Submission No 444

INQUIRY INTO COAL SEAM GAS

Organisation: Stop CSG Sydney

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Stop CSG Sydney (a.k.a Sydney Residents Against Coal Seam Gas) appreciate the opportunity to comment on the Legislative Council's Inquiry into Coal Seam Gas (General Purpose Standing Committee No.5) and structure our response according to the Committee's Terms of Reference.

However we would like to begin with some more general comments.

We would like the Committee to consider the potential scale of this industry and whether or not limits should be ultimately imposed. This we believe is a considerable question that should be given much weight, as the endpoint scale of Coal Seam Gas (CSG) activity will have impact on all factors considered as part of this Inquiry.

The emergence of the CSG industry has been in part touted as part of the answer to climate change and a role as a transitional energy source.

We would like the Committee to note that currently ~25% of NSW is covered in Petroleum Exploration Licences (PELs) for CSG. This area covers almost the entire extent of known coal seams and incorporates ~90% of the population of NSW (thus legislative announcements that consider only new licences are considered farcical). Exploration for CSG is somewhat different than standard petroleum exploration. CSG is present in all coal seams, exploration is not being undertaken to find out if it is there, but to work out if (given local regulatory conditions) if it is financially viable to extract. The financially viability of a CSG well in a given area is dependent on the price of CSG, and the cost of impositions of regulations on techniques used to extract the gas in that particular area. As global supplies deplete, the price will increase, making once unviable wells, financially viable in the future. As price increases, the pressure to relax regulations to get that last drop out of the well also increases.

Given the above, without limits on the industry, 90% of the population of NSW will (if not now, then sometime in the future) will be facing the prospect of a CSG well in their neighbourhood.

So what limits should be considered? If the CSG is purely about being a transitional energy source to an economy based on renewable energy sources then limits should be based on purpose. E.g.

- As a transitional energy source we anticipate that CSG production will peak in XX years, CSG production will then reduced at a rate of X% a year as renewable energy sources ramp up. or
- We anticipate that NSW needs XX,XXX petajoules of CSG a year for X years, by which time renewable energy sources will begin to dominate. Based on current projects NSW will need XX,XXX CSG wells to meet that demand.

If, the CSG industry (or the government), in fact, has no transition plan, and CSG is seen as an ongoing source of export income, (and the public should be informed of this fact) then limits should be more prosaic, but should be well considered, and publicised so that every person in NSW fully understands the eventual impact of this industry. So limits should be determined on when enough is considered enough, e.g:

- The NSW CSG industry has no limits, the industry is too important to our economy, and the NSW government will allow the CSG industry full access to the resource, no matter where it occurs. We anticipate that it will take a total of 100,000 wells to fully access this resource.

- The NSW CSG Industry will be restricted to areas where it does not impact on water, environment, food production, or health of the population. These areas are....and the number of anticipation wells is XX,XXX

- The NSW CSG Industry will be restricted to a maximum of 100,000 wells, or 10,000 new wells a year, or production of XX,XXX petajoules, or export of XX,XXX petajoules.

Once limits (or not, as the case maybe) are determined then the entire cumulative effect of anticipated production should considered before full scale rollout of the industry. E.g. when the mining industry talks about how much water each well uses, that amount should be multiplied accordingly, when the mining industry talks about only 0.5% of the fracking fluids being chemical in nature, that figure should be 0.5% x XX Litres (of fracking fluid) x XX (number of times each well fracked) x XX,XXX (number of wells). That 0.5% amount is no longer insignificant.

We would also like the Committee to recognize the current lack of context given by the mining industry in relation to CSG issues. In the example above 0.5% sounds like a small amount, when it is 0.5% of an awfully large amount, it too is an awfully large amount. We are also aware of recent claims by the industry of the amount of BTEX chemicals found in some monitoring bores as minor, only 15-16 parts per billion, when the safe level in Australia is recognized as less than 1 part per billion. When showing communities images of well sites, they show one well head in isolation, not the grid of hundreds of well heads, which is more likely and is a truer representation of what communities are in for. Showing farmers who have a few exploration wells, and not many production wells on their properties in advertising commercials .This repeated lack of context (and spin) is misleading and needs addressing. The Advertising Standards Board appears to have no issue with repeated complaints about misrepresentation and environmental claims by the industry.

