



AJ Lucas Group Limited
ABN: 12 060 309 104
1 Elizabeth Plaza
North Sydney NSW 2060
PO Box 538
North Sydney NSW 2060
T (02) 9490 4000
F (02) 9490 4200
www.lucas.com.au

26 April 2018

Please find attached a presentation for the purpose of briefing investors on our UK shale gas investments.

Marcin Swierkowski
Company Secretary

UK SHALE GAS DEVELOPMENT UPDATE

26 April 2018



 **LUCAS**

This Presentation has been prepared by AJ Lucas Group Limited (ACN 060 309 104) (**AJL**).

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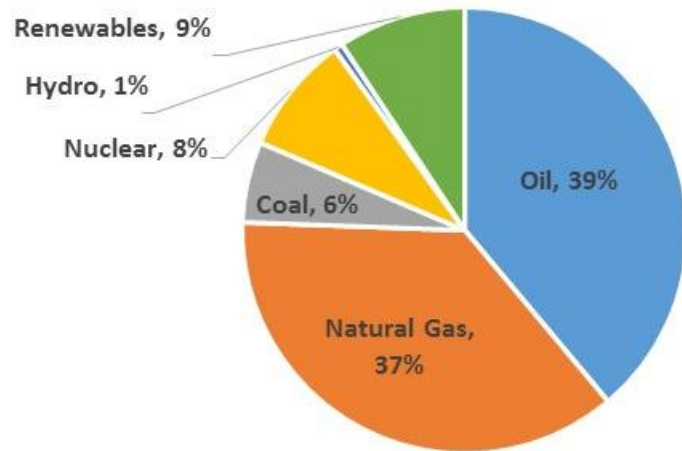
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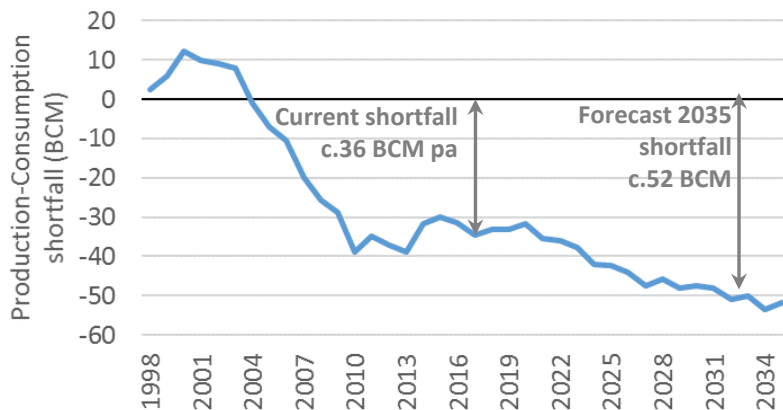
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Compelling macro support for UK shale gas development

UK energy consumption by fuel type¹



Widening UK Production-Consumption shortfall²



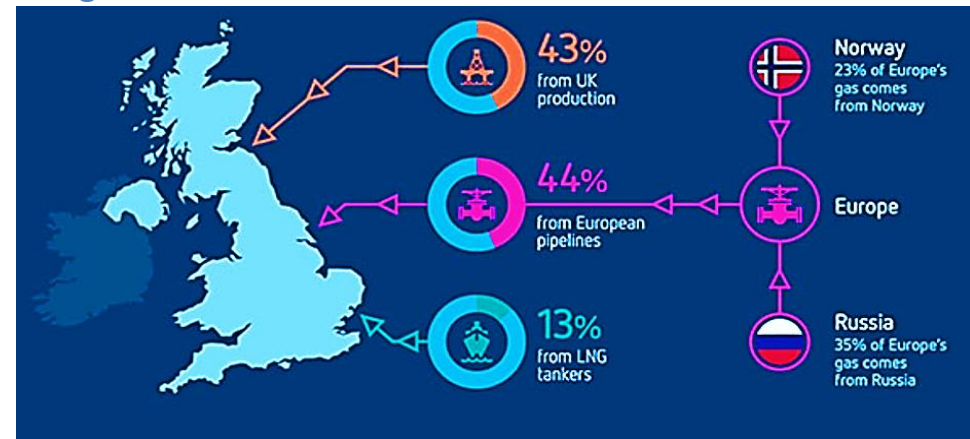
Importance of natural gas to the UK economy

- More than a third of the UK's energy comes from natural gas.
- 80% of UK homes heated by gas – entrenched, high switching costs.

