



22 Tate Street
Gloucester, NSW, 2422
Australia
Tel: - +61 2 6558 1166
Fax: - +61 2 6558 1066

Legal Notice: Please note that this document is only a reflection of the comments, questions and conversations that occurred during the meeting. All comments captured have been paraphrased.

Project	Gloucester Coal Seam Gas Project	From	Michael Ulph
Subject	Community Consultative Committee	Tel	4941 2841
Venue/Date/Time	Thursday 26th April Gloucester Country Club, 10am – 2pm	Job No	21/17714
Copies to	All attendees		
Attendees	Gerald McCalden – The Gloucester Project Ed Robinson – Waukivory Residents Action Group Rod Williams – Community Representative Kirsty Hughes, for Anna Kaliska – Mid Coast Water Paul Hogan – Mid Coast Water Jerry Germon – Gloucester Shire Council Garry Smith (BGSPA) Tim Hickman – Community representative Toni Laurie – AGL Land & Approvals Manager Naomi Rowe – AGL Community Relations Manager Dr. Richard Evans – SKM Principal Hydrogeologist, Independent Peer Reviewer John Ross – AGL Manager Hydrogeology Michael Ulph – GHD (Facilitator) Barbara Campany – GHD (Presenter) Lilen Pautasso – GHD (Assistant Facilitator)	Apologies	Karen Hutchinson Ian Shaw – AGL Lands Officer Graham Gardner – Gloucester Shire Council David Mitchell – Avon Landcare

1. Introductions

Action

Michael Ulph

Welcome and Acknowledgement of Country

2. Meeting agenda

- **Welcome**

- **Acceptance of previous meetings**

CCC: Issue with the minutes being released very late. Concerned that they are published on the website prior to being accepted by the CCC. Concerned about the paraphrasing of the Waukivory blockade, this is believed to be paraphrased to the point where it is incorrect.

Michael: explained the process of the minutes being taken. Welcomed the CCC to call him to discuss any further issues. Acknowledged that 4 weeks for the release of the draft minutes was unacceptable and that a 2 week turnaround was to be achieved from now on. This is to be reflected in the terms of reference.

Barbara: explained further to contacting Michael that the terms of reference would be used to ensure an appropriate protocol for taking the minutes.

CCC: Further discussed the error in the meeting minutes regarding the blockade and requested they be amended with the following correction:

"He said he would like AGL to go back to the Alliance rather than it being brought up in the CCC meeting".

CCC: Explained that they are not content with the structure of the minutes.

Michael stated that he would ask the CCC to discuss the structure of the minutes during the terms of reference discussion later in the meeting.

CCC: Requested hard copies of documents with large numbers of pages due to the extensive printing required and that page numbers be added to minutes.

Minutes moved by Gerry Germon. Seconded by Rod Williams.

Due to the delay in sending the minutes they are not accepted by Ed Robinson or Gerald McCalden.

Minutes from 2nd April, 2012 (extraordinary meeting) were moved by Rod Williams. Seconded by Gerry Germon.

- **Action items from previous meetings**

- ***Action 1: Michael to set aside time in the next meeting to discuss 'Membership of CCC' and the Community Engagement Plan.***

CEP moved back to the next meet meeting due to the busy agenda.

- ***Action 2: Toni Laurie to re-distribute maps with***

Action: Michael to add the following correction to the previous minutes: "He said he would like AGL to go back to the Alliance rather than it being brought up in the CCC meeting".

Action: Page numbers to be added to all future minute documents

Action 2: Toni to distribute hard copies of maps with kilometre points marked to CCC members and to mail out to those not present

kilometre points marked.

Toni to distribute hard copies to those present and to send to those not present.

- ***Action 3: Toni to collect this information and send to Michael to distribute to GCCC.***

Link to DTIRIS has been sent to CCC members.

- ***Action 4: Toni to send this information in an email to Michael to distribute to GCCC.***

Contact mechanisms have been sent to the CCC

- ***Action 5: Rick to produce a draft review report by 20th March***

Complete

- ***Action 6: Michael to organise an extraordinary meeting on 2nd April and invite Dr Evans to speak.***

Complete

- ***Action 7: GCCC to send any questions to Michael prior to the meeting 2nd April. Questions to be sent to Rick.***

Complete

Action: AGL to clarify what is and isn't reportable (re: environmental incidents). Michael to distribute.

Motion that was put forward at the previous meeting is that AGL and CCC is to discuss notion of perceived independence at the next meeting: This will be discussed during the presentation of the Terms of Reference.

- ***Action 8: AGL, CCC and GHD to discuss community perceptions of 'independence' further at the next meeting.***

Terms of reference happening today

- ***Action 9: Michael to provide a clear agenda of the next CCC meeting that allocates more time to the CEP and terms of reference.***

Dr. Evans will discuss the recommendations. John Ross will discuss today how the groundwater studies will go to a broader area of the Gloucester Basin. This can be discussed further at the next meeting, but will be commented on by John during Rick's presentation.

- ***Action 10: AGL to clarify what is and isn't reportable.***

Environmental incident reporting – to be held for the next meeting.

- ***Action 11: Michael to include the mentoring program mentoring as part of the next meeting.***

Mentoring – held for the next meeting

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- **Action 12: Clarification needed regarding the flood management plan and the reason for placing wells on a floodplain.**
Clarification needed regarding the flood management plan and the reason for placing wells on a flood plain.
 - **Action 13: AGL to provide a clearer response to the CCC's request as to why there is not a holistic study of the Gloucester Basin area.**
John Ross to provide to the CCC at the next meeting.
 - **Action 14: GCCC to review the documents and to discuss the terms of reference in this document at the next meeting on 26th April**

Correspondence from the CCC regarding the hydrogeological review – no comments from the CCC.

Some issues were raised with the following action due to it being deferred to the next ordinary meeting:

Clarification needed regarding the flood management plan and the reason for placing wells on a flood plain.

CCC: Will it be too late in 2 months time? What's your plan for the Waukivory wells? Won't it be too late to clarify if you're already going to start drilling?

Toni: there are no immediate plans to do any drilling now as they are on hold. We have flood management plans, both general and site specific flood management plans. The site specific ones are done closer to the time when drilling occurs and will cover the river scenarios and the gully behind. The flood management plans will deal more with the site construction and the bunding of the sites and the way the site is built up.

