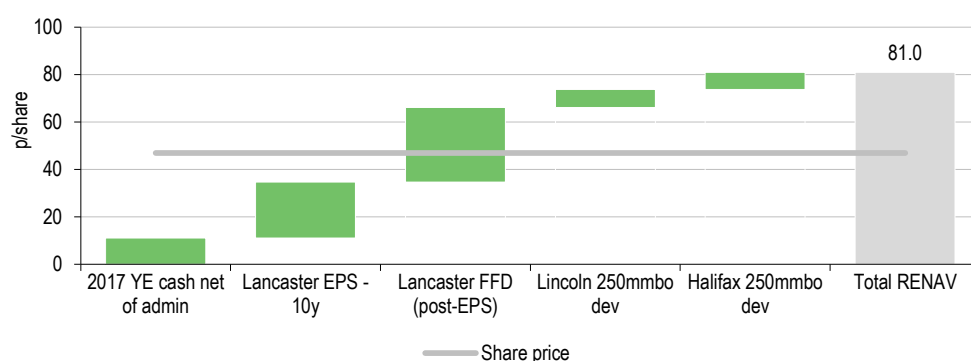
### Regional activity on the rise

In recent months there has been significant activity in and around Hurricane's asset base; much of this activity is led by integrated majors (IOCs) or large-cap E&Ps with significant technical expertise and balance sheet capacity. This provides us with some comfort in Hurricane's ability to attract a partner for the full field development phase of Lancaster.

### Sensitivities: Leveraged to oil price

Our valuation is sensitive to oil price assumptions (base case Edison \$70/bbl real long-term Brent), capex cost estimates for EPS and full field development and delivery schedule. We estimate that the EPS phase of development reaches break even ( $NPV_{12.5}=0$ ) at \$29/bbl Brent (long-term). Our base RENAV of 81.0p/share would fall to 68.6p/share under a long-term \$60/bbl oil price and rise to 93.1p/share under a long-term \$80/bbl oil price scenario. EPS volumes remain unhedged (assuming that modelled farm-out terms are unchanged).

**Exhibit 1: RENAV valuation waterfall**



Source: Edison Investment Research

## **UKCS fractured basements: Progressing to first oil**

---

Hurricane Energy exists to discover, appraise and develop oil from fractured basement reservoirs. Management was early to recognise the potential for significant recoverable oil volumes in UKCS basement discoveries given the presence of prolific source rock, large basement structures and access to the shelf's mature service sector. Since incorporation in 2005, Hurricane has acquired a series of basement prospective UKCS licences, drilled nine exploration and appraisal wells, discovering 2.6bnboe of 2P + 2C reserves and resources (Lancaster, Lincoln, Halifax, Whirlwind, and Strathmore CPR estimates) to date. Management estimates first oil from the Lancaster EPS is expected in 2019, taking Hurricane's basement concept to reality.

### **Fractured basements: A material new play type for the UKCS**

Hurricane's management recognises the potential for oil in overlooked fractured basement reservoirs. Initial studies focused on the West of Shetland, where historic well results had encountered oil in the basement. Over the proceeding years Hurricane has managed to open up a material new play type West of Shetland, with over 523mmbbls discovered at Lancaster (RPS 2P reserves plus 2C resource) excluding the wider Greater Lancaster Area (GLA) and Greater Warwick Area (GWA) resource. The largest of these discoveries, Lancaster, is under development.

### **EPS delivery well advanced; upside potential exists**

The EPS phase of Lancaster field development is well underway with activity focused on readying the Aoka Mizu FPSO for sea trials, re-entry and completion of two EPS producers, installation of mooring, installation of subsea umbilicals risers and flowlines (SURF) and transport of the buoy to Lerwick in the Shetland Isles. The Aoka Mizu FPSO can handle up to 35kbod of fluids with a maximum oil rate of 30kbod and water rate of 20kbwd. To minimise drawdown, Hurricane expects to restrict production to 10kbod per well, which would imply a stabilised gross rate from the two-well development of 17kbod after incorporating management guidance of 85% uptime. Once the key EPS phase meets its initial objectives of enhancing reservoir understanding and reducing productivity uncertainty, we see potential for Hurricane to increase well draw down or add an additional producer to maximise usage of available FPSO capacity – subject to gas handling constraints.

### **Full field development and GLA analogues**

Hurricane is embarking its first development: the EPS development phase of the Lancaster field. This development, consisting of a two-well tieback to the Aoka Mizu FPSO, will enable Hurricane to demonstrate the long-term performance of basement production providing additional data on reservoir connectivity, pressure regime and fluid flow. The EPS phase will provide Hurricane with information required to optimise Lancaster full field development concepts. Beyond Lancaster, the company continues to pursue the appraisal of resource along the Rona Ridge, including the Halifax and Lincoln oil discoveries, with the potential to use in-house basement expertise to explore for further oil on the UKCS.

### **Management: Lean, experienced team**

Hurricane is managed by a small team of experienced professionals, led by Dr Robert Trice, the company's founder and technical lead. With just over 21 employees, the company uses a selection of top-tier contractors to manage the engineering and development components of field development. Biographies for senior management are provided later in this note.

## Lancaster EPS expectations and delivery

The Lancaster EPS development phase has three main objectives:

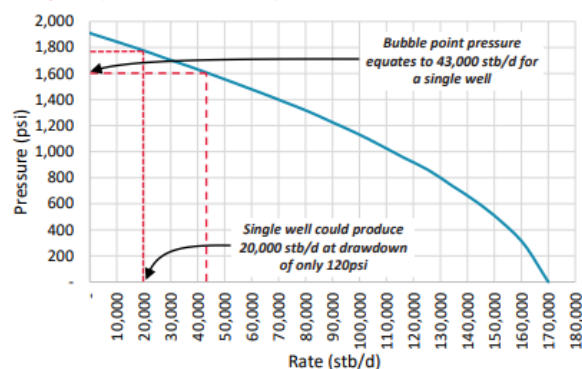
- Establishing long-term production data to enhance reservoir understanding. EPS data analysis is expected to be extensive and will include bottom hole pressure (BHP) analysis, interference testing and pressure build-up analysis.
- Start development of field-wide resources in a phased manner while managing uncertainties.
- Deliver an acceptable return on investment.

