



**NB: These are draft minutes only – to be ratified at the next CCC meeting. Note that minutes are paraphrased to an extent and may not exactly match actual statements.**

Project	Gloucester Coal Seam Gas Project	From	Michael Ulph
Subject	Community Consultative Committee	Tel	4910 7788
Venue/Date/Time	Thursday 24 October Gloucester Country Club, 10.10am – 12.00noon	Job No	21/17714

Copies to All attendees

Attendees	Ian Shaw – AGL Lands Officer Therese Ryan – AGL Community Relations Manager Toni Laurie – AGL Land and Approvals Manager Ed Robinson – Lower Waukivory Residents Group Dr. Gerald McCalden – The Gloucester Project Rod Williams – Community Representative Jerry Germon – Community Representative Anna Kaliska – Mid Coast Water Graham Gardner – Gloucester Shire Council Ray Dawes – Barrington Gloucester Stroud Preservation Alliance Clr Aled Hogget – Gloucester Shire Council Clr Karen Hutchinson – Great Lakes Council Clr Tony McKenzie – Dungog Shire Council Michael Ulph – GHD (Chair) Lilen Pautasso – GHD (Minute taker)	Apologies	Clr David West – Mid Coast Water Lee McElroy – Port Stephens Council Lisa Schiff – Great Lakes Council David Mitchell – Avon Valley Landcare Dan Rose – CEO, Forster Local Aboriginal Land Council
	<b>Observers / Presenters</b> Alex Kennedy-Clarke – Gloucester Project Manager Melissa Ryan – Gloucester Project Officer John Ross – Manager Hydrogeology David Moss – Gloucester Pipeline Manager		



Notes	Action
<p><b>Michael Ulph (Chair)</b> <i>Welcome and Acknowledgement of Country</i></p> <p>Meeting commenced at 10:15am</p> <hr/>	
<p><b>2. Meeting agenda</b></p> <ul style="list-style-type: none"><li>• Welcome and apologies</li><li>• Action items from previous meetings</li><li>• Project Update (Toni Laurie)</li><li>• Community Engagement update (Therese Ryan)</li><li>• General business</li><li>• Next meeting &amp; close of formal proceedings</li><li>• Lunch</li></ul> <hr/>	
<p><b>3. Action items from the last meeting</b></p> <p>Action items from the previous CCC were reviewed. Michael asked the CCC if there were any other questions in relation to the action items or previous meeting minutes.</p> <p><b>Action 1 - CCC to further discuss health study for this project</b></p> <p><b>CCC: Now that the Waukivory is in progress and we know that fracking is going ahead, is there no health study about the impacts?</b></p> <p>TL: There is a health study in the REF and one that has been conducted for the Camden project is to be released soon. This Camden study covers the same processes so we look at that one and implement the same process for this project.</p> <p><b>CCC: My view is that the study is too late and that Camden doesn't relate to Gloucester. Once you start fracking, if you conduct the health study afterwards it will be too late.</b></p> <p>TL: As I mentioned, we consider this to be a very serious study and, as such, have made sure to include one in the REF. Even though Camden is a different site, the processes are similar so we will combine our understanding of that project, what is in the REF and any further findings as we progress.</p> <p><b>CCC: Is it a legal requirement to undertake a health study?</b></p> <p>TL: Yes it is a legal requirement, but also one that we undertake as part of the project. It is part of the requirements for the fracture simulation plan and there are guidelines we need to cover off in the REF. As you know, this REF is still being assessed by the Department of Planning.</p> <p><b>CCC: Has there been any fracking undertaken in Camden?</b></p> <p>TL: Yes. About 117 of 144 wells have been fracked.</p> <hr/>	



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<p><b>CCC: I understand that fracking was done early in the process, but when was the last or most recent time it was done?</b></p>	
<p>TL: Somewhere in the order of 4 or 5 years.</p>	
<p><b>CCC: (to another CCC member) I just want to point out that you made an incorrect statement regarding fracking in Camden. You said that there had been no fracking.</b></p>	
<p><b>In addition, I want to also say that the health study really does need to be pursued here and I agree with other members of the committee that it is important to do it now, especially because people live close by.</b></p>	
<p>TL: Yes, I understand. As mentioned, there is a report inside the REF to cover that and once the Camden health study is released then we will look at that too. It's due for release soon.</p>	
<p><b>CCC: How can we look at the REF?</b></p>	
<p>TL: The document is on the AGL and Department of Planning website and is available to view.</p>	
<p><b>CCC: Would you be fined if you proceeded without this study?</b></p>	
<p>TL: It's not just that, but we have a reputation and we have an obligation to meet these guidelines. Our report is the first REF under the new guidelines. It was a long process to meet these guidelines and there certainly would be significant infringements if we didn't comply with our requirements.</p>	
<p><b>CCC: On the website the REF is just one PDF file. Could AGL provide separate PDF sections so that we can look at the areas of interest?</b></p>	
<p>TL: Unfortunately the Department made that decision to put all seven volumes up on their website that way. As for the AGL website, we can look into it to see whether we can separate the sections.</p>	<p><b>Toni to investigate if the REF can be divided into separate sections on the AGL website.</b></p>
<p><b>Action 2 - Toni to check status of Phase 1 desktop assessment</b></p>	
<p>TL: John Ross will address this as part of his report.</p>	
<p><b>Action 3 - CCC to catch up on program status, schedule and timing proposed at next meeting.</b></p>	
<p>Action complete.</p>	
<p><b>Action 4 - Toni to ask whether John can critique Yancoal's data</b></p>	
<p>TL: John to address in presentation.</p>	
<p><b>Action 5 - Toni to inform CCC of the Aeromag presentation timing</b></p>	
<p>Therese Ryan has organised for a presentation at the December CCC meeting.</p>	
<p><b>Action 6 - TR to provide four hard copies of water reports to CCC</b></p>	



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Action complete.

**Action 7 - TR and TL to provide hard copies of their reports next meeting**

Action complete.