CCC: These plans are not part of the REF because the REF stated that they are not on a floodplain.

Toni: No they're not. What the REF has to address is if they are in an area that is mapped as a flood plain area or not. That area is not mapped as a 'floodplain' area.

CCC: But that means that there is no flood plain levee, not that it's not on a flood plain.

Toni: Yes, but that is what the REF addresses. We have to address the flood mapping and that area isn't mapped as a 'floodplain area'. It does not mean that we do not address the fact that there is flooding in that area – our management plans will address that.

CCC: But the wording suggests that this floods. You have to read the REF again to get that negative interpretation.

Toni explained that the guidelines for the REF have been updated following the release of the REF for this area.

CCC: At some stage there have to be roads to the wells because it is likely to be used for extraction and that is going to change the whole structure of the Avon River and directly affect me.

CCC: Are these plans in the public domain?

Toni: the Camden plans would be, and ours will be the same as those. The site specific plans would be the ones that change. They aren't available as yet.

CCC: So they can't be criticised because they are not in the public domain.

Toni: They are not in the public domain because we are not at the stage of completing our site specific plans. We're on hold with the entire project, so they have not been completed.

CCC: The problem is that you are not at any stage yet and you are charging ahead with this project.

Toni: We haven't been able to do site specific management plans because we're not at that stage there. In terms of the bigger project we have been through the conditions of the whole project and we have not started these stages because we have to address all of our conditions. We have our general management plans and that will be applied here.

CCC: The ones in Camden, they have to be built for a 1 in 100 year flood event, don't they?

Toni: No, they don't have to be built to that event. What they look at is how often they need to go to the site, so the roads are built with that in mind.

Other CCC members requested the Chair cease this conversation for the purposes of moving forward.

Michael: Toni, you mentioned that you would be doing more work around this area. Do you mean that this would occur before any work proceeds in this area?

Toni: if you're looking at the bigger project then it has to happen and we will have management plans developing in the next 12 months. If we're talking about the Waukivory ones then that will be driven by the need to use that site. But again we've got management plans that will be adapted from the Camden scenario to suit this area.

Michael: When that is done, will that document be able to be examined before you go ahead.

Toni: We can look to do that. Yes.

CCC: That would give us some comfort if we had plenty of time to review prior to it happening.

Toni: I can provide information that has been used previously, for other projects such as in Camden. That can be provided to you.

CCC: I want to be convinced that if a flood does happen, what the plan is.

Action: Toni to send information prior to any work being done in Waukivory.

-
- **Peer Review of Phase 2 Groundwater Study – Discussion regarding Draft B**
 - **GCCC Terms of Reference**
 - **Project update/ General business**
 - **Close of formal proceedings**

Tony McKenzie left – 10:30 due to emergency.


3. Dr. Richard Evans – Presentation of Draft B

Dr. Evans explained that there were 6 summarised slides, a number of slides responding to comments from CCC, the remainder are based on recommendations and conclusions. Dr Evans suggested that questions be asked throughout the presentation for time constraint reasons, but requested the CCC to indicate when they want to pause and discuss.

Summary of first draft

Summary of First Draft

- > In general, conceptualisation presented in PB (2012) is appropriate, including:
 - o Four conceptual units
 - o Decreasing k with depth
 - o Discharge conceptualisation
 - o Dominance of lateral processes (in natural state)
- > Agree with conclusion that further work required to understand hydraulic significance of faults




In agreement with most of the conclusions made in the review.

Summary of first draft – conceptual model

Summary of First Draft - Conceptual Model

- > Apparent that the conceptual model is spatially and vertically limited
- > Would be strengthened by a water balance.
- > Boundaries should be defined & cover extent of numerical model
- > 'Connectivity' btwn deep & shallow groundwater systems in the natural state is not necessarily an indicator of interaction in the developed state
- > Recharge processes: Significance of vertical leakage to recharge of deeper units (not well covered), limited discussion on potential role of faults as enhanced recharge areas and significance of recharge from creeks over outcropping units (not covered)



Detailed that the conceptual model does not go far enough or deep enough in the valley. The boundaries of the valley need to be defined and that the information is limited for the purposes of creating a numerical model. Faults and overflow/recharge areas require further investigation.

Summary of first draft – connectivity between shallow aquifer/surface

Summary of First Draft- connectivity between shallow aquifer / surface

- > “there is no evidence of natural connectivity between shallow and deep gw systems” (PB, 2012)
 - questioned basis of this conclusion
- > The following evidence provided for hydraulic separation of shallow and deep groundwater systems:
 - o Different chemistries – imply limited impact of vertical processes, not isolation of units
 - o Static nature of hydrographs
 - o Absence of response to rainfall recharge

The latter two are not supported by the data, as shown in subsequent slides

SKM

The last two (sub) points – the evidence does not support these two points but rather, support another conclusion. I am questioning this.

Summary of first draft – vertical hydraulic conductivity

Summary of First Draft - vertical hydraulic conductivity

- > Reports currently don't address distinction between vertical (Kv) and horizontal (Kh) hydraulic conductivity
- > Most results are Kh, what Kv values will be used in model?
- > Range in results for 4 units is large – what will be used in the model?
- > How will differences in results between slug tests and packer testing / lab testing be handled?
- > How will tendency for point tests to underestimate regional vertical hydraulic conductivity be addressed?
- > Use of other regional data to supplement local data set should be considered (but may not be appropriate)


SKM

The vertical hydraulic conductivity is not explored enough in the report and will impact on the numerical model.

Summary of first draft – discharge processes

Summary of First Draft - discharge processes

- > **Alluvial aquifers** – agree primary mechanism likely to be baseflow (ET also important, probably secondary)
- > **Shallow rock units** – agree primary mechanism likely to be discharge to alluvium
- > **Interburden confining units** – within study area, vertically variable (up and down). Down catchment expected to be upwards (to shallow rock/alluvial seds) – in vicinity of Gloucester
- > **Coal seams** – agree primary mechanism likely to be discharge to shallow rock (and indirectly to alluvial aquifers) down catchment - in vicinity of Gloucester




I agree with most of the conclusions but there are aspects that require further investigation

Summary of first draft – GDEs

Summary of First Draft - Characterisation of GDEs

- > **Baseflow GDEs**
 - o Baseflow assessment was recommended to determine baseflow contribution
 - o Can't assume small baseflow based on visual inspection
 - o Given conceptual understanding of discharge (to north of study area), a baseflow assessment at stream gauge GS208028 was recommended
- > **Springs**
 - o Some reference to monitoring of 'at least one spring' in the Alum Mountain Volcanic formation. No other discussion on number, use, importance etc of these springs
- > **Terrestrial vegetation**
 - o There is potential for ET wherever gw is shallow, but unlikely to be relationship of high dependence (given brackish nature of gw & consistent nature of rainfall)



There is quite a bit of additional work that needs to be done on baseflow. There is little to no thought on springs – the fact that the report is silent on this is, in my opinion, not OK. The effect on baseflow and springs are linked anyway, but need to be looked at.

