SUBMISSION NAMOI WATER - NOTE draft was attached not final

Namoi Water to: csg.review 01/05/2013 05:08 PM

History: This message has been replied to and forwarded.

Please disregard the previous email as it contained the draft with spelling errors!

Attached is the corrected final version.

Thanks
Jon

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Namoi Water Submission to the Review of coal seam gas activities in NSW final 2013.pdf

NW submission AI Policy final April 2012.pdf

2011 Namoi Water Submission in respect to CSG State Senate Inquiry.pdf

Namoi Water Submission to the Review of coal seam gas activities in NSW

Please find attached our submission in relation to the below review terms of reference. We also attach our submission to the NSW Government inquiry into CSG.

At the request of the NSW Government, the NSW Chief Scientist and Engineer will conduct a review of coal seam gas (CSG) related activities in NSW, with a focus on the impacts of these activities on human health and the environment.

The Chief Scientist and Engineer is to:

1. Undertake a comprehensive study of industry compliance involving site visits and well inspections. The Chief Scientist's work will be informed by compliance audits undertaken by regulatory officers, such as the Environment Protection Authority and other government agencies .

Please provide to the community the results of this review of compliance in particular any activity in the Gunnedah Basin. If the community and individual members from the community had not raised issues with the Department of Industry and Innovation repeatedly and taken evidence by way of photographs, videos, water and soil samples and had them analysed, the long term environmental impacts of Eastern Star Gas and Santos's operations in the Pilliga Forest may have been catastrophic. Particularly in regard to untreated water being pumped into Bohena Creek, spills at all well sites, continued use of evaporation ponds, unsafe practices, dust, dam wall and well integrity etc. The Pilliga site is a litany of environmental breaches of licence conditions. It is a clear example of the failures of the compliance systems.

2. Identify and assess any gaps in the identification and management of risk arising from coal seam gas exploration, assessment and production, particularly as they relate to human health, the environment and water catchments.

The Namoi CMA Risk assessment framework was developed to provide a spatially-interactive cumulative risk assessment tool that could be used to explore the potential cumulative impacts of mining scenarios on key natural resource management assets in the Namoi Catchment. THIS IS NO LONGER A GAP – yet NSW Government is choosing not to use this framework? What better example of assessment of issues relating to Catchment Action Targets as developed by our community and signed off by government.

The Namoi Water study would have been one of the data inputs into the above tool, in the Chief scientists review we recommend you read the Terms of Reference for the study. It was originally intended to assess at a regional scale the cumulative impacts of mining and coal seam gas. The study was to be a $22 million dollar project and was scaled down to a desktop assessment – it should be noted that the data provided for the coal seam gas in the Narrabri region to this study was from Eastern Star Gas. Santos has been unable to verify the data provided to the water study for the Narrabri wells. The data provided was questioned in detail by members of the Stakeholder advisory group and there are still significant concerns in regard to the Eastern Star Gas data for the CSG section of the study.

The study found that groundwater quantity datasets are much more limited in the deeper systems and used generic or estimated parameters with sensitivity testing run on the numerical model. The study provides an indication of the impact CSG extraction will have on water quantity however water quality is a key data gap in the study.

The study shows that ground water in the hard rock areas in the Gunnedah and Oxley basin management areas are shown to be at high risk in scenario three from CSG and mining.

There are no baseline studies independently conducted prior to exploration or development completed, these must be done by the government to provide assurances to the community the CSG industry is not having an impact and that ongoing monitoring by regulatory agencies can identify the source of impact. A monitoring program similar to the hydrometric network (which is paid for by irrigators) but targeted at deeper systems (paid for by CSG companies) including isotope testing, full water chemistry, water levels, aquifer flow paths for connectivity and water level mapping is suggested.

Water Quality is a significant gap as per the Namoi water study, in particular the risk once the CSG water is brought to the surface was not assessed in this study. In the recent review of the Santos application for the Leewood Dam construction and pipework from Bibblewindi treatment works the REF approval provided did not take into account the recommendations from NOW or EPA as stated below.

NSW Office of Water recommends that no dewaterering of coal seams should occur until the water treatment facilities are available. (I.e. no pilot production until they sort out the treatment plant. They also note the REF does not address the risk of a leakage or failure of the pipeline.

NOW Letter: http://www.resources.nsw.gov.au/__data/assets/pdf_file/0005/461975/Santos-PAL2-Leewood-Produced-Water-and-Brine-Management-Ponds-REF-NOW-Response.pdf

The EPA response also reports that it has 'inherent risk' offering this approval as only one section of a water plan and in no way means subsequent parts of the water plan will be approved.

Also points to no possibility to manage Maximum Operating Water Level, given the REF does not incorporate any water treatment or disposal strategies. Recommends Santos demonstrates exactly how it can manage water levels if the maximum is reached.

EPA letter: http://www.resources.nsw.gov.au/__data/assets/pdf_file/0008/461978/Santos-PAL2-Leewood-Produced-Water-and-Brine-Ponds-REF-EPA-Response.pdf

Approval was provided that did not take in the above recommendations by the Department of Trade Investment: http://www.resources.nsw.gov.au/__data/assets/pdf_file/0009/461979/Santos-PAL2-Leewood-Produced-Water-and-Brine-Ponds-REF-Approval-Letter.pdf

It is not NSW Office of Waters responsibility to assess the risk of the CSG water when brought to the surface, they are focused on the potential risk to the aquifers from the interference activity in terms of recharge or connectivity through modelled assessment. However it is the risk of unintended impact on the surface that is a significant area of concern, the department responsible

up until recently for compliance has been the same department that issued the licence in the first instance.

