

Bowen Gas Project

Community information sessions 18-20 March 2013

Introduction

Arrow is seeking to develop opportunities for the supply of gas to new export markets, including a proposed liquefied natural gas (LNG) development at Curtis Island near Gladstone. As part of this work, Arrow is undertaking an environmental impact statement (EIS) covering the area of its proposed Bowen Gas Project which extends from Glenden in the north, to Blackwater in the south.

In March 2013, Arrow held a series of community information sessions in the Bowen Basin to introduce the community to its Bowen Gas Project. The information sessions were held from 18 to 20 March 2013 at:

- Moranbah - 18 March 2013
- Middlemount - 19 March 2013
- Blackwater - 20 March 2013.

Questions and answers were captured by JTA Australia and are presented in this document. As the questions varied across the three sessions, these notes summarise all of the discussions to ensure that valuable information is shared throughout the communities.

How to read these notes

Questions and comments from the audience are in bold type. The unbolded 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, the meeting notes, or if you would like detailed maps of the exploration areas, please contact the project team:

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Email: bowengas@arrowenergy.com.au

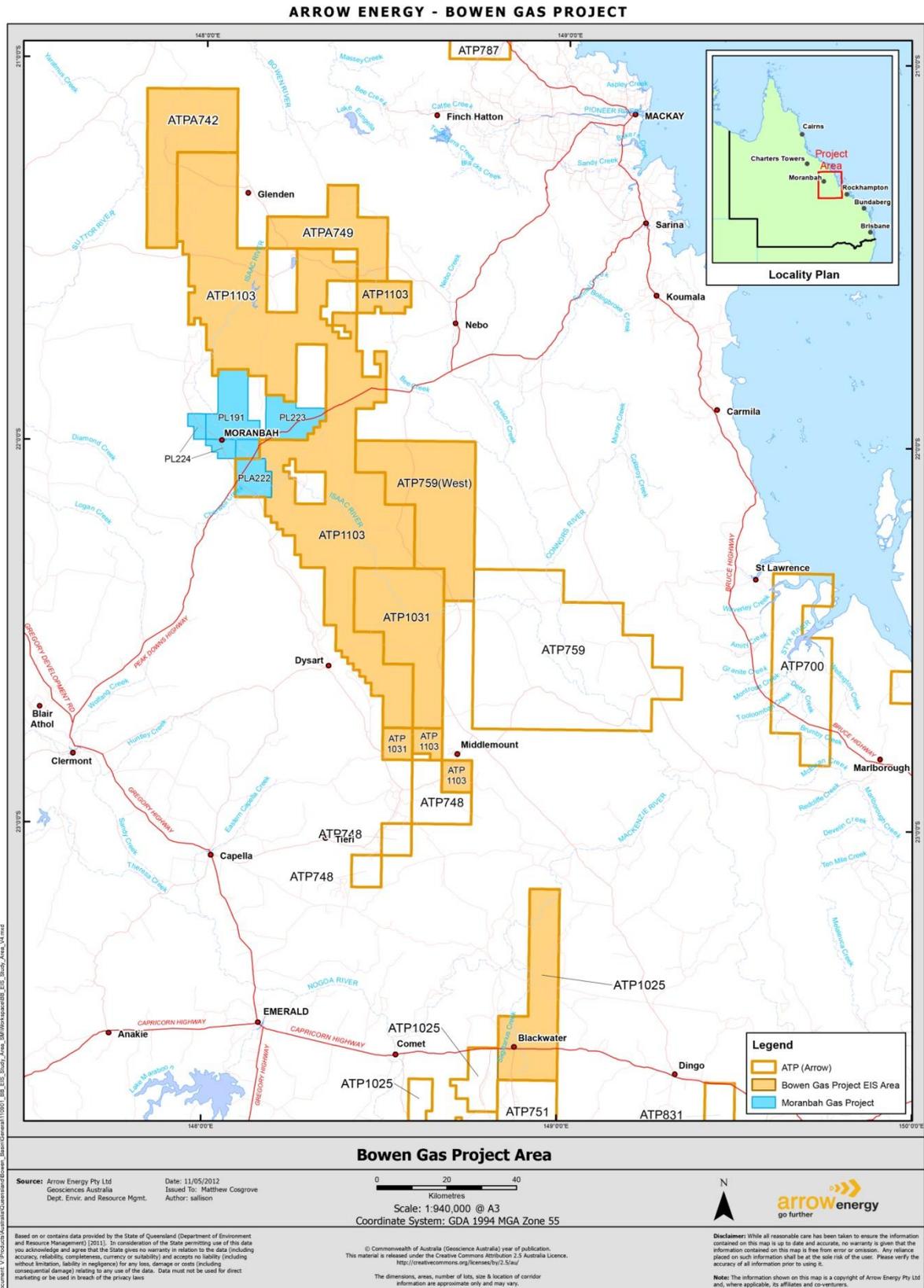
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Glossary