We expect the market focus to shift away from project execution and delivery milestones to commissioning and meeting the above objectives in H119. Hurricane expects to introduce hydrocarbons into the Aoka Mizu FPSO from a single producer at the outset at a gross rate of 10kbod, ramping up to the inclusion of the second producer and 20kbod once the first well has stabilised. Hurricane's published third-party inflow performance relationship (IPR) analysis suggests this is comfortably achievable with minimal drawdown. Since the reservoir pressure (~1,904psia) is close to the bubble point pressure (~1,600psia), producing from the reservoir under low drawdowns will also be key to maintaining the flowing BHP above bubble point pressure for as long as possible.

Assuming successful delivery of IPRs in line with management expectations, as shown in Exhibit 2, there is likely to be attention on Hurricane's ability to implement its flow assurance strategy. Given the waxy nature of the crude (38°C wax appearance temperature), this involves running a pig through both flowlines (pigging loop) every six weeks involving a shut-down for a short period – this is reflected in Hurricane's guidance of 85% vessel uptime.

**Exhibit 2: IPR plot for an EPS producer**

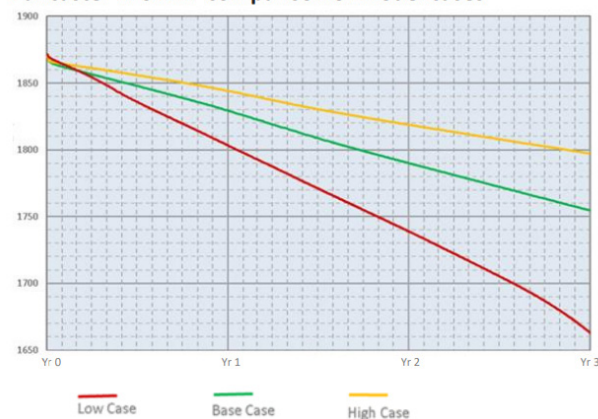
**IPR plot (205/21a-6 well)**



Source: Hurricane Energy

**Exhibit 3: Lancaster EPS BHP plots**

**Lancaster EPS BHP comparison of model cases**



Source: Hurricane Energy

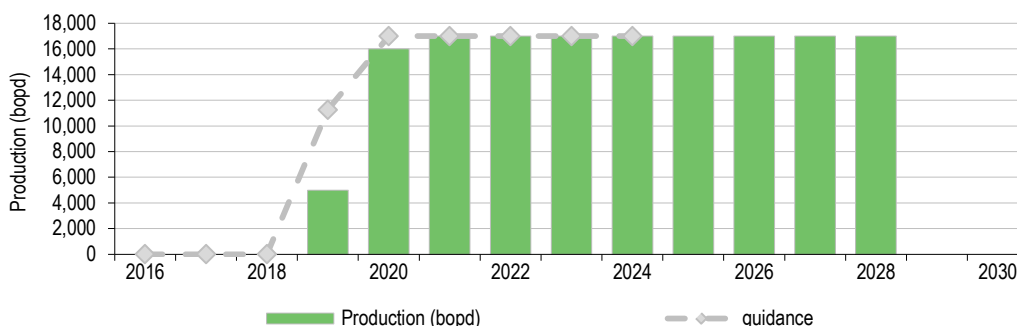
## EPS production expectations

We continue to use a relatively conservative view on first oil delivery (first oil on 30 June 2019, 50% uptime in H219 and 80% in 2020, rising to company guidance of 85% in 2021). Exhibit 4 compares our base case production relative to management guidance assuming a 30 March 2019 start-up. We forecast 2019 revenues of \$115m, which is below consensus forecasts of \$179m (Bloomberg); we believe consensus is likely to be using an earlier start-up date and higher initial uptime than we forecast.

In our post site-visit [note](#), we flagged flow assurance as a key consideration when assessing production uptime – we expect to have further certainty on the effectiveness of wax management and mitigation practices during the EPS commissioning phase. We expect to revise 2019

production expectations post-commissioning; while there is potential for an upgrade to our 2019 cash flow forecasts, the positive impact on EPS NPV is likely to be small.

**Exhibit 4: Edison EPS production expectations vs guidance (assuming 30 March first oil)**



Source: Edison Investment Research

## Delivering an acceptable return on investment

Assuming EPS production delivery and oil prices remain broadly in line with our forecasts, we expect Lancaster EPS to deliver a c 63% point-forward IRR and project IRR in excess of 25% (including well costs for the two producers). We believe this to be a strong return for a North Sea development project. We see upside to EPS returns if Hurricane can extend the field life beyond our modelled 10 years of production or add a further producer or increase well-draw down to increase production to FPSO gross capacity of 30kbod. We note that increasing well-draw down would come at minimal capex cost and would be a very high return option for Hurricane, but can only be executed once EPS data deliverables have been met and gas flaring has been addressed.

## EPS project execution remains in line with expectations

The offshore installation phase of the Lancaster EPS has begun with the installation of the enhanced horizontal Xmas trees on the two existing wells, 6 and 7z, completed by the Far Superior offshore construction vessel. In addition the Lancaster EPS buoy departed from Drydocks World in Dubai on the Jumbo Kinetic vessel and is scheduled to arrive in Lerwick in the Shetland Isles by the end of June, allowing installation of the turret mooring system for the Aoka Mizu FPSO, which is to take place on schedule by the end of Q318. Re-entry and completion operations on the 6 and 7z wells have started with the Paul B Loyd Jr rig on location.