Before we get to detailed comments on some of the Terms of Reference items, we would like to note that we use comments from the approval matrix for the exploratory well approved for St Peters, to illustrate our comments. Some may quibble that the St Peters proposal is for exploratory well, not a production well. We have two issues with such quibblers. 1) If a production well is never going to be appropriate, then why allow an exploratory well to go ahead, 2) when pressed Dart Energy admit that (based on results of previous exploratory wells sunk at Everleigh and Bunnerong) they expect the well to be financially viable and will move into production.

Residents of St Peters and surrounding areas recognized that one impact of an exploration well is a production well, therefore we argue that impacts of a production well should be considered in exploration approval.

1. The Environmental and health impact of CSG activities including the:

We note that in the approval for St Peters, any environmental impact that may cause disruption to the community was considered not applicable. Similarly impacts on the health of individuals and communities was considered not applicable.

a. Effect on ground and surface water systems

We note that in the approval for St Peters, the impacts on ground and surface waters were considered uncertain to comply with standards, plans and policies. While impacts in changes of water quality were uncertain to be reversible, only partly able to be mitigated, uncertain to comply with standards, plans and policies, but further studies on impacts or mitigation not required.

Impacts on Botany aquifer again considered uncertain to comply with standards, plans and policies, and uncertain if they could be reversed, but further studies on impacts or mitigation not required.

There are a myriad of threats to water. Living in Australia, which is one of the driest countries in the world, we Australians should be trying to conserve, treasure and protect our water. Indeed we need to be custodians of water on a global level as well since our planet is the only known planet in the solar system capable of supporting life. WHY because we have an abundance of WATER.

The CSG industry places a huge demand on our water supply. From the amount of water used in the drilling process, the fraccing process, and the dewatering of coal seams resulting in 'produced water'. As well, every stage of CSG extraction from the exploration core holes, production wells, to the fraccing process carries with it the risk of damaging aquifers and contaminating ground water supplies.

Water Use

A large amount of water is used in CSG mining process itself, whether this is sourced from the local water authorities or from local ground water, the net result is a loss of usable water to the detriment of other industries, agriculture and communities in the area.

Every hydraulic fracturing stimulation event of a single gas well requires approximately 3.8-19 million litres of water (or 1.5-7.5 Olympic size swimming pools).

Given that in a fully developed gas field containing hundreds of wells that are fracked up to 18 times each in their life cycle (ANH), and that mining companies have plans for 40 000 wells in the Surat and Bowen basins in Queensland alone (CSGN), the cumulative effects could potentially lower the groundwater table and render existing boreholes waterless.

This is of particular concern since most of the country has been declared drought stricken over the last 5-10 years. Large amounts of money have been spent on drought proofing Sydney at tax payers expense (eg. Reverse Osmosis treatment plant in Botany converting sea water to potable

water), this uses large amounts of power to run, not to mention expensive semi permeable membranes. Question: Why ruin groundwater in an effort to produce energy when treatment of water to potable criteria costs energy?

One only has to watch "Two men in a tinny" as they journey down the Murray Darling River to explore how stretched water resources are during times of drought. Followed by all the arguments regarding water rights in Victoria, this alone should be enough to understand what effects water shortage has on not only agriculture but community relations. Question: Why are we even considering CSG in Australia when we don't have enough water to service potable and agricultural needs? And in Sydney when residents have been on strict water regulations regarding water usage – we haven't even been allowed to water our grass!

Once CSG extraction commences, a large amount of 'produced' water is brought up from the coal seam. This produced water, as well as bringing up methane, brings up toxic, carcinogenic, radioactive compounds and heavy metals found naturally in the coal seam (see Health below). The current practice of treating produced water in evaporative ponds is recognised by the industry (Glynn, 2009) as very problematic, with permeation of salt and compounds into ground water or overflow into surrounding environments, streams and rivers etc. at the top of the list of concerns.

