AJ LUCAS GROUP

Dealing Desk Note

All-in on UK Shale

- **AJ Lucas (AJL) has three business units in two geographic locations – Australia and the United Kingdom. The UK Gas business unit is focussed on the exploration and potential commercialisation of shale gas in the UK. The Australian-focussed Drilling Services business focusses on coal mine degassing and coal seam gas drilling, while the Engineering & Construction unit is a pipeline and civil contractor to customers in the gas, water, wastewater, coal and electricity distribution sectors located in Australia.**

- **UK shale gas: a game changer?** AJL has an effective 48% interest in licences covering 2,391 km^2 in the prospective Bowland shale in the North West of the United Kingdom, through its shareholding in private exploration company, Cuadrilla Resources and direct licence holdings. Cuadrilla has previously stated that the licences it operates contain an estimated net 330 Tcf of gas in place. With approximately half of the UK's natural gas supplied from imports, replication of the US shale gas revolution in the UK would be a transformational shift.

- **First UK shale well in six years spudded in August.** The last well to be drilled and fracture stimulated in the UK's Bowland shale was Cuadrilla's Preese Hall-1 well in 2011. After years of public consultations, planning submissions, public protests, appeals and approvals, Cuadrilla is now undertaking a two well drill and fracture stimulation programme to gain further understanding of the Bowland shale's potential. Drilling commenced in August 2017, with flow testing expected in the March 2018 quarter. Investors should be mindful that any new shale play typically requires multiple wells to 'crack the code' - assess the geology, identify the sweet spot in the play, refine the well completion technique and optimise the number of fracks required – to determine whether the play is commercial, or not.

- **The bull case for UK shale gas.** The assessment of shale gas in the UK is in its infancy, with very little exploration and appraisal activity undertaken to date. Reasons to be bullish about UK shale include: (1) with annual UK consumption of 3 Tcf, 330 Tcf of gas in place in Cuadrilla's acreage is a large number (but ultimate recovery is not known); (2) the shale is very thick (up to 900m); and (3) some geological parameters are analogous to US shale plays.

- **The bear case for UK shale gas.** (1) there are several geological differences to US shale, and a number of unknown geological parameters that may ultimately have an impact on its commercial viability as a producer of gas; (2) the regulatory structure is quite different to the US model; (3) access to land for drilling wells is less conducive to development than in the US, and required permitting, approvals, consultations etc, can take long periods of time; and (4) only one well in the Bowland shale has been drilled and fracture stimulated to date, and it flowed at sub commercial rates, before highlighting a key difference between the Bowland and US shale: the presence of extensive faulting.

- **Balance sheet & financials.** Following the recent $53.2m capital raise, the Company has approximately $30m in cash and $112.9m in debt. AJL is now funded for the two-well programme at its Preston New Road site in the Bowland shale.

- **Upcoming catalysts.** The Preston New Road two-well programme is currently underway, with fracture stimulation to be undertaken in November/December followed by initial flow testing in the March 2018 quarter and potential extended flow testing from June 2018.

4 September 2017

Price	A$	0.24
ASX		**AJL.ASX**
Shares o/s	m	585.2
Free Float	%	33.5
Market Cap.	A$m	140
Net Cash	A$m	-85.1
Net Debt/Equity	%	87
3mth Av. D. T'over	A$m	0.02
52wk High/Low	A$	0.51/0.15

DIRECTORS

Name	Role
Phil Arnall	Chairman
John O'Neill	Non-Executive Director
Julian Ball	Non-Executive Director
Ian Meares	Non-Executive Director
Andrew Purcell	Non-Executive Director

TOP SHAREHOLDERS

Name	Shares (m)	%
Kerogen Capital	320.8	54.8
Paul Fudge	46.1	7.9

Analyst:	Cam Hardie
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Email:	chardie@psl.com.au

Disclosure: Patersons Securities acted as Lead Manager to a share placement that raised A$21.1m at A$0.21/share in March 2016. It also acted as Lead Manager to a share placement and entitlements offer that raised A$53.2m at $0.275/share in May 2017. Patersons Securities received fees for these services.

12 Month Share Price Performance

Performance %	1mth	3mth	12mth
Absolute	-11.11	0.25	39.21
Rel. S&P/ASX 300	-12.88	-11.29	21.27

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INVESTMENT SNAPSHOT

AJ Lucas (AJL) has interests in 2,391 km^2 of licences in Northern England's Bowland shale which the British Geological Society (BGS) estimates contains 1,329 Tcf of gas in place (approximately 330 Tcf net to Cuadrilla's licences). If 10% of the BGS estimate is proven to be recoverable, the Bowland shale could meet the UK's current natural gas demand for over 50 years. A lot of work is still required to better understand the economics and potential size of the opportunity, and to date only one well in the Bowland has been fracture stimulated and flow tested. Significant upside exists if AJL can crack the code for unlocking the Bowland shale gas potential.

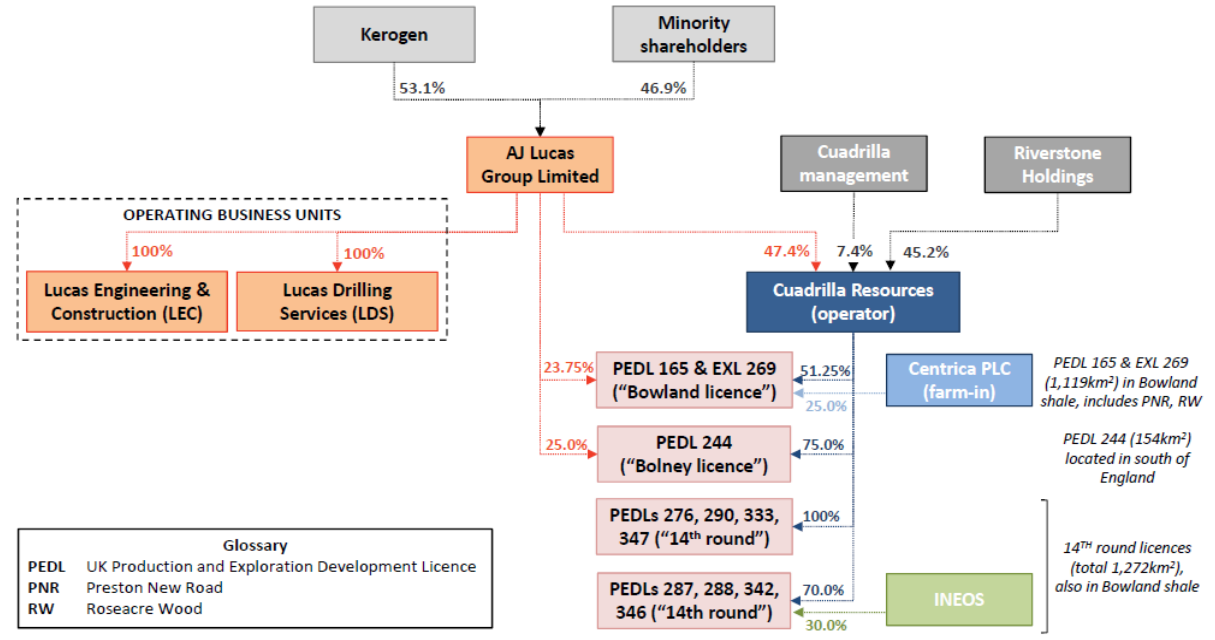
Cuadrilla is on the verge of embarking on a two well drill and fracture stimulation programme to gain further understanding of the Bowland's potential. The programme is scheduled to commence in July 2017, with a flow test then expected in the March 2018 quarter.