The remaining summer 2018 weather-critical items include FPSO sail away, arrival and hook up, and SURF installation. Installation of the mooring system and SURF is expected to take place in the Q2-Q3 summer weather window. The FPSO remains on schedule to sail away by the end of Q3. A key test before FPSO sail away will be a sea trial to ensure marine worthiness.

The sail away options will be via the Suez Canal or around South Africa. Routing via Suez is expected to lead to a four-week sail time, but would require the FPSO flare tip to be attached in a European yard due to route height restrictions. The South African alternative would require a longer journey time, but would limit the time required in a European yard, where in both cases the bottom plate of the turret is to be removed. Both options are expected to result in a sail time to Rotterdam of around six weeks.

**Exhibit 5: EPS progress and timeline**

	2016	2017				2018				2019				Current Status
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Complete FEED 1														Complete
LLI Commitment (Trees and Controls)														Complete
FEED 2														Complete
GeoTech and GeoPhys Surveys														Complete
LLI Commitment (FPSO & SURF)														Complete
FPSO Upgrade Yard Contract Award														Complete
FPSO Aoka Mizu arrival in Upgrade Yard														Aoka Mizu arrived in Dubai on 30 September
Boulder Relocation														Complete
Re-enter & Complete Wells 6&7Z (Window)														Operations have commenced with Paul B Loyd Jr rig
Delivery of Mooring System														Piles, chains and wires delivered; buoy en route
Mooring System Installation (Window)														Installation ongoing
SURF Installation (Window)														Delivery and expected installation on schedule
FPSO Ready for Sail Away														Windows 'tightened'
FPSO Arrival in Field (Window)														
Buoy Hook-Up and Commissioning														
First Oil														

Source: Hurricane Energy

## Rona Ridge reserves and resources

Beyond Hurricane's 523mmboe of 2P reserves and 2C contingent resource at Lancaster, the company has CPR audited contingent and prospective resource for Halifax, Lincoln, Whirlwind, Strathmore and Warwick.

**Exhibit 6: Rona Ridge reserves and resources**

Asset	Reserves/resources
	<b>2P reserves (mmboe)</b>
Lancaster (6yr EPS)	37
	<b>2C contingent resource</b>
Lancaster	486
Halifax	1,235
Lincoln	604
Whirlwind	205
Strathmore	32
<b>Total 2P +2C</b>	<b>2,599</b>
	<b>P50 prospective resource</b>
Warwick	935

Source: Hurricane Energy

We include risked value for both Lincoln and Halifax in our RENAV based on two notional 250mmbo FPSO-based field developments.

### Lincoln

Lincoln is an oil discovery that is modelled as a distinct oil accumulation to Lancaster, separated by the Brynhild fault zone. There is potential for Lincoln and Warwick to be a single hydrocarbon accumulation; however, the two structures are considered separate accumulations in RPS's last published CPR. Although log data and hydrocarbon shows indicate reservoir mobility, further appraisal will likely be required to demonstrate the presence of moveable hydrocarbons. The Lincoln well was drilled as a slim hole to establish oil water contact (OWC) and a further appraisal well at Lincoln could be used to establish horizontal well flow rates with the potential to be tied back to the Lancaster EPS. Warwick remains undrilled and is a key target for further exploration/appraisal on Hurricane's Rona Ridge acreage.

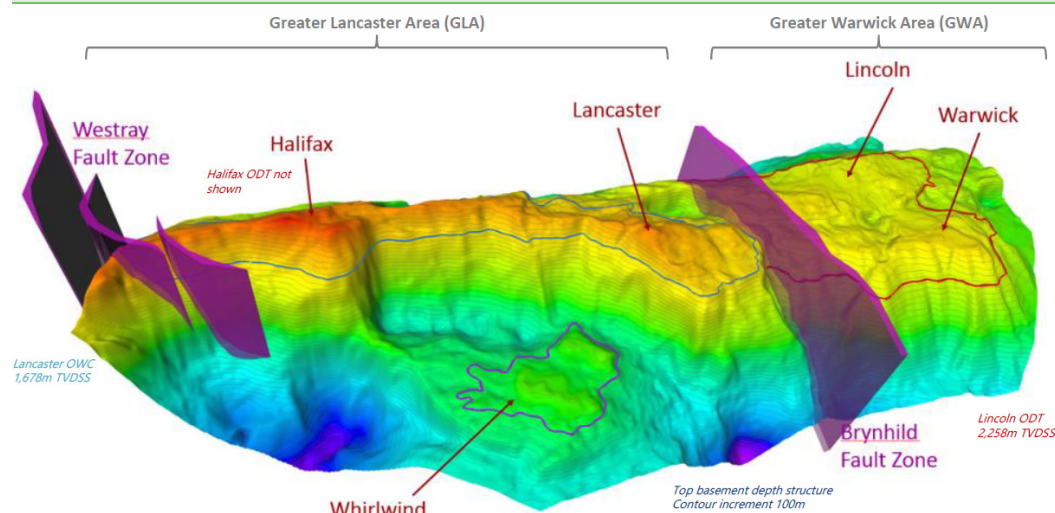
### Halifax

Halifax is an oil discovery with a hydrocarbon column in excess of 1km true vertical thickness. The discovery well was drilled and suspended in 2017 with the objective of future re-entry and flow test. As in Lincoln, no pressure or flow test data were recovered. However, although no fluid samples



were taken, traces of formation oil were found in fluid recovered from circulating the test string. Management believes that log data indicate Halifax has similar reservoir properties to Lancaster and may share a common aquifer. A difference in depth in OWC between Lancaster and Halifax is subject to debate but theories on it include the potential for a tilted OWC or the presence of intra basement sealing faults. An additional appraisal well/flow test will be required to confirm moveable hydrocarbons and the extent of the connectivity between Halifax and Lancaster.

