

## ARROW ENERGY UPDATE COMMUNITY INFORMATION SESSIONS SEPTEMBER 2019

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### Arrow Energy update Community information session 17 – 19 September 2019

#### Introduction

In September 2019, Arrow Energy (Arrow) held a series of community information sessions to provide an update on Arrow's current operations and Surat Gas Project planning.

Formal presentations and question and answer sessions were held in Cecil Plains and Dalby, while the Chinchilla and Miles sessions consisted of drop-in information sessions with one-on-one discussions.

These notes reflect the questions from the formal information sessions in Cecil Plains and Dalby, and their answers. While the notes include some paraphrasing and summarising, every effort has been made to preserve the integrity of the discussions.

Information sessions were held as follows:

Cecil Plains	17 September 2018	Presentation, questions and answers
Dalby	18 September 2018	Presentation, questions and answers
Chinchilla	18 September 2018	Drop-in session with one-on-one conversations
Miles	19 September 2018	Drop-in session with one-on-one conversations

A copy of the presentation is available on the Arrow website: [www.arrowenergy.com.au](http://www.arrowenergy.com.au)

#### How to read these notes

Questions and comments from the audience are in bold type, with the responses from Arrow staff in roman type. In some cases, responses have been summarised. In others, additional information is included to provide further context or explanation. This information is italicised following the answer.

If you have questions or comments about the project or these meeting notes, please contact the project team during working hours on:

Freecall: 1800 038 856

email: [info@arrowenergy.com.au](mailto:info@arrowenergy.com.au)

**Acronyms**

QGC – Queensland Gas Company

CSG – coal seam gas

ATP – authority to prospect

PL – Petroleum lease

SGP – Surat Gas Project

EIS – environmental impact statement

SREIS – supplementary report to an environmental impact statement

IFL – intensively farmed land

**Legislation**

*Petroleum and Gas Act 2004 (P&G Act)*

<b>Date:</b>	17 September 2018
<b>Time:</b>	11.30 am – 2 pm
<b>Venue:</b>	Cecil Plains Memorial Hall
<b>Presenters:</b>	Dave Wolf – Project Manager Offplot, Arrow Energy Nathan Blundell – Surat Front End Development Manager, Arrow Energy Simon Gossmann – Groundwater Manager, Arrow Energy
<b>Facilitator:</b>	Leisa Elder – Vice President, External Relations and Tenure Management, Arrow Energy

**1. On the phasing maps, is the ‘green area’ suitable for deviated wells?**

The green indicates an area where there is less certainty around our development timeframes, and which could be developed from 2023 onwards. It doesn’t refer to where deviated wells could be used; however, there is intensively farmed land within this area where deviated wells will not be suitable.

*Deviated wells will be used on intensively farmed land, where geology allows. For example, coal seams must be greater than 450 m in depth for deviated drilling to a viable drilling method. The depth is required to enable a vertical well to be drilled, before a special angled drill bit is ‘steered’ or deviated within the coal seam.*

**2. Is the concreting method the same for deviated drilling as well?**

To construct a ‘deviated well’, the surface section is firstly drilled vertically from ground level to a depth of between 50 and 120 metres. This section is fitted with a double steel casing which is cemented in place.

The drill bit is then ‘steered’ away from the other wells on the same pad. The deviated well can reach coal seams to a vertical depth of around 600m and can extend horizontally up to 800m from the well pad. This enables us to reach the same area of coal as grid-pattern vertical wells, but with much less surface impact.

**3. Has deviated drilling technology improved over the years?**

Arrow has focused on applying the current technology, and getting it right. Our deviated wells in the Daandine area are producing good gas. We are always looking to improve our methods. Currently the deviation is up to 800m; that is, we can run the well 800m horizontally away from the surface-level wellhead.

*Our greatest technology improvements are inside the well bore after it is drilled. By modifying the way we clean out newly-drilled bores, using different types of water pumps, using swellable packers above and below our target coal seams to better isolate the target seam from other formations, adding automated surveillance, and a host of other small tweaks, we are getting greater reliability from our down-hole equipment. This all means reduced impacts to farming businesses.*

**4. Is a cut and cap of a well carried out because the well has reached the end of its life?**

Yes, a cut and cap is generally carried out because a well has finished producing gas in that area.

*‘Cut and cap’ is part of the process called ‘plug and abandon’ which occurs at the end of well life. The well is ‘plugged’ by filling with concrete. The plugged well casing is cut off approximately*

*1.5m below ground level and the well is capped with a steel plate. The surrounding area is then rehabilitated back to its former state.*

- 5. Will Arrow still develop on intensively farmed land (IFL) on the east side of the river where deviated drilling may not be suitable right now?**

Yes, Arrow intends to develop its full tenure areas.

- 6. Is the local area around Cecil Plains all under a petroleum lease (PL), and no longer an authority to prospect (ATP)?**

That's correct.

- 7. Given concerns about water and climate in the region, does Arrow use reclaimed CSG water when constructing wells, well pads, roads and for camps?**

Arrow uses both coal seam (produced) water and other water sources. The water source depends on the location of the activity, and the availability of water in that area. If the site is close to existing infrastructure, produced water may be used.

