Submission
No 344

INQUIRY INTO COAL SEAM GAS

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The Director
General Purpose Standing Committee No. 5
Parliament House
Macquarie St
Sydney NSW 2000

08 September 2011

Dear Committee,

Re: Inquiry into Coal Seam Gas

AGL Energy Ltd (AGL) welcomes the opportunity to provide a submission the General Purpose Standing Committee No. 5 inquiry into and report on the environmental, economic and social impacts of coal seam gas (CSG) activities.

AGL is Australia's leading renewable energy company with the largest privately owned and operated renewable portfolio in the country. AGL is also one of Australia's largest retailers of gas and electricity with more than 3 million customers in Victoria, New South Wales (NSW), South Australia and Queensland. AGL operates across the supply chain with investments in energy retailing, coal-fired electricity generation, gas fired electricity generation, renewable and upstream gas exploration and production projects. The diversity of AGL's portfolio has enabled AGL to develop a detailed understanding of the risks and opportunities presented by CSG and the broader energy sector.

Natural gas is the only affordable alternative to fuel large scale base load electricity supply in the transition to a clean energy economy. This principle is particularly pertinent to NSW, a State which currently imports more than 90% of its natural gas from interstate. AGL is the *only* supplier of locally-sourced natural gas into the Sydney/Newcastle gas network. AGL's NSW projects are working towards supplying 6% of the NSW domestic market.

While co-existing with the environment, the development of new natural gas reserves is critical to ensure security of supply to the more than one million gas users in NSW. Indeed, Queensland-based CSG to LNG projects will begin exporting from around 2015; potentially consuming all the gas supplies from central and northern Australia which have traditionally flowed into NSW and other eastern states. Attached to this submission are slides which demonstrate the future supply issues for east coast gas markets.

Without additional indigenous gas supplies to NSW, there are risks of unexpected interruptions to gas supplies causing serious disruption to residential, commercial and industrial consumers across the State. AGL is committed to securing long term, reliable sources of gas for its domestic customers.

1. The economic and social implications of CSG activities

a. CSG economic investment

As the Committee would be aware, CSG is natural gas that is found in coal seams. Natural gas is used by just under four million residential, commercial and industrial customers across Australia. Gas is primarily used in appliances for heating, cooking and drying as well as a wide variety of industrial applications. Gas is also increasingly being used to generate electricity where it produces 50 – 70% lower greenhouse gas emissions than some existing coal generation technology. The CSG industry will play a significant role in reducing Australia's greenhouse gas emissions.

Additional to its low carbon emissions character, CSG as an industry provides many positive economic benefits to the communities in which it operates, and more broadly. These benefits include: contributing to the ability of Australia to meet its energy requirements, generating employment opportunities and boosting regional prosperity.

In addition, because gas-fired electricity generation can be turned on and off to meet fluctuations in demand, it complements intermittent sources of renewable energy such as solar and wind. AGL's business model for the CSG industry in eastern Australia is to develop additional sources of natural gas to increase reserves for use as a transitional energy source to a low carbon economy, and to guarantee the security of supplies for the domestic gas market.

In terms of economic development, CSG projects play an increasingly important role in Australia's economy. For example, the BG Group has announced the sanction of a US$15 billion development of its Queensland CSG to LNG operations. That project alone was estimated to increase the gross Queensland State product by up to $32 billion between 2010 and 2021, and add around $4 billion a year to the value of Queensland's annual exports. The project proposes to create 5,000 construction and 1,000 direct permanent jobs.

b. Overview of AGL CSG Investment in NSW

AGL's Upstream Gas business has been established to create a portfolio of equity gas investments that will provide AGL with a more flexible, self-supply option to enable it to fill the gap between wholesale gas contract positions and AGL customer gas demand. This will ensure that AGL remains a cost competitive and reliable supplier of natural gas into the future.

AGL has invested more than $700 million in the NSW CSG industry. AGL wholly owns and operates NSW's largest CSG production facility at Camden, south-west Sydney, which could supply 6% of NSW's annual gas demand. The company is also exploring for and developing new CSG resources at Gloucester and in the Hunter Valley; and also proposes to invest approximately $300 million in a gas storage facility at Tomago near Newcastle.