Will the EPA be properly resourced to fulfil their role? Is this a risk the community is willing to take with water resources for short term economic gain to this governments budget? The above is but one example of the system for compliance and management failing to meet the expectations of communities that rely on the water resources that potentially will be impacted by unintended consequences of operational and system failures. The assessment of the longevity of surface impacts is unknown.

3. Identify best practice in relation to the management of CSG or similar unconventional gas projects in close proximity to residential properties and urban areas and consider appropriate ways to manage the interface between residences and CSG activity

The recently announced 2klm buffer for residential areas is based on what premise (out of sight out of mind?). Whilst excluding rural farm residences and smaller villages the principle of the buffer has yet to be detailed. The issue of access agreements being required to drill under your property is currently unresolved, there is no prohibition preventing a mining or gas company from drilling underneath, however it is difficult to prove trespass. The onus of proof of damage still rests with the impacted citizen/farmer at great cost, difficulty and pitted against multinational companies that in many cases can provide substantially more resources to defending their practices.

Deputy Premier Andrew Stoner has acknowledged coal seam gas wells impact on property values and there is the potential for things to go wrong. The Pilliga is a case in point of the failure of regulation to protect the community against those probabilities.

Investors have expressed concern at the risk of litigation against CSG companies and the government by farmers regarding property devaluation resulting from CSG extraction. There are already examples of this on the Liverpool plains near the Santos site Kaluha at Mary's Mount.

The Valuer General's Department in Queensland confirmed an overall devaluation of properties of between 2-12%. This figure is for south west Qld grazing country, not irrigation or highly productive dryland cropping country where the CSG PELs are located in the Gunnedah Basin.

4. explain how the characteristics of the NSW coal seam gas industry compare with industry nationally and internationally

In reviewing the issue of water impacts, the precautionary principle enshrined within water sharing plans should apply consistently across the aquifer interference policy. Yet the biophysical SAL is not to reflective of NRM principles under which water and land management sit. A catchment focus must be applied to the planning process and to date this has not occurred, evidenced by the lack of understanding of cumulative impacts.

The process of adaptive management fails in this instance, Qld is an example of exploration and production that failed in the planning and approval process. NSW Government is asking NSW landholders to try the new regulatory process, yet the risk or perceived risk is too high of unintended impacts.

Namoi Water seeks industry and government undertake the science first before exploration and production is started in consultation with communities and reflecting catchment focus of land management. We also have a number of concerns with the aquifer interference policy. Specifically comments regarding the Minimal Harm Criteria are tabled below.

- The previous draft of the Aquifer Interference policy used the approach of considering potential impact on draw down, creation of connectivity and impact on surface water similar to WSP planning process.

- The new draft proposes the minimal harm criteria as the basis of all exceptions for the need to hold an AI approval.

- As the criteria focuses on providing a distance measure we seek the data that supports the criteria and how this minimises harm? Why is the non-highly productive groundwater restriction higher than highly productive groundwater sources?

- The minimal harm criteria must include surface water including stringent protection for primary rivers and conditions for stream protection.

Attached to this document is our submission on the Aquifer Interference Policy.

5. inspect and monitor current drilling activities including water extraction, hydraulic fracturing and aquifer protection techniques

The Aquifer Interference Policy has now been finalised : Fracking has not been ruled out and the policy indicates that hydraulic fracturing will require an AI approval. We do not support continuation of fracking due to the unknown impacts on water resources in our catchment.

The volume of water taken from a water source will need to be predicted prior to project approval and measured and reported – there may be requirements for additional monitoring and reporting.

Given at this stage our experience with mining and gas company estimations and calibration of models for water take prediction being underwhelming in the provision of quality and quantity data we have concerns over the reliance on modeled data. Particularly, coal seam gas and the lack of metering at well heads in the exploration phase and mining difficulties in measuring pit inflows to accurately calculate take. There are several examples in the Namoi in the last 5 years where the modeling has failed to predict accurately resulting in contamination of the environment.

There is a library of resources here in the Namoi of a local Landholder that has gathered evidence of Eastern Star Gas and Santos operations. This landholder has a plethora of photos and video evidence that will give a different picture of past and current activities. Namoi Water recommends this review seek all views on CSG operations here in NSW not just the sanitised information from the companies themselves.

The NSW Chief Scientist & Engineer will provide an initial report to the Premier and the Minister for Resources and Energy on her findings and observations by July 2013.

Namoi Water

Submission to NSW State Government
April 2012

Photo : Natural Gas Fracking article America Revealed

Draft NSW Aquifer Interference Policy
Stage 1

Namoi Water : Supporting sustainable water use in the Namoi Catchment and representing water users in the Peel, Upper and Lower Namoi Catchment Area.

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Introduction

- This is a formal submission to the NSW State Government on the draft Aquifer Interference policy – stage I.

- Namoi Water commends the NSW Governments efforts to review policies for the licensing and approval of aquifer interference activities. The aquifer interference policy has been a long time in draft form within the department and we commend the NSW Office of Water (NOW) staff that have over the years added to the policies development.

- It is essential that a balanced outcome prevails through the Strategic Regional Land Use and Aquifer Interference policies, with balanced consideration between the interests agriculture and expanding extractive industries impacts.

- Namoi Water represents regulated, unregulated and groundwater users in the Peel, Upper and Lower Namoi valley. Our members are major contributors to the sustainability of local towns and the region's economic development. As employers of a significant workforce, collectively our members contribution is well documented in the multiplier effect in terms of economic value.