There is currently insufficient information to evaluate the technical, let alone economical, potential of the shale. We believe that there are four key factors that need to be addressed for the successful development of the Bowland shale. These include (1) ability for gas to flow at commercial rates; (2) access to land; (3) service industry costs; and (4) community and government support.

COMPANY DESCRIPTION

In mid-2000, AJ Lucas (AJL) was the largest provider of drilling services to the Australian coal industry. However today, the Company is now more diversified, having three business units in two geographic locations - Australia and the United Kingdom. The UK Gas business unit is focussed on the exploration for, and potential commercialisation of, shale gas in the UK. In Australia, AJL has a Drilling Services business unit and an Engineering and Construction business unit. The Drilling Services business is a drilling provider for the coal sector in Australia for mine degassing, exploration and coal seam gas extraction, while the Engineering & Construction unit is a pipeline contractor to customers in the gas, water, wastewater and coal sectors, and also does works for electricity distributors. The key focus for the Company is on the UK business unit, where AJL holds a 47.4% stake in Cuadrilla Resources, a private exploration company focussed on unconventional gas in the UK, plus a 23.75% interest in PEDL 165 and EXL 269 (the Bowland licence), and a 25% interest in PEDL 244 (the Bolney licence). PEDL 165 is the primary focus area for both AJL and Cuadrilla, where a two well drilling programme is expected to commence in July 2017.

Figure 1: AJ Lucas & Cuadrilla Corporate Structure



Source: AJ Lucas

UK SHALE OVERVIEW

The UK consumes approximately 3 Tcf of natural gas per year and it accounts for over 40% of the UK's fuel mix. At present around half of this gas is imported, and imports are expected to climb as current domestic production from mature fields declines in the coming years. The UK Conservative Party sees the development

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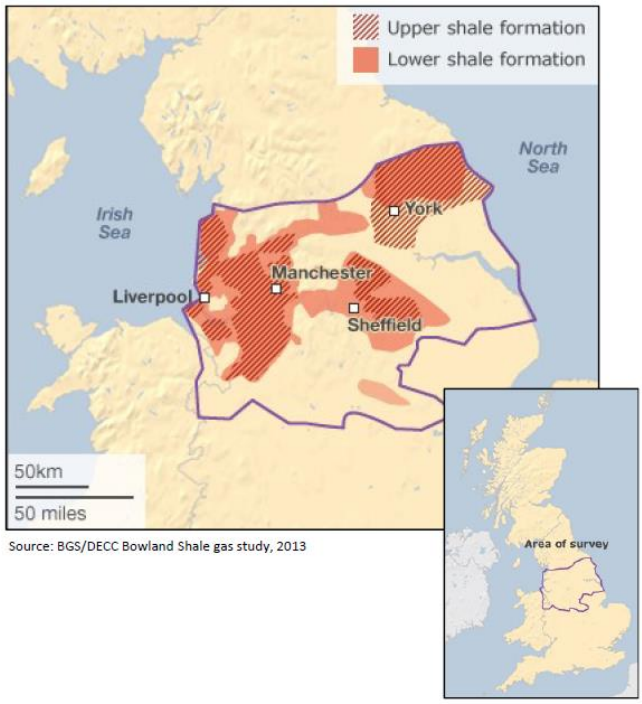
of a UK shale gas industry as an important step to restore the UK's energy security as a result of the decreasing supply from the North Sea gas fields and increased reliance on imports.

The assessment of shale gas in the UK is in its infancy, with very little exploration and appraisal activity undertaken to date. The former UK oil and gas regulatory body, the Department of Energy & Climate Change (DECC), commissioned the British Geological Society (BGS) to complete a study of the geology and resource estimation of the Bowland shale. The July 2013 DECC/BGS report estimated that there was a significant 1,329 Tcf of gas in place in the Upper and Lower units of the Bowland-Hodder shale. Of this, the majority (1,065 Tcf) is attributed to the Lower unit, while 264 Tcf is estimated to be in the Upper unit. Cuadrilla has previously stated that its licences contain approximately 25% (approximately 330 Tcf) of the total gas in place.

Figure 2: Location of Bowland Shale in DECC/BGS Report



Source: AJ Lucas

Gas in place figures refer to an estimate of the entire volume of gas contained in the rock formation. Significant further exploration and appraisal is required to determine how much of the gas in place can be technically recovered and/or economically produced. To this end, the 2013 BGS report does not provide a recoverable resource volume, as not enough is yet known to estimate a recovery factor, or estimate how much gas may ultimately be produced from the Bowland shale. A 2010 DECC commissioned BGS report, estimated that the Upper Bowland shale could potentially yield 4.7 Tcf of shale gas, based on a relatively simple scaled basin analogy to the Barnett shale in Texas.

The US Energy Information Administration (EIA) published a report on UK shale in 2015 highlighting that the Northern UK petroleum system (i.e. the Bowland shale), is much more complex than in the US, stating "faults are numerous, geologic data control is weak, and shale wells are costlier to drill". The major faulting suggests that, unlike the US, the depth to the shale varies significantly across the play. The EIA report estimated the Northern UK contains 25.1 Tcf of risked technically recoverable shale gas.

The EIA has also noted that the stress differential within the Bowland shale of around 4,000 psi is an order of magnitude higher than in North American shale plays, which typically have stress differentials of only several hundred psi. At this stage, it is unclear whether the high stress differential is local or more widespread.