**Action 8 - Aaron Clifton to inform CCC about the Camden preliminary methane monitoring report status**

IS: This action hasn't been completed as yet, but is not far away. Once this occurs a link will be circulated to the CCC

**AGL to provide a link to the Camden preliminary methane monitoring report once received.**

**Action 9 - TL and TR to keep CCC informed about a workshop to discuss methane monitoring locations and conducting further baseline monitoring**

TL: We are still working on that process.

**Action 10 - TL to ask APPEA about the advert stating 'CSG will ensure the creation of 150,000 new jobs in Australia'**

Held over for discuss in general business when Gerald is expected to have arrived.

**Action 11 - Michael to liaise with Terrence Healy re: meeting dates for 2014.**

Action completed.

The last meeting minutes were moved by Graham Gardner and seconded by Jerry Germon as a true and correct record.

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**3. Project update:**

Toni Laurie provided an update of the Gloucester project to the CCC. A hard copy document summarising recent activities was also provided to the CCC.

TL: As the document outlines, we are continuing to work through the conditions of our approval and incorporating these requirements into the design. There have been minor modifications applied to the pipeline route which results in less vegetation clearing and straightens the pipeline direction in southern areas near Tomago. We are also still working with landowners regarding property access approvals in relation to the pipeline route. In summary, the change applied to the pipeline route was that it now heads more directly into the Newcastle Gas Storage Facility (NGSF). The pipeline will now connect into the NGSF at Tomago instead of Hexham which is a shorter route and reduces impacts such as vegetation clearance in a few areas. All the plans for the pipeline route will be submitted early November and will also go on public exhibition.

**CCC: Where does the southern end come into Tomago?**

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<p>TL: On the northern side of the transmission lines and from there connects into existing pipelines.</p>	
<p><b>CCC: Who owns the Newcastle Gas Storage Facility pipelines?</b></p>	
<p>TL: It is an AGL project that we are connecting in to, so it belongs to us.</p>	
<p>Flow testing of the exploration pilot wells is continuing at the Craven 6 and Waukivory 3 well sites. Waukivory 3 will be completed and the site rehabilitated as per the landowner agreement, in December 2013.</p>	
<p>Workover of water monitoring bore (WKMB04) near the Waukivory Pilot will commence next week (28 October) for an estimated 2 week period.</p>	
<p><b>CCC: In relation to the WKMB04, why are you monitoring more wells?</b></p>	
<p>JR: There are four water monitoring bores at Waukivory and WKMB04 is the deepest in the current program. It is planned to monitor water levels and water quality at all sites, although WKMB04 requires work to effectively monitor water levels at depth. This is all to give us more information.</p>	
<p>Sessions will be taking place next week for those landowners involved in the 2012 seismic survey.</p>	
<p>As has been discussed at previous meetings and in AGL's Community updates, the Waukivory REF has now been submitted to the NSW Office of Coal Seam gas (OCSG) for assessment. This REF covers perforation, fracture stimulation and flow testing of all four pilot wells. Community drop in sessions (afternoon and evening sessions) regarding this work program are timetabled for 20 and 21 November.</p>	
<p>The Pontilands corehole has been plugged and abandoned. This work has now been completed and the site rehabilitated around the water bore monument recently installed for the ongoing deep groundwater monitoring program at this site.</p>	
<p><b>CCC: I just wanted to make a comment and congratulate Toni on producing a comprehensive and neat report.</b></p>	
<p>TL: Thank you.</p>	
<p><b>CCC: Just in relation to the pipeline, how many landholders are you still waiting on for approval to access their properties?</b></p>	
<p>TL: Only about 10 or so.</p>	
<p><b>Community Engagement Update – Therese Ryan</b></p>	
<p>Therese provided an update to the CCC on all the recent community engagement events.</p>	
<p><i>TR issued document that outlined the key activities. Some of the key summarised activity is:</i></p>	
<ul style="list-style-type: none"><li>• <b>Letterbox drops</b></li></ul>	



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This included the community update about work happening.

- **Website**

The web address is provided in the document, but the address is slightly different now.

- **Meetings with Gloucester Shire Council**

The key milestone here was the co-op agreement, which has been signed and executed.

- **Information sessions**

We are planning to host the Waukivory information sessions on the 20th and 21<sup>st</sup> of November.

### **Presentation on Front End Engineering Design (FEED)**

#### **Introduction by Alex Kennedy-Clarke (AKC)**

AKC provided an overview of the engineering design aspects of the project. This presentation focuses on the front end engineering design (FEED) phase of the project. AKC outlined that this process involved the development of a basic design that would later move into detailed design. Once a 30% detailed design has been achieved, AGL present a business case to the Board to obtain a final investment decision. This is anticipated to occur in the fourth quarter of 2014.

AKC explained that during the design and engineering phase, data is collected from the exploration activities and the engineers refine concepts and lock in the design, prior to presenting the business case. This happens for all elements of the project (including wells, layouts of the CPF, high pressure gas pipeline etc.). The design needs to be 30% complete to get a good idea in regards to costs, equipment requirements etc. After this, AGL will go to tender for various packages of work across the project and the results of the tendering process will allow the completion of the business case showing costs of construction and operation, which will go forward to the Board.

This will then allow us to lock in exactly how we are going to proceed with the next phase.

Over the next year we will be able to come back to you (GCCC) with a lot more clarity around what we are doing and how.

As part of this phase we have to comply with the conditions of consent, the Part 3A approval and the Commonwealth EPBC approval.

I think we have 92 conditions under Part 3A and 36 under the Commonwealth approval, all with numerous sub-parts, so there is a large amount of work involved in meeting those conditions of consent.

A lot of them are water related issues, which obviously John [Ross] is across, and we are looking at feeding any of those requirements into the design process.

AKC stated that Worley Parsons has been chosen as the consultant for the FEED.