- Aquifer Interference under the Water Management Act 2000 is a licenced activity. The current policy provides certainty for the mining and gas industries and uncertainty for water access licence holders. Namoi Water does not support the draft Aquifer Interference policy stage 1, as it does not protect the water resources we rely upon both ground and surface water. The policy is not balanced between the interests of extractive industries and agriculture. Nor does it provide consistency and compliance with the Water Management act's objective to manage minimize local impacts and cap resource extraction.

- The long term future of the state's water resources and the productive capacity of those industries dependent on them, are severely threatened as a result of the exemptions in the Draft AI policy. The policy provides countless opportunities for mining, including coal seam gas to use highly productive water and land resources without regulatory scrutiny and with potential detrimental effects on existing industries.

- Our experience in water reform and sustainable practices are the strengths that we apply to this policy development process. We look forward to engaging with the NSW state government to enable use of our skills in this consultation period. To reach an outcome acceptable to all parties that continues the sustainability of the water resource for all in NSW.

General Comments

As one of the stakeholders in the Namoi Catchment Water study our recent learning's in regard to modelling at a catchment scale has been instructive. Regional-scale, multi-state and multi-layer **models of the cumulative effects of multiple extractive industry developments** on ground and surface water as recommended by Geoscience Australia are imperative to assessing impacts on resources prior to development.

- Catchment scale models do not provide the resolution required.
- Site specific models do not provide coverage of cumulative impacts.
- There is a significant lack of data for assessing Coal Seam Gas impacts on water resources connectivity, subsidence and quality.
- Model run times should not be limited so that the resolution of the model is compromised.
- And assumptions/parameters used must be transparent to understand the model capacity to predict impacts.

Use of a multi layer model as proposed by the Namoi CMA we believe will provide a more complete way to assess risk and determine if impacts are beyond the resilience of the resource. This tool should be used to inform the "Gateway process" and would use the AI assessment completed by NOW. Namoi Water agrees that this assessment must be completed "up front" prior to approval being given for AI.

We have significant concerns around the exemptions contained within the AI policy that need to be addressed.

SAL

- The AI policy must be broadened out to apply to all water sources regardless of whether it falls under the SAL criteria. As per our submission this vertical view of the water resource neglects the horizontal nature of the resource and is not in line with NRM principles. There are many submissions being lodged on the quality of the SAL criteria and in the Namoi's case the need for a cotton industry cluster.

Retrospectivity :

- AI must apply retrospectively to all existing mining and coal seam gas operations. The risk to the resource of the policy not being retrospective is substantial.
- All mining and CSG activity must be captured within the legislative framework that allows for the assessment of their impact on water resources.

Exploration

- The Eastern Star Gas operations in Narrabri are an example of exploration being left unchecked and unregulated.
- There must be sufficient regulation during the exploration stage, the draft AI policy does not apply to exploration and this is a major flaw that needs to be corrected.

Exemptions

- The exemption that allows mining and CSG projects to bypass the draft AI policy is not acceptable.
- The AI policy is reported to be a key input into the gateway process which will assess project applications using a planning framework. This does not provide confidence that a complete assessment will be undertaken or how this will be weighted in a risk framework or approval matrix if it is determined that the AI of a project will result in significant damage to an aquifer.

- The AI advice in the gateway process must be a show stopper with the regulatory strength attached to provide rejection of an application.
- If not the AI policy must stand alone as a separate approval process (this is our preferred option). NSW Office of Water to consider and determine impact and provide advice to Minister of Department of Primary Industries.

Water Quality

- The policy does not provide clarity around water quality, our concerns given the recent spills (Easter Star Gas/Santos) and releases into the Namoi (Idemitsu/Whitehaven) highlight water quality as a major impact requiring tighter regulation.
- All returned water must be of a quality equal to or higher than independently assessed benchmark data of the resource being returned into. The use of high flows to dilute pollution of waste water from mines and CSG activities is an easy out. Water must be treated via Reverse Osmosis and must include treatment for all parameters not just EC and salt content.
- The AI policy does not cover in our view water quality well enough in the stage 1 draft.

Minimal Harm Criteria

- The previous draft used the approach of considering potential impact on draw down, creation of connectivity and impact on surface water similar to WSP planning process.
- The new draft proposes the minimal harm criteria as the basis of all exceptions for the need to hold an AI approval.
- The minimal harm criteria provides four zones – we question if four zones are necessary and if three might be more practical?
- As the criteria focuses on providing a distance measure we would seek the data that supports the criteria and how this minimises harm? Why is the non-highly productive groundwater restriction higher than highly productive groundwater sources?
- The minimal harm criteria must include surface water including stringent protection for primary rivers and conditions for stream protection.

As a member of NSW Irrigators Council Namoi Water is supportive of the councils policy document - *Mining and Coal Seam Gas Approvals; Protecting Water Resources Policy* - which clearly outlines irrigators expectations that the NSW Government to provide a strong aquifer interference policy that extends to all water sources and can be rigorously implemented and enforced.

The policy also affirms the NSWIC policy approach of ‘no regrets’ to the exploration and operation phases of mining, including coal seam gas. The current Draft AI policy does not fulfil any of these expectations and cannot be supported in its current form.

Namoi Water supports the NSWIC submission to NSW Government in regard to Aquifer Interference.

The water sharing plan process was lengthy, painful and resulted in major cutbacks to water access in the Namoi. There have been significant efforts made to sustain the resource for future generations. We must ensure the AI policy provides the same protection of the resource as new industries emerge and challenges arise with co-existence.

Submission Comments

1.1 Fracking has not been ruled out and on page 2 of the document suggests that hydraulic fracturing will require an AI approval. We do not support continuation of fracking due to the unknown impacts on water resources in our catchment.