The recent flooding of these ponds in the Queensland floods demonstrates that these effects may not be limited to a local area. An evaporation pond or hole in the ground lined with plastic, to prevent seepage into the environment is just not acceptable. All produced water needs to be treated to ANZECC guidelines standards and tested for target pollutants BEFORE it is released into the environment. Any liquid waste containing hazardous substances needs to be treated as Hazardous and disposed of by HAZMAT specialists. Transport of hazardous waste to restricted Hazardous waste sites needs to be carefully considered – distances, access routes and risks to agricultural land, residential areas and waterways if there are accidents and spills. Why should every other industry in Australia be subject to strict laws regarding treatment of waste when the CSG industry are allowed to accumulate water in large ponds, untreated, evaporating and releasing deadly fumes into the atmosphere. Question: When CSG leaves an area, who will clean up?

Contamination of food producing regions by produced water cannot be easily remediated and can render the land unusable for generations. *In order to protect our foodbowl water needs to be protected, since only about 4% of Australia's land can be deemed suitable for agriculture.*

Often downplayed by the CSG industry is the physical geological interplay between coal seams, overlying geology/strata and groundwater. Many coal seams are ideal for gas extraction purely because they exist in a high pressure state. Releasing of this pressure through extraction has a twofold effect:

Firstly, it can result in subsidence which can in turn change the connectivity*/continuity* between the coal seam, any local aquifers and ground water thus contaminating the ground water. The

contamination can be from the compounds found naturally in the coal seam, or from fracking chemicals.

Secondly, removing the pressure in the coal seam may result in a drop in ground/bore water, leaving it inaccessible to current bore water users. The most graphic demonstration of what can happen when drilling results in a drop of pressure can be found in Indonesia with the mud volcano (Davies *et.al.* 2011) whereby 3 square miles of land is now 65 feet under a pool of mud.

Contamination and disruption of aquifers (unanticipated or otherwise) can have far reaching effects. The National Water Commission (2009) recognises that "ground water and surface water are intimately linked", and that "we are still unclear as the extent of these interconnections". Extraction of CSG cannot continue until we can be certain of the extent of any impacts from the operation. Indeed the National Water Commission (2010) recognizes that the industry "risks having significant, long-term and adverse impacts on adjacent surface and groundwater systems". *CSG drilling may cut across aquifers and disturb the natural flow of water underground.*

Despite the CSG industries claim that directional drilling and hydraulic fracking does not cause groundwater contamination, methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing has been reported in Pennsylvania (Duke 2011). In this study the peak methane level of 64 mgCH4/L was detected in drinking water. This is a potential explosion hazard as the defined action level for hazard mitigation in this case is 10-28mg/L.

Australia is highly susceptible to bushfires, with the Victorian and Marysville tragedy still fresh Feb 2009, do we really need an added threat of flammable methane hanging around in drinking water at explosion level concentrations?

b. Effects related to the use of chemicals

We note that in the approval for St Peters, the impacts of flaring of gas (and associated chemical release) were not considered to be reversible, only partly able to be mitigated, uncertain to comply with standards, plans and policies, but further studies on impacts or mitigation not required.

We also note that in the same approval, impacts of chemicals in general was considered not applicable.

CSG mining has a range of direct and indirect health impacts. Doctors for the Environment Australia (DEA), is a voluntary organisation of doctors from around Australia, concerned with the relationship between health and the environment. Dr Helen Redmond recently presented a seminar 'Health impacts of open-cut coal mining and coal seam gas mining' (Redmond, 2011). Chemicals and compounds used can be generally classified into three groups: 1) standard drilling compounds, 2) compounds used in the fraccing process, and 3) compounds found naturally within the coal seam that are bought to the surface whatever the extraction method. Many compounds and chemicals are found in all three groups. Of the compounds that we know are

present and that we know the effects of include endocrine disruptors, carcinogens, heavy metals and radioactive isotopes (NTN, 2011).

Impacts from these compounds on physical health include skin, eye and sensory organs issues, respiratory illnesses, gastrointestinal and liver problems, brain and nervous systems, immune disorders, kidney malfunction, cardiovascular and blood issues, cancer, mutagens, the list goes on (NTN, 2011).

