



Project	Gloucester Coal Seam Gas Project	From	Michael Ulph
Subject	Community Consultative Committee	Tel	4941 2841
Venue/Date/Time	Friday September 3 2010 Gloucester Country Club, 11.05am – 1pm	Job No	21/17714
Copies to	All attendees		
Attendees	Councillor Richard Webb – Gloucester Shire Council Glen Wilcox – Gloucester Shire Council Councillor Peter Ainsworth - Dungog Shire Council Terry Kavanagh – Dungog Shire Council Rod Williams – Community Representative David Mitchell – Avon Valley Landcare Garry Smith – Barrington Gloucester Stroud Preservation Alliance Inc. Ed Robinson – Lower Waukivory Residents Group Bruce Gilbert – The Gloucester Project Toni Laurie – AGL John Ross - AGL Mark Bonisch - AGL Ian Shaw – AGL Michael Ulph – GHD (Facilitator)	Apologies	Stuart Galway - AGL Tim Hickman – Community Representative Sally Whitelaw - Port Stephens Council Marianne Johnson – The Gloucester Project Cr. Karen Hutchinson – Great Lakes Council

1. Introductions & Confirmation of Previous Minutes

Action

Ian introduced Michael Ulph, the new facilitator from GHD.

Business from the previous minutes included:

The submissions report was announced as viewable on the Dept of Planning website in an email to Committee Members on 28 June 2010.

Stuart Galway is still checking on the level of involvement that Council can have in the development of the CEMP if and when approval comes about.

The AGL principal geologist Andrew Parker will give a presentation when the 3D seismic survey data is compiled.

All landholders whose properties were traversed by the 2D seismic survey were invited to view the results in a presentation by Andrew Parker. Approximately 30 people accepted this offer to view the results.



Ian Shaw has distributed a handout today, it includes:-

- Information sheet from QLD Government about Hydraulic Fracturing in coal seam gas (CSG) wells.
- APPEA Fact Sheet on CSG Well Construction and bore specifications.
- Question on notice No. 1061 in the Qld Parliament on CSG and land values.
- A précis of John Ross' background.

Ed Robinson: Question regarding the document – Plume rise assessment, about emissions from flaring

The PM10 exceedances of DECCW criteria are noted. When flaring, does this take into account PM2.5 and others? Is AGL going to do anything about air monitoring while flaring occurs at the wells. This is understood to be at each well for about a month.

Mark Bonisch: You would flare until you have enough of a flow rate from the initial wells to run the Central Processing Facility. There is also the ability to flare in a shutdown if necessary.

Ed Robinson: Up to 150 metres from the well, flaring can bring about exceedances of PM2.5 and below. Is AGL going to stick with the (DECCW) criteria or do more as a good corporate citizen?

Rod Williams – was in support of what Ed was saying. We are asking if it is AGL's intention to reflect on community concern and give consideration to monitoring PM2.

ACTION - The above two comments were taken on notice for an answer at the next meeting.

Ian Shaw – request from Glen Wilcox re: follow up on Giant Parramatta Grass after 3D survey– this has been diarised for 1st. February 2011.

2. Environmental Assessment Update

Toni Laurie explained that the EA is still under assessment, so there is no new information.

AGL to inform committee members when project approval or rejection occurs.

Regarding the construction camp – Stuart had said that the camp was covered under the EA, but it was 1 paragraph.

Terry Kavanagh asked that if the camp was for 3 months, with sewerage required 40,000 m per day, would a separate DA be required? He said he expected that if a DA was not required, approvals for sewerage would still be required.

Ian Shaw noted there had been a request from Stuart Galway to the Department of Planning that Councils be invited to be involved in the approvals process for such items. No response has been received at this time.

3. Exploration Programme Update

Mark Bonisch updated those present on the exploration programme, namely:

- Redrilling of Wards River 4 well is finished, meaning that all 8 holes
-



in the current exploration programme have been completed, plugged and abandoned and site restoration is also almost complete.

- The drill rig is currently at Tiedemans property ready to move on to the next job, in QLD.
- The 3D seismic survey has been completed. The model is now to be built and this should be completed in Nov / Dec.
- The fields gas resource has been re-certified, with the reserves now expected to be in the order of 660 PJ, which is a 58% increase in the available gas reserves in the field
- For a comparison Newcastle currently uses approximately 20PJ per year.

4. Hydrogeology presentation

Ian introduced Mr John Ross, the new Manager of Hydrogeology for the Upstream Gas division of AGL.