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*Gerald McCalden arrived at 10:45.*

**CCC: Is the requirement for the design to be 30% complete an industry standard?**

AKC: Yes, and it's about doing enough design work to get a good handle on the project and getting an idea what costs will be required without going into too much detail prior to receiving funding or approval. So yes, it is an industry standard in terms of the level of detail that you go into. Once you have Board approval to proceed you then go to detailed design, which specifies every nut and bolt. But you don't need that at this stage.

**CCC: Once you get board approval, do you do the additional design as part of this same process or afterwards?**

AKC: It depends. You can do that for some aspects, but not for others. We have meet our conditions of consent before we can 'turn dirt', so that comes before anything else. But it gives us ideas about what we need and we can continue to plan as we need to. We can choose to do more design to get ahead, but we know that there are also some pieces of equipment that have long lead times, of 18 months or more and they drive the schedules.

**CCC: You said you expect to go to the board in the 4<sup>th</sup> quarter of 2014. The publicity says you will produce gas in 2016. If it took 18 months to get some equipment, does that mean that there will be a massive construction phase in 2016?**

AKC: AGL has publicly stated the 4<sup>th</sup> quarter of 2016 to produce first gas. We can do a lot of other work up front and then slot in those final bits of equipment when they arrive, we won't wait for everything to be on site before we start construction. That's part of the detailed scheduling.

**CCC: Will you start the detailed design before completing the pilot project? If there is no information from the pilot inputted into the 30% detailed design, how can you complete it?**

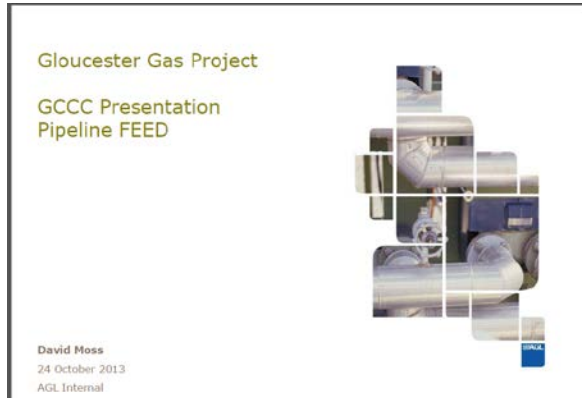
AKC: We have the other wells, one of the reasons we have the Craven 6 and Waukivory 3 wells on flow test is to get as much information as we can.

We won't have much information from the Waukivory pilot but we can back feed that and update it as we move along. You design for a range and a mean, and we have enough data from the aeromag and seismic surveys to input into the design. We therefore have enough data and information to give us confidence about the spectrum for the project. The pilot data will help to refine that.

**AGL Pipeline Manager, David Moss (DM), presented on the pipeline design and construction process.**

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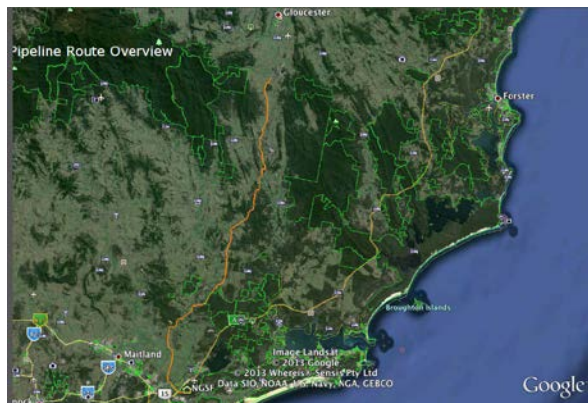
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**David Moss' presentation to be made available to CCC**

DM provided an overview of the pipeline construction phase including the FEED for the pipeline. DM explained the location of the pipeline and how it will connect to the Hexham pipeline that will eventually feed into the Newcastle Gas Storage Facility (NGSF).

DM has more than 20 years' experience in and around natural gas pipelines, operations, maintenance and construction activities.



The slide above shows the pipeline route (orange line), which runs through a few different geologies, from mountains to river flats. The altered route will reduce the impact on people around Tomago.

**CCC: Is there a link under the Hunter River?**

DM: That will be constructed in November as part of the Newcastle Gas Storage project.

Our main reference for the Pipeline FEED is the Australian Standard AS 2885. Recognised around the world as one of the more advanced standards for designing, constructing and operating petroleum pipelines with a very good reputation. There has been a lot of input from the industry over the last 40 years to really make that a very comprehensive standard from an engineering and construction perspective.



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### Pipeline FEED

AS 2885 is the main reference for design, construction, testing and operation of high pressure petroleum pipelines in Australia.

#### Front End Engineering Design Deliverables

- > Finalise pipeline centreline for detailed design
- > Preliminary crossing details, roads, rail, other major utilities ie Hunter Water
- > Fracture control plan for pipeline
- > Specification of line pipe steel, manufacture, and coating
- > Location class confirmed
- > Pipeline Safety Management Study
- > Construction Scope of Work and Specifications
- > Specifications and data sheets for equipment

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(See above slide for headings).

Fracture control plan is around making sure the steel is properly specified for the service, as the metallurgy is important. This is one of the long lead items. You have to have the line pipe here in order to start constructing the pipeline, so specifying the pipe is important for us.

The location class of the pipeline is based on the population density and the country that the pipeline is traversing. Part of the pipeline design is to determine the location class.

This is followed by a pipeline safety management study. Pipeline design is very much risk-based, so our designers and we have an obligation to make sure that the controls that we put into the design are specifically matched to the sort of areas and things we are doing. We need to look at the pipeline from start to finish and understand the issues and make sure we design the pipeline to match those.

We develop a construction scope of work and specifications towards the end of the FEED phase and we go out to constructors and get a price and proposal to construct, we also specify a lot of the major equipment like mainline valves which can be long lead items as well.

We also look at more construction related activities Slide 4 (below) which include confirming a location for a midline camp. The pipeline is like a mobile production line and in the peak of the construction activity we could have up to 300 people constructing the pipeline. We will have a camp somewhere around Gloucester and we'll also need a midline camp so that we have somewhere for the workers to stay, probably down the range somewhere between the bottom of the range and Seaham.