ATP	Authority to Prospect
CSG	coal seam gas
DIDO	drive in/drive out
DTMR	Department of Transport and Main Roads
EA	environmental authority
EHP	Department of Environment and Heritage Protection
EIS	environmental impact statement
EPA	Environmental Protection Agency
FIFO	fly in/fly out
IVMS	In-vehicle monitoring system
LNG	liquefied natural gas
PL	petroleum lease

Conversions

1 megalitre (ML) = 1,000,000 litres



Bowen Gas Project EIS Study Area

Moranbah

Date:	18 March 2013	
Venue:	Moranbah Community Centre	
Presenters:	Carey Bradford, Exploration Manager and Authority to Prospect (ATP) Compliance Manager	Arrow Energy
	Fergal Convery, Project Manager Bowen Gas Project EIS	Arrow Energy
	Kavita Prasad, Groundwater Modeller	Arrow Energy
Facilitator:	Jan Taylor, Principal	JTA Australia

- 1. You're running through a salty aquifer, a good quality water aquifer, a brackish aquifer; what guarantee is there that when you've drilled through them they're not going to mix together? How do you stop one aquifer mixing with another?**

There are a number of things that we do. Initially when we're drilling, we use what we call drilling muds or drilling fluids. These act a bit like Gladwrap on the side of the hole. They're biodegradable, generally cellulose-based compounds that actually stop fluid loss to the formation. It's in our best interest not to lose fluid within the hole, and initially we do that using drilling muds. When we drill through the formations we use a set of telescoping casing runs.

In the top section of the well where we might have sand and gravel, we drill down to the base of the sand, gravel and loose unconsolidated material. We put in what we call a conductor, which is a piece of steel pipe that has cement pumped through the middle of it and up the outside. That cement provides the integrity between the borehole wall and the steel casing. Those cements are specially designed slurries to stop them shrinking, making sure that they retain their integrity. The steel casing gives it tensile strength so it stops any sort of pushing and shoving while we're drilling.

Once we drill through another set of aquifers, we put in more steel casing and cement using the same method. If the well is designed and executed correctly we believe that effective zonal isolation can be achieved, but it's getting it right with the design of the casing and cementing that is important.

- 2. I can understand that when you're going through an alluvium situation, but if you're drilling through rock, you must have a gap coming up the outside of the wall casing. You're not putting cement out there?**

We have what we call a float shoe or float collar inside the casing. It is basically a restrictor and would be in the bottom, either in the last joint or at the bottom of the casing. On top we install a cement head with a plug. We pump our cement into the inside of the casing, then pump water behind the plug and force the plug down to the bottom of the casing which pushes the cement up the side. Then we can seal the whole system to stop it from U-tubing back inside the casing and let it set. That's how we get the cement from the bottom all the way up the outside of the casing. We pump more cement than we need so we see the cement

return to the surface. When we see it return to the surface in a clean and uncontaminated state, we know it has returned and will seal off all those aquifers.

3. Can you tell us what the life of the cement is going to be?

There is no oxygen in the underground environment so rust isn't a problem. One problem that can occur is bacteria and other bugs. We sterilise the well with a compound to ensure that those bugs aren't present, and then when we're finished, when the well has gone through its lifespan, we fill it to the top with cement. We believe that cement lasts a long time in that environment.

4. I'm concerned about what I saw in the *GasLand* movie about the Environmental Protection Agency (EPA) and the United States (US) Government saying there was no problem at all but these people were lighting fires from the gas in their bathroom taps. The EPA and the US Government didn't want to know anything about it. What sort of guarantees have we got that this can't occur in Australia?