CCC: What is a spring, in your definition?

Rick: The definition is quite vague but essentially it is an area wherever there is groundwater emanating at the surface.

GCCC comments

Comments received on first draft, GCCC (1)

Comments	Response
1. "I note the report is labelled as being by SKM but I understood it is a report by Rick Evans only. Is there some point in doing this? Is it to give it greater standing? or what?"	The IPR is by Rick Evans, but was conducted as an employee of SKM
2. "I am confused by the Overview comments in Section 4. Some of the bullet points on page 8 (1st, 4th, 5th) do not appear to be supported by the findings of the review generally. I believe other members will raise this more fully but issues discussed included that the breakdown into 4 basic hydrostratigraphic units is too constrained in lateral extent and depth as acknowledged in section 5. This always has been and remains a serious flaw in all investigations undertaken by AGL to date. The inadequate assessment of faults compounds the whole issue involved here."	<ul style="list-style-type: none"> • 1st bullet point re 4 basic hydrostratigraphic units – standby conclusion that they are broadly appropriate. 4 units covers all depths but comments re vertical limitations relate to characterisation /presentation of deeper layers. Agree C.M. is laterally constrained. • 4th bullet point – in the natural state, lateral flow processes are dominant with vertical processes being relatively small. Standby this point – comments re vertical flow relate to developed state • 5th bullet point - likelihood of GDEs (excl baseflow) being significantly dependent on gw considered to be low - Standby this point, noting that springs need further investigation • Re faults - The review identified faults as an area requiring additional investigation

SKM

SKM – I am responsible for the report but, in a legal and insurance sense, all of my reports are released under SKM.

CCC acknowledged that this has been covered previously and asked for him to move on.

GCCC 2

Comments received on first draft, GCCC (2)

Comments	Response
3. "The review seems to ignore or play down the existence and importance of vertical flows. The statement that natural flow is dominant (in the natural state) takes us nowhere because this is normal in any situation, only unusual formations would be otherwise. The circumstances under CSG extraction are what is relevant and this needs much more analysis."	<p>On the contrary, the IPR has identified that a weakness in the current C.M. is that it's descriptions re vertical connection only consider the natural state.</p> <p>Further, the review has focussed on how well Kv has been characterised, as this will be critical in the prediction of vertical flows in the numerical modelling</p>
4. "We remain concerned that groundwater ecosystems have not been properly addressed and see this as a serious deficiency and consider that the Phase 2 investigations fall a long way short of being a Comprehensive Groundwater Study as claimed".	<ul style="list-style-type: none"> • Re baseflow GDEs – have recommended additional work to identify importance of baseflow, including Waukivory Ck/Dog TrapCk (Additional work may be required if numerical modelling shows significant baseflow impact) • Re springs – have recommended additional work related to springs. • Re terrestrial vegetation – don't consider this to be a significant risk

SKM

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Rick: acknowledges that he has emphasised vertical flows and the importance of groundwater ecosystems. Rick stated that he disagreed with the comments made by the GCCC.

GCCC 3

Comments received on first draft, GCCC (3)	
Comments	Response
5. We are concerned that there has been no analyses of the computed impacts of the proposed CSG extraction and that terms such as high and unacceptable risk have not been defined or quantified in any way.	<ul style="list-style-type: none"> • Have recommend water balance for natural and developed state which will provided a 'first-cut' indication of potential magnitude of impact BUT • The conceptual model was never intended to provide computation of impacts - that is the role of the numerical model • Review has identified need for review of monitoring network after the numerical modelling & predicted impacts • High /unacceptable risk intentionally not defined as this is a future assessment. ("Normal" issues identified).

Rick – in response to this comment has stated that he has requested for further work to be done, but that it was not the purpose of the PB report to look at computed impacts because that is part of a later stage. The conceptual model needs to be strengthened but the fundamental point that there is no assessment of CSG impacts is not able to be made at this stage. The high/unacceptable risk is not defined as this is a future assessment. In my opinion, there are no damning or fundamental issues that would create a high or unacceptable risk.

CCC: there was a substantial well blow out in 2006? The report in the media stated that there was a water or gas eruption during the Lucas days. There is an external report available. We're getting informed scientific comment that there is significant vertical conductivity happening here.

Rick: I agree that significant vertical leakage can occur and I make that very clear. I disagree that the report is silent on this or gives it zero. It is normal, the fact that it happens doesn't mean that there is a high or unacceptable risk but it has to be captured into the conceptual model and then further in the numerical model. Based on what I've seen I don't think that a high risk will be the case. I'm saying that yes it could be a problem, but if there is significant vertical leakage, then they can't depressurise the coal seam, pump too much water and, as a result it would be in doubt and become economically unsuitable. Normally you get blow outs because of the bore construction, the casing hasn't been done properly or it hasn't been done right and as a result there is a blow out as you say. I don't know the details at all, but I'm guessing that that is likely to be the cause of the issue you describe. That is not acceptable, but the standard to which they are designed is a separate issue. A lot of the issues that have been made in the US, for example, are because of this. I believe that, generally,



this is an issue across the board but it should be considered separately to this.

CCC: I think the refusal to address the matter added very much to the concern. If there had been a logical explanation it could have helped eased the speculation.

CCC: Is this an issue on an individual well basis or is it more a whole bore field project problem?

Rick: No, this is more of an issue with individual well construction. The issue here could be either that the people designing it are not doing it properly or that the standards are not correct. I know that in Australia people are putting in a lot of effort to make sure that this doesn't happen. These issues can cause massive reputation risk and need to be managed. One of my recommendations involves what happens to old wells or abandoned wells. It is my point of view, and of the companies responsible for CSG production that this is not something that they would want to want to brush over.

CCC: Is there a standard for well construction?