Increasing reliance on natural gas imports

- UK natural gas consumption has exceeded production since 2004¹.
- Production-Consumption shortfall in the UK was 35.7 billion cubic metres in 2016 (up from 28.6 billion cubic metres in 2015).²
- Shortfall estimated to widen to 52 billion cubic metres by 2035².
- UK Government predicts that by 2030 nearly $\frac{3}{4}$ of UK gas will be imported, in the absence of increased domestic production².

UK gas sources³



¹ BP Statistical Review of World Energy, June 2017

² UK O&GA and DECC projections, March 2017

³ British Gas, December 2017

Strong UK Government support for domestic shale gas industry



UK Prime Minister Theresa May

UK Government has underscored its support for the shale gas industry by establishing a government-funded Shale Wealth Fund of up to GBP1 billion to benefit local communities.

Statements from UK Prime Minister Theresa May (October 2017):

"I think that shale gas has the potential to power economic growth in this country and to support thousands of jobs in oil and gas and other sectors. It will provide a new domestic energy source."

"We have more than 50 years' drilling experience in the UK, and one of the best records in the world for economic development while protecting our environment."

"The shale wealth fund is going to provide up to £1 billion of additional resources to local communities, and local councils are going to be able to retain 100% of the business rates they collect from shale gas developments."

"This is an important potential source of energy, and it is right that we should use it and take benefits from it for our economy, for jobs and for people's futures."

UK Secretary of State for Communities and Local Government, Sajid Javid:

"Shale gas has the potential to power economic growth, support 64,000 jobs, and provide a new domestic energy source, making us less reliant on imports."

"We will take the big decisions that matter to the future of our country as we build an economy that works for everyone."

Import reliance & reduced storage exposes UK to price spikes, supply constraints, geopolitical shocks

Extended cold spell across Europe drove natural gas prices to record highs

- National Grid (operator of UK's gas transmission system) issued a formal deficit warning on 1 March 2018 – the first since 2010 – forecasting a gas shortfall up to 50 million cubic metres on the day (14% above predicted supply).
- Within-day natural gas prices briefly spiked more than 400% to the highest levels on record.
- Suppliers and industrial users responded during the day to avert potential interruptions to consumers.

Import reliance and reduced storage capacity puts UK at risk of further price spikes, supply shortfalls, geopolitical shocks

- Historically the UK's gas storage facilities have ensured security of supply and limited price shocks during extreme weather events or supply constraints (eg recent Forties pipeline shutdown).
- UK's total natural gas storage will fall from c.6% to 1.8% of total annual consumption¹ following Centrica's recently announced closure of the UK's largest gas storage facility at Rough – removing 70% of storage capacity from the market.
- Compares with other European countries such as Germany, France and Italy which have available storage of around 20% of annual consumption.
- Import reliance increases UK's exposure to future geopolitical risks.

