

Simone Marsh

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Via email to gasmining.sen@aph.gov.au

Committee Secretary
Senate Select Committee on Unconventional Gas Mining
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Select Committee

Senate Select Committee on Unconventional Gas Mining (Bender Inquiry)

This submission relates to the following established Terms of Reference (TOR) regarding the adequacy of Australia's legislative, regulatory and policy framework for unconventional gas mining including coal seam gas (CSG) and shale gas mining, with reference to:

- a. a national approach to the conduct of unconventional gas mining in Australia;
- b. the health, social, business, agricultural, environmental, landholder and economic impacts of unconventional gas mining;
- c. compliance and penalty arrangements;
- d. legislative and regulatory frameworks for unconventional gas mining in comparable overseas jurisdictions;
- e. any related matter.

Please accept, consider and upload, as part of this inquiry:

1. My accepted submission to the *Senate Select Committee Inquiry into Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39), dated 18 November 2014 ¹; and
2. The *Committee Hansard* transcript of evidence I provided to the *Senate Select Committee Inquiry into Certain Aspects of Queensland Government*

¹ *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39, Simone Marsh). Retrieved from http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Certain_Aspects_of_Queensland_Government_Administration/Certain_Aspects_Qld_Admin/Submissions

Administration related to Commonwealth Government Affairs on 28 November 2014.²

The 'LNG Committee', 'Constitutional innovation' and 'Court of Star Chamber'

In the abovementioned transcript, Senator Waters asked about the 'LNG Committee' mentioned in email to Queensland Treasurer, Andrew Fraser, on 12 May 2010.³ The transcript quotes from the email:

says: 'David Maxwell said that QGC would like to appear in front of the LNG committee to explain his position in respect of the EIS.' He uses the words 'a degree of constitutional innovation' ... he puts a question mark over the following words: 'the LNG committee as a Court of Star Chamber'."

I hereby confirm for the record that the 'LNG Committee' was the LNG cabinet sub-committee, formed in March 2010.⁴ The LNG Cabinet Sub-Committee was composed of the following Queensland cabinet Ministers:

- Treasurer and Minister for Employment and Economic Development (Chair)
- Minister for Natural Resources, Mines and Energy, and Minister for Trade
- Minister for Primary Industries, Fisheries, Rural and Regional Queensland
- Minister for Infrastructure and Planning
- Minister for Climate Change and Sustainability⁵

Please amend the *Committee Hansard* transcript of 28 November 2014 accordingly.

² *Committee Hansard* record of 'in camera' evidence provided to *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* on 28 November 2014 by Simone Marsh. Retrieved from <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;db=COMMITTEES;id=committees/commsen/9e7a99b6-f87b-4ac0-a713-d192a8889516/0001;query=id:%22committees/commsen/9e7a99b6-f87b-4ac0-a713-d192a8889516/0000%22>

³ Refer to evidence taken in camera by the Senate Select Committee inquiry into Queensland Government Administration related to Commonwealth Government Affairs, 28/11/2014 <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;db=COMMITTEES;id=committees/commsen/9e7a99b6-f87b-4ac0-a713-d192a8889516/0001;query=id:%22committees/commsen/9e7a99b6-f87b-4ac0-a713-d192a8889516/0000%22>

⁴ Queensland Government. Queensland's LNG Industry: Once in a generation opportunity for a generation of employment (November 2010) Retrieved from <http://rti.cabinet.qld.gov.au/documents/2010/nov/lng%20blueprint/Attachments/LNG%20Blueprint.pdf>

⁵ Queensland Government. Queensland's LNG Industry: Once in a generation opportunity for a generation of employment (November 2010) Retrieved from <http://rti.cabinet.qld.gov.au/documents/2010/nov/lng%20blueprint/Attachments/LNG%20Blueprint.pdf>

Legal aspects

The documents indicate that in relation to Queensland CSG-LNG projects:

1. Proponents provided false, misleading and incomplete information.
2. Gas was sold prior to assessment of impacts and prior to approvals.
3. Government executives ignored internal legal advice and technical advice, and instead operated outside their powers and facilitated breaches of law that benefitted private and foreign interests.
4. Parliamentarians operated as a 'court of star chamber' to facilitate 'constitutional innovation' at the suggestion, and on behalf of, foreign and private interests.
5. Baseline data was missing, as confirmed by independent specialists. Hence environmental and human health impacts cannot be readily quantified. This was a breach of the information requirements of the *Environmental Protection Act 1994* (Queensland).
6. Environmental authority conditions did not provide limits for a range of aspects (with potential for impacts) and did not provide limits for, nor require monitoring of, a range of parameters of environment and human health concern.
7. The magnitude and extent of harm is on a large-scale, and has not been quantified nor justified.