Cuadrilla Resources

Cuadrilla Resources (Cuadrilla) is a UK-based oil and gas company focussed on exploring and developing shale gas in the UK. Cuadrilla has onshore exploration licences in the UK, with its main focus being on the licences in the north (see Figure 3). Cuadrilla operates all UK licences in which AJL has interests. To date, Cuadrilla has

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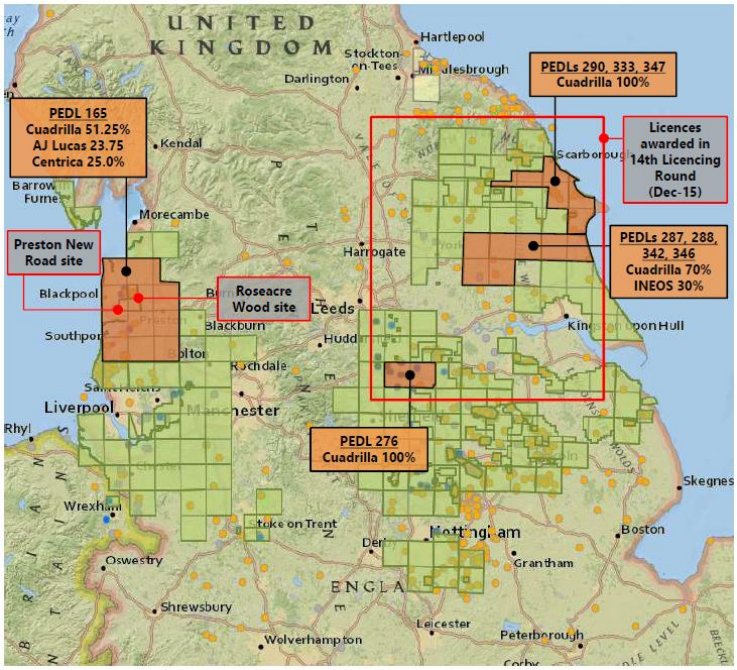
spent more than £100m ($170m) in UK shale gas exploration, and its upcoming drilling programme is estimated to cost around $35m.

Owners of Cuadrilla Resources are: AJ Lucas (47.4%), Cuadrilla management (7.4%) and Riverstone Holdings (45.2%).

Figure 3: Cuadrilla's Bowland Licences



Source: AJ Lucas

Only one shale gas well (Preese Hall-1) in the Bowland has been hydraulically stimulated. In 2010/11, Cuadrilla drilled the Preece Hall-1 well, however testing was suspended before completion of the stimulation program after fracture stimulation of the well caused two seismic events, measuring 2.3 and 1.5 on the Richter scale. It was concluded that excess fluid pressure placed on the fault during hydraulic stimulation overcame friction between the fault rock face, which enabled the fault to slip and generate the earthquakes.

Preese Hall-1 was drilled to a total depth of 2,775m with an estimated gross pay of 1,070m (no net figure was provided). Five zones ranging in depth from 2,265m to 2,770m were fracture stimulated before activities were suspended due to the earthquake events. The deepest three zones (2,500m to 2,770m), flowed at a combined rate of 0.4 to 0.5 mmscf/d, however the duration of the flow test was not disclosed. The other two fracture stimulated zones were flow tested, but results were not released. A flow of 0.5 mmscf/d is not economic in our view, however the AJ Lucas 2012 Annual Report states there is a very large potential hydrocarbon resource and it will "most probably" flow at commercial rates.

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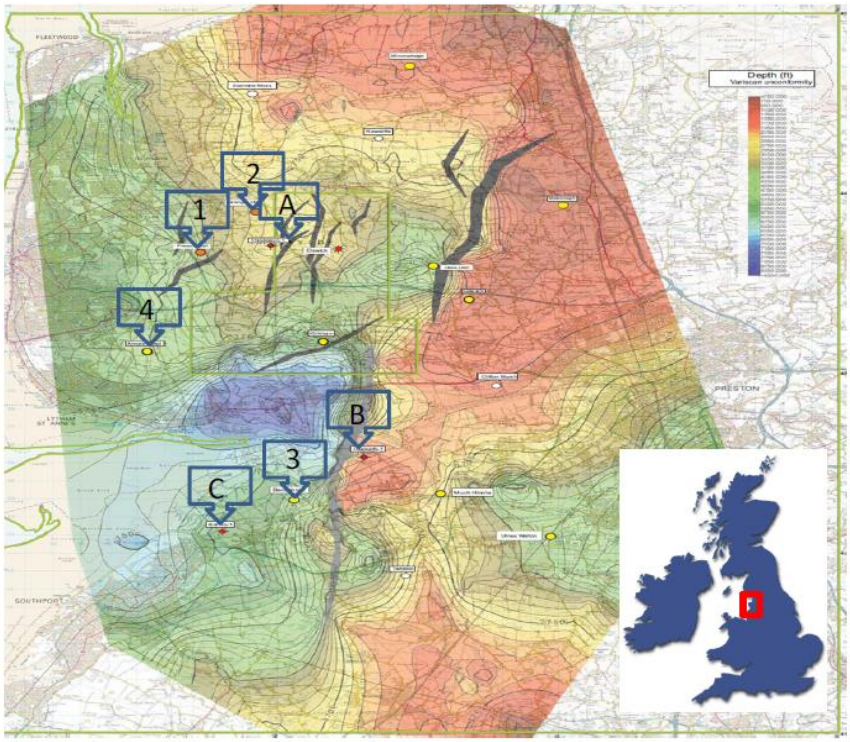
Figure 4: Drill Locations (Basin is deepest in the green and blue)



1. **Preese Hall #1**
2. **Grange Hill #1**
3. **Becconsall #1**
4. **Anna's Road #1**

A. **Thistleton #1**

B. **Hesketh #1**

C. **Banks #1**

Source: AJ Lucas

Other wells Cuadrilla drilled in the area include:

Grange Hill-1: In 2011, the Grange Hill well, located near Singleton, was drilled to its target depth of 10,700 ft. The well was not fracture stimulated and no flow testing was undertaken.

Elswick-1: The Elswick well is Cuadrilla's only production well. The sandstone in the well was hydraulically fractured in 1993, and the well is now at the end of its producing life.

Anna's Road-1: The Anna's Road site is located near Westby in Lancashire. The well was drilled to a depth of 2,074 ft in 2012. Drilling was suspended when a drilling tool became stuck in the borehole. Although the tool was successfully recovered, the time taken to do so, coupled with restrictions on drilling at the site during winter months (due to the presence of wintering birds) led Cuadrilla to not progress further with the well and it was plugged and abandoned (P&A) in July 2014.