The carcinogenic BTEX group (benzene, toluene, ethyl benzene and xylene) that have received recent publicity are not only used in the drilling/fracking process but occur naturally within the coal seam. Since the fracking procedure releases rock bound BTEX from the strata, the banning of BTEX chemicals in the drilling process will not stop these compounds coming to the surface, seeping into the ground water or from accidently contaminating surrounding areas through spillages of produced water.

The pH of the produced water needs to be considered as increased acidity can result in increased mobility of the heavy metals and other compounds brought up from the coal seam.

Despite the CSG industries claims that no pollution of groundwater has been documented due to hydraulic fracking. The US EPA has linked fracking to groundwater contamination (Horwitt 2011). “Government studies found that oil and natural gas waste fluids injected underground can migrate up old oil and natural gas wells and fluids can break into aquifers near the surface if old wells have deteriorated casing, lack cement plugs or contain cracked cement. This phenomenon is known as saltwater breakout” Question: Are CSG companies going to maintain well integrity in the future, or abandon them once the gas is gone but chemicals are still underground?

c. Effect related to hydraulic fracturing

Many of the effects related to hydraulic fracturing are covered under effect on ground and water systems, use of chemicals, and air quality. What is not covered in other sections is the potential for large scale subsidence and potentially earthquakes.

We note that in the approval for the St Peters site, land instability was considered ‘Not Applicable’, yet the Federal government lists large scale subsidence as one of the foremost issues of the CSG Industry. Subsidence could cause large scale devaluations of the property market in the inner west of Sydney and would prompt large class action suits against both the industry and any government that approved activity in full knowledge of the likely impacts.

While fracking has yet to be directly linked to earthquakes, in the UK a CSG company voluntarily stopped fracking operations once earthquakes commenced in a nearby geologically stable area. While earthquake swarms in the USA have also subsided since fracking operations were suspended.

The re-injection of produced water into aquifers (as suggested recently as a solution by Hon. Tony Burke) has been scientifically proven to cause earthquakes.

d. Effect on Crown Lands including travelling stock routes and State forests

Travelling stock routes are not only a cultural icon, but important for stock during periods of drought, and provide valuable biodiversity corridors. Disturbance and fragmentation of the TSRs for pipelines should not be considered a no-brainer, but should incorporate long term wildlife studies (migratory patterns) etc as well as the impact on feeding stock in times of water stress. The required clearings around methane pipelines for fire hazard purposes could in effect prevent any other functionality of a TSR and remove them from the common good.

e. Nature and effectiveness of remediation required under the Act

Rehabilitation of Coal Seam Gas fields is not as simple as that of a Coal mine. The area affected by a coal mine is localised, while a CSG field consists of an extensive network of wells over a vast area. The most likely of threats from a CSG field is water and soil contamination: by heavy metals, neurotoxins, radioactive isotopes and salinity from produced water. A produced water spill will leave the surrounding land unusable for decades, if not centuries. *Question: Is there any documented evidence of successful ecosystem rehabilitation anywhere in the world? How much did it cost? Will all CSG fields be rehabilitated?*

Contaminated groundwater or contamination in the artesian basin, is likewise unable to be remediated (watching attempts to clean up the Orica contamination of the Botany aquifer is like watching a car crash in slow motion). It is also likely to have a far wider effect.

f. Effect on greenhouse gas and other emissions

We note that in the approval for St Peters, the greenhouse gas impacts were considered uncertain to be reversible, only partly able to be mitigated, uncertain to comply with standards, plans and policies, but further studies on impacts or mitigation not required.

No one argues that the burning of gas is more efficient and releases less carbon into the atmosphere than burning of coal. However simply looking at the carbon effects of usage is misleading. New research on the life cycle carbon cost of CSG which includes fugitive emissions of methane conservatively estimates that in a 20 year timeframe approximately 36 grams of carbon are produced per MJ of energy produced, while coal estimates for the same timeframe range between 30 and 32 grams carbon per MJ. The high estimate for CSG is over 60 grams of carbon per MJ. (Howarth, 2011). This is not fringe or discredited science. The Coal industry itself uses Howarth's research to point out that over a hundred year timeframe CSG produces fewer grams of carbon per MJ of energy produced then coal (although only marginally). Given the need to address climate change sooner rather than later, and that the NSW Government is promoting CSG as a transitional energy source (as opposed to a final solution) we feel that 20 year timeframe data is more apposite.