Rick: Absolutely. Lot of them.

Naomi: There are standards that already exist but there has also been a review by the Australian Government as part of the investigations into coal seam gas.

John: The new codes of practice are the ones that specifically relate to well construction and well integrity. There's also a code of practice for fracturing. They are documents that are already being attended to, going forward. Underlying those codes are site plans such as fracture management plans.

CCC: So if you had a problematic well, would it be managed in a way so that there's no further communication, in a vertical sense? I guess I just want to be comforted in the fact that there are mechanisms in place to make sure you can reinstate the wells to the right standard.

Rick: If you know where the well is, yes you can definitely come in and do all of the right things to that well. Whether there's a process to ensure that that occurs that's a different matter, but yes you can do that in a physical sense.

John: I think the greatest risks are the exploration holes, like Rick has pointed out. We have as part of our planning conditions a specific line item in there to say that every old exploration hole within 500m of a proposed production well has to be located and checked that it is properly abandoned before that well produces.

Toni: And we do that already and make sure to plug and abandon them properly before we drill or explore in that area.




CCC: And Gloucester Coal would have to be informed?

Toni: Absolutely, it is GPS tracked and we work together with other companies to ensure that there aren't any potential issues with abandoned wells.

AGL 1


Comments received on first draft AGL (1)	
Comments	Response
p 11 para 4 (b) - Clarification of how CSG production wells were going to be constructed was provided in email dated 16 March 2012 to Rick Evans - can this section be updated and referenced	Agree that potential impacts (on the shallow aquifers, creeks) will be most sensitive to the properties of the interburden material in the upper 200m – therefore it is appropriate that the conceptual model focuses on the upper 200m. However, the deeper units cannot be ignored in the conceptual model and some discussion on the behaviour and properties of units below this depth is warranted.



Rick: I don't think that the comments I have made are fatal flaws at this early stage, but rather that the recommendations that I have made need to be addressed because they will have impacts on the numerical model. We need to know whether the impacts or timeframes are acceptable, and that is not right at the moment. The PB report does not go there at all.

AGL 2

Comments received on first draft AGL (2)	
Comments	Response
p18 para 5 Sec S5MB02 - This intermediate depth monitoring bore is located over 1km east of the Avon River (and is the most remote site of any of the monitoring bores drilled from the Avon River). It is well away from the influence of floods and given that S5MB01 did not show any apparent influence from floods / rainfall it may be that the reference to a flood response at this location is wrong. Also overbank floods associated with the Avon River go up and down within a matter of days. In fact the site is very close to suspected recharge areas, so with higher permeability in the S5MB02 interval could this be a more likely explanation?	Have clarified in IPR Draft B what was meant by the impact of flood recharge. Conveying the idea that these bores were inundated and directly recharged by flood waters was not the intent. The review has been amended to clarify that these bores were influenced by the rainfall recharge associated with the June 2011 floods (i.e. not the flooding directly). Conclusion is essentially the same
p19 para 3 sec S5MB01 - In the interests of clarity, consider replacing "slug test" words with words "water sampling/purging program"	Diagree that the suggested change adds clarity. PB report indicates this is the effect of the slug test (which is not water sampling or purging)



No comments

AGL 3

Comments received on first draft AGL (3)	
Comments	Response
p21 para 4 sec TCMB04 - AGL has talked with PB regarding the WL trace for TCMB04 and this deep MB (when first constructed) was making a small amount of gas - a datalogger was installed but the monitoring bore was shut in to monitor any build up of gases - this did not occur so in June 2011, the gas in the column was vented and the water level allowed to re-equilibrate to atmospheric pressure. Consequently the early part of the WL trace is depressed and is inaccurate (due to the shut in pressures). Hence the apparent rise of 0.75m is an artifact of the early datalogger data set that has not been properly referenced on the hydrographic plot or explained in the text - the manual SWL readings in April 11 were 12.66mbtoc (Summary Table 2) and were exactly the same in June 11 (Table 7-1) so there is no apparent rise in WLs at this deep MB site	Agree to ignore the data associated with pre-venting of the bore. Disagree with the conclusion that there is no apparent rise in WLs at this bore - there is still a rise after the bore had been vented. Hence conclusion that there is an apparent recharge response in this bore is the same. Note: all bores examined in IPR (except those with anomalies preventing analysis) have a water level trend indicative of a response to recharge.

I agree that there is a reason why there is a jump in this graph but that this was not due to a significant event, but rather a recharge event occurring in that area. The fundamental point is that there's evidence, slow and gradual, of a change in groundwater level due to a recharge event occurring here that still holds. All of these results are showing a response to a recharge event - there is an apparent interconnection with the surface in the deeper monitoring bores. This is due to a process happening that we need to identify and discuss in the conceptual model. This is not indicating isolation, as was discussed in the PB report, but it needs to be addressed.

CCC: Is it due to significant rain over a significant point of time? Or is it a big feed in somewhere?

Rick: it could be rainfall, or rather a coincidence.

John: I agree that some words being used by PB are not correct and that there are inconsistencies. But when you put that figure (20cm) into perspective, you're looking at less than 0.5 of 1% of rainfall which is not a large quantity of water. It's not a large recharge event. There is something going on that needs to be factored into the conceptual model, yes, but that it isn't a significant rise.

Rick - I agree that it is a small rise, yes. Putting it into perspective when there is a pressure response, you get a pressure moving through your aquifer and then ultimately given sufficient time (which in this case would be a very long time) you would get that water molecule reaching the area that is being assessed.

CCC: It's a very quick response?

Rick - not necessarily, it is due to other processes that are occurring too, which is quite normal. This is due to four other processes - tide effect, loading and unloading events and recharging. What I mean to

say is that the issue in the report is that this is a normal effect but what are the impacts of this event?

John: the other important aspect is the stress test such as the upcoming pilot program to understand what happens across all the aquifers.

Rick: And this is the best test you could ever do to understand this issue.

CCC: But in June 2011, this was not considered to be a significant flooding event.

Rick – I'm not saying that this is a major event, but that there was a short, sharp rainfall event that has been recorded. All I am saying is that it occurred and that there was an increase as a result of this.

CCC: But there have been bigger events.

Rick: Yes, and it would be interesting to have that information, but we currently don't.

CCC: So how important is the rainfall record?

Rick: It is important, but what I'm saying is that what we have is enough to tell us that something is happening and that we need to discuss it and evaluate its impact.