In the Surat Basin in particular where some of the water in the coal seams is quite potable, there are instances dating back 100 years where gas has been coming out of water bores, particularly when the water bores are within the Walloon Coal Measures. Those bores are working exactly the same way as our gas wells are working; they're removing some of the water which is allowing the gas to flow into the well. Also, if there are bacteria present in shallow aquifers, they can break down compounds that are present, particularly carbon compounds, within the aquifer itself.

Within a shallow aquifer that might have been an old stream bed or floodplain, there would be an amount of organic content and these bugs are actually eating that and turning it into gas, called biogenic gas, much like the bugs are turning the coal into gas. One of the ways coal seam gas forms is that if you heat it and crush it up enough, it will naturally form gas. The other way that it forms gas is that bacteria live in the coal seams and they convert the coal seam to gas so you get the same thing. In the US in that area where that particular well was being lit, there were reports going back to the 1700s that troublesome methane had been found.

You would therefore need to look at all the reasons why this may occur. One of the main reasons why you would find it is biogenic gas. There is the possibility that you do have problems with gas travelling up the annulus of the well, but this is where it's important to have a robust regulatory system with monitoring and maintenance involved so you can avoid this happening. If you monitor the well and see that there are issues with the gas, you can take out the casing and reinstall it. We think that with the framework we've got, it is very robust. We do have monitoring programs in place to cover off those things, but it is all about getting it right when you build the well. You've got to design and construct the well properly.

5. Is there anything that we need to be concerned about with general health as a result of coal seam gas?

Occasionally you see things like hydrogen sulphide involved, but if we did see those impurities they're not the sort of thing we want to extract either, so we would abandon those wells. And that is quite rare. Generally you'd only find it around intrusions or things like that.

The groundwater we talk about is like any other groundwater that you see. The water that we extract from coal seams is no different to other groundwater. The gas that comes out is generally 98% methane or better. We don't see a lot of higher hydrocarbons or anything like that so there's very limited scope for there to be health issues.

6. I haven't seen the whole document, but I've flicked through it and my main concern is what's not in the document. I'm concerned about the roads and the impact that this will have on the Peak Downs Highway, the Suttor Development Road and the Beef Road in Middledmount. I can't see that there's great room here for over-sized loads. Eton Range had two crashes on it only yesterday. One was a wide load that collected a truck which couldn't get off the road. I'm just wondering if there's anything like that being considered because it's not only your staff, it's all the tradies and all the ancillaries that go with them.

With the workforce coming, both fly-in fly-out (FIFO) and drive-in drive-out (DIDO), statistically the government doesn't see them as a bum on a seat, for want of a better way of putting it. We're still in the Nebo area and we've got no-one at Coppabella; there's one policeman, one ambulance, it's hard to get State Emergency Services (SES) people and firemen and all the rest of it. Has there ever been any consideration of these factors because I couldn't see it in here?

The road and traffic study that we have developed is based on a modelled scenario. That scenario looks at the construction period and looks at the worst case, which would be constructing maybe three of our major facilities at any one time in the same general area, for example, all in an area that is north of Moranbah. The scenario has a construction period of up to 40 years and it would also have quite a large ramp-up stage of typically five years.

What we'd be looking at employing in terms of workforce for construction is an initial peak of about 1,500 people. To give you an indication, after this initial peak the construction workforce over that 40 year lifespan, and this relates to traffic as well, generally wouldn't go over about 700 people. Over that 40 year life, it's a steady, stable construction, apart from the peak in the first three or four years to get the momentum going for the volume of gas needed.

Likewise with our operations workforce, it's a steady incline up to about 600 personnel starting from around 200. That gives you an indication of the type of traffic volumes, but not everybody is on the one location or one zone; we work in an extensive area. The results of the road and traffic study showed our project would have a negligible impact except for one road on which the impacts were considered low impact. That low impact is on the Suttor Development Road, and that's before we actually put any management measures in place.