#### Exhibit 7: GLA and GWA



Source: Hurricane Energy

## Regional activity

### Current activity in the West of Shetlands

Ongoing projects in the region include the Chevron-operated Rosebank field development and Siccar Point's Cambo. Rosebank is an oil and gas project targeting 300mmboe with the final investment decision (FID) due in 2019. Cambo is being appraised with the last well of the appraisal programme already spudded and due to be tested with an extended well test to obtain key information for Phase 1 of the project, which will target 90mmboe. In May 2018, Shell acquired a 30% participating interest in the Cambo project. In addition to the sandstone reservoir in Cambo, Siccar Point also sees a fractured basement prospect underlying the existing discovery. BP aims to recover an additional 640mmbl from the second phase of Clair through its Clair Ridge development, with first oil expected in 2018. In April 2018 BP also sanctioned the development of Alligin, a satellite of Schiehallion, which will be tied back to Quad 204 project's Glen Lyon FPSO.

In terms of exploration activity, an exploration well is being planned by Siccar Point for 2019 on the Blackrock prospect, located between the Rosebank and Cambo blocks, which could add substantial resources to the planned area development.

### UK oil and gas 30th licensing round

Following UK's 30th licensing round, several licences were awarded in blocks in the West of Shetland, showing the increase of interest in the region (regardless of it being geologically challenging with multiple burial periods and Palaeocene basalt complicating geological models and seismic imaging). Siccar Point and Shell were awarded one licence covering six blocks immediately to the south of Cambo on a 50:50 basis, with Siccar Point the operator for the exploration and appraisal phases. In addition, Siccar Point and Shell were awarded a further one and two blocks respectively in the surrounding area. Together these licences cover most of the remaining acreage

that was available between the Cambo block, and Shell's acreage to the south of Cambo and west of Hurricane's blocks. Shell acreage was awarded in the 2016 29<sup>th</sup> licensing round and encompasses more than 10 blocks. No well commitments for these blocks resulted as an outcome of the bid rounds.

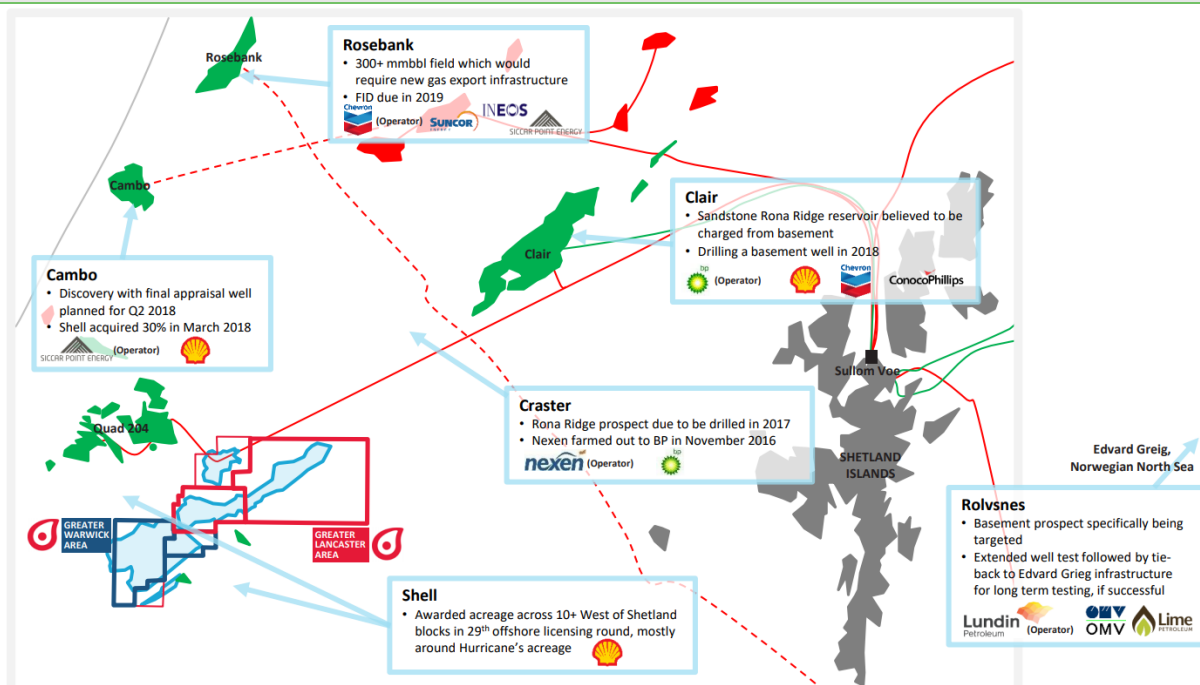
## Gas export optionality

Associated natural gas will also be produced from the Lancaster reservoir. Hurricane is considering several options as a solution for gas export, including monetising the natural gas via tie-in to existing infrastructure, tie-in to planned infrastructure, or constructing its own export pipeline.

Natural gas export infrastructure in the West of Shetland is limited. The pipeline system, which provides export for BP's nearby Schiehallion and Foinaven fields, is the only export pipeline within a reasonable distance of Lancaster. However, an agreement could not be reached for the use of the pipeline for the EPS phase, due to the lack of capacity in the pipeline at the time. We note that BP reports 25% ullage in the West of Shetlands pipeline for at least the next five years.