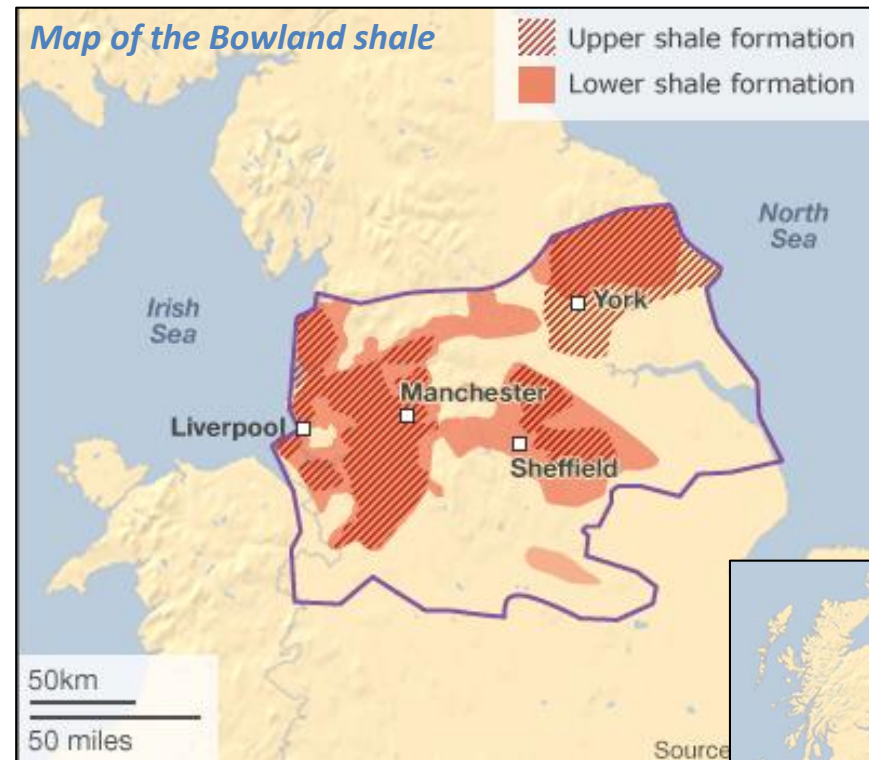
Systemic risks exacerbated by heavy reliance on critical infrastructure

- Systemic risks highlighted by three-week closure of Forties natural gas pipeline in late December 2017 for repairs to a hairline crack (pipeline delivers gas from the UK's North Sea fields).

¹ BP Statistical Review of World Energy, June 2017 (based on 2016 consumption)

Bowland gas extraction potential based on independent British Geological Survey

- British Geological Survey (BGS) has estimated total gas in place in Bowland shale of 1,329 trillion cubic feet (**tcf**) (central estimate; lower and upper range 822 tcf and 2,281 tcf)^{1,2}.
- Recovery of 10% of the BGS central estimate could meet the UK's natural gas demand for approximately 50 years.³



Source: BGS/DECC Bowland Shale gas study, 2013



- BGS/DECC Bowland Shale gas study, 2013. Note the estimates contained in the BGS report refer to the entire Bowland shale and not only the licences operated by Cuadrilla and in which AJL holds a stake.
- The BGS 2013 report notes that “only with further shale gas exploration drilling and testing over an extended period, and optimization of the extraction process, will it be possible to determine whether this identified shale gas prospectivity can be exploited commercially”.
- Based on UK natural gas consumption of 2.7 tcf in calendar 2016 (source: BP Statistical Review of World Energy, June 2017).

Bowland shale potentially attractive for commercialisation

Shale thickness (>1 km) enables multiple horizontal wells at different stratas

Shale located several thousand feet below aquifers

Bowland shale demonstrated to be well suited to hydraulic fracturing

Proximity to local and national pipeline infrastructure = efficient distribution potential