We need to look at access for machinery and pipe trucks. One of the bigger logistical exercises for us is to get the pipe to the pipeline route. So access in and along tracks and bridges is important. It may be that we need to do some work on some of the bridges to make sure that they are safe for the trucks and machinery to traverse.

## Notes

## Action

### Construction Related Activities

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#### Review logistics;

- > Confirm potential locations for midline camp
- > Potential stockpile locations for pipe
- > Access to pipeline right of way for machinery and pipe trucks, review road access and bridges
- > Select optimal centreline for constructability and lowest impact on environment and landowners
- > Identify areas where additional construction area may be required
- > Identify any construction constraints with key stakeholders ie Transgrid, Hunter Water, ARTC, Main Roads, Councils

»Presentation Title  
»February 2008  
»AGL Internal



You have to balance different constraints. Constructors want the easiest construction route, environmentalists want the least impact, we also talk to the landholders about their particular issues and we want to make life as easy as possible for everyone, whilst still complying with our project approvals.

We also will look at areas where we might need a little more construction area, so where the constructors might need some more room to facilitate a safer or more cost-effective construction activity.

That may be in areas like river crossings and so on.

We are also engaging a lot with other stakeholders like Transgrid, Hunter Water, ARTC and so on in relation to roads and crossings etc.

A couple of the other things we are doing – a geotechnical investigation along the pipeline, probably towards December we'll be doing some preliminary investigations to look at the geology along the pipeline centreline. We'll be consulting with the landholders and finding out more about land use and things that people are planning that we may need to account for in our design. If we know that someone's going to deep-rip a paddock we can put the pipeline a little bit deeper in that area.

We can use these studies now to make the design better.

### Procurement

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#### Procurement Activities

- > Tenders for coated line pipe
- > Tenders for main valves
- > Tender for main design and construction contract for pipeline and facilities
- > Tenders for other long lead items as required.



Slide 5 – Towards end of February there will be procurement activities. We'll go out to tender for coated line pipe and possibly valves, and the design and construction of the pipeline and any other long lead items that might be on the critical path for construction activity.

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Images show (from previous projects) the progression of the pipeline construction activity.



The first thing is fencing to establish a clear run through the pipeline corridor where possible, then we remove topsoil and stockpile it, and provide a clear path for the pipeline activity.



We then string the line pipe out along the route in preparation for welding.

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**CCC: What is the typical stage length?**

DM: There will be a main construction spread of probably something like 20km. Normally they start and continue all the way through, but you don't want to be too far in front of the other crews. We need to consider things like wet weather (e.g. for trenching), so the aim is not to get too far ahead during the laying of the pipeline. We want to be efficient and have high productivity due to cost but we also want to get off people's land to lessen the impacts on them.

**CCC: What is the normal depth to bury the pipe?**

DM: The pipeline code varies depending on the location class (e.g. away from population). Generally in open country the minimum burial depth is 750mm to the top of the pipe but in more populated areas the depths get deeper. There's also a risk based element too. We do that as part of safety management study. We generally prefer to bury the pipeline deeper, for safety reasons. It can be shallower in rock.



**CCC: How do you test the pipe?**

DM: That's a part of the detailed design. The pipe is tested in the mill when it is manufactured to make sure that the seams are in good order. After the pipeline is fully constructed they will break the pipe up into sections and hydro-test. That's a little to do with the availability of water. A 20km section of pipe will need a fair bit of water to fill and hydro-test. Changes in elevation will also determine how you split up the hydro-test lengths.



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<p><b>CCC: Typically how long would you be on each person's property?</b></p> <p>DM: It's hard to say. If everything is in order it's probably about 3 – 4 months between the front end and the back end which is the rehabilitation, which is guys coming through and re-seeding and doing the final grade and putting the top soil back and so on.</p>	
<p><b>CCC: When you do river crossing under-bores will you do those first?</b></p> <p>DM: Typically when we do an under bore, such as for a river crossing, there will be a particular team doing special crossings, and they will go ahead of the main construction activity. They may have two or three crossing crews that go ahead and do things like under bores under roads and rail, horizontal drills under major rivers – again a specialised activity with a special crew.</p>	
<p><b>CCC: Which is the longest under-bore?</b></p> <p>The one under the Hunter River to get into the storage facility. It is about 1 kilometre.</p>	
<p><b>CCC: Have you worked out a rough timeframe for this to be completed?</b></p> <p>DM: I think around 9 months. It is a detailed design issue, but 9 months is an average timeframe from start to finish. You don't have 300 people working for a full 9 months, but from the start of construction until end that is a rough timeline.</p>	
<p><b>CCC: When you were talking earlier, did you mean that there will be a stop valve every 20 kilometres?</b></p> <p>DM: No. I meant that more in terms of the spread of the pipeline. How much pipe you would have strung out at any one time.</p>	
<p><b>CCC: Is the pipe segregated in any way?</b></p> <p>DM: There is one mainline valve to be constructed near Seaham and then the rest of the pipeline goes from Seaham to the Newcastle Storage Facility.</p>	
<p><b>CCC: So, if there's a break you could lose 90 kilometres of gas or whatever is in the pipe?</b></p> <p>DM: In the worst case if you did have a leak you would need to close the mainline valve and repair the leak.</p>	
<p><b>CCC: I know that the topography in this area is challenging, perhaps more so than the examples you are showing on the screen. How does topography affect fluids in transit?</b></p> <p>DM: Not so much because it's natural gas, not a liquid. There is a small effect when you change elevation, but it's not a material impact on the design of the pipeline. The change is only minor, not like a water pipeline. Any issues are identified at the front end engineering design phase where we model the pressures and flows and take into account any changes in elevation. But there is normally no material impact on design.</p>	
<p><b>CCC: We know that the pipeline runs across properties, some of</b></p>	

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**which, during the rainy season, can be no-go areas for months. In the timeframe you mentioned, will this cause disturbances?**

DM: Weather is a big risk, and we will be constructing on natural terrain, not an all-weather track. This is why you need to ensure productivity is high during dry periods so you can take advantage of the good conditions.