Arrow also currently has in place a significant safety culture and that culture is highly focused on traffic and transport. We have what we call an In-Vehicle Monitoring System (IVMS). It's basically 'Big Brother' in the car with you. It is also used by our contractors and it monitors where we are at any time. It also monitors driver behaviour so that if they're speeding, they will be pulled up by their manager. Likewise if a contractor is speeding or misbehaving on the roads, then we know about it and reprimand them appropriately.

7. But it's the non-Arrow people that are attached just generally to the area, and they'll all use the Peak Downs Highway. I'm sure everyone here knows about the Peak Downs Highway.

With our IVMS, we can start to see trends with how much traffic we generate. That information then goes to the local council and to the Department of Main Roads (DTMR). There are also a lot of other impact assessment studies done in the interim between now and when we start. There'll be a road use management plan established before we commence construction and start rolling trucks in with equipment. That will outline the conditions that government has given us. It will also include the voluntary things that we're doing such as introducing turning lanes or initiatives and limiting movements on a school bus route near a facility at specific times to avoid any school bus runs. Another similar initiative we have introduced in Dalby is that staff travelling from Brisbane to Dalby, about 20 staff each day for site visits or other work, are not allowed to travel in private vehicles or in hire cars. They actually catch an Arrow bus service.

8. The infrastructure is not coping now with the existing traffic. We have a road safety campaign at Nebo every year in September, and when we started five years ago we had 2,000 vehicles. It's in excess of 6,000 now. And Main Roads' planning is five years behind so I hope you're aware of that in your planning and take it into account.

We are directed by the conditions that governments serve on us. It may for example say, 'based on your road use you've got to contribute a certain amount to DTMR or to your local council on specific roads', so there could be conditions similar to that. Likewise, we talk to groups such as the Road Accident Action Group, groups who check up on us to see what initiatives we have introduced to keep the roads safe between here and Mackay and elsewhere.

In addition to working with the Queensland Government and road safety interest groups, Arrow is also working with local councils in its area of operations to mitigate any potential impact to local road infrastructure.

9. It's not only this project, there are a lot of other people, other mines and projects as well, so it compounds.

One of the requirements of an environmental impact statement is to look at the cumulative impacts. Road use and traffic numbers are modelled on that basis. For example, for our pipeline project, which is a separate EIS, we look at what information came out of that; we look at who is opening up a mine in the next 10 to 20 years in the area, and feed that into the traffic model to then generate a series of impact results.

- 10. Yes, but we're always having trouble with fuel trucks on the road. We have written three or four times to government to see if we can put more freight on trains because the roads just can't stand up to it.**

We want to minimise the movement of people, goods and deliveries. We are looking at a depot-type setup at our major facilities and those major facilities are going to be away from urban areas.

At the moment a fuel truck leaves town about every five minutes on the average, so that's a lot of fuel and a lot of trucks on the Peak Downs Highway, plus the wide loads. I know the Queensland Police Service is gearing up for a lot of added over-dimensional wide loads.

- 11. I was wondering whether Arrow Energy had given any consideration to tying in with state and federal governments to distribute census forms to its employees on remote sites, making sure they're completed accurately and then collecting the forms so we can get the reporting correct at that level? Secondly, can Arrow tie in with the Bowen Basin/Galilee Basin population report that the Office of Economic and Statistical Research does that's currently based on bed numbers or an accommodation audit so we've got an annual population projection that goes to the Queensland Government. With the correct numbers we can actually begin mitigation on the ground.**

That is something I'd really have to take back on notice, but it sounds logical. I think last time around we did a little bit when the last census came out, but I think it's something we could look at doing with the current workforce we have on our existing operations.

Arrow is committed to engaging with the Office of the Coordinator General, State Government agencies and proponents to identify co-operative strategies that address cumulative housing impacts. Arrow facilitates the collection of population data across its operations and will continue to support and provide data to the Office of Economic and Statistical Research.