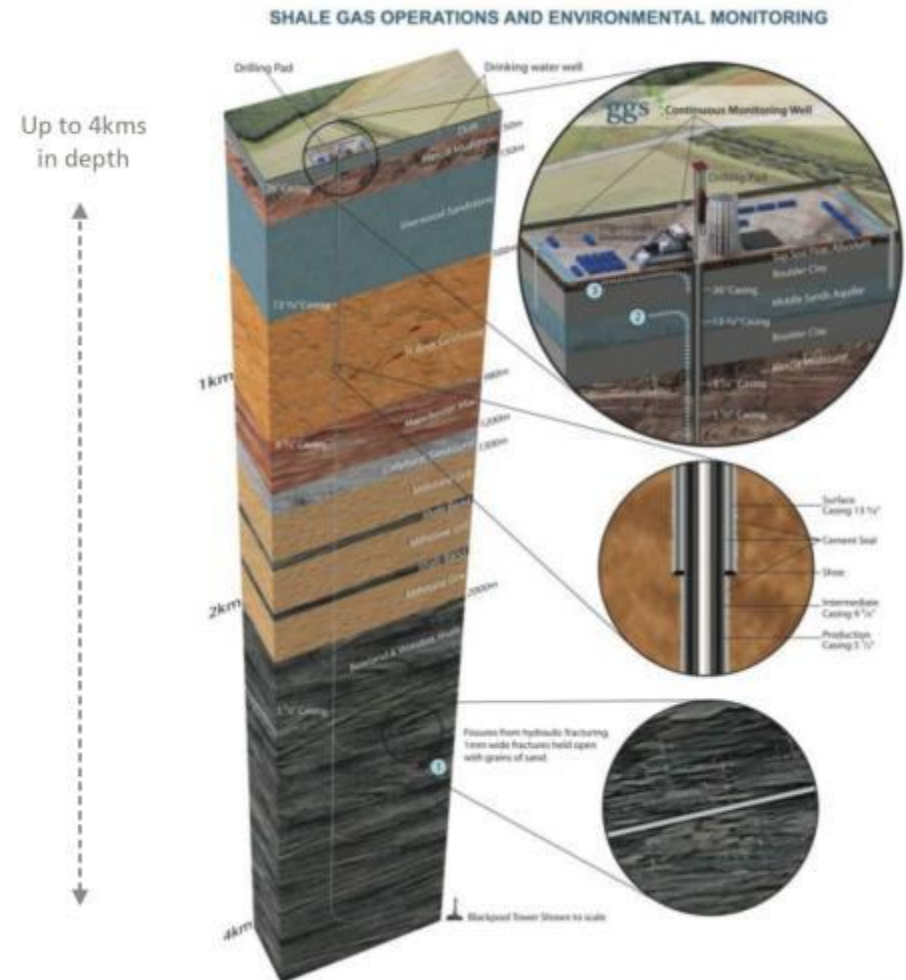
Thickness and spread of shale lends itself to multiple wells per development pad – cost efficiencies, reduced footprint

UK sovereign owns mineral rights as in Australia (cf USA where private landholders own mineral rights)

Planning regime provides for multi-site development approvals for projects of national significance