**CCC: During operation, how do you detect a leak?**

DM: We use a SCADA system which measures the pressures and the flows. This review involves the calculation of *line pack* to determine how much gas is travelling through and is contained in the pipeline. There is some leak detection ability in regards to what is coming in and out of the pipeline and that helps to identify any leaks. This calculation is done daily. We also do an annual activity of traversing along the pipeline to detect smaller leaks with gas detection equipment. It is very unusual for a leak to occur because a lot of focus in the design and construction is to make sure wall thickness it is designed properly with high integrity, including hydro tests for strength and a leak test, and we also monitor during operation.

**CCC: Do you have pressure sensors to measure pressure all along the pipeline or the start and end?**

DM: Just at the start and finish, and they may have something at the mainline valve. This will be decided as part of the FEED.

**CCC: Typically what sort of leakage rate is there in Australia?**

DM: I don't know that you can quantify that. The pipe is fully welded. With above ground pipework you check it more regularly as you are most exposed to get small leaks around flanges etc, but for mainline pipeline it is fully welded and after it has been tested it is very unusual for it to leak. I couldn't tell you how many incidences of that there have been in Australia, but they would be very low. The focus on the pipeline is the on the design and construction and the testing that we do to ensure we don't have any potential for leaks in the main pipe.



DM: So this is the welding crew. When a pipe is strung out, the next thing that happens is that the welding crews come along and they start welding the pipe together. The welders are a very important group and they are very productive. These guys actually run between welds. They are expensive because the welding is quite specialised. So the pipeline

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constructor doesn't want to hold them up. So when they get released they just want to keep on going. They can do a lot of welding in a day.



**CCC: Do they do their own verification of the welds?**

DM: No, behind these guys is an NDT crew, that does non-destructive testing (NDT) of each of the welds and there are Australian standards on weld testing that must be considered for all types of pipelines.

Different welding crews will do different things, the welds are built up in different passes, so there'll be a root pass, a hot pass, then some filling runs and then a capping run. So there are different types of tests for different welds, and the non-destructive tests. That is, radiography of the weld, an x-ray [or gamma radiograph] of the weld.

The Australian Standards for pipelines is in five parts now. There's a design part, a part dedicated to welding and what is acceptable and what's not, there's an operations and maintenance section, a section on hydrostatic testing and a section on submerged pipelines. It is a very comprehensive standard and there's a huge amount of detail in verifying the welds and it's all around ensuring that the integrity of the pipe is very high.

If you were to get a leak, one of the sources could be porosity in a weld, so there is inspection activity around that, which culminates in the hydrotest. There is a lot of focus on the integrity of the welds.

**IS: How many failures are allowed per welder?**

DM: There are all sorts of limits. Welders are individually qualified and there are limitations on what's acceptable, and what failure rate is acceptable and this is laid out in the Australian standards.

**CCC: I assume there may be some weld deterioration over time and that it would be subject to heating and cooling. What failure rate over time is there for the weld?**

DM: It is very low. After the weld is done it is coated. The technology in the coating is very advanced. Once the pipeline is put in the ground there is also a cathodic protection system, so we impress a current on the pipe to make sure that the pipe is not subject to corrosion.

In the design phase, the engineers will look at pressure cycling and make sure there isn't any potential for fatigue. The design considers all the issues you could get with pressure cycling. Temperature cycling is

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not so much of an issue. Where there is potential for depressurising the pipe, such as at a vent, we look at low temperature steels and ensure that materials we use are suitable for the temperatures that we expect.



**CCC: What is the overall lifespan of the pipeline?**

DM: The design life is specified in our license is 40 years, but if you wanted to specify one to last 100 years there is not much that you could do differently. The pipelines these days have very high integrity levels.

The standards require design reviews at regular intervals, so after 40 years we would need to do a review and investigate the pipeline for corrosion. You can send an inspection tool down the pipeline that measures magnetic flux to checks for internal and external corrosion. This is generally done every 7-10 years. We also do surveys on the corrosion protection system to make sure it is in order. By the time you get to those design reviews you should have a comprehensive set of documents that confirms to yourself, the regulators and the community that the integrity of the pipeline is acceptable.

**MU: You mentioned a 'corrosion protection system', is that the coating over the welds?**

DM: There are two things, coating of the joints and the main pipeline also has a cathodic protection system. It is a standard to have this system in place. You have an anode in the ground and you preferentially corrode that to the pipeline, by having a very low current on the pipe (micro-amps). It's a requirement under the standard to have that corrosion protection in place.





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So that's welding. After the welding we trench the pipe. Depending on the terrain we use something like a bucket-wheel trencher or a chain trencher. That will dig a nice neat trench in areas where the geology permits us to. Where the geology is a bit more tricky the constructor might use an excavator.



After it's trenched you'll have a completed trench, a long string of pipe and then we'll ideally re-use the material from the trench and use a padding machine to break up the spoil and pad the bottom of the trench. Before the pipe is lowered in.



You can see the lowering crews there with a side-boom, which is a mobile device on tracks with an arm out the side.

**CCC: Are there any dangers of flexion?**

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DM: No, the design considers this and the construction specification specifies what the constructors can and cannot do such as how much they are allowed to bend the pipe. Regular inspections are also undertaken to ensure that contractors are complying with the construction specifications.

**CCC: Are there any tests done after it has been laid in trench?**

DM: Yes, that's when the hydrotest is done, it is a final test on the integrity of the pipe, to ensure that the pipe is as it should be.



DM: This is an example of a special crossing, preparing for a bore for crossing of road or rail, and these rails would hold the boring machine. Typically this would be the sort of set up we need. The size of the trenches can change depending on the size of the bore we need to do

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and the lengths of the pipe we need to push across the road.