1.2 Page 5 states that AI approval will be required for dewatering of bores for CSG extraction, however there is no consideration of the impact of mining on aquifers and the need for mines to hold Aquifer Interference approvals.

1.3 Page 6 states that the volume of water taken from a water source will need to be predicted prior to project approval and measured and reported – there may be requirements for additional monitoring and reporting. Given at this stage our experience with mining and gas company estimations and calibration of models for water take prediction being underwhelming in the provision of quality and quantity data we have concerns over the reliance on modeled data. Particularly, coal seam gas and the lack of metering at well heads in the exploration phase and mining difficulties in measuring pit inflows to accurately calculate take. There are several examples in the Namoi in the last 5 years where the modeling has failed to predict accurately resulting in contamination of the environment.

1.4 There must be criteria developed and made available for review to assess the rigor of modeled data used. Government at the very least should have independent data to verify assumptions made by consultancy reports used to support applications. The lack of capacity due to funding constraints does not allow the department (NOW) to adequately move forward with extractive industry growth.

1.5 If the interconnectivity between GAB and deeper aquifers is not understood or currently measured then funding of monitoring by NOW staff needs to occur to dedicate hydro geologists or suitably qualified staff to undertaken this ongoing monitoring paid for by the mining industry.

1.6 Given approval is being heavily weighted to the development consent process overseen by planning we seek clarification regarding the enforcement provisions under EP&A. How many water experts are there in the planning department? Particularly given the recent Eastern Star Gas issues and Whitehaven/Boggabri Coal all being fined for contamination of the environment both land and water resources in the Namoi there are serious gaps in the departments capacity to deliver on the compliance of current provisions. How will the department be able to deliver on the new “strengthened” process?

1.7 Criminal prosecution provisions must be included to prevent ongoing environmental impacts as a result of extractive industries.

1.8 Page 11 states that where uncertainty in the predicted inflow has significant impact – we seek clarification of the meaning of significant? Should this relate to the minimum harm criteria and what is the test of how this will apply under a risk management framework.

1.9 Given the history of the licencing of water resources and the significant economic benefit $80 million in the Namoi alone from agricultural production there must be recognition of the longevity of economic contribution and the reliance on water resources as a sustainable resource in the future at a catchment scale.

2.0 The precautionary principle enshrined within water sharing plans should apply consistently across the aquifer interference policy yet the biophysical SAL process is a patch-working process so as not to be reflective of NRM principles under which water and land management sit. A catchment focus must be applied to the planning process and to date this has not occurred, evidenced by the lack of understanding of cumulative impacts.

2.1 Of major concern in the crossover of the three documents AI, Strategic Regional Land Use and new code of practice for Coal Seam Gas and how the three interrelate is not clear nor consistently used in each document.

2.2 As irrigators that rely on sustainable water resources, relegation of the NSW Office of Water opinion via the Minister as advisory only is in our view not sufficient in the approval process for “Gateway” applications and state significant projects.

2.3 Aquifer Interference approval should be granted or not granted as a stand alone process separate to the planning considerations.

2.4 Given the Water Management Act is based on two premises 1) to account under CAP rules and measure take and 2) to minimize local impacts – we question the point of the AI policy if it does not have the same intent and therefore authority for the department (NOW) to prevent impacts from CSG and Mining activities on water resources?

2.5 The Planning Assessment Commission process has considerable flaws of which we take issue with the lack of independences of the PAC appointee reviewers, the lack of consideration of cumulative impacts and the lack of consideration of Triple bottom line input from other industries being negatively impacted by mining and CSG industry proposals. This has yet to be looked at within the PAC review process which is still at it’s heart is an approval process not an independent assessment.

2.6 Page 16 is a positive outcome for all communities, the commitment to making information publicly available. We would seek to have the NSW Office of Water advice made public ***prior*** to the planning assessment being finalised. If the NOW advice is to be

relegated to being advisory only then this advice should also be available to the community as well to consider in their submission to the planning process. The regulation should specify when the advice is to be made available to the public.

2.7 Page 17 outlines the remedial action steps, who is monitoring this and who funds the monitoring and compliance? NOW assessment will be focused on desktop modeling and review of reports from company funded consultancy reviews. Again if the department responsible does not hold independent data on interconnectivity and monitoring bores there is no rigor in the assessment of predictions and proposed mitigation, prevention or avoidance strategies.

2.8 At this point there should be consideration given in the document for REJECTING an application for aquifer interference, this power must be discussed in the AI policy. In what circumstances will AI approval not be provided – the outline of minimum harm criteria is commendable in its focus on mitigation, yet there is no discussion on the steps for rejection or resubmission of modeled predictions and data and transparency of this process.

2.9 If NOW and the AI policy is relegated to advice only then if this advice is such that the minimum harm criteria is exceeded and cannot be mitigated then it must be a show stopper for the approval to be withheld and this must be clearly legislated in planning provisions. If not then Aquifer Interference approval must stand alone as a separate approval.

3.0 Features for protection must also include surface water as the documentation on connectivity between the two resources is significant and the fact that it is not included reflects this policy attempt to take a cylinder approach vertically on the land and water which is at odds with NRM learning's from many decades.

3.1 When was the need for protection of rivers ie: Primary rivers removed and why? How are impacts in connected surface water and groundwater systems accounted for in the minimum harm criteria and the broader policy. Is it the government's position that Surface water does not contribute to groundwater systems and therefore impact by mining on rivers and streams is not interference – where is this covered elsewhere and what legislation provides this protection?

3.2 Because there is no separate approval for AI who then has jurisdiction in the event of an aquifer being damaged and requiring make good provision?

