

**Arrow's Bowen Projects:  
Bowen Gas Project and Arrow Bowen Pipeline  
Community information sessions  
2 – 5 March, 2015**

***Introduction***

The proposed Arrow Bowen Gas Project involves the construction of wells and infrastructure to extract, treat and compress coal seam gas (CSG) from the Moranbah area. The proposed Arrow Bowen Pipeline would transport the gas to the proposed Gladstone Gas Hub, north-west of Gladstone.

The BGP area is proposed to be developed in three phases: phase one starting from Moranbah and extending north to Glenden, phase two further north, and phase three south of Moranbah.

Phase one entered the define phase in late 2014. This phase is expected to take about 12 months. The proposed project lies near the existing Moranbah Gas Project, owned jointly by Arrow and AGL Energy. One of the largest CSG fields in Australia, it has been producing gas for the domestic market since 2004.

***How to read these notes***

Questions and comments from the audience are in bold type. The responses are from Arrow staff.

In some cases, responses have been summarised. At other times, additional information has been included to provide further context or explanation. This information is italicised, following the answer.

If you have any further questions or comments about the project, please contact the project team:

**Freecall:** 1800 038 856

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

<b>Middlemount</b>		
<b>Date:</b>	Wednesday 4 March, 2015 5pm – 8pm	
<b>Venue:</b>	Community information session Middlemount Community School Hall, James Randall Drive 16 attendees	
<b>Presenters:</b>	David Wolf, Project Manager Gathering Systems	Arrow Energy
	Carey Bradford, Authority to Prospect (ATP) Compliance Manager	Arrow Energy
	John Lott, Pipelines Construction Manager	Arrow Energy
<b>Facilitator:</b>	Glenda Viner, General Manager Community Relations	Arrow Energy

- Q. Is the exact pipeline route known and do you definitely have the go ahead?**  
**A.** We have the corridor but the final selection of the route through landholders properties will be discussed with the landholders through their land liaison officer.
- Q. Does that mean it is going ahead?**  
**A.** It has the go ahead for the front end engineering and design stage. We then submit the Financial Investment Decision submission to shareholders. It is a matter of getting the right things in place before we ask for shareholder approval.
- Q. How are you going to cross the Isaac River?**  
**A.** There are three crossings across the Isaac River – two are Horizontal Directional Drilling (HDD) and one is open cut method.
- Q. And you will go through wet sand?**  
**A.** Arrow Energy is currently going through front end engineering design and that includes the engineering for the horizontal directional drilling (HDD). HDD is well known to Arrow Energy and used throughout the industry. To finalise design, Arrow Energy require detailed geotechnical analysis of the ground, once that is carried out and assessed we then can design in methods to allow us to drill through sands and other geotechnical layers. The methods used are complex as they are based on the actual site geotechnical information received; however they may include:
  - connecting drill rods from both sides of the pilot once it has emerged for the first time to hold the centreline of the bore
  - entry casing
  - steering control of the drill.
- Q. Which wrecks the bores beside them?**  
**A.** Arrow Energy have a ground water specialist arriving shortly who will be able to speak to you about your concerns and give a more detailed response.
- Q. Is it [the Arrow Bowen Pipeline project] still the same as the EIS case?**  
**A.** Our current approval is smaller than the EIS and we have moved to a smaller corridor.

**Q. How do you get through the shallow aquifers near the Isaac River?**

**A.** I think you are referring to having some concern in relation to a saline aquifer which is close to a good quality aquifer, is that right?

Different methods can be used to gather more information on the specifics. We look at the interface between shallow aquifers. First thing we have to do is understand the geological settings – how deep, how low, quality, potential for HDD and look at ways to minimise our impact. Understanding the bores that are already there helps us to understand the geophysics of the area. Monitoring bores, seismic and geotechnical investigations will help us to understand how separated they [the aquifers] are.

**Q. You will need to go 30 foot down below the Isaac River.**

**A.** The drill path design is dependent on the geotechnical information we obtain from the geotechnical bores and the elasticity of the steel pipe which is about a 500m radius. Both of these will make the bore very deep under the river, possible down to 15m.

**Q. Which crossing is open cut and which is HDD?**

**A.** The first crossing of the Isaac River near Moranbah is open cut and the next two are HDD.

**Q. Do you have a more detailed map?**

**A.** People directly impacted will have been contacted by a land liaison officer (LLO). Speak to one of our LLO's about where you are situated and they will be able to assist you in identifying any impacts.