

**Submission
No 371**

INQUIRY INTO COAL SEAM GAS

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

Dear Director

Subject: Lake Macquarie City Council Submission to General Purpose Standing Committee No. 5 - Coal Seam Gas

Thank you for the opportunity to make a submission to General Purpose Standing Committee No. 5 Inquiry into Coal Seam Gas. Our submission addresses each of the 'Terms of Reference (ToRs)' for this inquiry relevant to local government and the City of Lake Macquarie, and makes recommendations in relation to these ToRs. We are not in a position to comment on ToRs 2d, 3c, 3d, and 3e.

1. The environmental and health impact of coal seam gas activities including the:

1a. Effect on ground and surface water systems,

Council staff are aware that little is known about the groundwater reserves in the City of Lake Macquarie, other than that they are used for a range of domestic, rural, industrial and recreational purposes, and have been modified by underground coal mining operations. It is common practice for underground coal mining operations within Lake Macquarie to pump and discharge 'mine water' to the surface water environment, for the purposes of facilitating mining.

Current impacts of underground mining and associated mine-water discharges observed in Lake Macquarie include:

- hydraulic connectivity between surface water and groundwater reserves (resulting in loss of surface water flows into underground workings and aquifers);
- altered ecology of streams due to mine-water discharges,
- altered flow regimes in creeks and wetlands due to mine-water discharges, and
- lowering of the water table, which in some cases is affecting the ecology in groundwater dependant ecosystems (for example, in upper Slaty Creek).

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Our Ref: F2011/01807 Your Ref:

We understand that coal seam gas (CSG) production also requires dewatering of coal seams and associated discharge of this groundwater to the surface water environment. We anticipate that the impacts of CSG production will be similar to those of underground coal mining, where chemical additives are not used to facilitate hydraulic fracturing (impacts of chemical additives are discussed further in response to ToR 1b).

We are concerned that future CSG production in the City of Lake Macquarie will adopt similar practices regarding CSG water discharges to that of existing underground coal mining operations. Hence, modifications to the regulatory framework for CSG approvals are recommended to assess and mitigate these potential impacts.

Recommendation 1

The regulatory framework adopts ecologically sustainable development (ESD) principles, particularly the precautionary principle, in relation to water management in CSG exploration and production. Environmental assessment of projects, prior to approval, should specifically address:

- **potential for increased hydraulic connectivity between groundwater and surface water resources,**
- **impacts of surface discharge of groundwater extracted in association with CSG exploration and production on aquatic habitats,**
- **impacts of surface discharge of groundwater extracted in association with CSG production on surface water flow regimes, and**
- **impacts of lowered water tables on groundwater dependant ecosystems.**

1b. Effects related to the use of chemicals,

We are aware that the use of chemical-based hydraulic fracturing techniques is a matter of considerable community concern, due to potential human health and ecological impacts. Based on experiences in Queensland, we consider that the use of chemical additives in hydraulic fracturing may be contrary to ESD principles in the City of Lake Macquarie, due to the high ecological and amenity values of Lake Macquarie.

In addition, the City of Lake Macquarie is a highly populated area (with over 200,000 people), and is known to have sensitive groundwater reserves that are used for a range of uses (including domestic water supply, rural uses, industrial uses and for recreational purposes). We are also aware that historic coal mining activities across the City have resulted in modifications to the geology in many areas, hence increasing the potential for hydraulic connectivity between surface waters and groundwaters.

We suggest that the current moratorium on chemical-based hydraulic fracturing in NSW should be continued until there is clear evidence that this practice does not compromise the ecological and amenity values of ecosystems such as Lake Macquarie. If the implementation of a State-wide ban on the use of chemical-based hydraulic fracturing techniques is not

continued, exclusion zones should be implemented in areas close to population centres, as well as in catchments containing significant waterways (such as Lake Macquarie).

Recommendation 2

The current NSW Government moratorium on the use of chemical additives in hydraulic fracturing be maintained, and modifications to the regulatory framework be made to enforce a ban on the use of chemical-based hydraulic fracturing techniques, until it is proven to be ecologically sustainable.

1c. Effects related to hydraulic fracturing,

We acknowledge that the potential health and ecological impacts of water-based hydraulic fracturing (i.e., fracturing not involving the use of chemicals) are likely to be lower than those from chemical-based fracturing techniques. As discussed in relation to ToR 1a, water-based hydraulic fracturing may still have the potential to alter local geology, the integrity of aquifers, and the connectivity between groundwater and surface water resources, especially where the geology has already been modified due to underground coal mining activities.

Recommendation 3

The regulatory framework applies ecologically sustainable development principles, particularly the precautionary principle, in relation to the use of hydraulic fracturing techniques, especially in areas known to have local geology impacted by underground mining, and where the potential for increased hydraulic connectivity between groundwater and surface water resources exists.