- 12. What are some of the mitigation strategies around the more localised roads? I know that you mentioned the impacts were quite low or somewhat negligible, but I was wondering whether the local road rating system had been taken into consideration within that context? One or two vehicles per day may seem negligible, but for a property or local road that may only be graded once every four years, it actually has quite a significant impact.**

That's covered through our assumption that when we turn off a major road onto a side road, for example to a facility that may be five kilometres or 10 kilometres further down a dirt road, we need to reinforce that road. We may need to surface it for the long-term or, dependent on the size of the facility, if it was one of our key depots and compressor stations or mainline compressor stations, then chances are it would need a very durable road to take that traffic. If it's a smaller facility, it may be that we retain it as a gravel road, but maintain accordingly. Also, as we get closer to the junction, we'd make sure there are adequate turning lanes and signage to make sure it's safe as well as keeping up the maintenance to any changes that we make.

- 13. Has Arrow considered, as an example of a mitigation measure, entering into road maintenance agreements to assist local government's road responsibilities for things that aren't necessarily covered by the State Government or included in any part of the royalties program? For example, if the road usage jumped from one category to another, local government would need to be able to cater for the additional cost involved in maintaining that road to a set standard. Local government doesn't necessarily get any additional rate revenue to be able to cover the cost of that additional service, but still has to maintain that standard for our local residents for liveability purposes.**

Arrow's road use management plan will be developed pre-construction and will be based on the conditions set out in the EIS. The principles and the philosophies are there in the EIS at the moment; it is open communication with DTMR and the councils, and then we take it from there and develop a management plan that fits around all of those things that you mentioned.

In addition to working with the Queensland Government, Arrow is also working with local councils in its area of operations to mitigate any potential impact to local road infrastructure.

- 14. Did Arrow Energy run all the environmental impact assessment itself or has it been done by an independent company? Are the results of the EIS approved by government?**

We use an independent consultant. It's a global consultant called URS which specialises in environmental work approvals and specifically the preparation of environmental impact statements. URS would conduct typically at least half of the studies internally and then it has got specific specialist sub-consultants to do the remaining studies.

Government undertakes its approvals via a two-stage process. At a high level it looks at the EIS prior to it going on public exhibition. Over the last few months, through the Department of Environment and Heritage Protection (EHP), the Queensland Government has conducted an adequacy review. The Federal Government has done something similar through the Department of Sustainability, Environment, Water, Population and Communities, the agency assessing the EIS; it can give it a tick in the box or ask for more information to ensure Arrow is meeting the terms of reference. Once it is at a level where EHP is happy for it to go on public exhibition, it invites a lot of government agencies such as the Queensland Police Service and the Department of Natural Resources and Mines to make a submission into EHP. That way EHP knows relevant agencies have reviewed the EIS, considered it and had an opportunity to make a submission to ask either for more information or clarification.

- 15. Does the EIS or the social impact management plan account for the increased numbers of DIDO and FIFO people living in camp and their effects on both emergency services and the hospital and doctors' surgeries?**

Yes, the EIS does address that in much the same way as traffic i.e. the principles and suggested ways of managing and mitigating the impacts are included. There is a level of detail there that I can't speak to right now because it's quite a large document. But mitigation and management plans are outlined there to address those impacts. It's recognised especially

with emergency services and police that early notification to help planning is something that was flagged with us a long time ago.

Middlemount

Date:	19 March 2013	
Venue:	Middlemount Community Hall	
Presenters:	Carey Bradford, Exploration and ATP Compliance Manager	Arrow Energy
	Fergal Convery, Project Manager Bowen Gas Project EIS	Arrow Energy
	Kavita Prasad, Groundwater Modeller	Arrow Energy
Facilitator:	Jan Taylor, Principal	JTA Australia

1. **Arrow has not responded to the two drafts of the legal document we have prepared with our legal team regarding acquisition of easement. We gave an inch and let Arrow come through and do its first study, and one of your reps came down and wanted us to sign the agreement there and then. I told him I would go to our legal team to have it checked. We did a draft and sent it to your legal team and we haven't heard anything back since. We have had no acknowledgement from Arrow that they have received anything from us. My solicitor sent off a second draft after checking with me whether I had received any confirmation and I still haven't heard anything. It's been about eight months now. Arrow did say it will pay the legal team within reason, but I've had to pay my legal team in the interim because they were asking questions. Can you help me with this?**

We will follow that up for you and find out what is happening. If your legal team has sent that back to our legal team, they would be considering it. There are about 250 landholders that we're dealing with along the pipeline route. I'll find out what is happening with it and ask him to give you a call.