Rosebank and Cambo will also produce associated natural gas and it is expected that gas export infrastructure will be required; however, both fields are still in a concept-development stage and no pipelines have been sanctioned. This infrastructure will bring optionality for Lancaster full field development (FFD) once it comes online. Hurricane has also considered the possibility of building its own pipeline, although incurring such costs for the EPS could jeopardise the economics of this development phase. Consequently, there were only two options remaining: gas re-injection, or flaring. However, gas re-injection is not viable at Lancaster as no suitable geological structure was identified for such operation. Therefore, local use for power generation and flaring of any surplus volumes were identified as the only viable options for the EPS phase. Nonetheless, a gas export route has to be addressed to achieve Lancaster's FFD.

**Exhibit 8: Regional corporate activity West of Shetland**



Source: Hurricane Energy



## Management

---

**Steven McTiernan (chairman)** has over 45 years of oil and gas industry and investment banking experience. He was a non-executive director of Tullow Oil for 11 years until December 2012, and served as its senior independent director. His oil and gas industry experience includes roles at Iraq Petroleum, Amoco, BP and Mesa, and his banking experience includes senior roles leading energy teams at the Chase Manhattan Bank, NatWest Markets and CIBC. He has served as an independent director at First Quantum Minerals and Songa Offshore SE and is chairman of Kenmare Resources. He holds an MA in natural sciences from the University of Cambridge.

**Dr Robert Trice (CEO):** Hurricane's founder, Robert Trice, has over 25 years' experience in the oil industry. He has combined specialist technical expertise in the characterisation and evaluation of fractured reservoirs. He has a PhD in geology from Birkbeck College, University of London and gained the bulk of his geoscience experience with Enterprise Oil and Shell. He has worked in field development, exploration, well site operations and geological consultancy. Robert has held the position of visiting professor at Trondheim University (Norway) and has published and presented on subjects related to fractured reservoirs and exploration for stratigraphic traps. It is Robert's vision that lies behind Hurricane, providing clear strategic direction as the company develops and he takes the lead in all aspects of the scientific and technical heart of the company.

**Alistair Stobie (CFO)** has significant capital markets and oil and gas industry experience. He was previously director of finance at AIM-listed Zoltav Resources and CFO at Oando Exploration & Production. Prior to this, Alistair founded Volga Gas, where he was CFO and led its IPO to raise US\$135m, and Pan-Petroleum, which acquired an interest in the multi-billion barrel oil in place Mengo-Kundji-Bindi licence in Congo-Brazzaville. During his career Alistair has been actively involved in numerous corporate transactions including fund-raising, M&A and the acquisition and disposal of licence interests.

**Neil Platt (COO)** has more than 20 years' experience in the oil industry and has worked for Amoco, BG and Petrofac. He has completed assignments both in the UK and internationally, working in a variety of engineering, commercial and management roles including production asset manager for BG and vice president for project delivery in Petrofac Production Solutions. Neil joined Hurricane in 2011 and was appointed to the board in 2013. As chief operations officer, he is responsible for daily operations and asset delivery (drilling and projects).

## Valuation

---

After a successful 2016/17 drilling campaign, the focus now shifts towards Hurricane's ability to deliver on the first phase of development of Lancaster. The EPS phase is a commercial project in its own right, and has multiple appraisal aims. We estimate that on a point-forward IRR basis (excluding sunk costs) a 10-year EPS would deliver a 63% IRR. In this note, the key changes we make to our valuation include:

- Increasing 2019 Brent oil price assumption from \$58.9/bbl to \$66/bbl. Our long-term price assumption of \$70/bbl from 2022 remains unchanged.
- Increasing our risk of the EPS phase from a 90% chance of commercial success to 100%; we continue to include contingency in our planned start-up date and capex assumptions.

### Releasing 10% capex contingency would add c 0.5p/share

Despite 75% of costs contracted on a lump-sum basis, we conservatively assume an additional 10% cost contingency in our base case; under this scenario EPS development generates a 63% point-forward IRR. We expect to 'release' this contingency in our valuation closer to the point of first

oil and confirmation of final project costs. Assuming the Lancaster EPS development tracks management estimates of schedule and costs, releasing this contingency in our valuation would add c 0.5p/share.

## Edison RENAV reflects lower risk and higher 2019 oil price

**Exhibit 9: Hurricane valuation breakdown**

Asset	Country	Diluted WI	CCoS	Recoverable reserves		NPV/boe	Net risked	Value per share
				Gross	Net			
		%	%	mmboe	mmboe	\$/boe*	\$m	Risked /share
<b>NOSH: 2401.9**</b>								
Net (Debt) Cash YE17 ex convert (assumed conversion)		100%	100%				360	11.5
SG&A (2 years)		100%	100%				(13)	(0.4)
Lancaster EPS - 10y	UK	100%	100%	57	57	12.9	737	23.6
<b>Core NAV</b>							<b>1,084</b>	<b>34.7</b>
Contingent								
Lancaster FFD (post-EPS)	UK	40%	81%	462	185	6.5	979	31.4
<b>Contingent NAV</b>				<b>462</b>	<b>185</b>		<b>979</b>	<b>31.4</b>
Lincoln 250mmbo dev		40%	48.8%	250	100	5.0	241	7.7
Halifax 250mmbo dev		40%	45.0%	250	100	5.0	223	7.1
<b>Total inc exploration RENAV</b>				<b>962</b>	<b>385</b>		<b>2,528</b>	<b>81.0</b>

Source: Edison Investment Research. Note: \*\$/boe value where we assume farm-out includes cost carry (US\$/£1.3). \*\*Assumes conversion of convertible debt.