3.3 What provisions are there for make good and how long do they last after mine well has been closed off. Given the bonds are already taken by government is there a need to duplicate the process, should the step be taken to put funds aside for a minimum of 50 years post mine/well closure for make good provisions.

3.4 What regulation sees to the repairs for damages to water access licence holders access and reliability as a result of AI?

3.5 Page 18 relates to highly productive groundwater that lies below SAL land, yet is purely based on irrigation situation, this criteria should be reduced to 3L/sec and 500 mg/L.

3.6 Also the suggestion that town water supply to smaller towns is less important is inappropriate suggest the town water supply to 500 people is more appropriate especially if groundwater is their only supply source.

3.7 The section : An aquifer interference approval will not be issued for an activity that proposes to directly operate within a Water protection zone except in the water protection zone that relates to highly productive groundwater – is in conflict with itself by our reading.

3.8 Following on, the reference on page 18/19 that a productive aquifer can be rehabilitated back to its previous state is against all advice received from the department to date. The planning department and NOW are requested to evidence the situations where highly productive aquifers have been returned to their productive states under these circumstances. What was the timeframe for return to the state required when and where did this rehabilitation occur and what monitoring took place was by the department independent to the mine/gas company.

3.9 The statement in para 5 page 19 : 10% of the three dimensional extent of this zone needs to be clarified in terms of impact and example provided. Again the exemptions on page 19 for state significant projects that state that GW works and yield can be returned to meet highly productive groundwater criteria is in our view not possible if the government is serious about protecting water resources and flys in the face of the WMA and WSP process undertaken by communities now facing extractive industry expansion. This issue is a significant flaw in the document requires evidence to be provided on catchment scale, cumulative impact and with the resolution to detail examples that show how this is can be done.

4.0 Dot point three is approval for reinjection of CSG water and this has yet to be demonstrated as being a viable solution to waste water management. Given the reluctance of CSG and Mining companies to put in place adequate water treatment plants reinjection cannot be discussed without clear guidelines for minimum standards in this policy.

4.1 The calibration of data 2 years baseline data needs further detail : who specifies the amount of bores and depth of the monitoring network? Modeling the requirements of take, needs to be appropriate for the minimum harm criteria and would need to apply

across the 4 zones proposed. How do current models meet this requirement and how has the department considered that this is done within existing EA and EIS proposals?

4.2 Page 20 states that all other impacts based on predictive modeling with be independently reviewed - by who and what data will be used? Given there is no state data to verify the legitimacy of company data.

4.3 Irrigation impacts are well understood and the information contributing to sustainable yield has years of calibration and is an ongoing management responsibility of NOW and has dedicated monitoring network, hydrological team and compliance staff focused on ensuring extraction outcomes comply with WMA. Where does this document protect the water resources from extractive industries impact into the future? Agricultural will span 100's years to come and depends on sustainable water resource.

4.4 Page 26 – states that approval for AI will not be issued if bore construction is likely to increase inter aquifer leakage – what specifications are being used for this? This assessment needs to be clearly identified in the Onshore act reviewing CSG code of practice.

4.5 What penalties are in place? Where are company directors made liable for the actions of their companies.

4.6 How is this process managed by the department responsible where are the guidelines published and when are security deposits released to be used to remediate and what department signs off on this action.

Conclusion

Aquifer Interference under the Water Management Act 2000 is a licenced activity. The current policy provides certainty for the mining and gas industries and uncertainty for water access licence holders.

It was understood that Aquifer Interference (AI) policy and subsequent regulation would be stand alone. This is not the case and the policy is subservient to the newly proposed Strategic Regional Land Use Policy and "gateway" process which identifies areas of Biophysical Strategic Agricultural Lands (SAL). The proposed SAL looks at the resource in a vertical aspect and does not consider the horizontal nature of groundwater and surface water resources.

All projects that are "state significant" are not required to have an AI approval. Exploration activities are exempt as long as interconnectivity clauses are not triggered.

Given the proposed new arrangements relegates the AI policy to an "advisory" role only there are significant questions around the governments purpose of having an AI policy and then choosing not to use it.

The policy refers to the newly "strengthened" Environmental Planning and Assessment Act as being sufficient to address concerns of Aquifer Interference. Yet the document clearly highlights that Biophysical is focused on the land not the water resources underneath them.

There are no certainties that water impacts will be addressed through this process.

Submission ends.

Supporting Sustainable Water Use in the Namoi Catchment

Namoi Water

Namoi Water Submission in respect to Coal Seam Gas Extraction

With respect to environmental, economic and social impacts of CSG activities, including exploration and commercial extraction activities, allowable under the NSW Petroleum On shore Act and in particular;

- *The environmental and health impact of CSG activities*
- *The economic and social implications of CSG activities*
- *the role of CSG in meeting the future energy needs of NSW*
- *The interaction of the Act with other legislation and regulations including Land Acquisition Act*
- *the impact similar industries have had in other jurisdictions*

The issue of CSG in NSW is of State importance and there is need for urgent priority of legislation both at State and Federal level to legislate safe guards to preserve public health, food integrity and security.

Namoi Water is the peak industry group for irrigated agriculture in the Peel, Upper and Lower Namoi valleys in the North West of NSW. We are non-profit non-political organization supporting our members to achieve a sustainable irrigation industry that meets the environmental, economic and social needs of our local communities. Namoi Water as the peak water entitlement holder group represents approximately 1000 members. Entitlement holders within the catchment vary in size from single employee operations to businesses employing around seventy employees.