**STATEMENT: Where Arrow does have to access water for construction, I suggest that the company obtains water from sources that are sustainably managed i.e. purchase the water from a sustainable pool.**

**STATEMENT: Referring back to the safety moment 'Are You Bugged Mate' from Mary O'Brien: another organisation that are having community impacts in the area have come to an arrangement with a support service to offer free counselling for community members who may need psychological help or support in dealing with unchosen change.**

**Different people deal with change differently, and the stress it causes. Arrow should consider something similar to support their community.**

*Since 2011, Arrow has invested more than \$32 million in Surat and Bowen Basin communities. This investment is focused on building capacity in health and safety, education and environmental areas. Arrow remains committed to supporting the communities in which it operates.*

<b>Date:</b>	18 September 2018
<b>Time:</b>	11.30 am – 2 pm
<b>Venue:</b>	BMO, Drayton Street, Dalby
<b>Presenters:</b>	Dave Wolf – Project Manager Offplot, Arrow Energy Nathan Blundell – Surat Front End Development Manager, Arrow Energy Simon Gossmann – Groundwater Manager, Arrow Energy
<b>Facilitator:</b>	Leisa Elder – Vice President, External Relations and Tenure Management, Arrow Energy

**1. What is FID?**

FID stands for ‘final investment decision’. It’s the point at which Shareholders have sufficient technical and commercial information to commit to full funding of a project and proceed to construction. To reach FID, a project has to have a wide range of regulatory approvals, project and execution plans in place.

**2. Is the water extracted from the coal seam salty?**

The raw water can vary between fresh water (water with very few other elements) to saline or brackish. It is understood that CSG water quality typically varies over the life of a well and can also vary between wells in the same location. Reverse osmosis plants treat this water, to a standard suitable for its final re-use.

**3. What is the beneficial use network pipeline?**

The beneficial use network (BUN) is a proposed pipeline network that will carry treated water back to Condamine Alluvium allocation holders, to substitute the water taken from the Alluvium.

*The objective of the proposed BUN is to offset potential impact to the Condamine Alluvium, caused by Arrow’s future production. The treated water will be distributed via the BUN, across the area of greatest predicted drawdown.*

**4. Where does the BUN pipeline go (i.e the yellow dotted line as shown on the map)?**

The pipeline route represented on the maps is only indicative; the actual route is still to be determined. A consultative sub-committee to the Arrow Surat Community Reference Group is assisting Arrow with planning for the Beneficial Use Network.

**5. What is an EIS and SREIS?**

An environmental impact statement (EIS) was prepared for Arrow’s Surat Gas Project. A supplementary report to the EIS (SREIS) received State Government approval on 25 October 2013 and Federal Government approval on 20 December 2013.

*An EIS is a tool the government uses to assess potential impacts which may be caused by large projects. It is also used to consider alternative ways to carry out the project in order to limit the project’s impact. An EIS will consider:*

- *the current environment in the area of the project*
- *potential environmental, economic and social impacts of the project*
- *proposals to avoid, minimise, mitigate and/or offset those potential impacts.*

*Once drafted, an EIS is provided to stakeholders for consultation. A company will review and respond to the feedback provided, and may update the EIS document before releasing a Supplementary Report to the EIS.*

**6. Can you explain why we use the term Petroleum Pipeline for a gas pipeline since Petroleum actually means “oil from rock”, this is misleading?**

The term comes from the *Petroleum and Gas (Production and Safety) Act 2004*, and is also applied to gas pipelines.

**7. Water quality is variable. What method will Arrow use to deliver water back to the community?**

Arrow continues to refine the scope of its water management plans, however the intent is for Arrow to treat water and distribute it for beneficial use, including as 'substitution of allocation' to Condamine Alluvium entitlement holders as an offset to Arrow's predicted impact to this aquifer.

The water would be transferred via a pipeline to existing water treatment facilities at Daandine, Tipton and the QGC-operated Kenya facility. Once treated, the BUN would distribute the water back to Condamine Alluvium allocation holders, for beneficial use. This could include a pipeline to the property boundary.

**8. How variable is the water quality? Previously some landholders would use CSG water directly for beasts [cattle].**

There are some landholder bores directly into the Walloon Coal Measures. This means that landholders are already sourcing water from the same formation we use to produce CSG.

We wouldn't typically supply untreated produced water for beneficial use. Generally the water is treated first to remove the salts (solids).

**9. I'm intrigued and delighted to hear that Arrow uses gas at some sites to run equipment. Will the community be able to use the Arrow infrastructure to obtain power when the power stations fail?**

Broader gas supply direct from the well head is not the current model under consideration. The power generation at the well site is small, for the purposes of running an onsite gas-powered generator.

*Arrow's Surat gas supplies Braemar, Braemar 2 and Daandine power stations, and other power-generating customers. We own Braemar 2 power station and that produces three to four per cent of Queensland's electricity – enough for more than 200,000 homes.*

**STATEMENT: On behalf of the community, I want to thank Arrow for keeping us informed and going to the effort that you go to, to run these information sessions.**