It is also important to note that while carbon dioxide is the dominant greenhouse gas, methane is the second most dominant. The Global Warming Potential (GWP) of methane is at least 21 (IPCC, 2007) , we need to be careful that in our haste to tackle the more popular carbon dioxide issue, that we don't substitute carbon dioxide emissions with methane emissions.

Despite industry reassurances to the otherwise the wells do leak and the leaks are detectable at the surface. A recent QLD Government report (QLD, 2010) found that over 50% of the wells tested were leaking – although they only consider it to be a leak when it becomes measurable compared to the Lethal Explosive Limit (LEL) of methane and thus only report a small percentage of actual leaking wells.

Perhaps we should be looking at counting methane (not just at the electricity generation site), and the leaky wells and production location, but at leakage from the government owned infrastructure. In Australia in 2001-2002 the Australian Bureau of Statistics recorded transmission losses of gas from the pipelines at 1.5%. Given that the pipes are aging and there is unlikely to be a wholesale upgrade of pipework in the near term - this figure is only likely to increase.

g. Relative air quality and environmental impacts compared to alternate fossil fuels

We note that in the approval for St Peters, air quality impacts were not considered reversible, only partly able to be mitigated, uncertain to comply with standards, plans and policies, but further studies on impacts or mitigation not required.

Over 250 toxins have been identified in air pollution associated with gas flares including "carcinogens such as benzopyrene, benzene, carbon di-sulphide, carbonyl sulphide and toluene, metals such as mercury, arsenic and chromium; sourgas with H2S and SO2, nitrous oxides (NOx); carbon dioxide (CO2) and methane (CH4). (see NTN 2011, and references contained within).

On the 8TH August 2011, A landowner in Chinchilla QLD reported the following: "There is a mysterious odour wafting through the farms south of Chinchilla. Residents describe it as like "burning oil". It is most often reported in the air during the night and early in the morning. It is strong enough to wake some landholders from a deep sleep….. The land owner lives about 6km from the Linc Energy pilot plant and spends most of his time outdoors. But he is concerned. He said the fumes burn his eyes, with the pain remaining for two or three days, and he is also suffering respiratory problems." http://qcl.farmonline.com.au/news/state/agribusiness-and-general/political/linc-site-causes-big-stink/2251382.aspx?storypage=0

Question: Do we really want to expose residents in high density populate areas, or any where for that matter, to these types of fumes? What will be the cost to the health system?

Due to the gaseous nature of the contaminants, concentrations of pollution dissipate over time. This makes sampling and analysis of gas exceedingly difficult and obtaining quantitative proof of

contamination almost impossible for the general public. Proof of contamination is usually qualitative and symptomatic and for this reason down played by the CSG industry indeed it seems that they use it to their advantage. Bare in mind that analytical laboratories have strict holding times (time within which samples must be analysed within) for VOC (Volatile Organic compounds) and SVOC (Semi Volatile organic compounds) in order for results to be deemed viable or even to stand up in a court of law.

Other environmental impacts not specified in the Terms of Reference

Not considered at all in any of the publicity around the CSG industry is the problem of habitat fragmentation and the threat to stygofauna (fauna that live within groundwater systems and aquifers). Habitat fragmentation is one of the major threats to biodiversity (Lindenmayer, 2006) a well documented critical threat, more so in the rural areas, while the threat to stygofauna is universal.

Habitat Fragmentation - Unlike a coal mine, CSG fields cover large areas and are networks connected by pipes and roads. The resultant habitat fragmentation can be easily seen in any of the more developed CSG fields. While this causes visual pollution, and obvious obstacles to cropping and grazing practices by farmers it also impacts on the local, surrounding and migrating fauna, and does so in a manner much greater than the impact of a coal mine. It is well known that habitats need to be connected to maintain biodiversity and much good work has been done on a large scale within Australia. For example the Australian Alps connectivity initiatives (Andersen and Atkins, 2010) has been recognised globally. On a smaller scale, many species will not even cross a small road, and the ones that do are subject to increased risk of traffic injury (Randgaard, 1999).