UK natural gas prices at substantial premium to US

Representative Bowland shale geology

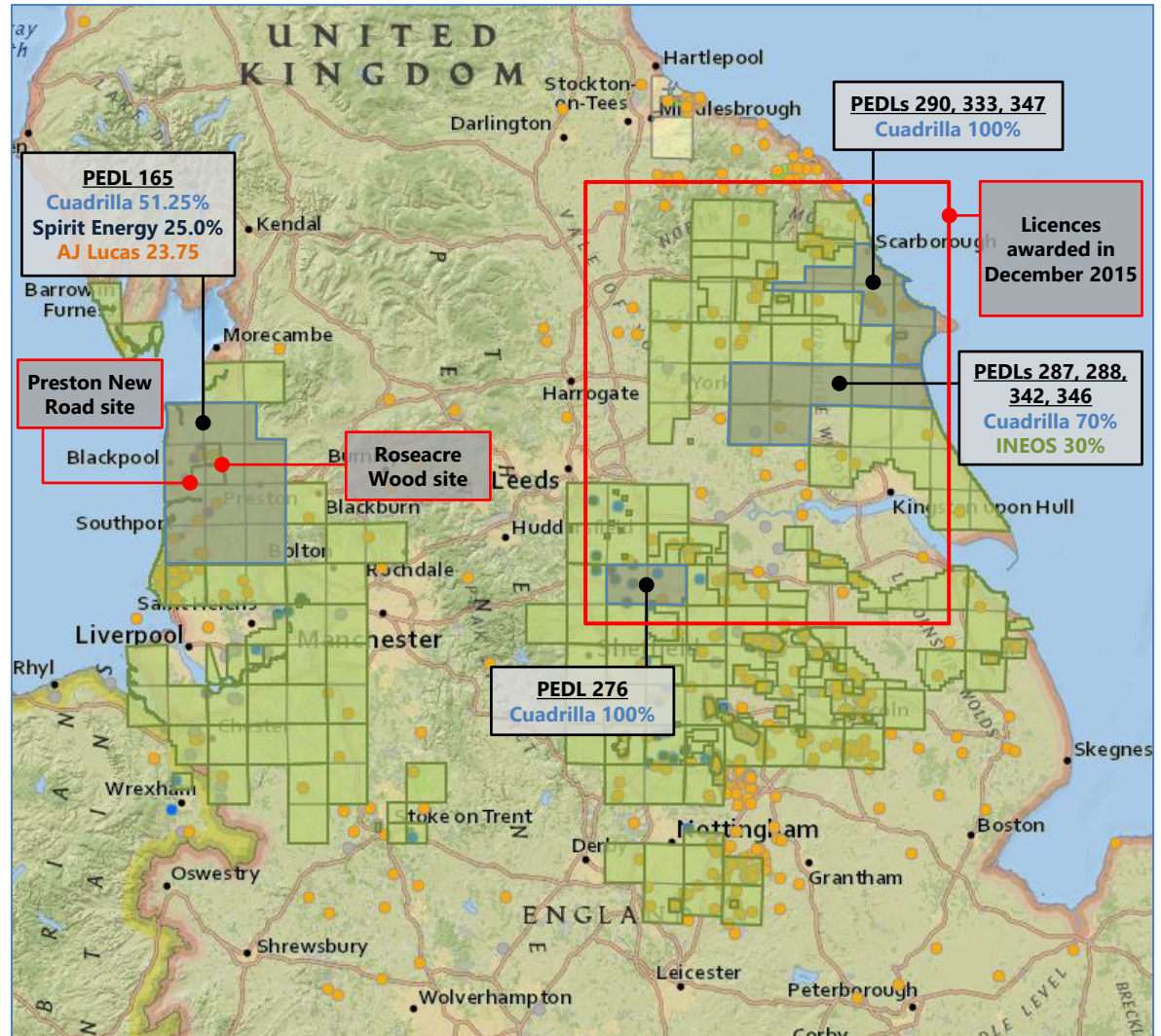


BOWLAND SHALE ACTIVITIES

Preston New Road exploration site, Lancashire

Cuadrilla one of three significant operators (gross licence >2,000km²) in Bowland shale

- Cuadrilla-operated licences in the Bowland shale total 2,391 km² (590,000 acres).
- One of three significant operators by licence area, along with INEOS and iGas (each with gross licence area >2,000 km²).
- Sites at Preston New Road (exploration currently underway) and Roseacre Wood (approval process ongoing) are within the PEDL 165 licence in Lancashire in the North West of England.
- In December 2015 Cuadrilla was issued 8 further licences in the Gainsborough Trough and Cleveland Basin segments of the Bowland shale.