The agricultural activities range from grains and pulses such as sorghum, wheat, soybeans, peanuts, corn, lucerne, vegetables and cotton, to water used for intensive animal production and a variety of niche market food products. The direct contribution to our economy is $800 million per annum. We are one of the most experienced valleys in terms of water reform, having entered reform in NSW several years prior to other valleys. The Namoi has pioneered the NSW industry response to water reform and we apply this experience to the current challenges of Coal seam gas industries expansion in our area.

The Namoi Water study is currently collating data from government, mining and CSG companies to produce a regional model to assess the risks of coal mining and coal seam gas activities in our catchment on water resources. The models will be run using a number of scenarios (5 – in this project) to assess impact. The phase II report has highlighted there is limited data available in CSG water sources outside the companies own data. This data gap is critical flaw in the development of this industry in any region to assess impact.

The Water Sharing Plan processes are based on the precautionary principle in regard to managing water resources, the CSG industry regulation is not based on the same principle yet is dealing with the same resource - water. State policy, legislation and planning procedures need to be rebalanced. State legislation needs to play a role in providing checks and balances in a regional sense, and the Water act has a role to play in safeguarding water resources from mining industry impacts.

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Namoi Water is working with Eastern Star Gas to understand the CSG industry and their technology. We recognise that the gas reserves are a significant benefit to the economy of the State. Long term impacts on community health and the environment (inc water resource environment) should play a major role when assessing projects that add to the community, state and national triple bottom line. We are concerned about the safeguards that are currently not in place if things go wrong eg contamination of an aquifer in 30 years time. What are the various levels of the "make good" provisions, how do these work in practicability?

The CSG industry case is based on comparison of this energy source with others (ie: coal) as a good clean form of energy with few environmental costs. The assumption that natural gas from CSG can act as a transition fuel needs to be challenged. Rather than substituting for coal it is likely that CSG will simply satisfy increasing energy demand and hence increase associated emissions.

The CSG industry promotes local economic stimulus will create jobs in our regional community. The gas industry submissions will highlight the "jobs" benefit in our community, however Eastern Star Gas have stated the current operations employ 25 staff, what % live in our regional community? The bulk of the workforce are fly in fly out. What social research is used by Government and CSG/Coal Mining companies to ensure they don't make the same mistakes repeatedly in each new community they enter and the risk of social disruption caused by transient workforce and camp living arrangements are acceptable to the community. What significant socio economic studies have been done to show benefit of CSG industry expansion in rural communities, what is the real cost benefit to the region and State? What are the potential long term costs to our communities and State if there is damage to water resources, land and agricultural production?

We are using our experience with the CSG companies that are operating in the Namoi to highlight our concerns in this submission. Namoi Water is committed to continue working towards better information exchange between our industries, and lobby government for appropriate safeguards to consider long term and accumulative impacts prior to approval being provided. Our aim is to seek regulation to protect the water resources our industry is dependent upon and upon which the food and fibre this State needs now and for the future. If the water resources cannot be safeguarded then this industry must not be allowed develop in NSW. There should be an immediate moratorium on any further licences or approvals, until the system is reformed. Regional water studies must be conducted prior to granting licences.

Thank you for the opportunity to submit to this inquiry we welcome any opportunity to present our concerns to you and further engage in the required rebalancing of legislation.

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The environmental and health impact of CSG activities

• *The economic and social implications of CSG activities*

The preservation of sustainable resources (inc water) must be absolute in addressing economic and social implications of CSG activities. The real risk is that CSG industry exposes the existing base of our communities and other land users to, is third party impacts on our key resources. The environmental costs are higher than just the local cost (the CSG company value of the water resource to the community may differ significantly to how the community values this water).

Many costs are not easy to quantify such as the cost of salinity downstream or leakage into groundwater if it is unclear where the contamination has come from. This industry has as its regulator (self regulation), in what industry with the potential impact and the many unknowns due to lack of regional studies is this acceptable? Unless the extractive industry can prove that there is no impact to our environment, water integrity and quality, food security and human and animal health. The impacts both short and long term will far exceed any benefit in jobs and royalties paid. There is no doubt that the CSG industry will impact on water resources, there must be no circumstances under which the watercourse is permanently damaged or altered.

Our concerns are focused on **subsidence, induced recharge, connectivity, management of co-produced water**.

Induced recharge from adjacent fresh water aquifers needs to be prevented not licensed. **Recommendation:** isotope test CSG production water and cease operation if water from an adjacent and licensed aquifer is detected. This is an accurate representation of a property right and avoids long tail environmental outcomes that simply cannot be anticipated. In other words, regarding adjacent aquifers, leave it as you found it.

Disposal of waste CSG water:
This is the biggest issue of concern with the potential for significant impact. The storage of large volumes of co-produced water awaiting retreatment or reuse potentially contaminated with many toxic substances is a serious risk. Evaporation is no longer a preferred disposal method due to the risk of dam wall failure and spills after intense rainfall events, concern is increasing that reinjected water could contaminate adjacent aquifers in time to come. The current ESG practice is to use the evaporation ponds that they now claim will not be used to stockpile water, whilst waiting for processing through a very small reverse osmosis (RO) plant. The reality is the stockpiled water evaporates while waiting for reverse osmosis processing. The public however, think the water is being processed. Reverse Osmosis (RO) is expensive and the capacity will need to be huge and RO still leaves a potentially noxious waste of salt, heavy metals and sulphides.