AGL is committed to ensuring that its gas exploration and production activities have a minimal impact on the environment and the community, and can comfortably co-exist with other land uses, including agricultural, pastoral, residential and industrial development. AGL stands by its record of co-operative engagement with stakeholders.

AGL currently operates three wholly-owned CSG exploration and production projects in NSW which are located in Camden, Gloucester and the Hunter Valley.

i. Camden Gas Project (PPLs 1, 2, 4, 5 and 6)

AGL's Camden Gas Project is located in the Camden, Campbelltown and Wollondilly Local Government Areas on the south-western outskirts of Sydney and currently consists of:

1. 80 producing gas wells (out of 138 drilled wells);

2. 100 km of gas gathering lines and associated infrastructure; and
3. The Rosalind Park Gas Plant.

Further expansion is proposed in the northern area around Narellan-Denham Court (possibly an extra 72 individual wells at 12 surface locations). A major project application has been lodged for the expansion project under Part 3A of the *Environmental Planning and Assessment Act 1979.* AGL has also sought to modify the concept plan approval for the existing Camden Gas Project, so that it will cover the expansion project area.

ii. Gloucester Gas Project (PEL 285)

In February 2011, the NSW Planning Assessment Commission (PAC) approved the Gloucester Gas Project. This project is located in PEL 285, approximately 100 km north of Newcastle, and represents a $400 million investment to date by AGL in the NSW gas industry, with a further $300 million expenditure to be incurred during project development. The terms of the approval issued by the PAC require AGL to finance the construction of the project within the next five years.

The Gloucester Gas Project includes:

1. the Stage 1 gas field development area, including 110 gas wells and associated infrastructure;
2. A central processing facility to treat gas and water;
3. A proposed 15MW gas fired power generation facility;
4. A gas transmission pipeline between the central processing facility and the existing gas supply network at Hexham; and
5. A delivery station at Hexham to connect the transported gas to the existing Sydney-Newcastle trunk pipeline.

iii. Hunter Gas Project (PELs 4 and 267)

The Hunter Gas Project, located in the Hunter Valley between Cessnock and Scone, is still in the exploration stage. AGL has:

1. Obtained approximately 300 km of seismic data;
2. Flow tested two pilot wells; and
3. Drilled 16 core holes and 6 stratigraphic holes.

Exploration activities for the Hunter Gas Project are expected to continue for at least another three to five years, pending a decision to proceed to development.

c. Legal rights of property owners and property values

The Committee would be aware that in Australia, the resource extraction industry is founded on the basis that the Crown holds the rights to subsurface resources and issues exploration and production licences to third parties. A financial return to resource rich communities is then provided through state based royalties.

Similarly water resources are vested in the Crown and the States allocate licences to access a portion of the available resource for each water source.

Under the current regime, resource development companies are given access to land by the Government to explore for and produce resources, and both Queensland and NSW require proponents to enter into access arrangements with private landholders and pay compensation.

In Queensland, companies seeking to explore for CSG on privately owned land have to finalise a conduct and compensation agreement with the landowner. If agreement cannot be reached, the case can be referred to the land court. At present in Queensland, more than 1,400 such agreements have been reached and there are no cases before the Land Court initiated by proponents.

In NSW, companies seeking to explore for CSG on privately owned land must enter into a land access and compensation agreement. If agreement cannot be reached then a Ministerial intervention can be sought, however such an action is rarely if ever requested.

Access agreements negotiated with landholders are similarly comprehensive, and cover matters such as when access is permitted, the activities to be undertaken and their location, and conditions to be observed by proponents.

AGL has 140 successfully negotiated access and compensation agreements currently in operation with landowners and further agreements are under active negotiation. Many, if not all, include aspects specific tailored to ensure our operations are sympathetic to the landowners' current and future land use plans.