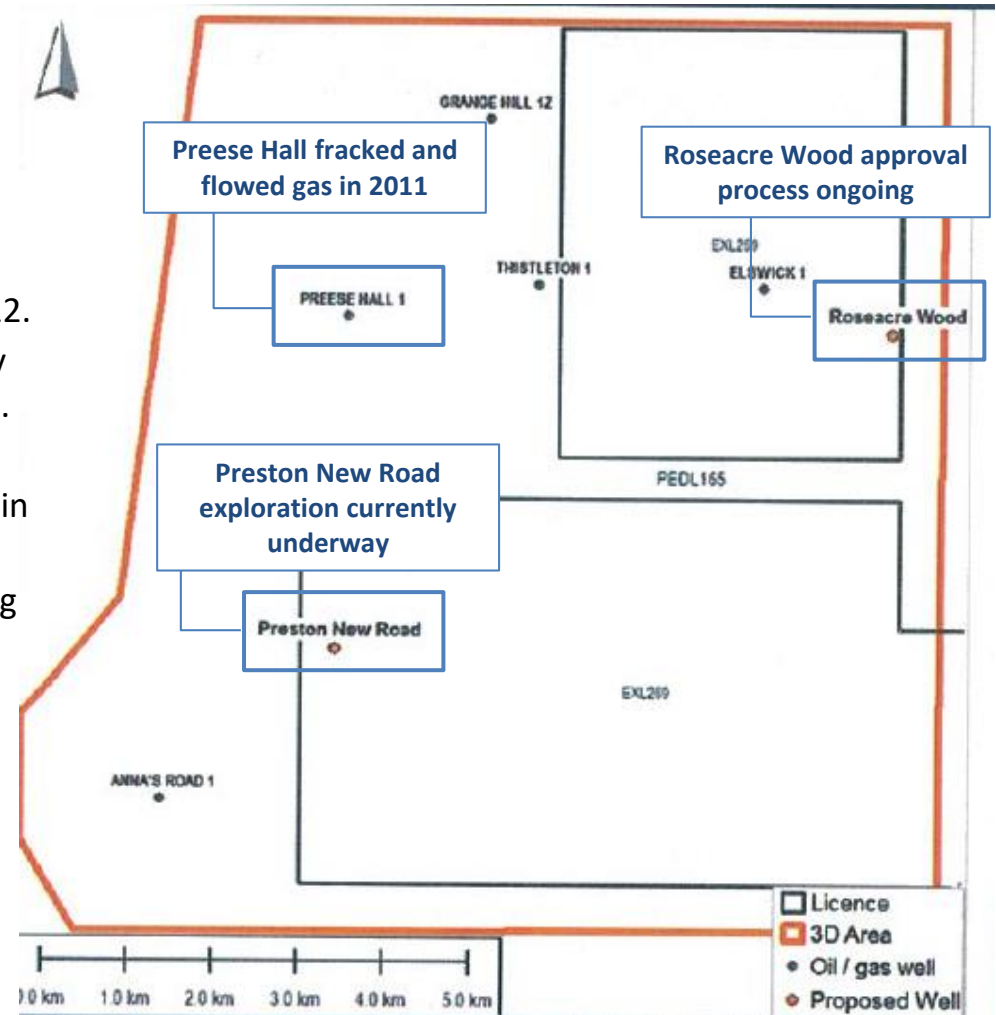


Source: UK Oil and Gas Authority, Cuadrilla management

Cuadrilla's Bowland exploration activity has focused on the prospective Fylde area in Lancashire

- Cuadrilla operates licences in the Lancashire region totalling 1,120 km² (PEDL 165 and EXL 269).
- AJL effective interest 48.0%.
- Exploration activities presently focused on the Fylde Area within PEDL 165 (see map).
 - 3D seismic survey of Fylde (98 km²) acquired in 2012.
 - Approx. 1,300 ft (400 metres) of cores recovered by Cuadrilla from four exploration wells drilled to date.
- Area home to conventional oil wells in past (Formby).
- Testing at PNR indicates enhanced potential for liquids in Upper Bowland shale.
- Shale thickness lends itself to multi-well pads benefiting from common infrastructure.

Shale cores from Beconsall and Grange Hill



Source: Cuadrilla management



Preston New Road: hydraulic fracturing expected in calendar Q3 2018

Preston New Road Phase exploration programme

- Vertical drilling complete to a depth of over 2,700 metres, through Upper and Lower Bowland Shales.
- First horizontal well completed through Lower Bowland with a lateral length of approximately 800 metres, second horizontal well progressing.
- 375 feet (c.112 metres) of cores taken from Upper and Lower Bowland shales and comprehensive logging programme successfully completed.
 - Multiple prospective zones high-graded in Upper & Lower Bowland.
 - Robust correlation to previously drilled offset wells demonstrating laterally continuous resource play.
 - Rock mechanics very well suited to hydraulic fracturing.
 - Potential for liquids rich gas identified in Upper Bowland.
- Hydraulic fracturing of the first two horizontal wells is expected to commence in calendar Q3 2018, followed by initial flow testing of both wells for approximately six months.
- Following successful flow testing, it is anticipated that the wells would be connected to the nearby local gas grid network to enable gas sales.

Recent PNR site photos



Spirit Energy¹ PEDL 165 farm-in

Spirit Energy PEDL 165 farm-in summary (25% stake)

Contribution	GBP (millions)	USD (millions)
Up-front payment (June 2013)	40.0	
Initial carry (fully utilised)	60.0	
Contingent carry ²	46.7	
Total farm-in contributions	146.7	0.0
Contribution per 1% stake	5.9	0.0

Notes

- 1 AJL and Cuadrilla entered into a farm-in agreement with Centrica plc (**Centrica**) in June 2013, resulting in Centrica taking a 25% stake in PEDL 165. In December 2017, Centrica merged its E&P business with Bayerngas Norge AS to create Spirit Energy. Centrica plc maintains a 69% stake in Spirit Energy.
- 2 Milestone for commencement of contingent carry = flow testing of gas from two wells for six months.



Preston New Road planning permissions reaffirmed; Roseacre Wood consent process progressing

Preston New Road planning permissions reaffirmed

UK Government planning permission in October 2016 to drill, frack and test gas flow of up to four wells.