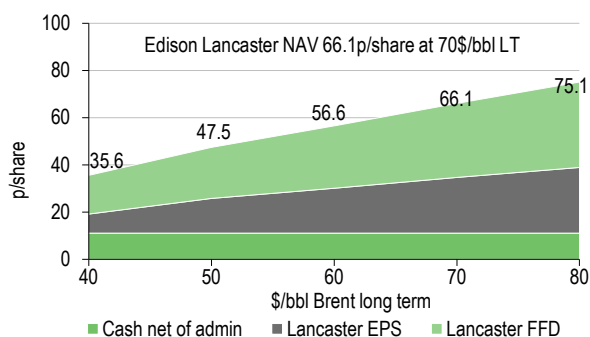
## Edison valuation sensitivity to oil price

Our valuation of Hurricane is highly sensitive to our underlying oil price assumptions. In our base case we use the EIA's short-term forecasts (\$70.7/bbl Brent in 2018 and \$66.0/bbl in 2019) and a long term oil price of \$70/bbl (from 2022). Below we look at oil price sensitivity of our Lancaster valuation.

Based on the Lancaster only valuation, we believe the market is pricing in a long-term oil price of c \$48/bbl Brent. An alternative take on market valuation is that, based on our \$70/bbl long-term Brent assumption, the market appears to be fully pricing a 10-year Lancaster EPS development and less than half of full field development valuation as shown in Exhibit 11 below.

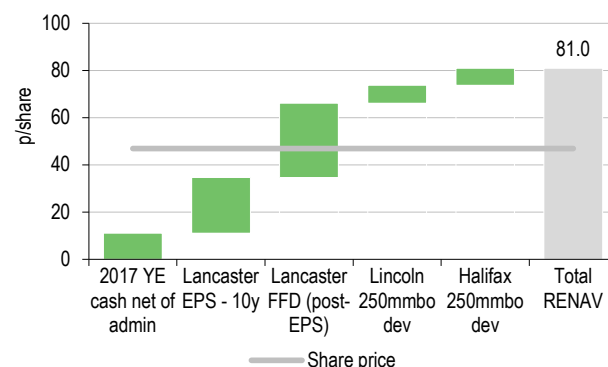
We note that in our oil price sensitivity, our assumptions of farm-out terms for Lancaster full field development remain unchanged. In reality, we would expect farm-out terms to improve as oil prices rise. We continue to assume a development farm-out assuming a farminee 20% IRR.

**Exhibit 10: Lancaster valuation sensitivity to long-term oil price**



Source: Edison Investment Research

**Exhibit 11: RENAV waterfall**



Source: Edison Investment Research

## Risks and sensitivities

---

Hurricane is subject to several sector-specific and company specific risks. We highlight the key risks below.

### Sector risks

Generic sector risks include:

- commodity price volatility;
- geological risk and uncertainty and reservoir performance uncertainty;
- recent studies on project execution in the upstream oil and gas sector suggest that up to 60% of projects incur delays and capex overruns versus FID expectations;
- small-/mid-cap availability of funding: while we include the potential dilutive impact of equity funding and farm-outs in our valuation, if the cost of capital implied by equity financing or farm-outs is higher than our estimates, this would lead to additional equity NAV/share dilution; and
- volatility in service sector availability and pricing.

### Company-specific risks

- Asset concentration: the bulk of Hurricane's value is based on one large asset. If this asset was impaired for any reason, it would have a material impact on Hurricane's share price.
- Geographical concentration: Hurricane is 100% exposed to the UKCS and petroleum fiscal terms, which have been volatile over the last decade. While tax terms and capital allowances are currently favourable versus other mature basins, there is no certainty they will not change if oil prices rise significantly from current levels, potentially reducing equity holder leverage to a rising oil price.
- Funding risks: Hurricane is reliant on being able to attract additional capital to progress the Lancaster FFD and as such valuation will be sensitive to the financing availability and terms.

## Financials

---

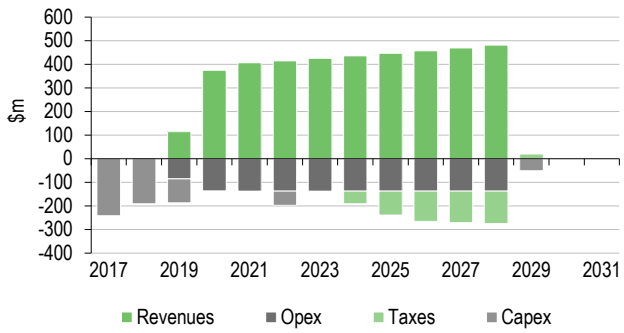
Short-term cash flow and balance sheet items are driven by investment in the Lancaster EPS before first oil, which we model in H119. Hurricane is fully funded for the EPS phase with contingency based on current capex forecasts; however, further funding would be required to accelerate the appraisal of GLA in 2019/20. Management has several options for funding further appraisal activity, selecting those that maximise shareholder value. Lancaster EPS cash flow appears to be management's preferred option based on the current price of new equity and farminee capital. However, this could evolve if the company's wider resource base is deemed to have been de-risked by the EPS phase.

As mentioned earlier in this note, the recent rise in oil price increases the likelihood and value retained net to Hurricane should the company look to farm-out its asset base to attract industry capital to fund further exploration/appraisal.

Hurricane remains relatively un-levered with the company's only debt being a \$230m convertible bond due in 2022 bearing interest of 7.5% and convertible at \$0.52/share. We assume the bond converts in our RENAV, treating this debt instrument as equity.