Becconsall-1: Becconsall-1 is located near Banks in Lancashire. The well was drilled to a depth of 10,500 ft in 2011, however no testing results were released.

Thistleton-1: The Thistleton 1 well terminated in Brigantian-aged shales and sandstones and the lower Bowland-Hodder unit was not reached.

Other Companies Involved in UK Shale

Other key companies looking at UK's shale potential include:

- **INEOS:** INEOS is a privately owned chemicals manufacturing company. It is currently the UK's largest shale gas licence holder with licences covering over 4,600 km^2. In 2014, INEOS announced it was planning to invest US$1bn in UK shale gas exploration and appraisal, however no wells have been drilled and fracked since that announcement. In March 2017, INEOS acquired French listed Engie's entire UK onshore exploration licence portfolio for an undisclosed sum. Part of the portfolio included a 30% stake in Cuadrilla's PEDLs 287, 288, 342 and 346 in Yorkshire. Engie stated the sale was in line with its strategy to focus more on energy infrastructure.

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- **iGas Energy:** iGas is an AIM listed oil and gas exploration and production company with interests in 55 licences at onshore locations across Britain, including acreage in the Bowland Basin. iGas acquired ASX listed Dart Energy in May 2014. At the time, Dart disclosed potential gas in place in UK shale of 76-110 Tcf.

- **Third Energy:** Third Energy is a privately held company with a focus on building a portfolio of UK onshore and offshore producing and appraisal assets. Third Energy is planning on fracture stimulating its KM8 well at Kirby Misperton in North Yorkshire once it meets its planning permission and environmental requirements. KM8 was drilled in 2013. Third Energy is reportedly seeking to list on London's AIM stockmarket.

- **Egdon Resources:** Egdon Resources is an AIM listed exploration company with conventional and unconventional assets in the UK and France. Egdon has around 70km^2 of shale acreage in north-west London.

- **Total:** In January 2014, Total became the first energy major to enter into UK shale, acquiring a 40% interest in two shale gas exploration licences in the East Midlands area of the UK. It also has an option with Egdon Resources to buy a 36% stake in the PEDL 209 exploration licence in Lincolnshire. Total will pay up to £13.5m for Egdon's share of the exploration programme at the licence.

- **Centrica:** In June 2013, AJL and Cuadrilla announced the sale of a combined 25% interest in the Bowland licences PEDL 165 and EXL 269 to UK listed utilities company Centrica. In consideration for the stake, Centrica made an upfront £40m payment to Cuadrilla/AJL and committed to full carry on the next £60m of expenditure at Bowland. Centrica also agreed to make a further cash payment of £60m, contingent on achieving certain milestones. As at 31 December 2016, Centrica's remaining carry obligation was £30m.

Reasons to be Bullish about UK Shale Development

- **Potential scale of resource.** The British Geological Society estimates the total gas in place in the Bowland shale in Northern England is 1,329 Tcf (P50), within a range of 822 Tcf to 2,281 Tcf. If 10% of the P50 estimate is recoverable, the Bowland shale could meet the UK's current natural gas consumption for 50 years. In addition, the shale is over 900m thick in places, one to two orders of magnitude thicker than what is present in US shale plays (although this is understood to be a gross thickness, not net pay).

- **Initial flow from Preese Hall 1 was encouraging.** The three frac stages of the Preese Hall-1 well flowed at a combined rate of 0.4-0.5 mmcf/d suggesting gas is present. Extrapolating this result suggests that a 12 stage vertical well could flow at 1.2 to 1.5 mmscf/d, with higher flows potentially possible from a horizontal well. However, we do note that the duration of the test and choke size used have not been disclosed, and these can have a material impact on the meaningfulness of the flow result.

- **Gas infrastructure in place.** There appears to be sufficient trunkline capacity in the UK to get gas to markets, however we do acknowledge some additional pipelines would be required from the Bowland shale area to tie in to the existing trunklines (eg the Preston New Road site is approximately 8 km from the nearest trunkline).

- **Good downstream markets.** The UK has a long history of gas production, and it therefore has well developed downstream markets, including good trunkline infrastructure and the Interconnector natural gas pipeline which runs between the United Kingdom and continental Europe.

Reasons to be Bearish about UK Shale Development

- **Commercial uncertainty.** With only one unknown duration flow test performed to date and no long term production testing, there is no certainty that any of the gas in place in the Bowland can be commercially extracted. Similarly, like each successful shale play in the US, significant time and money is required to 'crack the code' to optimising development. De-risking shale plays in North America typically requires drilling about 100 wells, while achieving economies of scale requires many hundreds more.

- **Geological uncertainty.** There is very little information currently available to evaluate the technical potential of the Bowland shale. The relatively high degree of natural faulting within the Bowland, and the experience with Preese Hall-1 highlights the potential issues faced with fracture stimulation of the shale. Following the experience with Preese Hall-1, Cuadrilla undertook a This may limit the areal extent of shale able to be developed. The majority of successful shale plays have 'sweet spots' where the best flows are derived for the smallest cost. To date, there is insufficient geological information to determine the location of the sweet spots within the Bowland.

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- **Higher cost environment.** Low well costs have been the key driver for economic development of shale in the US. Given the large number of wells that will be required to produce the gas from UK shale, well costs will need to drop significantly. We expect UK regulations will result in costs being higher than in the US.

- **Land access/Public concerns.** There has been a growing movement of protestors concerned about drilling and fracking activities in the UK. Access to land for drilling wells is less conducive to development than in the US.

- **Material service industry uplift required.** Significant growth in the services industry would be required to enable timely full field development. Limited competition could result in significant inflation in costs.