Water issues are seen as very important so AGL have brought the expertise in-house.

John has a long history with Parsons Brinckerhoff on water resource and management studies and most recently with AGL on water & gas investigations in the Hunter region.

John explained SRK's (recently completed) Phase 1 groundwater study – a desktop assessment of groundwater conditions across the basin.

There are plans to install a broad monitoring programme as part of the Phase 2 studies.

John is aware of questions re: QLD issues and he explained why it is very different.

The SRK study is based on current knowledge of the geology & geological structure from existing bores and wells. It has been overlaid with the 2D seismic survey, to build a more informed model.

SRK took samples of the groundwater to see what sort of water it was, to obtain an initial indication of salinity distribution.

This covered the entire structure (basin), but then focused on the Stage 1 Field area.

This study has a number of recommendations for further work, and most have been covered under the Phase 2 scope.

Ed Robinson – is it possible to get an email of the study or of an Executive Summary?

ACTION - John will send the Executive Summary asap. and will put the entire document onto the web site when possible.

The geology is very old. The bedrock consists of very old geology associated with the New England Fold Belt (more than 3000 million years old). The Gloucester Basin sediments were deposited in a near shore marine & fresh water swamp area and are 250 to 300 million years old.

The basin is a saucer shaped, elongated basin. Groundwater is thought to discharge to springs and streams. Springs occur on the valley sides and



the stream discharges are suspected in the downstream areas of the major streams.

The predominant dip of rocks is from East to West. There are coal seams within the top 750m; however to the West it goes down to over 2000m underground, which is far too deep for coal seam gas and for exploration.

This information is from the Minerals Department over many years. AGL has drilled one hole down to 1340m

Some important geology is the more recent (alluvial) river sediments from the last 10,000 years. The Gloucester & Avon river floodplains are made up of these sediments.

The 2D seismic section (see Power Point presentation) shows coal horizons. Black solid lines are fault zones. Sediments have turned into rock but have also been twisted etc over time.

The next program of work is to check groundwater levels and flow patterns and to see what the faults have done to groundwater flow.

Ed Robinson – if you don't know where groundwater goes – how do you know contamination won't flow?

Mark Bonisch - The drilled holes will be filled with cement which will stop any cross connection of aquifers and flow.

John Ross – It is only in the top 150 metres, where the aquifer systems are contained within the sediments and fractured rock zone and this is where most groundwater flow occurs. Below this the rock strata is so low in permeability that groundwater won't come out irrespective of whether faults exist.

Queensland has the Great Artesian Basin and more permeable aquifers in closer connection with coal seam targets, which is much more permeable, which is why they have had issues.

Rod Williams – what is the difference with the Gunnedah Basin?

John Ross – The Gunnedah basin has a groundwater system over the top of the coal seams in places (Namoi River alluvium to the north and Mooki River alluvium in the east). Other parts of the Basin have no overlying aquifers. This is up to 120 – 130 metres of saturated alluvial sediments. Because of this there is a higher risk that water could flow between systems if there was proven connectivity.

You don't get those thick alluvial drainage systems this close to the coast.

There are 128 bores in this Region, with none deeper than 66m. The NSW water licensing system has a register of every bore and well licensed under the Water Act. Along coastal areas this should include all bores/wells etc drilled since 1955.

Ed Robinson – some of these were drilled more than 30 years ago? Is this out of date?

John Ross – Some of the bore locations won't exist. Geology, recorded water levels and water quality will be relevant. If anything, the water levels will now be higher, as many bores would have been drilled during drought.

Bores were generally for stock, some for domestic use, but usually quite brackish.

Deeper waters were generally more highly saline.



John Ross then referred to the Water quality data slide. A description of water quality – tri-linear diagram.

Rainfall is the recharge source for all ground water in this basin.

Rainfall has high sodium chloride in it. Groundwater with the same make up means it has come more recently from rainfall.

Groundwater with sodium bicarbonate rather than sodium chloride is a very different type of water. It has been in the ground much longer and is part of a separate groundwater flow system.

Here in the Gloucester Basin we have lower permeability and longer flow periods than is described in the conceptual image, so instead of days and years, it is more likely that the flow takes years and decades for alluvial systems, and centuries or even a few thousand years for fractured rock systems.

Ed Robinson - How do you date water?