1d. Effect on Crown Lands including travelling stock routes and State forests,

We note that section 70 of the *Petroleum (Onshore) Act* 1991 includes provisions that exclude land reserved for 'public purposes' from access for petroleum (including CSG) exploration, except with consent of the Minister. However, we note that the management of many Crown reserves is vested with local councils.

Recommendation 4

Section 70 of the *Petroleum (Onshore) Act* 1991 be amended to specify that consent from the relevant local council also be required (in addition to consent being required from the Minister) where the 'exempted areas' include either council-owned land (used for public purposes) or Crown land vested with council.

1e. Nature and effectiveness of remediation required under the Act,

We are not familiar with the detailed requirements of the Act in relation to remediation requirements, but support application of the precautionary principle where the impacts and potential remediation measures associated with CSG are not fully understood.

Recommendation 5

The precautionary principle be applied to minimise the requirement for remediation measures, and that projects not proceed where there is a significant risk that remediation measures will not adequately manage likely impacts.

1f. Effect on greenhouse gas and other emissions,

We are aware that CSG has the potential to lower NSW greenhouse gas emissions, if CSG is used to substitute fuels with higher greenhouse intensity (such as coal). However, we are concerned that CSG may be used to provide an additional rather than alternative fuel source, hence resulting in a net increase in greenhouse gas emissions in NSW. We understand that in general CSG will result in coal reserves being mined that would not have occurred otherwise, using existing methods (underground, open cut or auger mining), and consequently will liberate more carbon into the atmosphere than if this technology was not used. Other than a placing a price on carbon, we are not aware of any current mechanism to ensure that existing coal production will be substituted by CSG.

The extent of fugitive emissions from CSG production is unclear as there is a lack of publicly available comprehensive life cycle assessment data on the release of fugitive emissions from coal seam gas extraction in the Australian context. Should CSG production occur within the City of Lake Macquarie, it may increase the City's carbon footprint and obstruct Council's ability to achieve the greenhouse gas reduction targets adopted for the City.

Recommendation 6

The regulatory framework includes a requirement for cumulative assessment of the impact of CSG proposals on NSW greenhouse gas emissions.

1g. Relative air quality and environmental impacts compared to alternative fossil fuels.

Fugitive methane emissions from CSG mining within the City of Lake Macquarie may result in local air quality impacts. There is potential for increased emissions of oxides associated with both CSG production and the combustion of CSG for electricity generation. Oxides of nitrogen may be used in the production process and released back into the air as localised fugitive emissions.

CSG-fired electricity generation within the City is likely to result in increased emissions of oxides of nitrogen from the combustion process. While CSG-fired power generation does not emit the particulate pollution associated with coal-fired electricity, increased emissions of oxides of nitrogen are likely to increase the amount of photochemical smog precursors in the local atmosphere.

Recommendation 7

The regulatory framework includes appropriate controls to mitigate localised fugitive emissions of methane and other gases associated with CSG production.

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

2a. Legal rights of property owners and property values,

We are aware of significant community concern over the rights of petroleum exploration licence holders to access private land. It appears that the current system of granting access to private land for exploration places the onus on the private landowner to object to access arrangements. This has the potential to result in the landowner being subject to legal or financial consequences.

We consider that landowners should not be liable for potential legal or financial consequences if they object to providing access to their land for exploration and/or production purposes. If access arrangements cannot be negotiated, a system of arbitration should be established in a manner that protects landowners from potential legal or financial consequences.

Recommendation 8

The regulatory framework provides protection to landowners from potential legal or financial consequences resulting from not agreeing to grant access to their land.

2b. Food security and agricultural activity,

We note that in many localities, farmers have expressed concern that CSG exploration and production have disrupted farm activities, with potential impacts on food security. While the City of Lake Macquarie has limited agricultural production, CSG activities elsewhere in NSW have the potential to affect the food security of our City.

Recommendation 9

The regulatory framework for CSG projects requires cumulative assessment of the impacts on food security.

2c. Regional development, investment and employment, and State competitiveness,

The City of Lake Macquarie is a significant provider of residential housing, as well as providing for local jobs in the light industrial, commercial and service industry sectors. The City is also increasingly recognised as a tourist destination, with associated increases in tourism-related employment. Council believes that the CSG industry is generally not compatible with existing residential, commercial, and light industrial land uses, and has the potential to affect the City's growing reputation as a tourism destination.

Recommendation 10

The regulatory framework for CSG projects specifically considers impacts on existing land uses, including the contribution these land uses provide to regional development, investment and employment.

2e. Local Government including provision of local/regional infrastructure and local planning control mechanisms.

We are aware of significant community concern over the lack of opportunity for community input into the regulatory process for either CSG exploration or production activities. The process for granting petroleum exploration licences provides very limited ability for the community or local councils to comment on the granting of licences, or subsequent applications for CSG production activities and associated environmental, economic and social assessments.