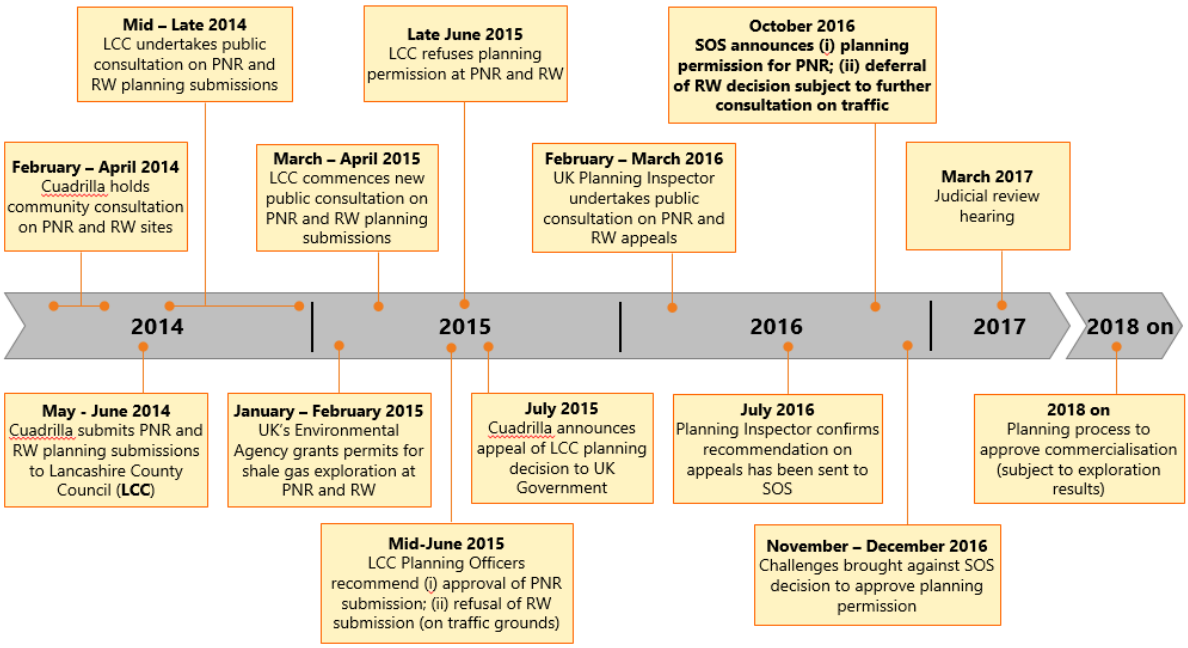
- **Regulatory and fiscal risk.** The UK government imposed an 18-month suspension on all hydraulic fracturing activity following the seismic events linked to the Preese Hall-1 well. Should another well cause a further seismic event, we would expect the Government would impose a potentially indefinite suspension on all fracking, which would essentially curtail AJL's plans for potential development of its UK shale.

- **UK gas price.** With access to other gas markets via the interconnector pipeline, regional gas prices are determined by indexing to oil, with the current UK gas price being 35.7 pence per therm (approximately A$6.2/mcf). Given the infancy of UK shale, it is not known at what gas price development of the shale is economic.

UK REGULATORY ENVIRONMENT

AJL believes the risks around the shale development are above ground and not in the subsurface geology. If the last six years are anything to go by, it may just be correct. Since Cuadrilla's Preese Hall-1 well was fracture stimulated in early 2011, no further wells have been drilled and fracked thanks in part to the 18-month moratorium on fracking that ensued, plus a series of public consultations, planning submissions, public protests, appeals and approvals. It is only in the few months that the Company has emerged out the other end of this process, with the UK High Court dismissing claims against the decision to grant Cuadrilla planning consent for its Preston New Road site. Cuadrilla is now able to proceed with its work programme to drill and fracture stimulate up to four wells at the site.

Figure 5: UK Government Planning Decision Timeline



Source: AJ Lucas, March 2017.

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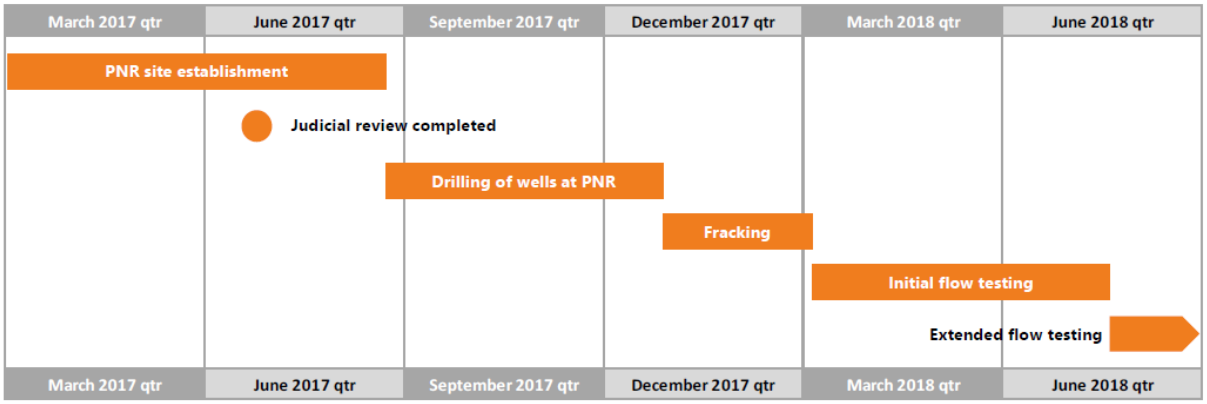
UPCOMING DRILLING PROGRAMME

The Preston New Road appraisal programme drilling commenced in August 2017. The current programme includes drilling two horizontal wells in four months, followed by hydraulic fracture stimulation in the December quarter. Flow testing will then be undertaken in the March 2018 quarter.

Figure 6: Indicative Timeline for Preston New Road Appraisal Programme



Source: AJ Lucas

GLOBAL SHALE EXPERIENCES

Outside the US, only three other countries (Canada, China and Argentina) have commercial shale gas production. Significant exploration and appraisal work was also undertaken in Poland and Australia, but no widespread development ensued. In the US, shale gas production now accounts for more than half of the US natural gas production. The reason why it isn't more globally widespread is that few countries in the world have the right mix of ingredients that have made the US shale recipe so successful. A land ownership royalty system that rewards owners for production, a mature, competitive oil and gas service industry, and a fiscal and legal system that encourages production and issues timely permits are but a few of the key requirements to drive commercial production, and that's before even considering the viability of sub-surface geological conditions.