It is AGL's submission that properly negotiated CSG developments provide a stable long-term income to landholders, and also potentially a new supply of water separate from existing water rights. This in turn can assist landholders to secure finance for property developments and other activities.

RP Data, on behalf of AGL, has undertaken an analysis of housing markets in and around areas where AGL is actively exploring for coal seam methane or extracting methane from underground. These areas include projects around Camden, Hunter and Gloucester in NSW. AGL undertook this study as it acknowledges that there has been some conjecture that AGL's activities have disrupted the local housing markets and potentially caused housing prices to suffer.

The study has been based on an analysis of median house price movements and the number of transactions recorded over time within each of the areas. The results for each region have been compared with a broader benchmark region that provides a reference point for the broader market average.

RP Data's report shows that the housing markets within each of the regions where AGL is active have shown no discernable deviation from broader market trends. In fact, across each of the four operational regions studied, median price movements and transaction volumes are generally moving in line with the broader benchmark results.

d. Food security and agricultural activity

AGL recognises that some communities are concerned about the impact of CSG developments in their local area. However, unlike coal (with which it is often inaccurately linked) CSG is a comparatively low impact industry that can successfully coexist alongside other primary land uses, without significant cumulative impacts. AGL's current CSG projects exist side by side quite successfully with many other industries. For example:

1. CSG exploration is taking place in a producing vineyard in Broke, a lucerne farm at Bulga, and stock agistment at Broke as part of AGL's Hunter Gas Project.

2. At its Camden Gas Project, AGL extracts CSG alongside the trotting track at Menangle Park, as well as horse studs, current and future housing developments, within parklands, a quarry, a horse riding centre, a coal washery, corn fields, dairy farms and many other types of farming activities, including the well respected NSW Government owned Elizabeth Macarthur Agricultural Institute.

3. The Gloucester Gas Project will operate alongside cropping, food production, coal mining and livestock land uses.

AGL has a track record of successful coexistence with a wide variety of land uses, both in semi-urban and rural areas, in a wide geographical area. By minimising the footprint of wellhead development (as is happening within the northern sites of the Camden Gas Project), and establishing sites and pipelines close to fencelines and other areas where site disruption is minimised, there are minimal impacts on land use. Also by working with landowners to tailor agreements and operations to suit them and their long term plans, AGL has come to many mutually beneficial arrangements enabling CSG to successfully co-exist with other land uses.

AGL acknowledges that long-term moratoriums on the CSG industry in NSW have been proposed by some political figures in NSW as a necessary 'pause' for the industry. AGL is strongly opposed to any additional moratoriums, sterilisation of areas or ring fencing of areas without appropriate investigation, environmental assessment, consultation and review in accordance with best practice regulatory control. Any moratoriums, excising or exclusion of areas or land uses not only sterilises the development of CSG projects, and their associated fuel security and greenhouse benefits, but it also:

1. Halts the development of critical indigenous gas sources for NSW;

2. Perpetuates the assumption that CSG cannot operate alongside other land uses successfully; and

3. In some cases, may deprive landowners from a latent source of income which is needed to make their existing properties more economically viable. This is particularly important to agricultural land owners who benefit from the reliable income source provided by CSG production during times of drought or poor commodity pricing.

In AGL's submission, policy development which respects the needs of each industry, and is supported by environmental assessment and factually based locational guidelines, is the optimum solution.

e. Community engagement

AGL acknowledges the significant levels of concern in rural and regional communities surrounding the CSG industry at the present time, particularly in relation to issues such as land access, and is keen to address these concerns. Over the past 12 months in particular, misunderstanding about the nature of CSG industry has led to wider unease in local communities. AGL believes that greater levels of community engagement can effectively address these concerns.

AGL respects the diverse range of views held by communities at each of its CSG project sites. For example, a critical part of AGL's exploration project development involves engagement with these views and the levels of concern which may understandably be present in a community which has not previously had exposure to CSG exploration work. AGL prioritises addressing these issues through its community engagement and environmental assessment processes.

AGL recognises the importance of working hard to earn the trust of the community. In order to engage the community and effectively respond to community concerns, AGL manages its community relationships by firstly understanding the concerns, values and matters of importance.