DM: Gloucester will look different to this picture because you'll have the CPF (Central Processing Facility) as well in the background. In terms of the pipeline infrastructure that's pretty much what it will look like at Gloucester and Newcastle.

Usually there would be an actuator valve that can be controlled remotely to shut off the gas supply.

We can send tools through the pipeline (what we call a pig) at this point to check it, and also to clean it. We are not expecting to get a lot of contaminants, and there's a standard that we have to meet relating to the quality of the gas that we transport.



DM: This is a photo of about a 300 man construction camp. That block was previously cleared by the landholder and we were fortunate that there was a landholder there that previously had an orchard on it.

Once we were finished obviously all of that gear was picked up and we then rehabilitated the site back to its original condition.

**CCC: In terms of workers on site, how many camps would you need during a project like this one?**

DM: One at the start of the pipeline, and a midline camp as well.

**CCC: Are the pipes you're demonstrating on the PowerPoint slides the same as those going into Gloucester?**

DM: Yes, the pipeline in the slides is 16 inches (400 mm) diameter. We do need to confirm our pipeline diameter for Gloucester. I think in the

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approval we could go up to 18 inches, but it will be somewhere between 12 and 16 inches.

### **CCC: What are the lengths of the pipeline sections?**

DM: Usually 18 metre lengths.



**CCC: There is a lot of concern in the community that when this construction phase starts there is going to be a lot of pressure on Gloucester resources. It's hard enough to get to see a doctor now. It only takes one nasty case of flu to create a serious problem in this town. Are there any contingency plans so they don't rely too heavily on our supplies?**

DM: Generally construction crews are self-sufficient. A lot of their work is in very remote areas, and will typically have their own medical crew, their own ambulance, and their own nurse. They may or may not have a doctor. So I wouldn't be expecting them to rely on the Gloucester medical facilities except in an emergency.

**CCC: Will the local community get to contract and supply any goods and services to this organisation?**

DM: In my experience, construction crews understand the value of using local subcontractors to do a range of different things, so usually they make pretty good use of local subcontractors, such as for fencing or additional equipment.

**CCC: Is there an opportunity for local providers to be shortlisted or considered as a main supplier of services, like was organised for the Tillegra dam? It provides a good linkage.**

AKC: There have already been discussions on this with the NSW Department of Trade and Investment. They have a service that runs this so when we get to this point where we are closer to construction, we can put in Expressions of Interest (EOI's) through that website so we know who to contact and who provides particular services. We have already been in touch with their Newcastle office regarding this but we just need to find the right time to start shortlisting suppliers so as not to set any expectations too soon in the project. This won't happen until we get that board final investment decision.

**IS: I understand that the pipeline is manufactured overseas. Is it**



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### **because it's just not available here?**

DM: It is just an unfortunate case that there are not these manufacturers available to us in Australia. Ten years ago we would have ordered this pipe through an Australian manufacturer as we did have two Australian mills down in Wollongong with very clever and competent guys running those mills. A couple of years ago they both pulled up stumps due to international competition. Pipe manufacture is very energy intensive. The costs were too high in Australia considering the price to do this overseas. This is high strength alloy-steel pipe, not the type of thing that just anyone could put together.

### **CCC: Given the volume of pipe you need, would you consider railing to any points?**

DM: Possibly. I think there's a siding near Stroud that might be a good stockpiling area. But it is up to the contractor/constructor and how they want to manage the pipeline. Ideally they don't want to double handle the pipe, as lifting could potentially damage the coating.

### **CCC: Who's on the shortlist of contractors for construction?**

DM: There will be quite a healthy market, as a lot of the activity in Queensland is winding down now. A number of companies have been identified, but there are probably about a dozen or so interested.

### **CCC: What are the chances for local subcontractors to be involved in the construction of the pipeline?**

DM: There is reasonable opportunity. As I mentioned earlier, the contractors value local subcontractors. When we go out to tender they will be trying to deliver at low cost and the best way to do that is to use local services. My experience is that they make good use of local resources where they are available, but a lot of their machinery is quite specialised, but they are likely to hire in things like excavators. The opportunity is there as a subbie to the main contractor.

### **A water update was presented by AGL Manager Hydrogeology, John Ross (JR).**

JR referred to the action item regarding the status of the Phase 1 report. JR stated that the study was completed by URS in July. This report is not released yet but can be placed on the AGL website. It basically says that the geology and hydrogeology in the rest of the basin is very similar to the area we're working in and there's no other special groundwater features, issues or concerns that we need to worry about immediately, but roll out the expanded monitoring network as per the plan.

JR referred to the second action item regarding the critiquing of Yancoal's data. JR stated AGL does have a data sharing agreement with Yancoal, as they do with GRL. They have to request data, and they request data from us. There is confidentiality around that data, we don't have the ability to talk to it, we can use it internally for our own purposes and we have made a request recently for our groundwater modelling.

The data that is coming in will be critiqued and used for the groundwater model. This groundwater model will be basin wide and we