Figure 7: Comparison of Bowland vs US Shale Plays

		Bowland	Haynesville	Marcellus	Barnett	Fayetteville	Woodford	Bakken	DJ Basin Niobrara	Eagle Ford
Depth of Shale	(m)	2,100-4,600	3,000-4,000	1,200-2,600	1,500-2,500	300-2,200	1,800-3,000	2,000-3,400	1,800-2,500	1,800-2,500
Net thickness of shale	(m)	*	60-90	15-100	30-150	10-60	30-70	40	60-120	30-125
Kerogen Type		Type II & III	Type III	Type II & III	Type II	Type II & III	Type II	Type II & III	Type II	Type II
TOC	% wt	1.2-6.9%	3%	4.7%	3.7%	3.8%	5.3%	9%	2-6%	2.8%
Porosity	%	2-3%	3-15%	4-15%	6-8%	2-8%	4-12%	8-12%	6-10%	8-12%
Permeability	mD	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Clay Content	%	30-40%	20-30%	na	30-40%	na	<30%	5-10%	10-40%	8-11%
Pressure Gradient	psi/ft	0.65	07-0.9	0.4-0.7	1.9	na	0.4-1.7	0.5-0.7	0.4-0.6	0.5-0.8

*Source: Energy Information Administration, United States Geological Survey, British Geological Survey, Patersons Securities. * No net thickness has been provided. Gross thickness is 150-900m.*

China

China was one of the first countries outside of North America to develop shale resources. More than 600 gas wells have been drilled in its shale plays since 2010. State owned China National Petroleum Corporation (CNPC) and Sinopec own the vast majority of China's shale gas resources.

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Argentina

According to the US Energy Information Administration (EIA), Argentina's Vaca Muerta formation is estimated to contain 308 Tcf of technically recoverable shale gas resources. Vaca Muerta's geologic properties have been compared to the Eagle Ford in the US in terms of its depth, thickness, pressure and mineral composition. More than 600 wells have been drilled in the Vaca Muerta since 2010. The EIA estimates the average drilling and completion cost of a horizontal well in the Vaca Muerta is around US$11m. This compares to around US$6-8m in the Eagle Ford. Argentina has relatively high labour and imported equipment costs, a shortage of shale drill rigs, and limited proppant capacity. All of which limit production growth in the Vaca Muerta.

Poland

In around 2007, Poland was shaping up to be one of the most prospective countries for shale gas production outside of the US, with the EIA estimating technically recoverable shale resource of 146 Tcf. Poland had large shale formations that, in theory, looked like they could produce significant gas volumes. However, by 2015, 68 wells were drilled, but the results were disappointing and none were producing at economic rates and the majors, including ConocoPhillips, ExxonMobil, Total, Marathon Oil and Chevron, had all exited Poland's shale acreage. Unlike the shale formations in the US, which were brittle and easily fractured because of calcium carbonate content, Polish shale was more plastic in nature and difficult to fracture. In addition, some of the structures had high reactive clay contents that swelled when in contact with water, thus hindering the flow of gas in the shale.

Australia

In 2013, Beach Energy, with partners Chevron and Icon Energy, undertook the unconventional Nappamerri Trough Natural Gas project in the Cooper Basin, Australia. After a multiple well programme was undertaken, Chevron elected to not participate in Stage 2 of the project in 2015, and Beach stepped away from the permit in March 2017. The best flow from the programme was 4.5 mmscf/d. Shale in the Cooper Basin was located at depths of up to 5km below surface, and pressures encountered deformed the well casing, while well head equipment was not equipped to handle the high temperatures associated with the shales.

AJ LUCAS - AUSTRALIAN BUSINESS

The Australian business comprises two units, Drilling Services, and Engineering & Infrastructure.

Lucas Drilling Services

AJL provides drilling services to the coal and coal seam gas industries for the degasification of coal mines and the production of coal seam gas. Underlying EBITDA in the Drilling Services business unit has varied over the years due to challenging conditions in the coal mining and coal seam gas sectors, and the conclusion of a key long-term contract in the June 2016 quarter.

Figure 8: Lucas Drilling Services Financial Summary

	2013A	2014A	2015A	2016A	2017A
Revenue	163.4	94.2	83.5	79.6	73.4
Underlying EBITDA	23.5	10.8	6.2	11.4	2.7

Source: AJ Lucas, Patersons Securities

Lucas Engineering & Construction

Lucas Engineering & Construction is a civil engineering business focussed on long distance, high pressure pipeline construction for clients in the Australian resources, energy and water sectors. Work is typically either tendered on a stand-alone basis or in formal joint ventures, with partners such as Spiecapag, Downer EDI and Brian Perry Civil Engineering NZ. AJL is currently constructing the 165 km Victorian Northern Interconnect Expansion project for APA Group in partnership with Spiecapag, with AJL's revenue share expected to be approximately $35m. It is also completing a 4km Gas Suction Pipeline for South32 in Appin NSW, with revenue of around $7m expected. The Engineering & Infrastructure business cash flows are very 'lumpy' as it is highly dependent on contract wins which are beyond the control of AJL.

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Figure 9: Lucas Engineering & Construction Financial Summary					
	2013A	**2014A**	**2015A**	**2016A**	**2017A**
Revenue	131.4	133.7	61.5	45.8	48.6
Underlying EBITDA	-14.6	1.7	8	6.9	-1.9

Source: AJ Lucas, Patersons Securities

FINANCIAL SUMMARY

As at 30 June 2017, AJL had cash, cash equivalents and cash in trust of $22.1m, and $107.3m in debt.

Senior Secured Loan Notes: AJL has a US$45m three-year senior secured loan note facility with entities managed by OCP (Asia) Hong Kong Limited with a maturity date of June 2019. The first tranche for US$25m was drawn in June 2016 and was used in part to discharge outstanding liabilities with the Australian Taxation Office (ATO). UK planning permission triggered the drawdown of Tranche 2 (US$20m) of the senior loan facility. The secured notes carry a 12% p.a cash interest rate (paid quarterly in arrears), with a further 6% accrued interest per annum (payable on maturity).

Kerogen Capital Finance Facility: AJL also has a US$56.2m finance facility in place with major shareholder Kerogen Capital. This facility has a maturity date of December 2019. Following the recent capital raising, AJL repaid US$25m of the Kerogen facility, with a balance of US$38.7m remaining drawn following this repayment. The balance of this facility will incur interest of 16% per annum (compounding and payable on maturity) until June 2018, and 18% thereafter.

SHAREHOLDERS

The top five shareholders as at 1 September 2017 are shown in Figure 10.

Figure 10: Top Five Shareholders		
Holder Name	**Shares Held**	**% Holding**
Kerogen Capital	320,806,301	54.8
Paul Fudge	46,115,863	7.9
OCP Asia P/L	21,290,536	3.6
Andial Holdings	12,884,938	2.2
Toolebuc Investments	8,333,442	1.4
Total, Top 5 shareholders	**429,424,779**	**70.0**

Source: Iress, Patersons Securities.