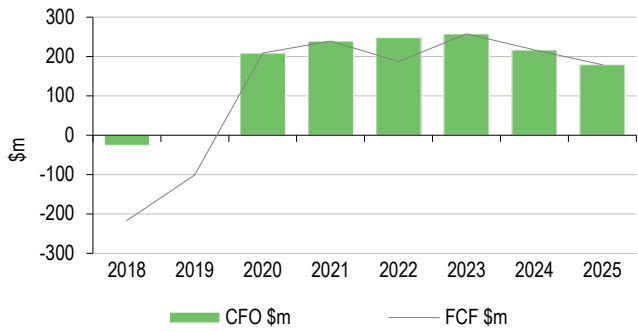


**Exhibit 12: Lancaster EPS phase development cash flows**



Source: Edison Investment Research

**Exhibit 13: Group operating cash flow and FCF**



Source: Edison Investment Research

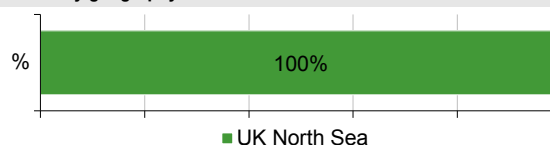
**Exhibit 14: Financial summary**

	US\$m	2016	2017	2018e	2019e	2020e
Dec		IFRS	IFRS	IFRS	IFRS	IFRS
<b>PROFIT &amp; LOSS</b>						
Revenue		0	0	0	114,995	374,385
Operating Expenses		(8,811)	(14,564)	0	(85,215)	(136,437)
EBITDA		(8,811)	(14,564)	(15,000)	14,780	222,948
Operating Profit (before amort. and except.)		(8,865)	(14,586)	(15,000)	(13,642)	132,000
Exploration expenses		0	(10,412)	0	0	0
Exceptionals		0	10,416	0	0	0
Other		0	0	0	0	0
Operating Profit		(8,865)	(14,582)	(15,000)	(13,642)	132,000
Net Interest		2,494	7,578	(10,779)	(14,333)	(14,372)
Profit Before Tax (norm)		(6,371)	(7,008)	(25,779)	(27,975)	117,628
Profit Before Tax (FRS 3)		(6,371)	(7,004)	(25,779)	(27,975)	117,628
Tax		7,272	0	0	0	0
Profit After Tax (norm)		901	(7,008)	(25,779)	(27,975)	117,628
Profit After Tax (FRS 3)		901	(7,004)	(25,779)	(27,975)	117,628
Average Number of Shares Outstanding (m)		889.5	1,583.8	1,959.6	1,959.6	1,959.6
EPS - normalised (p)		0.1	(0.4)	(1.3)	(1.4)	6.0
EPS - normalised and fully diluted (p)		0.1	(0.4)	(1.3)	(1.4)	6.0
EPS - (IFRS) (p)		0.1	(0.4)	(1.3)	(1.4)	6.0
Dividend per share (p)		0.0	0.0	0.0	0.0	0.0
Gross Margin (%)		NA	NA	NA	25.9	63.6
EBITDA Margin (%)		NA	NA	NA	12.9	59.6
Operating Margin (before GW and except.) (%)		NA	NA	NA	-11.9	35.3
<b>BALANCE SHEET</b>						
Fixed Assets		305,593	587,947	779,017	851,686	760,737
Intangible Assets		302,539	126,365	126,365	126,365	126,365
Tangible Assets		18	445,291	636,361	709,030	618,081
Investments		3,036	16,291	16,291	16,291	16,291
Current Assets		106,323	350,100	133,251	32,608	241,184
Stocks		443	1,434	1,434	1,434	1,434
Debtors		7,273	4,737	4,737	4,737	4,737
Cash		98,607	343,929	127,080	26,437	235,013
Other		0	0	0	0	0
Current Liabilities		(26,338)	(28,844)	(28,844)	(28,844)	(28,844)
Creditors		(26,338)	(28,844)	(28,844)	(28,844)	(28,844)
Short term borrowings		0	0	0	0	0
Long Term Liabilities		(5,959)	(226,747)	(226,747)	(226,747)	(226,747)
Long term borrowings		0	(191,102)	(191,102)	(191,102)	(191,102)
Other long term liabilities		(5,959)	(35,645)	(35,645)	(35,645)	(35,645)
Net Assets		379,619	682,456	656,677	628,703	746,330
<b>CASH FLOW</b>						
Operating Cash Flow		(5,577)	(8,088)	(25,779)	447	208,576
Net Interest		0	0	0	0	0
Tax		0	0	0	0	0
Capex		(63,476)	(265,674)	(191,070)	(101,090)	0*
Acquisitions/disposals		0	0	0	0	0
Financing		160,555	322,304	0	0	0
Dividends		0	0	0	0	0
Net Cash Flow		91,502	48,542	(216,849)	(100,643)	208,576
Opening net debt/(cash)		(14,715)	(101,482)	(158,045)	58,804	159,447
HP finance leases initiated		0	0	0	0	0
Other		(4,735)	8,021	0	0	0
Closing net debt/(cash)		(101,482)	(158,045)	58,804	159,447	(49,129)

Source: Company accounts, Edison Investment Research. Note: \*Assume farm-out funding for full field development.

**Contact details**

Hurricane Energy  
The Wharf, Abbey Mill Business Park  
Godalming  
United Kingdom  
+44 1483 862 820  
www.hurricaneenergy.com

**Revenue by geography**

**Management team**
**CEO: Dr Robert Trice**

Dr Robert Trice is Hurricane's founder and has over 25 years' oil industry experience. He has a PhD in geology from Birkbeck College (University of London) and gained the bulk of his geoscience experience with Enterprise Oil and Shell. He has worked in field development, exploration, well site operations and geological consultancy. Robert has published and presented on subjects related to fractured reservoirs and exploration for stratigraphic traps.