CCC: What I'm saying is that if it happened earlier then permeability would be lower than what is indicated there.

Rick: Yes, that's right and what I'm saying is that time lags, as shown in this diagram, are normal.

John: By the time that we get into the modelling program we will have 18 to 20 months of records and we think we will be in a reasonable state to tease out any flood events.

CCC: And I think that that's what we're most interested in.

Rick: Yes, And what I've highlighted further in this instance is that the PB report is silent in a few areas that needs to be captured in the conceptual model.

CCC: is it possible to go on the numerical model when this report is only dealing with the static stuff, rather than the gas. Can you make that leap?

Rick: Yes you can make that leap and we do have to make it, but this is perhaps another of my fundamental questions. The PB report does make the point clear when there is a natural stage conclusion. I believe that they need to discuss what happens in the stress state, as is what you're suggesting; our job is to make those predictions. We need to understand what the information is telling us. I believe that we can extrapolate information from the natural state to the stressed state. The more stress you impose, the more accurate a predication you can make on the impacts. Because of the solid science behind the report, you can use the data to understand the impact. When I say that the PB report needs to go in further detail, it doesn't mean putting a number on it, it is just a matter of investigating it further.

AGL 4

Comments received on first draft AGL (4)

Comments	Response
p22 para 4 sec S4MB03 last dot point - This deep monitoring bore is located about 500m east of the Avon River (and is between the Avon River and the S5MB bores). It is well away from the influence of floods and although S4MB01 shows a similar slight upwards trend, it may be that the reference to a flood response at this location is wrong. Also overbank floods associated with the Avon River go up and down within a matter of days. In fact the site is reasonably close to suspected recharge areas, so could this equally be an explanation?	The dot point referred to is not describing S4MB03 - it is a summary comment of bores described earlier. However, the review has been amended to clarify that these bores were influenced by the rainfall recharge associated with the June 2011 floods.
p31 para 2 - second sentence: Consider clarifying by saying "lower flow" rather than low flow/baseflow range because what the record shows for 2011 is an average to above average rainfall year, and really low flow conditions have not yet been observed at this site.	Acknowledge that baseflow may decrease further (and salinity increase) if longer periods of no rainfall were captured by monitoring period. But still refer to this as "baseflow" as it is not "quick flow" (i.e. not overland runoff associated with rainfall event)

SKM

I have acknowledged that there was some clarification and amendments needed to Draft A and you will note this.

AGL 5

Comments received on first draft AGL (5)

Comments	Response
p46 re Rec (5) - Conversion of the Reservoir corehole (on the Tiedman or more likely Farley property) immediately to the north of the Tiedman property to include two VWPs has been proposed in the REF that is currently with DTIRIS for approval... a copy of this REF (EMGA Mitchell McLennan, November 2011) is now supplied, it should be referenced at this location (and possibly other locations) and should be included in the references for the IPR report	Acknowledged – the recommendation is retained however acknowledging that this is a planned activity The recommendation notes that the REF states that the depths for the VWPs have not yet been determined, but assuming they target the deep coal seams and interburden, these works would address this recommendation.
p46 re Rec (6) - The two gas monitoring bores that have been constructed target the Roseville coal seam (one - TGMB02 is within the Roseville CS and the other - TGMB01 is in the weathered zone immediately above - PB, 2012:App B). Given this, do you mean that extra gas MBs should be constructed into the older/deeper coal seams that are being targeted for CSG development and extra MBs are required further east?	Refers to installation of gas monitoring bores further east than the current gas obs. bores, in the coal seam outcrop/subcrop areas, targeting the Cloverdale, Roseville and possibly underlying coal seam. (The current gas observation bores are not located in the coal seam outcrop areas). It is possible that a nil response might be observed in these bores, but the need to prove this is considered important

SKM

No comments

AGL 6

Comments received on first draft AGL (6)	
Comments	Response
p46 Rec (10) - The two Stratford Dams are to be decommissioned shortly and are not part of future flow testing programs or the production wellfield. Consider whether, in light of this, downgradient MBs are justified.	Agree that this recommendation is not relevant if dams are to be removed - comment has been added to this effect to this recommendation
References to No Connectivity - The few references to No/Limited Connectivity between strata in the PB documents are wholly based on the assessment of natural (unstressed) systems - this is reasonably clear in the report. Given this, PB is not saying there is no connectivity in a project development sense as this will be a matter for further assessment thru flow testing programs, monitoring and modelling programs etc.	Generally agree, but this could have been stated more explicitly in the PB report, as there could be an impression that this is the case for the developed case also. Further given that part of the purpose of report was to define a monitoring network, there is an issue regarding how could this be done if the stressed condition was not considered. The report should have somewhere stated that the the developed (stressed) case could be very different from the natural.

No comments

AGL 7

Comments received on first draft AGL (7)	
Comments	Response
Executive Summary - Consider whether it would be good to add some extra words to the Exec Summary so as to provide a slightly expanded "plain english" appreciation of the IPR. I suspect many of the GCCC members would have struggled with the main report. Perhaps along the lines of some sub-headings on Investigation Methodology, Data Sets, Analysis and Interpretation, Conceptual Model and Recommendations.	This has not been undertaken. If the GCCC would find this helpful, this could be added to the Final version of the IPR report.
Re the 4th paragraph, consider whether the comments here fully reflect the merits of the PB report which contains many accurate conclusions that far outweigh any conclusions which may be considered inaccurate or not justified fully.	Have emphasised <u>some</u> in this paragraph. Have removed dot point "drawn conclusions which cannot be substantiated based on the available data/current level of analysis" because this was mainly referring to the link between natural and developed case. On reflection, while this is implied in the PB report, it is not stated explicitly

There was a perception that there could be confusion stating that we agreed with most of the outcomes of the report but that there are 30 pages of criticism. I have addressed this accordingly.

Naomi: it is pretty substantial change. Do we need to explain that further to make sure that everyone understands the change?

CCC was OK to continue.