Legal challenges to validity of UK Government's planning permission have been dismissed by High Court and Court of Appeals – most recently in January 2018.

Roseacre Wood consent process progressing

October 2016 planning decision stated UK Communities Minister is minded to grant planning consent at Roseacre Wood, provided highway safety issues can be addressed.

Cuadrilla, following local community consultation, submitted three alternative routes for consultation ahead of a public inquiry that commenced on 10 April 2018.

Following the inquiry, UK Planning Inspectorate will submit a report to the UK Communities Minister for a final decision, expected late Q3 or Q4 2018.

Future planning considerations

Planning approvals to date administered by local council, governed by the UK Town and Country Planning Act.

Future commercialisation may be eligible for a Development Consent Order under the 2008 Planning Act, if deemed an infrastructure projects of national significance.

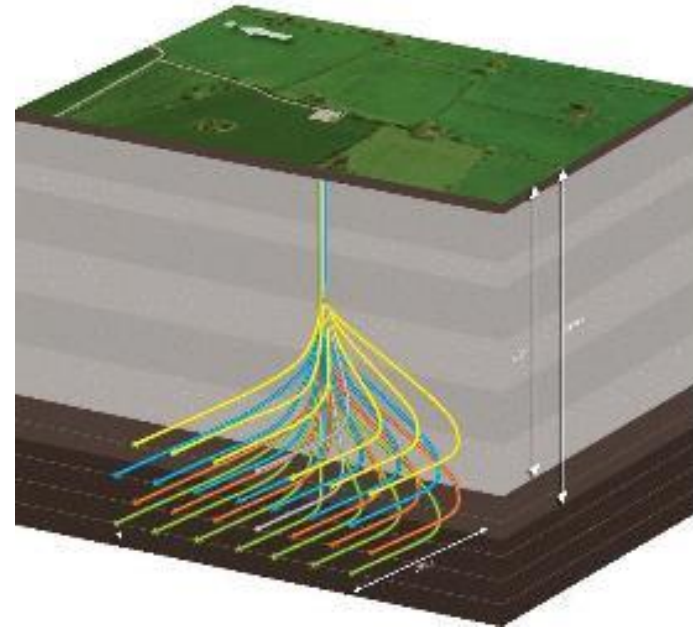
DCO may be appropriate for future expansion given the need for a coordinated, multi-site approvals process.

Conceptual development options to minimise surface impact and optimise efficiency

Multi-well production pad (conceptual)



Multiple productive zones within shale (conceptual)