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<p>will get the best data from everywhere to put into that model.</p>	
<p>JR provided a general update. Activities have included the following:</p>	
<ul style="list-style-type: none"><li>• We are releasing today the 2013 groundwater monitoring report. We have hard copies for everyone, and it will go onto the web site this afternoon. There are no surprises. Our 40-odd monitoring wells that we monitored last year were very dry as they were this time last year. The report shows that we had low water levels in alluvial aquifers and then these skyrocketed again during wet season (as anticipated). There's a completed round of water quality monitoring reported here from June. Little change in water quality based on the study done in 2011 and released in 2012. I urge you to have a read through it. There is also ongoing quarterly monitoring (water level) occurring across the monitoring bores.</li><li>• Hydrograph (water level) information will be put up on the website so you can see the progress over the first three months from July this year. Additional data will be uploaded quarterly.</li><li>• We have finished the pumping test program and fault study on the Tiedman's site. We are using it as part of our discussions with the Commonwealth as part of the EPBC planning approvals process. If they are happy with it, it may be released by the end of year/early 2014.</li><li>• Waukivory drilling program – The monitoring bores are established out there. As Toni mentioned we are doing a workover on our deep monitoring bore and converting it to a vibrating wire piezometer from next week. Given that the Waukivory REF is on the table and we are looking to do that program in early 2014. We'll be doing another baseline water quality sampling event to occur probably in late December or early January and will have two lots of water quality data in advance of the fracture stimulation and flow testing program. The water level monitoring will continue indefinitely. We've got a very good data set there. Those first wells went in in January 2012, so we will have almost 2 years of information in front of that fracture stimulation and flow program.</li><li>• In terms of new monitoring sites we are expanding beyond our Stage 1 area. We are actually putting in more monitoring bores. To the north and south. You may have seen the drill rig on the Buckets way just east of Gloucester, in the last few weeks, that was putting down the nested monitoring bores in the Northern part of the basin, just to give us some control for our groundwater model and a monitoring point where we think there is active groundwater discharge. That was finished with four nested monitoring bores down to 160 metres. It will become part of our standard network.</li><li>• Pontilands No.3 core hole was finished around July near the Tiedman's property. Rather than cementing it fully up, we've put deep vibrating wire piezometers into the well for deep groundwater monitoring, from about 430 to 680 metres in depth. There are three sensors in that hole which will be pretty important going forward.</li><li>• We are planning some more monitoring bores to be installed in the south near Wards River. It's planned for drilling in November.</li></ul>	

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<p>We've just about got all of our approvals from the Office of Coal Seam Gas and the Office of Water to do that hole, and then there'll be another monitoring site further south again in the Wisemantels area, probably Q1, or early Q2 (first or second quarter) 2014. Once this is complete we will have about 45 monitoring bores by Christmas and probably 49 or 50 dedicated groundwater monitoring locations across the basin by the middle of next year.</p> <ul style="list-style-type: none"><li>Probably the most important piece of work that we are doing now is the groundwater model. We've finished our conceptual model report and water balance report and the technical peer reviews, they are all up on our website from July. We've started the numerical modelling, which is the predictive tool that we need to construct to tell us what the drawdowns are going to be longer term for the field development. There will be two parts, a cross-sectional model which will be a detailed local model to look at fracture patterns and geology on a very local scale and then there'll be the regional model which will cover the whole of the geological basin the broader numerical model probably isn't due for completion until about Feb-March 2014. It is quite a detailed model with many thousands of cells and a lot of permeability data to be captured and analysed from ourselves, GRL, Yancoal, public databases and maybe some private information as well that will be collected in the coming months.</li><li>Irrigation trial is continuing – we started irrigating there in late March early April, we've finished the winter crop of triticale, harvested twice. Stubble has been ploughed in and it's been planted with forage sorghum as a summer crop. It has germinated and is out of the ground, and the lucerne is coming along quite nicely too. There is a lot of irrigation going on at the moment as you'd expect with the dry and windy conditions and we've done one 6 monthly water and soils report which went up on the website I think in early September, and there's another one due for the period up to December but will probably not go onto the web site until around January-February after the consultants have completed the report. This next report is going to be quite important because basically we've had no rain, and everything that has been applied to the irrigation area has been blended fresh water and CSG produced water.</li><li>The other initiative I'd like to talk to is the cooperation agreement with Gloucester Council to fund a water scientist within Council for the next 18 months. That has been signed and executed during the last couple of months and Kate Johnson started with Council a couple of weeks ago Graham? [Yes]. We had our first technical steering committee meeting yesterday and I think that was very successful and we got along quite well, so I think that will be a great initiative to get some independence in both the studies that we've passed to council to manage, and also there's a peer review component in there as well for the water balance and the conceptual modelling going forward.</li></ul> <p><b>CCC: Gloucester Council is very keen to make sure that the public is up to speed with what's going on in this project and we'll be doing that at some stage through November. The purposes of this</b></p>	



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study and in particular the interrelationships between the bioregional assessment, the study that is being done and what AGL are doing, is all out there on public record, as I think there's already some misunderstanding or mis-expectations of what the work in this project is.

We really want to take an opportunity to explain that to the community, probably through November and probably through a combination of written material and public meetings. The important thing is that it has started. It was a helpful meeting yesterday. But this is the very start. It's also very important that the community understand what is happening with the bioregional assessment which will be more about cumulative affects across the region. I'm also talking to the Federal Government to make sure they come and talk to the community about what's going on in their project as well.

CCC: I've noticed that this scientist will not take part in reviewing the 3D modelling or conceptual modelling. I suspect there could be movement of water due to topography. We need to have people to question the basic assumptions about the water movement and modelling, such as the volcanics being an impervious layer. I suspect there could be movement of water in and out of the basin.

CCC: This is the sort of mis-expectation of the water scientist that we do need to clarify. This person won't be doing that sort of analysis. This is the sort of work that AGL will be doing. By introducing a water scientist, this moves the responsibility to Council so that we can manage the peer review process. The questions you are asking will be addressed by a process that is managed by Council but not done by Council.

JR: There will be four peer reviews of the annual report, the conceptual model, the water balance and then the final numerical model, including our own independent technical peer review (of the Parsons Brinckerhoff selected studies and reports), Council will do the independent third party review and two government reviews will also happen through the NSW Office of Water and the Commonwealth Department of Environment. So there will be multiple levels of questioning and review.

CCC: The peer review process is Council's process not AGL's process. We (the CCC) were involved in the process [of recommending Rick Evans for the previous peer review] and what I'll be saying to Council is that I see no reason not to re-appoint Rick Evans to do the review. But, as I mentioned this will be part of the review process.

CCC: The reason I ask is because I'm not familiar with this work, so I have to take this on trust. It is a lot of work so we want it to be critiqued.

JR: That's fine we want to be an open book. The more scrutiny these reports go under the happier I am to be quite honest. It gives us confidence going forward that they've been looked at, turned upside down, a fresh set of eyes and so on, so there's no surprises. So the more people that look at it, the happier I am moving forward.