AGL 8

Comments received on first draft AGL (8)

Comments	Response
p12 para 2, 3, 4 - Additional water level and permeability data will be obtained from the following sources: * AGL/LE coreholes and stratigraphic holes where intrinsic permeability tests have been undertaken * GRL and GCL models, monitoring data and networks * new AGL Reservoir Corehole	The IPR report now acknowledges that this further work will be undertaken (in Section 5.1.1 - Limited coverage of conceptual model) The IPR report also notes that it is possible that this data will address some (or all) of the data gaps described, but without details of these activities it is not possible to provide any detailed comments.
p15 para 3 Sec 5.1.5 - Reservoir Corehole will provide VWP's within the deeper coal seams at one location	IPR report has been modified to acknowledge this work (In Section 5.1.1 and Rec 5). <u>Oversight that this was not mentioned in Section 5.1.5 – The Final report will be amended to include this.</u>

SKM

Further modifications made based on comments from AGL

AGL 9

Comments received on first draft AGL (9)

Comments	Response
Interburden layers are described as aquitards (PB, 2012: Table 10-1 p124 and p131) and therefore by definition they have the potential to leak	Agree, but then PB (2012) e.g. para 3 p131, is internally inconsistent because it refers to an aquitard that creates 'a separate and distinct gw system' with 'no connection' between overlying and underlying layers (Draft B acknowledges use and implication of term aquitard but also notes the inconsistency described above)
p26 para 4 Sec 5.3.4 - The comment about slug tests only being a local scale test equally applies to the core and packer tests (in fact the core is both local and highly disturbed since it is rotated and heated during drilling, and then dried out when placed in core boxes/jars and transported to labs). Given this, is it appropriate to put in some comment about longer term tests providing the most reliable permeability data?	Agree, have added core and packer tests to the discussion (i.e. they are also local tests) and added a comment re longer term tests providing more reliable data.

SKM

Agreements made with the comments from AGL

AGL 10

Comments received on first draft AGL (10)	
Comments	Response
p28 para 7 last sentence - Note that a new shallow MB has since been constructed at this central site (TCMB01 was completed in late October-November 2011) and is screened from 87 to 93m so is more compatible with the shallowest MBs at the other nested sites. (It was not included in this Phase 2 report as testing had not been completed at the time of writing this report).	IPR report has been modified to acknowledge this new bore which will allow a comparison of vertical gradients between the deeper and shallow aquifers at this nested site
p30 para 5 - Visual discharges to the Avon River were not the prime baseflow mechanism proposed by PB in their conceptual model.....rather this comment was made just to emphasise that the volumes were probably small..... the actual discharge mechanism was suggested to be via the alluvium (PB, 2012:126)	Visual inspection is not considered a reliable estimate of the significance of baseflow contribution. Discharge to the alluvium from deeper units seems to be separate point? (No changes made to Draft B)

No further comments – as outlined on slide.

AGL 11

Comments received on first draft AGL (11)	
Comments	Response
p31 para 6 - second major dot point: The PB report does not say anywhere that "baseflow is an important process for sustaining stream flows"...the comment in the AH ecology report and at PB 2012:132 is considered more accurate. In fact at PB, 2012:31, it specifically states that baseflow contributions are expected to be small.	This IPR does not state that the PB report said this. This is a conclusion of the IPR based on data in the PB report – in particular based on Figure 7-8 which shows streamflow was maintained for considerable lengths of the year by flow that is not associated with rainfall runoff (i.e. baseflow). The AH Ecology conclusion does not seem to concur data in the PB (2012) report. An attempt to remove potential ambiguity in the IPR regarding what PB states on this matter have been made.
p32 para 2 & 3 sec Springs - The presence of springs across the area is yet to be substantiated - the basis of the comment in the SRK report is not known (report was only desktop with limited field inspection/ sampling). Spring identification & analysis was removed from PB's scope. AGL agree it needs to be further assessed as part of (i) property surveys & (ii) analysis of hydrology of Waukivory & Dog Trap Ck	Minor change noted in the IPR report that this was outside of PB scope

As outlined on the slide

CCC: That AH Ecology report was additional?

Rick – yes and will be part of the further information handed to you as discussed earlier in the meeting.

CCC: Are the page numbers A or B page numbers?

Rick – this is A.

AGL 12

Comments received on first draft AGL (12)	
Comments	Response
p33 para 2 - Details of the proposed Stage 1 GFDA and production well layout are provided in the Environmental Assessment (AECOM, 2009) that went on public exhibition - perhaps there should be a reference to the EA here	This has been acknowledged in IPR Draft B

No comment

CCC: So the comment about the location of the wells. It was going to vary based on the seismic study and other factors. That was never part of where the wells are going to go. Where you put the wells on the EA aren't where they're going to go.

John – they're indicative. On the ground it will vary as you said but it doesn't have an impact on the hydrogeological report.

Conclusion

Conclusion
<ul style="list-style-type: none"> > Reiterate - While criticisms form the focus of much of the report they do not represent criticisms which cannot be addressed via additional work and/or modifying the conceptual model > Significant amount of work underway post-PB (2012) report > Comment regarding lack of analysis of impacts indicates there is apparently some confusion regarding the objective of work to date (conceptual model etc) > Key conclusion: no fundamental changes to draft A

As outlined in the slide.

Rick – Even though there are a lot of criticisms, they can be addressed. The issue is what effect those changes will have. The expectations of the PB report was that it would provide all of the answers and it doesn't and never will. That was not the intention of

the report.

How to provide input to Rick is tabled for discussion by the CCC.

CCC: Can we get a copy of the presentation?

Michael: Absolutely.

CCC: When do you need the report done?

Rick – next Thursday

CCC: When will we get time to provide comments?

Rick – these are the comments you have provided for the purpose of creating Draft B.

CCC: I think all of the comments have been addressed by you. We have all had an opportunity to provide more to you and I think that they have all been adequately answered.

Rick – I'm not suggesting that the time frame is strict. But if you would like to have time to look at Draft B then 'how long' is up to you.

CCC: My comment is that I would like to see more clarification as to why there was a departure from your comment based on AGL's comment. I would like to see that captured in the final document (this is based on Naomi's comment earlier that it was quite a big change).

Rick – In this instance, I wasn't able to understand a particular part of the response and, when more information was provided to me, it became clearer.

CCC: Is it fair to ask that this is addressed?

Rick – of course

CCC – we still have to get the two CDs of information that John sent to Rick and then process those prior to next week.

John – I don't think the information is going to be that digestible its raw information.

CCC – that might be right, but it means that I will be frozen out of the process.

CCC – I think what is being said is right but on the other side of the coin we had draft A and the comments from the CCC were very small in number and I think have been picked up in Draft B. So, what is the point of delaying the release of the final draft?