Fragmentation also effects ecosystem function and the network of roads can provide the means for feral animals and weeds to spread throughout the landscape.

Stygofauna - Stygofauna are members of the rich biota found in underground water including but not limited to potential important chemosynthetic microbes and distinctive and specialised (and often geographically specialised) fauna. Stygofaunal communities on the eastern coast of Australia are hardly ever recognised and are poorly understood. Recognised at a federal level (National Groundwater Commitee, there is an increasing awareness of these communities and of their importance to the Australian ecosystems in Western Australia (DEC, WA) Internationally Stygofauna are recognised in The RAMSAR Convention on Wetlands.

More recently the NSW Land and Environment Court in [2010]NSWLEC 104 and [2010] NSWLEC 48 recognised the likely occurrence of stygofauna in ground water and required continual sampling and monitoring of the project on basis of the Precautionary Principle.

Other environmental impacts include dust and sound pollution, vibration, increased traffic. As CSG extraction moves into urban environments (e.g. St Peters, Sydney and surrounding areas) noise, dust and sound pollution, and cumulative traffic are of increasing importance and need consideration. The fact that St Peters is located under a flight path and suffers from extensive

noise pollution between the hours of 6am and 11pm does not mean that the 24 hour a day drilling, extraction and truck noise will blend in with the existing noise pollution (Macquarie Energy , 2010) and should not be considered acceptable.

We note that in the approval for St Peters, noise and vibration were not considered reversible, only partly able to be mitigated, uncertain to comply with standards, plans and policies, but further studies on impacts or mitigation not required. We also note that noise was not considered to be significant because there were no 'sensitive receptors' in the area. This brings to mind a quote (more recently by Bart Simpson) that if a tree falls in a forest and no-one hears it, does it make a noise. Because something is currently not monitored does not make it insignificant. And any other physical or pollution impacts considered not applicable.

We suggest that that the 200m metre legislated distance from dwellings is not enough to mitigate the impacts and risks associated with CSG extraction. We suggest that CSG wells are incompatible with an urban context.

As the frequency, duration and intensity of vibration are unknown, have no idea on the effect or impact this will have on surrounding residents and the local environment. Similarly estimated numbers of associated truck movements are largely unknown, but we suggest that the current approval requirements lack the level of detail required for an accurate assessment of impacts, both local councils and state traffic bodies should be involved in the approval process. Given Sydney's lack of infrastructure and traffic problems the burden of additional traffic may well grind traffic to a halt.

The economic and social implications of CSG activities including those which affect:

a. Legal rights of property owners and property values

While there are many public discussions about landholder rights versus miner rights. Ultimately the resources belong to the Crown, and ultimately the Crown is the people of Australia. Communities should have the right to oppose mining in a rural area, or an agricultural area, or a tourist area, or an urban area. They should have the right to know that this industry is likely, or planned, and have some say in the process before it is locked in.

Mining companies should be held responsible for property prices in regions that they are profiting from. And this should not be restricted to the landholder, but the community at large. If one landholder says yes – or sells out and the neighbouring property is affected, the neighbouring property resident should be compensated.

If people relocate to an area (whether they buy or not), in part, the existing aesthetic often plays a part in the decision (and often the price). If this aesthetic changes (or is forcibly changed), by

decisions in which the local community have no say, the people of that community deserve to be compensated.

To have 90% of the NSW population under immediate threat of CSG wells for the foreseeable future is untenable.

We note that in the approval for St Peters, impacts on the welfare of individuals or communities (which presumably includes financial security) as well as impacts on property value was considered not applicable.

b. Food security and agricultural activity

There is constant media coverage about the need for a 'Big Australia', while Australia as a whole bounces between long dry droughts and destructive floods. Internationally food and water security is becoming a global concern. While meat accounts for 30% of our exports (DFAT 2011), the national fresh fruit and vegetable market is much more sensitive to local impacts (e.g. bananas, post cyclone, post flooding) (Verrender, 2011). As Australia grows in population it will become increasingly important to ensure that our water is drinkable and that we have enough arable land to not only to supply fresh food at peak production, but be flexible enough to cope with other environmental disasters. The absence of fresh food will impact on the health of the population (Redmond, 2010), as will contamination of water supply and impact on downstream communities.