Discussions regarding these matters are ensuing.

Blackwater

Date:	20 March 2013	
Venue:	Blackwater Civic Centre	
Presenters:	Carey Bradford, Exploration and ATP Compliance Manager	Arrow Energy
	Fergal Convery, Project Manager Bowen Gas Project EIS	Arrow Energy
	Kavita Prasad, Groundwater Modeller	Arrow Energy
Facilitator:	Jan Taylor, Principal	JTA Australia

- 1. Do you pay insurance to the Queensland Government if it all goes pear-shaped like what happened at Mount Morgan and things can't be rehabilitated? What happens if the groundwater is contaminated and it can't be used for anything? Who cleans it up?**

There are two mechanisms that come into play. We have our environmental financial assurance where we put up a bond and that would be used to pay for any damage that we didn't clean up. Secondly, there are the 'make good' arrangements for groundwater. If we impact the volume or quality of a landholder's water supply within certain thresholds, we are required to make good. We're required to make good until those elements are fixed and that can go on indefinitely. We're not a fly-by-night operator or a junior company floated on the Australian share market; we are owned by two of the world's largest companies with very, very large financial resources to be able to mitigate those issues.

- 2. There seem to be some horror stories coming out of the US where they have been doing this extraction for years, but are only now recognising the impacts.**

Firstly, just be careful where you get information from. Not all information on the internet has been vetted. We review what comes through the right channels. In Australia we've been fracking for 50 years out in the Cooper Basin. We haven't seen those kinds of issues. I'm only aware of one case in the US where it's been proven within reasonable doubt that there have been serious interactions between the shale gas industry and groundwater. That's at Pavillion in Wyoming, which has some very unique geological characteristics and where the guys are extracting gas from the same aquifers as where people are extracting water.

In Australia, we have a very robust regulatory regime; it's one of the tightest in the world, so this industry is strictly regulated. We have a code of practice for constructing and abandoning coal seam gas wells based on the way we construct our wells. But for us it's business as usual. We don't make money by going out and drilling wells that aren't productive and don't do what they're supposed to do, which is produce gas over their lifetime. If we ever did put in a well that ended up being leaky, we would need to remediate that. It's in our best interests to construct these wells in the best way possible and not to have these issues happen. By designing and constructing the well properly in the first place, having engineers design the cements and slurries that go into the well, and using the steel casing, we believe that the potential for impact on groundwater is very minimal.

3. With Metgasco closing down its gas operations in New South Wales (NSW), is there any likelihood of that happening here, or are there any implications for Queensland?

The word out of Metgasco is that it's concerned about the changing regulatory environment in New South Wales which has been playing catch-up to some extent with coal seam gas. In Queensland, the industry's quite a bit more mature and our standards are already very high. All companies look at their projects, particularly projects that have a long lifespan. Big companies want the stability to develop these large projects. They want to comply with the legislation and work within it, but when it changes they need to have a look at how it affects them. Metgasco seems to be saying that it doesn't have the confidence to invest because the NSW regulatory framework is changing without consultation.

If that was happening in any industry, whether it's the coal industry or the coal seam gas industry, where there are regulatory changes without any consultation from government, then you would be somewhat wary about investing tens of billions of dollars. In Queensland, we're in a better position because industry and the legislation have matured together, and I don't see those sorts of things being as much of an issue. We have a reasonable relationship with the government where we bounce ideas back off each other and there's quite a lot of lobbying between government and industry in Queensland, and I think we're getting it right.

4. What are some of the strategies to handle the salt coming out of the wells?

When we're talking about brine, we're talking about salt as well. The brine is the concentrate from our water treatment. When we treat the water that comes out of the well we take it to major facilities, and typically 90% of that water goes to beneficial uses such as urban or agricultural use. The remaining 10% is a volume of brine which eventually, if it's given the chance to dry out, becomes salt. In the Surat Basin, we're looking at options for bringing in mechanical devices, a plant essentially, to generate salt from the brine to speed up that process. The plant would mean that rather than having brine sitting there in evaporation dams, turning from brine to salt over many, many years, it's happening over just a few days. The concentrate may be salt or a form of brine and salt which may still be in a liquid form. Our worst case scenario is that we will take it offsite for disposal to a regulated hazardous waste landfill which could be some distance away if there isn't a beneficial use that can be found in the locality.