John Ross - techniques are used looking for radio isotopes like tritium (up to 50 years), Carbon 14, (up to 50,000 years). If water is older than 50,000 years you would use Chlorine 36 as the dating isotope.

There is a plan to look at fault zones and other places in this valley and do the research here on dating, to improve our understanding of groundwater flow systems.

Rod Williams - When you fracc does the permeability increase?

John Ross – yes but not by very much and usually only improves the pathways for 60 to 70 metres from the well.

Mark Bonisch – The Fracc will go North-South along the face cleats of the coal seam.

Rod Williams – when finished with the well, that space will fill with water over time, which will depend on the permeability of the formation?

John Ross – Yes – it may take decades for the water to flow into those depleted areas again, in the interim the small areas between the formations particles will be filled by the remaining gas and then it will progressively fill with water.

Richard Webb – why won't water disappear into a crack in the rock?

John Ross – we don't think there's much vertical connection between shallow groundwater and deeper zones. We are not interconnecting the zones above with the coal seams.

Mark Bonisch - We use CBL (Cement Bond Logs) prior to fracking to ensure the steel, concrete and rock are all successfully bonded This is best industry standard.

The ground water monitoring program will check water levels, connectivity of aquifers, and types over time.

John Ross – we are getting in early to look for any unusual trends. We can also look at water chemistry to see if the age of the water is changing. If fresher water comes into deep zones, then they will know that there is interference. If there was a problem and we were pulling water from higher levels we would close down the project as we are not looking for water, but gas.



This would not leave a legacy problem, as the water would not disappear; the volumes contained within the basin are enormous compared to the volumes we are taking out of the coal seams.

The freshest water is always at the top of the system and is always the most available to agricultural users and the environment.

Glen Wilcox – Can an issue happen like in the Nepean where the river is cracked and the system was taken underground?

John Ross - In the Nepean river issue the bedrock was disturbed due to mine subsidence from underground long wall mining. This causes a large disturbance to rocks and in some instances allows water to move quickly to other areas. The process in this basin is a series of small drill holes – there is no disturbance of the rocks on a wide scale and there is no mine subsidence.

Richard Webb – we are encouraged to think that you are doing this work and monitoring. I'd like to think we can be equally encouraged that similar work is being done on air quality. I would like to think the company will be on the front foot in this regard also.

John Ross – We do have to look at all environmental issues.

Ed Robinson – The Qld gas field and Hunter gas field have not been great.

John Ross – The Hunter project has had much misinformation. We have placed our study on the web for that.

Rod Williams – As a farmer, he is looking to see that air monitoring is taken in perspective. Farmers are concerned that the use of particulate matter arguments to try and stop mining will have a negative impact on farming practices

John Ross – Water monitoring bores will be in before Christmas – with data loggers etc into the new year to get baseline data. They will look at water chemistry, flow etc. into the New Year.

Once that is done, there will be 6-9 months of water level investigation before starting the next investigation phase. Monitoring is likely to continue long term. This is what Department of Planning (DoP) and NSW Office of Water wants plus more monitoring holes.

AGL will then put the extra information into a computer model for predictive purposes.

This program of water monitoring will continue for the life of the project.

The technical report on the Phase 2 studies should be available in the first quarter of next year.

John would be happy to return to discuss this further when results are available.

In regards the QLD issue, Benzene was found at a new site. The QLD project was using UCG – underground coal gasification, which is actually burning coal underground to release gas. A by-product is that coal turns into ash and tar, and hydrocarbons are released, including benzene. There is potential for this to get into aquifer systems. This has been identified in QLD in one sample at one well.



The Gloucester project is totally different, with no burning of coal. There is no benzene or toluene used in fracking for coal seam gas production. John commented that you are more exposed to benzenes while filling your car at the bowsers than the level found in the one test in one well in Qld BTEX group compounds are not being used here.

The majority of the fracc fluid is made up of water and sand. A complete list is available in the handout provided headed "Hydraulic Fracturing (fracking) in CSG Wells".

5. Community questions

Garry Smith – what percentage of the gas wells will be fraced in the valley?

Mark Bonisch – we will undeream below 300 – 400m, but at the moment every well is being fraced. Later we will be under reaming.

John Ross –addressed a question posed by Garry Smith that cross contamination will occur due to the extensive drilling by various different projects in the valley.

All holes must be plugged with concrete, so there is no potential for ground waters to mix.

Mark Bonisch explained the thorough plugging process.

Rod Williams asked about pipelines crossing rivers.