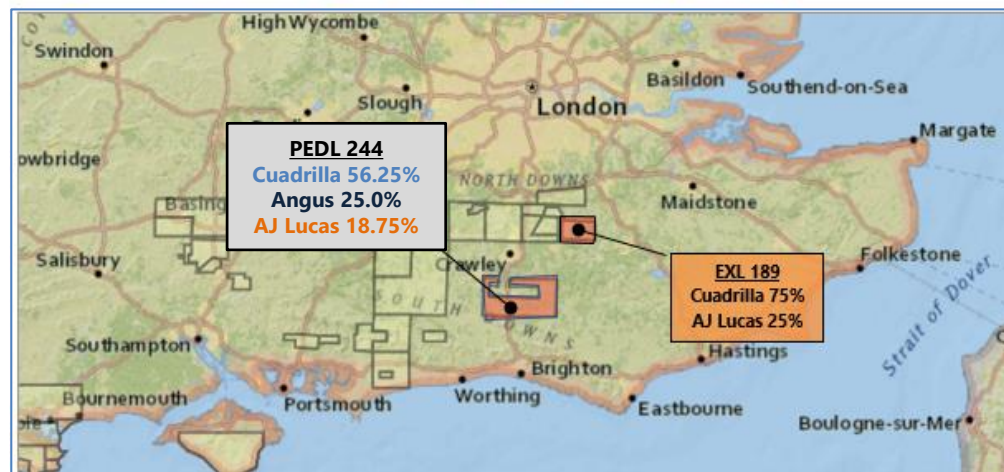


BALCOMBE LICENCE ACTIVITIES

Preston New Road exploration site, Lancashire

Balcombe licence (PEDL 244) farm-out to accelerate exploration timeline

- Cuadrilla and AJL recently announced an agreement for LSE-listed Angus Energy Plc (**Angus**) to acquire a 25% stake in PEDL 244 in the Weald Basin.
- Angus will become operator of PEDL 244 subject to UK Oil & Gas Authority (**O&GA**) approval.
- Consideration:
 - GBP 4 million in two instalments: the first has been paid and the second is due in late April 2018.
 - Angus to fund flow testing of existing Balcombe-2Z horizontal well (planning approval in place).
 - Angus to fund preparation and submission of development plan for approval to UK O&GA.
- PEDL 244 is located in the same basin as a recent successful oil discovery by LSE-listed UK Oil and Gas Investments Plc (**UKOG**) at Horse Hill.



Source: UK Oil and Gas Authority, Cuadrilla management

Revised interests in Balcombe licence

Shareholder	Before farm-in	Post farm-in
Cuadrilla	75.0%	56.25%
AJL	25.0%	18.75%
Angus		25.0%
Total	100.0%	100.0%
AJL effective interest	60.6%	45.4%

OTHER UK SHALE GAS INDUSTRY ACTIVITY

Preston New Road exploration site, Lancashire

Other leading UK shale gas operator activity

INEOS

- Multinational chemicals company, Britain's largest privately owned firm.
- Has steadily built its shale portfolio to become the UK's largest shale gas licence holder.
- Acquired the interests of French energy company Engie (minority interests in 15 licences) in March 2017 (price undisclosed).
 - Three of the licences are operated by INEOS, eight by iGas Energy and four by Cuadrilla.
- In 2014, INEOS announced it was planning to invest US\$1 billion in UK shale gas exploration and appraisal.
- Has submitted a number of planning applications to drill and core across its licences.

iGas Energy

- UK publicly listed company.
- April 2017: announced completion of significant equity raising and reduction and restructuring of outstanding debt.
- March 2017: approval from Nottinghamshire County Council (NCC) for an exploration well at Tinker Lane.
- November 2016: approval from NCC for two exploration wells at Springs Road site in Misson – received final planning consents from NCC in 2017.
- March 2015: secured a farm-out agreement with INEOS.
- AJL's largest investor, Kerogen, demonstrated its confidence in UK shale by investing US\$35 million in iGas in March 2017.

Third Energy

- Third Energy is looking to fracture and flow test its existing Kirby Misperton-8 well (KM8) in Yorkshire.
- The KM8 well was drilled by Third Energy in 2013.
- In December 2016 a High Court judge dismissed a judicial review brought against North Yorkshire County Council's decision to grant planning permission for Third Energy to frack the KM8 well.
- Presently seeking government approval to hydraulically fracture the KM8 well.

APPENDIX
CUADRILLA-OPERATED SHALE LICENCE ACREAGE



Cuadrilla-operated shale licence acreage

	Licence area				Cuadrilla net	AJL effective licence area	
PEDL	km ²	Acres	Cuadrilla stake	Other licence holder/s	licence area (km ²)	km ² *	Acres
Bowland - Lancashire region							
165	1,065		51.3%	Spirit Energy (25%), AJL (23.75%)	546	509	
EXL 269	55		50.2%	Spirit Energy (22.8%), AJL (22.1%), Warwick (5%)	27	25	
Bowland - Yorkshire region							
276	192		100%		192	90	
287	200		70%	INEOS (30%)	140	66	
288	200		70%	INEOS (30%)	140	66	
290	88		100%		88	41	
333	152		100%		152	71	
342	100		70%	INEOS (30%)	70	33	
346	185		70%	INEOS (30%)	129	61	
347	156		100%		156	73	
Total Bowland	2,391	590,828			1,639	1,035	255,858
South of England							
244	154		56.25%	Angus Energy (25%), AJL (18.75%)	87	79	
EXL 189	45		96%	Altwood Petroleum (4%)	43	20	
Total non-Bowland	199	49,174			130	100	24,591
Total licences	2,590	640,002			1,769	1,135	280,449

Source: Oil & Gas Authority UK

* Note: Total AJL effective licence area of 1,135 km² includes 303 km² attributable to AJL direct stakes in PEDL 165, EXL 269 and PEDL 244; remaining 832 km² attributable to AJL's 47.4% holding in Cuadrilla.