With the top five shareholders holding 70% of the outstanding shares, and daily trading volume averaging just over 96,000 shares (c$31,000 in value), liquidity in the stock may be an issue for some investors in AJL.

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BOARD AND KEY MANAGEMENT

Phil Arnall, Non-Executive Director and Chairman: Phil has had senior executive responsibility at Smorgon Steel Group, Tubemakers and ANI Limited. He is currently a non-executive director of Bradken Limited. Directorships of other listed companies over the past three years: Ludowici Limited and Macquarie Generation.

John O'Neill, Non-Executive Director: John joined the Board as an independent non-executive Director in June 2015. He has over 25 years' experience in the upstream oil and gas industry and was formally Non-Executive Chairman of Pangaea Resources. In addition, he was previously Chief Executive Officer of the Australian Petroleum Fund, which held a portfolio of exploration and producing oil and gas assets and a pipeline. John also has experience in accounting and finance. He holds a Bachelor of Business degree and is a Fellow of the Australian Institute of Chartered Accountants and a Fellow of the Australian Institute of Company Directors

Julian Ball, Non-Executive Director: Julian is a managing director of Kerogen Capital (Asia) Limited, based in Hong Kong, with more than 25 years of experience in investment banking and private equity. He trained as a chartered accountant at Ernst and Young in London before relocating to Hong Kong. He worked for many years as an investment banker at JP Morgan primarily covering the energy and natural resources sectors before working in private equity.

Ian Meares, Non-Executive Director: Ian has experience in the global civil infrastructure, mining and energy industries. He brings an understanding of the management and control of complex engineering projects as well as a wide network of industry contacts. Previous roles include Executive Director, Engineering and Infrastructure, with Brookfield Multiplex where he had responsibility for the delivery of large scale infrastructure projects throughout Australia, responsibility for Mine Infrastructure Delivery at Leighton Contractors, Group Manager Business Development at Clough Limited and Managing Director of Bechtel Australia.

Andrew Purcell, Non-Executive Director: Andrew has a track record of managing distressed and underperforming companies to sustainable profitability. An engineer by background, he has also worked in investment banking working with Macquarie Bank and Credit Suisse. He is also a former Director of Cougar Energy Ltd. and Realm Resources Ltd. in Australia.

Austen Perrin, Chief Financial Officer: Austen was appointed as Chief Financial Officer in December 2014. Prior to joining AJ Lucas, he was the Chief Financial Officer for Whitehaven Coal Limited for over 5 years. Austen also previously held the group CFO roles with Asciano Limited and Pacific National Limited and was an executive director and divisional CFO of the listed Toll NZ Limited, as well as holding various senior finance roles within the Toll Holdings group and TNT.

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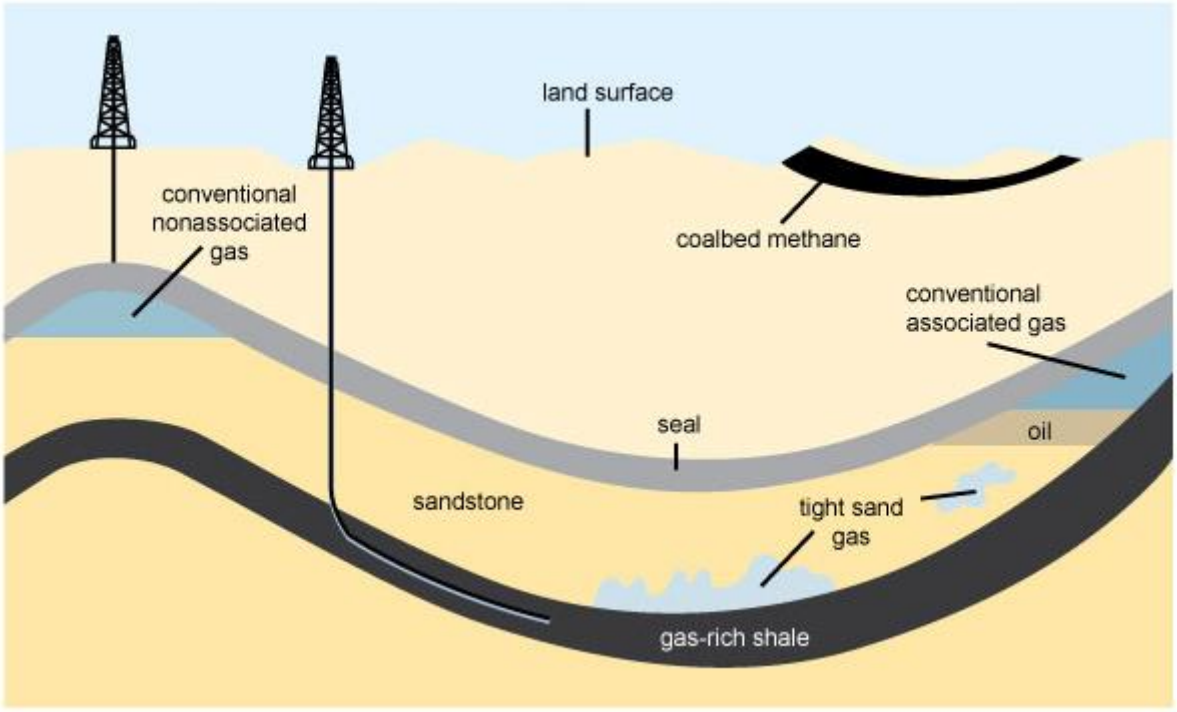
APPENDIX A: UNDERSTANDING SHALE GAS

Shale is a fine grained sedimentary rock that forms from the compaction of silt and clay-size mineral particles and is easily broken in to thin, parallel layers. Some shale can contain organic material that can generate oil and natural gas and trap the hydrocarbons within its pores.

Figure 11: Schematic Geology of Natural Gas Resources



Source: EIA, United States Geological Survey

Large scale natural gas production from shale began in around 2000 when shale gas production became a commercial reality in the Barnett Shale located in north-central Texas when the use of large scale hydraulic fracturing processes became more widespread. As natural gas producers gained confidence in their abilities to profitably produce natural gas in the Barnett Shale, with additional confirmation provided by well results in the Fayetteville Shale in northern Arkansas, producers started developing other shale formations, including the Haynesville in eastern Texas and north Louisiana, the Woodford in Oklahoma, the Eagle Ford in southern Texas, and the Marcellus and Utica shales in northern Appalachia.