Recommendation 11

The regulatory framework provides for increased community and local government consultation and input in the process of granting petroleum exploration licences and approvals for CSG production activities.

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

3a. Nature and extent of CSG demand and supply,

State and federal agencies, i.e. ABARE, NSW IPART are better placed to comment on current conventional gas reserves and their potential use in peak or baseload energy generation, as well as any threat to domestic availability of conventional gas (e.g. export contracts). However, allowing too much reliance on CSG to meet future peaking demand could be problematic if:

- the long term impacts of CSG production cannot be determined,
- satisfactory management regulations to protect the environment are not put in place, or
- CSG is promoted at the expense of investment in lower carbon technologies, including renewables.

Recommendation 12

That any consideration of the use of CSG to supply baseload or peak power demands:

- **be considered if potential environmental impacts can be demonstrated to be minimal and a regulatory framework is in place to ensure that significant environmental harm does not occur; and**
- **be based on demonstrated substitution of more greenhouse intensive power generation plant with CSG fuelled plant; and**
- **not be undertaken where it reduces investment in renewable energy sources.**

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

There is a lack of publicly available comprehensive life cycle assessment data on the release of fugitive emissions from coal seam gas extraction in the Australian context. Analysis of total greenhouse gas emissions from CSG, from the whole-of-life emission intensity of extracted CSG and the fugitive emissions from the production process is required.

Recommendation 13

The regulatory framework for CSG projects considers life cycle assessment.

3f. Contribution of CSG to energy security and as a transport fuel.

We recognise that CSG can be used to meet stationary energy needs for heating and power (generally electricity), as well as for a transport fuel. Council's policies support a reduction in carbon polluting energy sources for all three; however, the primary means are by energy efficiency measures, and by substitution with renewable energy sources. We acknowledge that gas, including CSG, provides an important transitional fuel towards a low carbon economy.

We are concerned that CSG will be used to provide an additional fuel source, not an alternative fuel source, hence resulting in a net increase in greenhouse gas emissions for NSW. To help improve energy security and protect against limited transport fuel availability, Council is supporting the use of smart electricity grids, transition to electric vehicles and measures that increase the generation of renewable energy.

Recommendation 14

Assessment of CSG's contribution to energy security and as a transport fuel to consider the full environmental costs and benefits of CSG extraction and use, including production impacts and the effects on NSW greenhouse gas emissions.

4. The interaction of the Act with other legislation and regulations,

The process for approving exploration activities appears to be confusing, and at times inconsistently applied, particularly in relation to State Environmental Planning Policy (Major Development) 2005. Schedule 1, Clause 6 of the Major Development SEPP lists Local Government Areas (including Lake Macquarie) where Part 3A approval (under the *Environmental Planning and Assessment Act 1979*) is required for CSG projects.

Council has received conflicting advice from State Government agencies as to whether exploration drilling, (including stratigraphic holes) require Part 3A approval, or can be approved under the *Petroleum (Onshore) Act 1991*. We are aware of the current transitional arrangements regarding Part 3A projects in NSW and believe that opportunity exists to clarify the current approval arrangements and increase community and local government consultation, and input to the approvals process. We also suggest that local planning instruments be considered in the regulatory process for CSG.

Recommendation 15

The regulatory framework for CSG projects be clarified as part of the transitional arrangements regarding State Significant Development, particularly in relation to State Environmental Planning Policy (Major Development) 2005, Schedule 1, Clause 6., consultation opportunities for local government and community be increased, and local planning instruments be considered.

Additionally, we are concerned about the lack of regulatory authority available to the Office of Environment and Heritage in relation to CSG activities. Specifically, Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act), which identifies the threshold for scheduled activities as being '*capacity to produce more than 5 petajoules of natural gas or methane per year*'. This is a very high threshold, and could potentially result in developments consisting of hundreds or thousands of gas wells not being listed as a scheduled premise under the POEO Act.

Recommendation 16

The environmental regulation framework for CSG projects be modified to lower threshold of scheduled activities (identified in Schedule 1 of the Protection of the Environment Operations Act 1997) for CSG production from 5 petajoules per year to 0.5 petajoules per year.

5. The impact similar industries have had in other jurisdictions

Impacts associated with underground coal mining are discussed in relation to ToR 1a. As previously mentioned, we are concerned that similar impacts will result from CSG production. We are not familiar with the specific impacts of CSG in other jurisdictions, but understand that there has been considerable community concern about the impacts of CSG in Queensland.

Recommendation 17

The regulatory framework gives greater consideration to cumulative impacts in the circumstance where CSG exploration or production is proposed in areas already impacts by underground coal mining.

We hope that this submission will be of assistance in informing the inquiry process, and that the recommendations listed above will be favourably considered.

Should you require further information, please contact Council's Ecosystem Enhancement Coordinator, Mr Symon Walpole on

Yours faithfully

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General Manager