5. Any idea how much salt per year would be generated per well if it's an average well?

When we're in full production in the Bowen Basin, around 25,000 tonnes per annum will be produced. I will have to check what it is per well.

Following the presentation, Arrow staff referred to the EIS which states that an average of 33,500 tonnes per annum is forecast, with a peak of 48,800 tonnes per annum expected. Clarification was provided to the attendee who asked this question.

- 6. You were saying some of the salt may be used and then you'd have a surplus and then the surplus would be put into landfill, is that right? Hopefully that will stay in the ground wherever it's put and doesn't leach into the surrounding area.**

Yes, that's right. The idea of a hazardous waste landfill is that it's a protected cell; it's not like your normal landfill that may have a clay liner. The hazardous waste landfill has typically got two plastic liners with good protection and detection devices so that if there ever was a leak, then it's identified and dealt with by the landfill owner.

- 7. Would part of the strategy to remove the salt from the water be reverse osmosis?**

That's correct.

- 8. Can you use the water that comes from the desalination to irrigate crops or feed livestock?**

Absolutely. We have to recondition the water because we clean it up too much. We put some chemicals back into it so that it has its base nutrients.

- 9. What class of salt are you talking about?**

Contrary to popular belief, coal seam gas water is similar to any other groundwater that you'll find. The main constituents are sodium chloride and some carbonates. It can have tiny amounts of other heavy metals, but it's very tiny amounts. It's no different to any other groundwater that you'll find and if we put it through a reverse osmosis plant and reduce the brine stream, the vast majority of that would become something like soda ash or table salt and there would be a very small fraction of other groundwater chemicals involved in that.

- 10. What did the 50 year recovery cycle model come up with? Will it recover fully in 50 years? Why did you use this recovery period?**

The 50 year recovery was an estimate that we used in terms of looking at recovery in the coal measures. I can't give you numbers off the top of my head, but based on our understanding of the Bowen Basin, it will take a very long time for it to fully recover.

The primary purpose of the 50 year recovery period is to predict how the groundwater system will behave post CSG production. During the planning phase of model development, a review was undertaken to determine groundwater model simulation frequency based on the data available for model calibration, and CSG production. Given that the duration of the transient calibration was for eight years followed by a simulation time of 55 years for CSG production, it was considered reasonable to simulate 50 years for post CSG production ("recovery"). Based on our understanding of the groundwater systems in the Bowen Basin, we anticipate that it will take a long time for the groundwater system to realise the depressurisation impacts. The modelling confirmed this and predicted the drawdown to extend approximately an additional 0 to 4km depending on location, 50 years post operations. It is considered that the groundwater system will readjust over a long period and eventually attain a new equilibrium.

11. You mentioned that you might be able to use the water as drinking water for stock, is that correct?

Yes, it could be used for stock, irrigation, and agricultural uses. Arrow owns a farm in Theten near Dalby and for the last 12 months we've been growing crops from water treated from our Daandine field. It's a successful project that uses centre pivot-type irrigation and Arrow is trying several different crops to establish which ones really grow best with the water.

Arrow has also successfully provided treated water for cattle feedlots in the Surat Basin.

12. All my questions are related to coal mining around Authority to Prospect (ATP)1025. When do you anticipate that you'll have greater infrastructure details available than what you currently have in the EIS so people can better appreciate the pipeline and likely power stations and the type of layout for the areas?

We'd expect within the next one to two years to know and to understand where the first four or five gas fields would be, with the level of detail that you've just suggested i.e. the major flow lines, the facilities such as power generation or power lines coming in as well as compression facilities and water treatment. I would say one to two years from now when we do an environmental authority application that information will go through to government and then they'll take it back to the public and you will see the detail. Subsequent to that, typically every second or third year we'll go back and look for a revised environmental authority for development of subsequent gas fields.

13. When you overlap mining leases, the EIS doesn't distinguish particularly well between the ATP boundary and the petroleum lease application. It looks like it covers the entire area and some of those areas include mining lease areas, not just exploration areas, and they're not excluded from the area. Does it cover the entire ATP1025 boundary? Is there a more detailed map that shows the areas that are excluded or is it just the entire ATP area that's involved?