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Co-produced water management strategies– Namoi Water has reviewed various strategies which comprise of a number of options such as reinjection after treatment through a reverse osmosis plant, virtual reinjection (substitution against existing water entitlements), beneficial use and discharge to river and creek system. Coal seam produced water contains an array of naturally occurring substances, many are reported as being hazardous to human health, animal health and to the environment. There must be a requirement for treated water to be comprehensively and independently analysed continuously to determine that water treatment standards are maintained to ensure water quality and integrity. The water analysis must list all the naturally occurring contaminants that are being brought to the surface and introduced via drilling or fracture stimulation practices. There must be strict conditions to treating this water so that it meets the Australian guidelines such as ANZECC water quality guidelines. There is no understanding of the impact of changing the micro nutrients through reverse osmosis and disposal in natural creek systems and the impact on downstream riverine health. There needs to be a higher level of treatment than reverse osmosis. The current water treatment is focused on removing salts and is unsatisfactory.

The maximum amount of water listed in megs per day to be discharged should be specifically stated in the authority to operate. The exact discharge point should also be specified in the licensing conditions with meters attached. The exact manner of disposal of the accumulated salts and minerals and the reportable wastes must be addressed under license. The sludge management disposal must be adequately monitored and managed by legislation. We have received presentations from ESG regarding "planning" for this process however there is still a focus on self regulation. If we are to implement effective monitoring and measurement practices as a safeguard then we need to use the data to regulate with appropriate penalties put in place to encourage compliance.

• *The role of CSG in meeting the future energy needs of NSW*

The CSG industry claim that gas fired power stations emit up to 70 per cent less greenhouse gases than existing coal burning plants. We would be keen to see a comparison with whole of life cost of the energy source with other alternatives. This comparison should include land clearing, water management, raw material export, imported pipe to lay initial infrastructure, costs to fly in workers, building of camps, compensation to landholders and loss of productivity, periodic release of methane "fugitive emissions", extraction of water per well head, surface salt bi-product managment, construction of water treatment plants, compression stations, LNG storage, importation of equipment for water treatment facilities, energy to boil the brine water, management of toxic waste left over, liquefying of gas and rehabilitation of land be used in accounting process. Economic considerations of these costs needs to be taken into account when determining if CSG is cleaner than other forms of energy.

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•*The interaction of the Act with other legislation and regulations including Land Acquisition Act*
CSG mining must be listed under the Protection of the Environment Operations At, so that oversight can be made by DECCW. CSG must also be included under the State Water Act so that compliance with State Acts and guidelines regarding the integrity of the river systems and waterways can be enforced.

Lack of information and accountability: There is no matrix or document control register available to account between CSG companies, environmental authorities, industry and investment exploration conditions and the State and Federal conditions on CSG projects. The public is not aware if due process is occurring when there are issues. For example ESG was reprimanded for low level environmental contamination at a site during the December 2010 flooding, this is not the first time, however this information was not made available at the time of the event or after on public record. Nor is the most up-to-date material on CSG development available to communities in which they are proposing development. There is no requirement for neighbor notification, nor communication or public consultation on exploration sites. A further practical example is that when REF's are amended via written hard copy these amendments are not available on line on public registers due to privacy restriction loop hole that CSG companies take advantage of. These same amendments are used to gain incremental changes to existing operations without full disclosure and review of plans for the entire resource.

The provision of proof is based on the data the company provides in the application process, Namoi Water like many other organizations has read and reviewed the publicly available REF's with consultancy reports attached providing evidence of risk mitigation strategy or resource reviews and environmental impact statements. How are these reports reviewed in detailed or ground truthed by the various departments responsible? What credibility should be placed on a subjective report that is focused on a small area impact and has limited accountability for its recommendations. Will the consultants stand up and be counted when Bohena creek has high levels of salinity and in the next rain event runs into the Namoi. As the discharge point for ESG co-produced water, this can potentially have a serious impact on Native fish numbers and reducing the Namoi's rating in the Sustainable Rivers Audit which determines ecosystem function levels, upon which the basin planning process has used as the scientific driver of river health?

No community or impacted industry has the level of resources (outside the example of the recently developed Namoi Water Study) to provide objective science to present the level of detail required to adequately assess these reports from a cumulative perspective. Nor does the current department responsible for this process have the staff resources to prosecute these reports to enable best practice in planning. Yet in the same legislative context the onus of burden of proof lays with the water access license (WAL) holder to prove damage or impact by CSG extraction. The significant financial imbalance between CSG company and WAL owner and the capacity of a WAL owner to seek independent hydrological services are critical considerations for current and future water licensing capacity.

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Legislation and due process:

CSG companies and their representatives, have long enjoyed access and input into the legislation, conditioning and regulation under which they operate. CSG industry development is largely facilitated on a reactive basis with a focus on self regulation. NSW has yet to review the make good provisions in terms of CSG, when this occurs the make good provision must be for the aquifer as a whole not just the individual bore hole impacted and must be in perpetuity. WAL holders in the alluvial aquifers are monitored regularly via the Water Act legislation (Water Sharing Plans developed under the precautionary principles) and are regulated by the Office of Water and Minister for DPI.

Provisions exist for NOW hydrologists (FTE staff across the state) to measure and manage the aquifers and test bores to detect changes to the catchment water resource and individual zones and thus impose restrictions on water access licences **immediately** to rectify any downward trend. An example of this immediate action in our catchment is the use of section 324 to restrict access in Zone 11 area of Maules creek during 2007-2010. These restrictions are in ground water aquifers that ***do*** recharge, the CSG drilling that is currently taking place in many cases is in aquifers that are thought not to recharge and have no such constraints as the water is considered a bi-product to the main activity and thus is treated as such. NOW hydrologists estimate the resource the gas industry is working in is a massive old water resource and therefore the water extraction is based on this vast resource number and is considered sustainable despite the lack of recharge.