**CFO: Alistair Stobie**

Alistair Stobie has significant capital markets and oil and gas industry experience. He was previously director of finance at AIM-listed Zoltav Resources and CFO at Oando Exploration & Production. Prior to this, Alistair founded both Volga Gas, where he was CFO and led its IPO to raise US\$135m, and Pan-Petroleum, which acquired an interest in the multi-billion barrel oil in place Mengo-Kundji-Bindi licence in Congo-Brazzaville. During his career Alistair has been actively involved in numerous corporate transactions including fund-raising, M&A and the acquisition and disposal of licence interests.

**COO: Neil Platt**

Neil is has more than 20 years' experience in the oil industry and has worked for Amoco, BG and Petrofac. He has completed assignments both in the UK and internationally, working in a variety of engineering, commercial and management roles including production asset manager for BG and vice president for project delivery in Petrofac Production Solutions. Neil joined Hurricane in 2011 and was appointed to the board in 2013.

**Principal shareholders**

	(%)
Kerogen Capital	21.9
Crystal Amber	6.4
Pelham Capital	6.2
Hargreaves Lansdown	5.3
Capital Group Companies	3.9
Interactive Incest Trade	3.4
UBS	3.0
JP Morgan Chase	2.7
Boston Partners	2.2

**Companies named in this report**

BP, Chevron Corporation, Royal Dutch Shell, Siccar Point Energy

Edison is an investment research and advisory company, with offices in North America, Europe, the Middle East and AsiaPac. The heart of Edison is our world-renowned equity research platform and deep multi-sector expertise. At Edison Investment Research, our research is widely read by international investors, advisers and stakeholders. Edison Advisors leverages our core research platform to provide differentiated services including investor relations and strategic consulting. Edison is authorised and regulated by the [Financial Conduct Authority](#). Edison Investment Research (NZ) Limited (Edison NZ) is the New Zealand subsidiary of Edison. Edison NZ is registered on the New Zealand Financial Service Providers Register (FSP number 247505) and is registered to provide wholesale and/or generic financial adviser services only. Edison Investment Research Inc (Edison US) is the US subsidiary of Edison and is regulated by the Securities and Exchange Commission. Edison Investment Research Pty Limited (Edison Aus) [46085869] is the Australian subsidiary of Edison. Edison Germany is a branch entity of Edison Investment Research Limited [4794244]. [www.edisongroup.com](http://www.edisongroup.com)

**DISCLAIMER**

Copyright 2018 Edison Investment Research Limited. All rights reserved. This report has been commissioned by Hurricane Energy and prepared and issued by Edison for publication globally. All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report. Opinions contained in this report represent those of the research department of Edison at the time of publication. The securities described in the Investment Research may not be eligible for sale in all jurisdictions or to certain categories of investors. This research is issued in Australia by Edison Investment Research Pty Ltd (Corporate Authorised Representative (1252501) of Myonlineadvisers Pty Ltd (AFSL: 427484)) and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. The Investment Research is distributed in the United States by Edison US to major US institutional investors only. Edison US is registered as an investment adviser with the Securities and Exchange Commission. Edison US relies upon the "publishers' exclusion" from the definition of investment adviser under Section 202(a)(11) of the Investment Advisers Act of 1940 and corresponding state securities laws. As such, Edison does not offer or provide personalised advice. We publish information about companies in which we believe our readers may be interested and this information reflects our sincere opinions. The information that we provide or that is derived from our website is not intended to be, and should not be construed in any manner whatsoever as, personalised advice. Also, our website and the information provided by us should not be construed by any subscriber or prospective subscriber as Edison's solicitation to effect, or attempt to effect, any transaction in a security. The research in this document is intended for New Zealand resident professional financial advisers or brokers (for use in their roles as financial advisers or brokers) and habitual investors who are "wholesale clients" for the purpose of the Financial Advisers Act 2008 (FAA) (as described in sections 5(c) (1)(a), (b) and (c) of the FAA). This is not a solicitation or inducement to buy, sell, subscribe, or underwrite any securities mentioned or in the topic of this document. This document is provided for information purposes only and should not be construed as an offer or solicitation for investment in any securities mentioned or in the topic of this document. A marketing communication under FCA Rules, this document has not been prepared in accordance with the legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research. Edison has a restrictive policy relating to personal dealing. Edison Group does not conduct any investment business and, accordingly, does not itself hold any positions in the securities mentioned in this report. However, the respective directors, officers, employees and contractors of Edison may have a position in any or related securities mentioned in this report. Edison or its affiliates may perform services or solicit business from any of the companies mentioned in this report. The value of securities mentioned in this report can fall as well as rise and are subject to large and sudden swings. In addition it may be difficult or not possible to buy, sell or obtain accurate information about the value of securities mentioned in this report. Past performance is not necessarily a guide to future performance. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results, estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations. For the purpose of the FAA, the content of this report is of a general nature, is intended as a source of general information only and is not intended to constitute a recommendation or opinion in relation to acquiring or disposing (including refraining from acquiring or disposing) of securities. The distribution of this document is not a "personalised service" and, to the extent that it contains any financial advice, is intended only as a "class service" provided by Edison within the meaning of the FAA (ie without taking into account the particular financial situation or goals of any person). As such, it should not be relied upon in making an investment decision. To the maximum extent permitted by law, Edison, its affiliates and contractors, and their respective directors, officers and employees will not be liable for any loss or damage arising as a result of reliance being placed on any of the information contained in this report and do not guarantee the returns on investments in the products discussed in this publication. FTSE International Limited ("FTSE") © FTSE 2018. "FTSE®" is a trade mark of the London Stock Exchange Group companies and is used by FTSE International Limited under license. All rights in the FTSE indices and/or FTSE ratings vest in FTSE and/or its licensors. Neither FTSE nor its licensors accept any liability for any errors or omissions in the FTSE indices and/or FTSE ratings or underlying data. No further distribution of FTSE Data is permitted without FTSE's express written consent.