CCC – I'm not saying that it's going to change the final draft, I have a fundamental problem with being frozen out of the process by not being given all of the information.

CCC – I think Rick has explained that we won't be able to find everything that we're looking for, so what's the point of trying to do that?

CCC – I just have a fundamental problem with not being given all of the information available.

Rick – If I can ask John a question, in terms of the extraction that has happened to date, is there anything available to be able to monitor

the effects of that?

John - yes we have information for the Stratford pilot wells, but there is no shallow aquifer information. Apart from flow volumes there is no information on water levels that I am aware of. That emphasises to me the absolute criticality of going ahead with the Waukivory tests and to undertake a stress test. It is such a critical part of understanding the trends happening in that area.

Rick – The reason I ask is because, I wanted to know if you knew or had any data to provide to me that would shed new light on what we already know. I think the answer here is 'no'. I think that the reason that the CCC have asked me to get involved is so I can go through that data myself on your behalf and that, if you had issues understanding or had questions, that you highlight this. But for you to be confident is very important.

CCC – at the meeting you (a member of the CCC) weren't present for. I don't think that there was an obligation to provide the raw data. So I think to that extent we don't need it.

Michael – I think that in terms of transparency it is important that the CCC gets that information. We need to balance that with a desire to make this information publicly available. By delaying this process you could essentially delay the report going out into the public domain. We can put it to a vote.

CCC – I can't promise any fundamental changes, but I haven't got any idea if this would happen given the limited time I had to look at the documents.

Motion – that it (the publication of the final report) would be held over to the next meeting as there is information yet to come.

CCC – I think what we have to look at, and please don't take this the wrong way, but if we get ourselves too bogged down it becomes a complicated process. We got a gentleman to do this for us so we have to have trust in him to do this for us and I am comfortable with what he has produced.

CCC – I agree but I would also say to you that this is a very serious project and I think we need to consider this very carefully.

CCC – But we need to understand the certain point where stalling doesn't work with your own judgements. You can keep asking for more information but if you're not careful you can get bogged down and it doesn't move along.

CCC – I think it's necessary to have extra time. This has not been a long process. We have had 4 meetings in four months, so I don't think that this has been a long or slow process at all. We need to see if this information is going to influence the final draft.

Toni – if we get that information out quickly John, is that possible?

John – yes, I can have that done as quickly as possible.

Action: John Ross to supply technical information provided to the IPR to the Chair for circulation to GCCC members.

CCC – I really should be going out to the people that I represent and I feel I haven't given them time to digest all of this information.

CCC – The extra information, was that within or outside the brief?

John – Within, definitely. The rest of the information has been email correspondence that has all been filed.

CCC – I think Rick has been hired to do a job, and he had done that job. We engaged him for that purpose.

Vote on motion that CCC to delay the publication of the final report to the next meeting or an extraordinary meeting so that they can consider the extra data.

Vote: 3 for, 5 against

Motion defeated. Final report to be made public in a week's time.

Naomi – is there any way we can reach middle ground?

CCC – but what is the middle ground? No, because you will be releasing the report anyway. I'm right across everything that you're stating but I think you're rushing. But I respect the vote of the committee.

CCC – to be fair you walked out at that meeting where we were deciding all of this and decided not to be part of this process. You decided not to be part of that process so I don't think that you have to criticise us.

CCC – I think that there is no need to put a value on that. Move on.

Michael moved on.

Rick – there was a hint of public meetings but it was not clear. I would like to make this clear.

Michael – OK so let's discuss where to from here?

CCC – I would like it to go to the community for one month and then to have a public meeting to discuss.

Naomi – is one public meeting enough? Or does there need to be another method?

CCC – I can't see that there will be many people outside of the groups represented here but I still think that it is important to



have. I also think that it needs to go wider and that it needs to be taken to all of the four councils. It is also dependant on how Rick has experienced this in the past?

Rick – it is very case specific but I am happy to work to meet with the requests of this community.

CCC – logically I would suggest the meeting be held locally.

CCC – maybe a focus of the public meeting is an AGL update because there hasn't been one for years.

Naomi – I think it's important and not a problem at all, but we need to be clear that we don't want to blur the social, political aspects etc. that Rick doesn't want to go into.

CCC – it's just something off the top of my head.

Toni – and I think it's better to keep them as a separate issue.

Rick – there is a strong argument that one big meeting is easier to organise. But there are people that may not be tempted to ask questions at a big meeting but you need to deal with people that are more introverted.

CCC – this should be a CCC initiative and AGL should be kept at arm's length for transparency. An open forum might be better for those that can walk around and ask questions.

CCC – the issue is that when there are mini conversations happening then you get an issue with transparency. But maybe it could be a mixture of them both.

Michael explained the process of combining a drop-in and public meeting.

Break for lunch – 12:44

Michael offered the potential for having individual briefings for each area.

CCC – I think that there wouldn't be enough interest to have these, so that's why I think that a public meeting would be better. I think that, for those that will actually read the document, their questions can be answered in a drop-in session.

Naomi – do you think that the opportunity to meet with the person who did the report would be good?

CCC – Yes, I think it's vital.

Action – GCCC members to go to their groups and see what the response is to have a public meeting.

Action – Michael to send email on proposed date for the public meeting.

Michael posed the question to representatives of the Gloucester



Project and BSGPA.

CCC representatives indicated that it would be a positive thing and that they would go back to them and see what the response is.

CCC – I think that not many people will read the report, but I am hesitant at getting people through the door and not walking out the door disappointed. It is a very distinct topic and I think that it may not interest a lot of people. This is very different to any other meeting we have had.

CCC – if you're going to do it that way then I suggest to have that public meeting first and then the individual meetings. Because you can upset a lot of people. The last thing we want is to upset people and not get them back in the future.

CCC – There may be questions that come up that would require the report.

John – we need to go back into the work programs and understand that the scope is and how things can fit. That would be a few weeks, but I would like it to be done prior to the public meeting.

Naomi – If Rick's last report is made available for a period of time and the AGL response comes as soon as possible.

CCC – requested a timeframe.

CCC - is there going to be an opportunity to ask general questions in relation to the report?

Michael – yes, go ahead.

CCC – the community update – “most importantly this investigation shows that there is no connectivity between shallow and deeper aquifers”. Is this correct to make based on the peer report.

Rick – there is clear evidence in my mind of linkage of shallow and deep aquifer.