Through regular community meetings, drop-in session, field days, site visits, newsletters, newspaper advertising, website and email updates, Community Consultative Committees, and many one-on-one conversations AGL seeks to better understand the views and concerns of the communities in which we operate.

Through a better understanding we work towards developing processes to address concerns raised. We hope to demonstrate to all of our communities our commitment to constructively work with the community to address concerns. .AGL is firmly committed to engaging with communities and providing them with a high level of information in relation to its projects. AGL seeks to improve industry standards beyond best practice to leading

practice. AGL will continue to work to enhance its community engagement on each of its CSG projects.

2. The Environmental and Health Impact of CSG Activities

a. Effect on ground and surface water systems

Management of water resources is a critical environmental issue facing Australia and the CSG industry and a key concern of landowners and communities. AGL strives for recognition as a prudent and responsible user of water, and is committed to ensuring that its CSG projects have a minimal impact on the environment and protect water resources.

Accordingly AGL's CSG projects include:

i. The use of best industry practice CSG well construction techniques to isolate shallow aquifers from deep CSG water bearing zones (coal seams). The water in these deep CSG water bearing zones, which is drawn out during CSG extraction is known as produced water. Produced water is typically saline and not able to be used for beneficial purposes without treatment. AGL is committed to reusing or disposing of produced water responsibly.

ii. The installation of groundwater monitoring networks to monitor the water level and water quality characteristics of shallow aquifers used for water supply, and to identify any changes during CSG exploration and production programs.

iii. Surface water monitoring where there are sensitive creek/river receptors nearby.

iv. Providing information for the local community and project stakeholders on the groundwater monitoring program and results, as they are made available.

An example of AGL's commitment to ensuring that its CSG projects do not adversely impact on beneficial shallow aquifers is the Hunter Valley (Broke) groundwater investigation and monitoring program. The study was developed by Parsons Brinckerhoff, AGL and the Bulga Community Consultative Committee to help the community understand what impacts, if any, there might be on shallow groundwater as a result of exploration for natural gas as part of AGL's Hunter Gas Project.

The results of this program, which were independently peer reviewed, showed no change in water levels, no leakage of water and no change in water quality in the beneficial shallow groundwater resources. The independent peer reviewer concluded that AGL's exploration activities would be "very unlikely to have any effect" on the surface aquifers in the Broke area. According to Parsons Brinckerhoff, the study "confirms that shallow alluvial and deep fractured rock aquifers are disconnected".

The Broke groundwater investigation and monitoring program is a comprehensive and groundbreaking scientific report for the CSG industry. AGL is undertaking similar investigations and maintains a variety of water monitoring systems at Camden and Gloucester.

In Queensland, AGL, as part of the Galilee Basin Operators Forum, has engaged leading independent environmental consultancy RPS to research and prepare a baseline water assessment report. The report, to be provided to the Queensland Water Commission will:

i. Establish the data currently readily available;

ii. Provide a regional understanding of the location of aquifers and use of these for bore water supplies;

iii. Identify areas where information is lacking; and

iv. Hopefully in the future provide the groundwork for the development of a

hydrogeological model.

These examples are recognised as a successful partnership between community representatives and an exploration company to work together to add to the knowledge base of a key issues of concern to the community.

In terms of the sustainability of water aquifers, CSG projects are the subject of increasingly stringent environmental controls at both State and Federal levels to ensure that economic development can occur in a manner that protects the environment.