c. Regional development, investment and employment, and State competitiveness

Assuming that the expansion of coal mining and CSG "will generate additional jobs and the need to house new employees....in regional areas" recent events in Queensland (Burke, 2011) and intentions of mining companies to move to 100% fly-in, fly-out operations, demonstrates that this is not necessarily true. The mining companies have their own agenda and their agenda is not necessarily in the best interest of local communities, states or even Australia. The move to fly-in, fly-out not only reduces any economic benefit to local communities, but also increases the opportunities for foreign labour, as is common in WA.

d. Royalties payable to the State

We are aware that the CSG industry has a 5 year royalty free holiday in NSW. We feel that this completely undermines any claims of contribution to the NSW coffers. In particular, we note that many wells are not lasting as long as they expected, therefore for some wells, no royalties will ever be paid by the companies, but the environmental, health and social costs will be borne by the local communities.

e. Local government including provision of local/regional infrastructure and local planning control mechanisms.

Local government and local communities should be informed, involved, and be enabled to forward plan with certainty. We note that in the approval for St Peters, 17 of the 24 community impacts were considered 'Not Applicable', we feel this is 'Not Acceptable'.

We note that in the St Peters Approval, the large (possibly most dense) urban population was not considered to be a biological factor for consideration, demand for local infrastructure, impacts on the local community and infrastructure were all considered not applicable.

3. The role of CSG in meeting the future energy needs of NSW.

Given our comments at the start of this document on limits (real, suggested, or anticipated), we would like to endorse comments and recommendation on energy details from organisations such as Beyond Zero. We are not convinced (particularly given the export deals already negotiated) that the CSG industry considers NSW to be anything but a well pad for export. It is our understanding that conventional natural gas supplies are adequate for a transitional move to renewable energies. We would like to see more plans for the endpoint, rather than the transitional phase.

We would like to note that while the NSW Government has promoted interest in the extraction of CSG for the domestic market, the NSW Government does not own the mining companies. Current domestic gas consumption is about 1000 petajoules (PJ) annually and is estimated to increase to 1150PJ, while gas companies are looking to export over twice this amount (AIG, 2011). Linking domestic gas production to world export markets will also dramatically increase the price of domestic gas (AIG, 2011). If the NSW Government is, as stated, looking for CSG to be an interim transitional energy source to a low carbon economy, then export of CSG must be restricted.

4. The interaction of the Act with other legislation and regulations, including the Land Acquisition (Just Terms Compensation) Act 1991.

The industry continually claims that it is the most heavily regulated industry in NSW. We note that none of the existing legislation was written with CSG in mind. Given the widespread scale and cumulative effects and potentially irreversible, devastating impacts, CSG needs specific legislation and regulation to ensure that we don't throw the baby out with the bath water.

We also note that the *Fisheries Management Act* is often neglected with respect to CSG enterprises. We would like the Committee to consider, as an example, stygofauna. Specific species of Stygofauna can be considered as

(a) a member of a threatened species, population or ecological community as defined in the *Threatened Species Conservation Act* 1995 (NSW)*;*

(b) a member of a threatened species, population or ecological community as defined in s 220B of the *Fisheries Management Act* 1994 (NSW); or

(c) a member of a listed threatened species or listed threatened ecological community as defined in the*Environment Protection and Biodiversity Conservation Act* 1999 (Cth);

It is also important to note that species (which may or may not have threatened species status) that have aquatic larvae in fresh water are covered under the *Fisheries Management Act* – so any operation that is extracting, returning or potentially contaminating inland rivers needs to consult the *Fisheries Management Act* as well.

5. The impact similar industries have had in other jurisdictions.

Stop CSG Sydney has had several screenings of 'The Gasland – the Movie', while we understand that things are different in America and it is just a movie, the biggest difference us and America is that they didn't know any better. We have the American example to look to, and at the very least we should put breaks on this Industry until we understand exactly how different it is in Australia.

Stop CSG Sydney for an immediate moratorium on all Coal Seam Gas exploration and extraction until the environmental, health, social issues can be thoroughly researched, and all true costs have been calculated.

On behalf of
Stop CSG Sydney

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