The State focus to date has been on the need for a licence to extract if recharge is induced from higher aquifers (aquifer interference policy). The NSW government has advocated for growth in use in the water sources where CSG companies operate within the Basin plan negotiations. Yet for every other groundwater source without a finalized WSP the lower of the two figures provided (either CAP or history of use numbers) was used. The history of use figure in this water source is minimal, however NSW Government is advocating for the higher CAP number to be included in the new Basin Plan. There is no requirement for Isotope testing of water in CSG exploration or extraction activity to determine the age of the water extracted, this process would clearly show if there is connectivity. ESG have stated that they isotope test the Coal seam but not the water. They have recently stated they will undertake isotope testing of water however this needs regulatory review to ensure it is effective in the intent to determine induced recharge.

There appears to be a focus on accepting the damage rather than preventing it happening in the first place; or to require licencing from one aquifer to another, or alternatively pay for damage along the way when it occurs. It is extremely concerning when the CSG industry has a significant lag period between cause and effect and has the potential to have impacts on groundwater which last hundreds of years.

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The basis of presentations by CSG companies to our organisation is on the premise that there is no connectivity between where the CSG extraction is occurring and the alluvial aquifer. Yet the submissions received by the Federal MDBA inquiry committee indicate otherwise in other regions. We have not seen data generation by the department that oversees this industry to ground truth these assumptions or if it is being generated it is not publicly available.

CSG companies have various means of well stimulation techniques not limited to hydraulic fraccing. Our understanding is the fraccing is not viable in the current ESG development areas at this time. In Qld disclosure of the nature of all these "operations" is not transparent as they are classed as "commercial-in confidence" techniques. Therefore, it would not be possible for the government to regulate other well stimulation techniques if they do not know what these techniques entail or the risks they pose. The potential impact to the water resource system would also go unaddressed. The above demonstrates inconsistencies and systemic problems in CSG development governance and the many implications that manifest from it.

Conclusion

A strategy needs to be designed to implement environmentally sustainable development of CSG and coal industries with view to transitioning to renewable energy. There must be regional independent strategic planning that identifies and permanently excludes areas of important natural resources or productive agricultural land from exploration or mining. There needs to be independent review and determination of all mine proposals and statutory third party appeal rights. Regional water studies should be conducted prior to granting exploration or extraction approvals for CSG. All water extraction must be licenced metered and adhere to strict water quality requirements and testing to determine if recharge is induced. There should be cumulative impact assessment of all existing and proposed CSG operations. The full impact must be considered up front including any proposed future variations modifications or extensions. There should be regular and thorough independent reviews of compliance with conditions of approval. These conditions must also be inforced. The government must seek urgent analysis of long term costs and benefits of CSG industry (over 100 years) that includes all external costs to determine its credentials as a "clean" energy source. All forms of fraccing must be prohibited as it poses a severed risk to water resources and human health. The impost on communities to keep abreast of CSG development is a significant impost on agricultural land holders. There must be public register of conditions, compliance, controls and approval processes. The public must be aware if the financially complicit regulator is safeguarding their community and the environment.

The community concern that has been expressed to date in NSW regarding CSG development must be acknowledged and this inquiry is a first step in that process. The Government must address the concerns that are being expressed in this review process by the community for their regional health, environment and sustainability. The long term impacts of various technologies being used by CSG industry needs to be subject to National Standards. The variable core hole casing techniques in use are being questioned overseas, ie: using one, two or three layers of casing at various levels within core hole. Is the government assured that industry best practice is

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enough to prevent interference and will not degradate over time 50-100 years resulting in contamination of the overlying aquifers? The time lag between cause and effect from CSG development and its impacts must be a part of the legislation to safeguard the environment and water resources. A proactive response is needed from Government and is called upon by communities to answer the questions on environmental, social and long term sustainability. Adopting a peer review process and using the precautionary principle for development the Government can reduce the variable impacts that result from adaptive management response such as in the Qld CSG expansion.

It is well recognized that economic systems move faster than environmental and social systems which creates a disconnection and discontent. There is already a groundswell of concern for CSG industry and its expansion in NSW. The overseas experiences are not encouraging as to the impacts socially and environmentally. Longer term economic impact will be a consideration of hindsight if we allow our productive assets (land, water & regional communities) to be compromised for short term gain. There remain many unanswered questions, for example the byproduct salt and how it will be dealt with, the value adding option is considered likely to be unviable and the reinjection or burying of salt in our catchment is not acceptable.

Our concern in regard to the salt impact is critically related to the MDBA basin plan. There is a real risk of increasing saline water introduction into the system if the CSG industry expansion is not well managed and strategically planned. It is our understanding that the dewatering process may indeed establish connectivity in some aquifers, whilst reassurances from CSG companies that this stops their production, the safeguards and testing of well field development and impacts at a regional scale are unknown. Sesimic reflection data to infer strata formation properties is subjective and does not provide detail. Water and gas pathways cannot be determined, as per ESG experience in drilling into fractured rock system in Narrabri. Can transmissivity be established by government departments at depth and scale of regional studies when the data is held solely by CSG companies? The data gaps are alarming and the use of planning departments focused on application approval is not conducive to a system managing for longevity of the whole system. Modelling and State held data is limited and this is a key factor in our call for the government to pause CSG exploration and production approvals until such time as we have the mechanisms in place to safeguard the water resources and land use above CSG resource.

Namoi Water does not purport to have technical expertise in CSG however our endeavour is to obtain knowledge and make informed judgment based on our significant experience with government and regulation in regard to water reform. We welcome the opportunity to present to the inquiry committee if required.

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