Key Parameters for Shale Plays

Shale plays have a higher number of key parameters to consider in order to delineate a play compared to conventional reservoirs. Some of the key parameters used to define a successful shale play include:

- **Depositional environment.** Marine-deposited shales (also known as Type II Kerogen) tend to have lower clay content and tend to be high in brittle minerals such as quartz, feldspar and carbonates. Brittle shales respond well to hydraulic stimulation. Shales deposited in non-marine settings (lacustrine, fluvial, Type III Kerogen) tend to be higher in clay, more ductile and less responsive to hydraulic stimulation.

- **Depth.** Shale shallower than 1,000 metres has lower reservoir pressure and thus lower driving forces for oil and gas recovery. In addition, shallow shale formations have risks of higher water content in their natural fracture systems. Deeper shales tend to have lower permeability and significantly higher drilling and development costs. Most successful shales in the US are less than 3,000m in depth.

- **Net shale thickness.** The net thickness of shale identifies the total interval containing organic rich shale. A high net-to-gross ratio is desirable Net thickness of US shale plays ranges from 10m to 150m. The 2013 DECC/BGS report states the net potentially productive shale in the upper Bowland shale unit is 60-900m thick.

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- **Total Organic Carbon Content (TOC).** In general, the average TOC of the prospective area needs to be greater than 2%. Figure 5 provides an example of using a gamma ray log to identify the TOC content for the Marcellus Shale in the New York (Chenango Co.) portion of the Appalachian Basin.

- **Porosity.** A measure of the void, or space, between grains that form the shale rock. It is measured as a percentage (or fraction) of the volume of voids over the total volume of the rock. US shale plays are typically 4-7%.

- **Mineralogy/clay content.** A high percentage of non-clay, silica content is required for successful fracking. The amount of clay – particularly reactive clay – needs to be low to allow fracking and swell in the fracture, thus limiting gas flow. According to the BGS, clay content should be less than 35%.

- **Over/Under pressure.** Overpressure enables a higher concentration of gas to be contained within the reservoir volume and results in higher flow rates. Almost all US shale plays are slightly to highly over pressured.

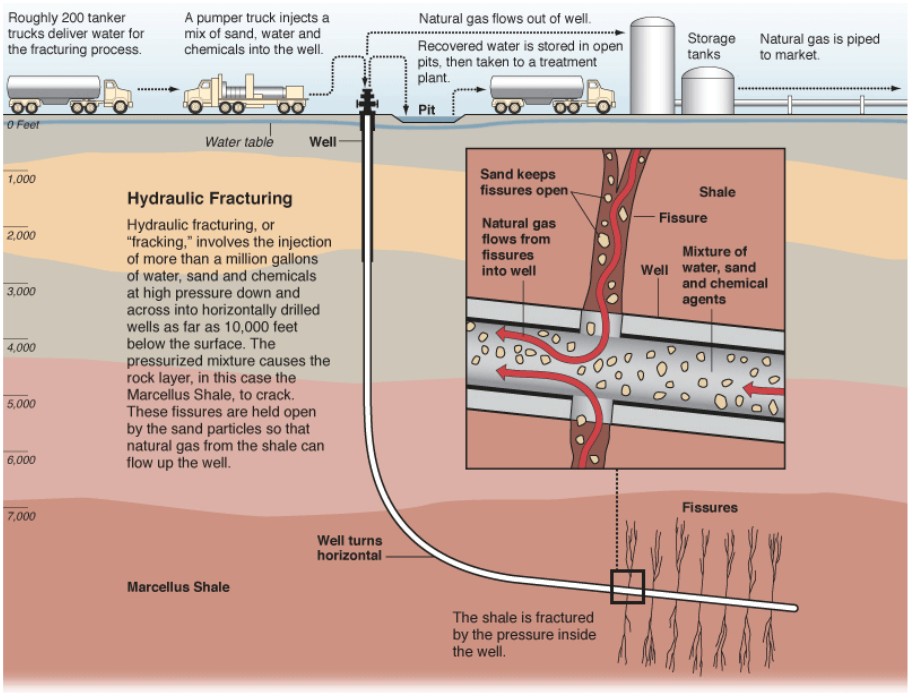
- **Thermal maturity.** Thermal maturity measures the degree to which a formation has been exposed to high heat needed to break down organic matter into hydrocarbons. R_o is used as an indication of thermal maturity. The thermal maturity of the oil prone prospective area has a R_o greater than 0.7% but less than 1.0%. The wet gas and condensate prospective area has a R_o between 1.0% and 1.3%. Dry gas areas typically have a R_o greater than 1.3%.

- **Structural setting.** Areas with extensive faults can hinder recoveries by limiting the productive length of the horizontal well. The preference is for large stable basins without complex geological conditions such as extensive faulting.

An Overview of Hydraulic Fracturing

In simple terms, hydraulic fracturing, hydraulic stimulation or fracking is the process of pumping fluid into a wellbore at an injection rate that is too high for the rock formation to accept without breaking, or fracturing. Conventional oil and gas reservoirs have interconnected pathways within the rock matrix that allow the hydrocarbons to flow to the wellbore. In unconventional reservoirs such as shale, the grain size of the rock matrix is typically much smaller and the spaces between the mineral grains (voids) are poorly connected, thus there are limited connected pathways that allow the hydrocarbons to flow. The fractures caused by hydraulic fracturing create a pathway for hydrocarbons to flow to the wellbore.

Figure 12: Typical Hydraulic Fracturing Operation Schematic



Source: US Energy Information Administration

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Once a well is drilled and cased to its target depth, perforations or holes are then made in the casing using a perforation gun that is lowered into the wellbore. Hydraulic fracturing equipment is then brought to the site and connected to the wellbore. From here, it is essentially a four step process: (1) pressure the reservoir rock with fluid to create fractures, (2) grow the fractures by continuing to pump fluid in to the fractures, (3) pump proppant material into the fracture in the form of a slurry, and (4) stop pumping and flowback the well to recover fracture fluids while the proppant material is left in the reservoir, effectively propping the fractures open.

The fractures created will extend along the path of least resistance. In the vertical direction, fractures will typically extend until they reach a more ductile rock material (eg clay or softer shales that deform rather than fracture). Ductile layers provide a form of containment and cause the fracture to travel horizontally within the more brittle layers. Several factors constrain the growth of a fracture in a horizontal plane, eg (1) fracture fluid may follow pre-existing natural fractures, (2) the fluid may disperse into the rock formation, and (3) the fracture pressure of the fluid required is beyond the capability of the pumping equipment.

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