For example, Stage 1 of AGL's Gloucester Gas Project, approximately 100 km north of Newcastle, was recently approved by the NSW PAC subject to the following detailed conditions:

i. Implementing all reasonable and practicable measures to ensure that gas wells are constructed, operated and decommissioned to avoid and minimise gas migration risks and adverse impacts to beneficial aquifers;

ii. Updating the conceptual hydrological model based on the baseline data gathered from pre-construction activities (including long term baseline monitoring, seismic surveys and field sampling, with an updated assessment of the potential for drawdown and displacement of shallow rock and alluvial aquifers, considering impacts to nearby registered bore users, optimal areas for gas well location within the Stage 1 Gas Field Development Area, including an independent peer review by an appropriately experienced and qualified hydrogeologist);

iii. The phasing of wells within the Stage 1 Gas Field Development Area to avoid and minimise adverse impacts to beneficial aquifers, including development of a Field Management Plan with a phasing program consistent with the outcomes of the groundwater monitoring program and associated numerical hydro-geological model;

iv. Development of a Groundwater Monitoring Program covering the operation of the Stage 1 Gas Field Development Area, including hold points (based on risk assessment) in case water volumes are greater than predicted, with mechanisms for regular review and update of the program (to be updated for each phase of the Field Development Plan);

v. Development of a detailed Numerical Hydrological Model of the Stage 1 Gas Field Development Area, to be used as a predictive, adaptive management and verification tool to guide the ongoing implementation and operation of gas wells;

vi. Groundwater extraction rate of no greater than two mega litres per day (averaged over a 12 month period);

vii. Development of an Extracted Water Management Strategy identifying water disposal and reuse options, water quality required and processes for monitoring treated water to ensure that the water quality criteria are achieved.

In addition to the specific project approval conditions, AGL understands that the NSW Department of Planning and Infrastructure (DoPI) will shortly be implementing a range of Strategic Regional Land Use initiatives to address community concerns over potential land use conflicts. For example, the DoPI has introduced the following arrangements pending the implementation of its Strategic Regional Land Use Policy:

i. A requirement that all new coal seam gas, petroleum extraction and coal applications be accompanied by an Agricultural Impact Statement. Agricultural Impact Statements will require an assessment to identify what potential impacts a project may have on agricultural land;

ii. Public notification of Guidelines which will inform the assessment of impacts on strategic agricultural land from proposed developments; and

iii. Development of an Aquifer Interference Regulation which will introduce a suite of new measures to regulate activities that impact on aquifers.

In AGL's submission, the detailed and comprehensive regulation of the CSG industry at the State level will ensure that impacts of CSG projects on the sustainability of water aquifers are minimised or avoided.

b. Effects related to the use of chemicals and hydraulic fracturing

AGL acknowledges community concerns regarding the perceived heath impacts surrounding fracture well simulation processes (known as 'frac' or 'fraccing'). Once drilling has been completed, fracture stimulation, if required, is used during the CSG pilot exploration testing and production process to stimulate the gas flow by increasing the surface area of a coal seam. Fracture stimulation involves the injection of sand and water mixed with small amounts of additives at high pressure which in turn stimulates the reservoir by providing a highly conductive flow path for gas and water that extends away from the wellbore and into the seam.
These fractures are contained within the target coal seams and do not propagate into shallow water supply aquifers. AGL is committed to minimising extracted groundwater volumes to what is required to dewater the target coal seams so there is substantial modelling and technology that goes into getting the fracture stimulation pattern and process right.

AGL does not use, nor does it propose to use, any of the BTEX chemicals (benzene, toluene, ethyl benzene and xylene) as part of the fracture stimulation process. These components serve no purpose in the fracture stimulation of CSG wells. Service companies who provide fracturing services to the CSG industry in Australia are currently having all their CSG fracture fluid additives tested by independent laboratories so a full disclosure can be provided to the regulators and the companies operating in the CSG industry.

The Committee should note however that these chemicals can naturally occur in coal seams and low concentrations in some basins have been detected in recent years.

c. Nature and effectiveness of remediation required under current legislation.

In NSW, CSG project proponents must comply with a wide range of legislative requirements. For example, the following approvals/legislation contain requirements relevant to well development and rehabilitation:

- conditions of petroleum titles granted under the *Petroleum (Onshore) Act 1991* and general obligations under that Act;
- conditions of planning approvals granted under the *Environmental Planning and Assessment Act 1979,* and general obligations under that Act;
- conditions of environment protection licences granted under the *Protection of the Environment Operations Act 1997,* and general obligations under that Act; and
- conditions of water licences/approvals granted under the *Water Act 1912* and the *Water Management Act 2000.*

Each of these Acts/approvals contain conditions relevant to components of CSG projects, such as well development and rehabilitation, non-compliance with which constitutes a breach of the relevant Act. Each Act/approval is administered by a different government authority.