Where there's mining and there's already a hole in the ground there's no, or limited, potential for us to put a well there. Any work within a mining lease is subject to a co-development agreement, and that will be dealt with through the planning phase. For that first package of work, in the first four or five years of construction, if your mine or your lease was in that area, then certainly we would be talking to you.

14. A little while ago Bow Energy built a power station not far back from Blackwater, just out of town really. My understanding is that Arrow Energy bought that company. What are the plans for that power station?

The last thing I heard regarding the power station was that it was up for sale. It was never connected to the gas pipe coming into it and was never hooked up for high voltage grid connection. Since Arrow took the power station site over, we decided to put it on the market for sale. I know there are a few interested parties, e.g. some mine sites which are looking at taking it onto their mine to run some of their drainage gas through, but I can't tell you if any of those miners have actually been successful in securing it.

(Ross Graham, Arrow's Northern Land Access Manager). The power station has been sold and it will be dismantled and removed from site over the next six to eight months. It's a

commercial-in-confidence agreement so I can't give you any details other than what I've said.

15. I assume that pipeline licence 158 was also going to that power station; is that also to be taken out now that the power station won't be there?

If that pipeline licence was for supply to the power station, then that's off the table at the moment. It's likely the pipeline would have been to gather the gas into the power station. If the power station's not there, there won't be a pipeline.

There are also two other pipeline licences that Arrow acquired with Bow Energy. One was heading directly north into the Arrow Bowen Pipeline, and the other one directly east towards Rockhampton, again towards the Arrow Bowen Pipeline. Similar to Arrow's decision about the power station asset, given that development in Blackwater is not imminent, Arrow is likely to take those pipeline licences off the table as well.

16. It was in the *Australian Financial Review* only last week that Shell has withheld its support of the Arrow project. Where does the project stand at this stage?

The Arrow project is \$20 billion and they've already put seven in, so it's almost \$30 billion dollars. You can imagine that the *Australian Financial Review* includes a fair bit of gossip. We will be looking at every opportunity to monetise our gas, whether that's through someone else's pipeline or whatever. Behind the scenes when you look at running an LNG project, it's not a matter of trickling gas into it and then building it up, you've got to run the thing flat strap or not at all.

Companies have a lot of issues with what we call ramp gas. You have to drill many, many wells to be able to produce enough gas to run one of these plants. And it's beyond the capability of most companies to meet that ramp on their own so we would be looking at maybe selling ramp gas to Santos or another company. Ramp gas is the gas that you are producing while you're building the capability to run your LNG plant.

There's a lot of speculation and we are entering into talks with other companies about what we do with our ramp gas as we're building our capability to run the plant. At this stage our base case scenario is Arrow building two trains, building a tunnel under Gladstone Harbour, putting in approximately 7,500 wells in each basin and building two 500 kilometre long pipelines and a number of water handling and compression facilities. That's what we're assessing. Obviously we would be looking at all opportunities and how we make the best amount of money out of the project.

17. There won't be any drilling in the Blackwater township itself, will there?

That's correct. There is a setback distance nominated from the township. It's actually a regulation that came through approximately 15 months ago and that's two kilometres back from the town limits which is enforced right across Queensland.

Clarification: The Queensland Government did not finalise the regulation nominating a setback distance of 2km from town limits. However, Arrow does not propose to conduct drilling within Blackwater township, and has made specific commitments nominating a minimum setback distance from houses of 200m. The location of all wells will be agreed in

consultation with the landholders.

18. What does the water trading look like? You're trying to encourage farmers not to use their bore water, but use your water, so what does that look like? What does it cost the farmer?

We're in the funny position that the water is a waste product; we don't actually own it, but we're required to remediate it and get it to a point where it can be used. The way that it works is we would go to the farmer and we would say, 'we'll put a lock on your bore so you won't use your allocation. You use two megalitres per year. We will supply you two megalitres.' We would put in the infrastructure to make that happen. It's in our interest to dispose of the water some way and our preferred hierarchy is to substitute allocations, discharge to streams or re-inject it. The onus is on us to get rid of this water, so it literally doesn't cost the farmer anything.