CCC – do you think AGL is justified in publishing that document?

Rick – I think this is a social issue.

CCC – I think it's a factual issue and I suggest that AGL make a correction because that is not factual.

John – At the time of publishing the report this was correct.

Naomi – It needs to be put into context that this was taken from the PB report which has now been peer reviewed and several criticisms have since been published.

CCC – Yes but my question is, you published something for the community but it is not correct, so will you release a community update with a correction?

Toni – No we won't because this has to be taken in context. We have now gone through this process and will be going through further processes to address how AGL will respond to the review.

CCC – I assume that this will be addressed in the meetings we will have post this process?

Naomi – yes, and we will also have to address any other comments.

Michael – did the PB report say what is written in the community update?

Rick – yes, it did. And what I'm saying in my review (which relates to that paragraph) is that I still don't think that just because you have an impact doesn't mean that it is unacceptable or a fatal flaw. We're not there at this stage.

CCC – talking about timing. The last 3 or 4 meetings ran over time. Why aren't we allowing time?

Naomi – it's just historical, that these times were chosen.

CCC – we're going to lose people if they keep running over time. For the normal meetings we should be going for 4 hours because we keep cutting ourselves short.

It was agreed that more time would be dedicated to each meeting.

4. Terms of Reference

CCC – I am concerned that we got this very late.

Naomi – would you like to take it home and have more time?

Barbara – I can provide a bit of a framework.

CCC – yes, that would be good.

Barbara – there are some key issues to consider when developing a terms of reference. It is important to note that there is no ministerial direction to have this forum on, but AGL has committed to having as much transparency as possible.

CCC – one of the things that I brought up some time ago, that we were going to discuss is how we did this. I did also mention that a broader demographic and an aboriginal representative should be present. We need to have certainly more representatives from the schools. There aren't enough young

Action –AGL to reissue the stakeholder table

Action – AGL to update stakeholder list and publish on web

people because it is their future.

CCC – In other committees I've been on it's been the chairman's job to find an indigenous representative to make themselves available. But it needs to be done.

Barbara – what is the current existing perception of the committee independence and what it represents. It's not an easy road because there is a lot of uncertainty, and if you're struggling with this then it is even harder for the community to get on board. I think that the terms of reference need to try and reflect what the CCC feels about membership and how we can get these people involved in the process.

Naomi – we should talk about including new members

CCC – the thing that interests me most is getting the young people. Even if they chop and change, we still have some sort of representation.

Michael – as stated in the terms of reference, there is enough flexibility to let that happen.

CCC – I think you'll find that the list that we have covers most of us in one guise or another, but what's missing is an aboriginal and young people representative.

Naomi – we do have a lot of flexibility to ensure that we have enough representation. We've capped at 15 but if we want to expand it we need to know what the number is.

CCC - in my committee it was a priority to have an indigenous member and I think that this needs to be prioritised here then it needs to be the chairman's job to ensure that there is someone is in attendance.

CCC – the problem is that they are distributed to us 10 days after the meeting which is good. But the CCC only has 5 days to review them.

Michael – I would want them to be online when they have been accepted as a true and correct form.

CCC – I would accept that, but I think we need more than 5 days to review them, because it needs to go back to those that we represent.

Naomi – I just want to add that it was my error putting up the previous draft meeting minutes before they were accepted. It is not something we've done before and it won't happen.

Barbara – I think 2 months is too long for them to be ratified. They could go up in draft form and then be ratified. If I was a community member I would feel very displeased that they are not out there.

Michael: I agree that, if the meeting isn't for 2 months then 10 days

Action – Michael to consider indigenous representation on the GCCC

Action – protocols are required for GCCC meeting minutes. Barbara to incorporate this into the terms of reference.

Notion 10 working days for the minutes to go to CCC. 10 days for GCCC to comment. Draft

for the CCC to review the meeting minutes seems fair. That would give you enough time to read them yourself and then send them to your group for review.

Barbara - we can look at that because what we want to make sure is that we are not limiting this process and alleviating the concerns as much as possible. What do you think will work?

CCC – the people that want to read the minutes have read them. As soon as they come to me I send them out. So I don't think that's an issue.

CCC - you could have an endorsed and unendorsed version.

Naomi – yes, that would be good.

Barbara – that would be perfect for the website, you could have both versions.

CCC – I'm still worried about the days. I would need more days, maybe 10 days leaving it as a draft version.

Barbara – I think that is a reasonable approach and I agree that I need to make a consistency between the two versions, which is the unendorsed and unendorsed version.

Barbara – we've covered membership and minutes. Let's talk about protocols.

Naomi – I'm conscious that the members that really wanted to talk about the terms of reference have had to leave.

Michael – I would like to hold over that until the next meeting.

Discussion was had to postpone the terms of reference for the next meeting.

Notion 10 working days for the minutes to be with the CCC for comment before they are put on the website.

They would then be ratified at the following ordinary meeting. Once ratified they will go up again on the website in final form.

Notion unanimously supported.

5. Update

- 2D Seismic survey starting next week
- The road into the Waukivory pilot wells at Forbesdale will commence tomorrow/next week

CCC – The waterbores are not included in the REF?

Toni – no they go through the Office of Water. Only one indicative location was included in the REF. But we go through another department for approvals.

CCC – is that down on the flood plain?

Toni – Yes, it is. The road doesn't continue on down there.

CCC – what depth are they?

Toni – There's a 50 metre and a 120m. I would have to check that, but roughly those depths.

CCC - The road doesn't continue on down to that area. Will you have to build an access road?

Toni – we would have to build a road but the wet weather is



22 Tate Street
Gloucester, NSW, 2422
Australia
Tel: - +61 2 6558 1166
Fax: - +61 2 6558 1066

beating us at the moment. But we will eventually get to this.

Naomi - AGL recognises the importance of community consultation and getting it right. A decision was made to restructure our community relations team in upstream gas which means there will be a dedicated community relations representative at all locations. The role of Community Relations Manager for Gloucester was advertised on seek and through the IAP2. A new Community Relations Manager, Therese Ryan, will be starting in Gloucester 7th May.

CCC – Can you just remind me what her role will be?

Naomi – she will be the Community Relations Manager in this region only.

Meeting closed 2:10pm.

Next meeting

Next meeting – 28th June, 2012

Michael Ulph

GHD – Stakeholder Engagement