John Ross – the plan is to put pipes under rivers, with no change of shape through damming, etc.

Ed Robinson – Why is John employed by AGL instead of an independent body.

John Ross – to identify the water management issues and to get the program started early – others that do the work are independent consultants and their work is peer reviewed.

John Ross – AGL wants to be an industry leader and get it right first time.

Garry Smith – There are so many different companies drilling. How are you working together if drilling holes in the same area?

Mark Bonisch - We have been asked by the Department of Infrastructure and Investment to put a cooperation agreement in place with both Gloucester Coal and GRL. We are currently sharing some information, attending each others' risk workshops, and have a good working relationship with Gloucester Coal. Gloucester Resources are still in the early part of their exploration phase Gloucester Coal drills their holes as per their specifications and regulations, so do we? We are working under petroleum regulations; they are working under mining regulations.

Garry Smith referred to issue at Stratford in 2005 where gas came out of a nearby coal hole when testing commenced



Ian Shaw – We will search for and plug with concrete any old coal drill holes within 500 metres of our production wells. This ensures there are no reoccurrences of that result.

Mark Bonisch – There has been no information forthcoming from landholders, but we have the records from 1955 onwards from the department.

Ed Robinson – GRL are about to start their drilling. Is that 80 or 90 holes?

Mark Bonisch is not aware.

Is there any data sharing going on with GRL?

Mark Bonisch: not at this stage.

Toni Laurie – It is still early days for GRL.

Glenn Wilcox: They haven't received approval yet.

Garry Smith – compensation is a public interest matter. The principles of compensation should be openly disclosed. Landholders should be able to look at the principles to have an idea what is coming.

Ian Shaw – Compensation is not for open discussion, it is paid considering a range of compensation principles, and regarding the effect on land, land valuation etc. This is set out in our documents for the landholder to peruse and take advice on if they wish.

There is a disturbance payment – for a well site, or other activity on site. Paid on a percentage against land value.

If a landholder wishes to disclose sums, that's up to them, not us.

Ed Robinson – Money paid for the seismic study, differed from earlier to more recent. (post Fairbairns Road Group)

Ian Shaw – every landholder that was signed up prior to that agreement, whose payments would have risen due to those negotiations, was paid extra retrospectively. Most of those who signed up prior to that agreement would have been worse off however were paid whatever was the higher amount

The principles on exploration holes were the same for all landholders. Very early on, a set of principles was drafted by Stuart Galway, all negotiations since then have followed the same principles. As a percentage of the value of the land.

No one has been disappointed with the valuation of their property.

Bruce Gilbert :

Question from Marnie Johnson: 2D seismic information has been given to landholders – is it available to the committee or the public?

Ian Shaw – Not at this time.

Toni Laurie – The information goes to the Department of Infrastructure and Investment (**DII**) after the data is collected and analysed. The information is held in confidence by DII for approximately 2 years and then becomes part of the public record.



From Marnie Johnson: what depth and thickness are the coal seams?

Mark Bonisch – they vary in depth across the entire basin; some are less than a metre thick through to several metres thick. The basin itself, which sits like a canoe, is in some places 1300m deep to the volcanics at the base, some 300m deep.

Garry Smith – If not happy with the submissions report can you contact DoP?

Ian Shaw – If you wish.

6. Staff changes:

Toni Laurie – is taking over from Stuart as Manager of Land and Approvals for the Gloucester project.
Stuart is moving back to Brisbane.

Congratulations to Toni from all.

7. Legacy Program / update from community

Youth Support and Development Programme Progress

Ian Shaw – Last Monday the coordinator, Courtney Paynter, started work. Courtney has a background working with young people with learning and social difficulties.

She will be working with students in year 9 at high school, and following them to year 10, plus 4 to 6 young people post-school.

The project looks to build self esteem, gain the maximum of a young persons talents and an understanding of the community. Community members will be approached to become mentors following training from TAFE Outreach.

Courtney is working 1 day per week at present, it is hoped this will grow over time.

If the pilot project works well it may be rolled out to AGL sites across rural and regional Australia.

Looking to ensure the community is comfortable with the project also. People are amazed that Gloucester has 130 community organisations. Must be some tremendous mentors in those groups – old and young.

8. Next Meeting

Most likely when DoP gives development consent.
AGL is hoping this will be before the next State election.

AGL will notify the committee of the date of the next meeting.

Michael Ulph

GHD - Stakeholder Solutions