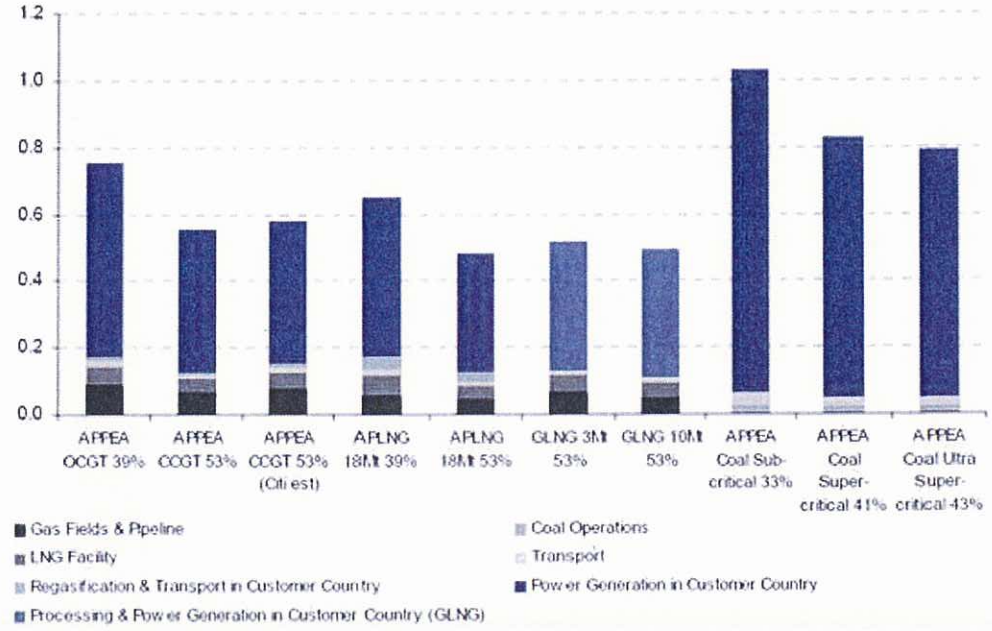
In addition, the *Contaminated Land Management Act 1997* provides a regime under which any contaminated land can be investigated and the person responsible for the contamination can be ordered to remediate the land.

AGL considers that the current legislation more than sufficiently addresses the issue of remediation in relation to CSG projects. This is evidenced by the fact that, as far as AGL is aware, there have been no prosecutions or significant environmental incidents relating to CSG projects in NSW.

3. Relative whole-of-lifecycle emission intensity of CSG versus other energy sources,

AGL relies on external analysis from a range of sources which remain commercial in confidence. The below figure is an excerpt from a Citi Investment Research report, produced in the ordinary course for Citi's institutional clients. The paper is authored by Elaine Prior/Dale Koenders and entitled *Coal Seam Gas & Greenhouse Emissions Comparing Life Cycle Emissions for CSG / LNG vs Coal.*

Figure 1. Life Cycle GHG Emissions Comparison For Various CSG/LNG and Coal Scenarios (t CO2e/MWh)



Source: Citi Investment Research and Analysis

Conclusion

AGL is committed to the sustainable development of CSG, which has been recognised by Federal and State governments as an important resource for Australia. This resource will contribute to the economic growth of NSW. Crucially, CSG will deliver an indigenous natural gas supply which will underpin the State's security of energy supply in an otherwise carbon-constrained economy for many decades to come. While operating with the highest operational and environmental standards, AGL is committed to positively engaging and supporting the communities at every level in which it operates.

Should you have any questions or comments, please contact Sarah McNamara, Head of Government & Community Engagement on

Yours sincerely,

Mike Moraza
Group General Manager, Upstream Gas