**Is the Tiedman fault permeable, or not?**





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<p>JR: Good question. At depth no, but at the surface yes. The testing and resultant concept model shows the permeability of the rocks which show that despite the type of rock, the permeability at deep levels is very low. Even though there's no bores, wells or anything done in the centre of the basin down to the depth of the volcanics.</p>	
<p><b>CCC: The discussion in Council was that we set up a circumstance where the water scientist does not develop a cosy relationship with AGL. We wanted to put in place that separation so that they can be independent, and the purpose is they don't participate in the studies but can take that information and farm it out to the appropriate people [for peer review].</b></p>	
<p>Clr Aled Hogget departed at noon.</p>	
<p><b>CCC: The conceptual model needs to be independently verified too, that it's a closed "tub". You've mentioned it a lot today and on a number of occasions before, nothing comes in, nothing goes out, so it is critical as it covers the whole basin.</b></p>	
<p>JR: The volcanics are part of it, not the whole box and dice when it comes to the conceptual model because we are also talking about the groundwater flows in the sediments that overlie the alums volcanics, that is the groundwater systems in the coals and sandstones and siltstones and all that sediment pile that sits above the volcanics. The volcanics if you like is the 'skin' at the bottom of the basin, it was the first outpouring of lava when this basin ruptured apart, back 300 million years ago.</p>	
<p><b>CCC: I don't know a lot about it, but you're saying the volcanics go to the bottom and seals the basin off. There's no verification that that actually happens. If that is the conceptual model, that fact alone needs to be independently verified.</b></p>	
<p>JR: Well let's get the independent experts in to evaluate that. That's the model that we've come up with, that's the model that Yancoal and GRL have come up with and the same model that everyone is moving forward with, that the basin is impermeable when you're looking at the groundwater flow systems of the Gloucester basin.</p>	
<p><b>CCC: This is where the bioregional assessment comes in. The Council is starting to look at this and, because of the focus of that work and the level of science, we want to provide the independent 'other voice'.</b></p>	
<p>JR: The other thing to keep in mind is that the volcanics sit 500 to 1,000 metres below the coal seams that will be targeted, which is a lot of impermeable rock in-between.</p>	
<p>IS: Just a question to Graham. Who is running the bioregional assessment?</p>	
<p><b>CCC: The Office of Water Science, and it's a collaboration between the Bureau of Meteorology, Geoscience Australia and the CSIRO. They are bringing a team of 25 here in December to look at the basin. There is a big investment going on. I can provide a copy of the methodology if you like.</b></p>	<p><b>Graham Gardner to provide a methodology for the bioregional assessment to the CCC</b></p>



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*A discussion was held regarding the selection of the water scientist and the number of candidates shortlisted for the position.*

**CCC: During the recruitment process, which had nothing to do with AGL, we had Rick Evans review the technical capabilities of the people going for the role. Kate has local government experience and in regional water authorities, the Office of Environment and Heritage as well as a range of experience in operation and testing. I'd be happy to introduce Kate to the CCC.**

GG: Kate was recruited and employed by Council. So she is a Council staff member on an 18 month contract. She reports to me and I report to the General Manager of Council. There is a technical steering committee that involves John Ross (AGL) and Anna Kaliska (GCCC member, but representing MidCoast Water), others from external agencies, the Council Directors of Technical Services and a couple of other Council technical staff, myself, and a community representative.

It will focus on getting the jobs done and will have a technical focus.

## 6. General Business

*The Chair referred to action item 10 - TL to ask APPEA about the advert stating 'CSG will ensure the creation of 150,000 new jobs in Australia'.*

*Karen Hutchinson left at 12:09 pm.*

TL: I will defer to Ian, but just to answer the first part regarding the letter that you sent and did not receive a response. AGL spoke to APPEA and they have re-sent the letter to respond to you.

IS: The question referred to advertising by APPEA, not AGL around a claim of 150,000 jobs being generated. That claim came from research conducted by McKinsey & Co. It was issued in a report dated May 2013. In the executive summary it discusses this figure.

This can be found at the following link:

[http://www.mckinsey.com/locations/australia/knowledge/pdf/Extending\\_LNG\\_boom.pdf](http://www.mckinsey.com/locations/australia/knowledge/pdf/Extending_LNG_boom.pdf)

**CCC: Thanks you for providing a source. Has AGL itself formed about an opinion about the likelihood of these claims being realised?**

IS: This talks about the industry in Australia, but not specific to NSW or QLD, it is a broad spectrum. Therefore this is an APPEA decision that is not specific for AGL.

**CCC: Some of the APPEA advertisements have mentioned NSW more specifically, so there have been forecasts for both. The Australia Institute has challenged those claims. Has there been some debate about this between the APPEA and the various members?**

IS: I can't answer that I'm sorry.



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**CCC: I was reading a groundwater study. There was a statement that AGL “has received approval for a gas producing development from the NSW Government”. Does that mean you’ve got a production licence?**

TL: We have applied for a production licence. The project is approved under Part 3A, and the next step is to apply for the production licence. We put the application in, back in December [2012], but the application hasn’t been approved yet.

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**8. Next meeting**

Meeting closed: 12.14pm.  
Next meeting to be held on 12th December from 10am, at the Gloucester Country Club.

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**Michael Ulph**  
**GHD – Stakeholder Engagement**

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<b>ACTION ITEMS</b>			
<b>Action</b>	<b>Responsibility</b>	<b>Complete</b>	<b>Outcome</b>
Toni to investigate if the REF can be divided into separate sections on the AGL website.	<b>Toni Laurie</b>		
AGL to provide a link to the Camden preliminary methane monitoring report once received.	<b>Toni Laurie</b>		
David Moss' presentation to be made available to CCC	<b>David Moss</b>		
Graham Gardner to provide a methodology for the bioregional assessment to the CCC	<b>Graham Gardner</b>		

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