Queensland law

This is the relevant section of the *Environmental Protection Act 1994* (Qld), as current in 2010. Section 310D required 'environmental values' information (i.e. baseline data) to be submitted in the environmental management plan documents as part of an environmental authority application for proposed activities:

310D – Environmental Management Plans

'(2) An environmental management plan must—

(a) be in the approved form; and

(b) describe each of the following—

(i) each relevant resource authority for the environmental authority;

(ii) all relevant activities the subject of the application;

- (iii) the land on which the activities are to be carried out;*
- (iv) the environmental values likely to be affected by the activities;*
- (v) the potential adverse and beneficial impacts of the activities on the environmental values; and*
- (c) state the environmental protection commitments the applicant proposes for the activities to protect or enhance the environmental values under best practice environmental management; and*
- (d) contain enough other information to allow the administering authority to decide the application and conditions to be imposed on the environmental authority (chapter 5A activities); and*
- (e) address any other matter prescribed under an environmental protection policy or regulation.....'*

However, The Coordinator-General conditions in May and June 2010, pursuant to the *State Development and Public Works Organisation Act 1971*, appear to have been written to override requirements of the *Environmental Protection Act 1994*.

The conditions, found in the Coordinator-General's evaluation report for the Santos GLNG EIS ⁶ proposed that gas field environmental values and environmental impact information be provided to the Coordinator-General **after** the assessment process ended. The same conditions are found in The Coordinator-General's evaluation report for the QGC QCLNG project.⁷ Conditions include the line:

"to be submitted to the Coordinator-General for review prior to the commencement of petroleum activities in the gas fields."

The detailed maps could effectively be submitted the day before the equipment turned up to start work in the gas field i.e. **after** the environmental authorities and petroleum tenements had been granted.

Commonwealth law

Former Environment Minister, Tony Burke, in his response to the ABC Four Corners 'Gas Leak!' program in 2013 claimed the matters raised in the program related to the State approvals processes (as opposed to the Commonwealth

⁶ See Appendix 2 - Gas fields, Part 2 - Coordinator-General environmental conditions - gas fields. Conditions 1 to 9 (p. 204 - 207).
<http://www.dsdp.qld.gov.au/resources/project/gladstone-liquefied-natural-gas/cg-report-gladstone-ing.pdf>

⁷ See Appendix 2, Part 2 - Coordinator-General's environmental Conditions - Gas fields, Condition 6, Operational Plan (p. 175) and Condition 9, Groundwater assessment, mitigation and monitoring (p.177)

process).⁸ However, the lack of information was an issue for both State and Commonwealth assessments.

According to former federal Environment Minister Peter Garrett, in his recent memoir 'Big Blue Sky', Garrett made 'non-decisions' for the Santos and British Gas projects as a result of advice received from Geosciences Australia. Garrett was subsequently moved out of the role of Environment Minister in September 2010.

It should be noted that Santos utilised the State EIS process, under the bilateral agreement between the Commonwealth and the State of Queensland, for the assessment of *Environmental Protection and Biodiversity Conservation Act* matters.

The following statement by former Environment Minister Burke is erroneous as it was not possible for Minister Burke to consider how groundwater-dependent ecosystems (which may include listed species and ecological communities) would be affected without understanding the impacts on groundwater quantity and quality. To consider how matters of national environmental significance were affected, the activity location, baseline data and an understanding of connectivity was needed:

"At the time of those approvals I was only able to (consider groundwater assets) to the extent that other matters of national environmental significance were affected".⁹

Environmental impacts of unconventional gas mining¹⁰

Coal seam gas activities in Queensland are intensive and extensive and result in widespread environmental harm, within and beyond the boundaries of the activities themselves. The total cost of impacts has been neither quantified nor justified.

The breadth and depth of unknowns, and high degree of risk, is of serious concern and well documented across disciplinary fields. However, the Commonwealth of Australia and the Queensland government have, thus far, failed to adopt the *Precautionary Principle*, which is enshrined in assessment processes under respective environmental laws.

⁸ 'Federal Government distances itself from claims approval of coal seam gas projects was rushed through' (3 April 2013). Retrieved from <http://www.news.com.au/finance/business/federal-government-distances-itself-from-claims-approval-of-coal-seam-gas-projects-was-rushed-through/story-fnda1bsz-1226611161597>

⁹ 'Federal Government distances itself from claims approval of coal seam gas projects was rushed through' (3 April 2013). Retrieved from <http://www.news.com.au/finance/business/federal-government-distances-itself-from-claims-approval-of-coal-seam-gas-projects-was-rushed-through/story-fnda1bsz-1226611161597>

¹⁰ Senate Inquiry on Unconventional Gas Mining, Terms of Reference item (b).

Widespread, *serious environmental harm* and *material environmental harm* is occurring and it's occurring unlawfully.

Lack of baseline data

A lack of baseline data is evidenced by various scientific endeavors and reports:

University of Southern Queensland, highlighting the concerns of researches in relation to the hydrogeology of the shallow Condamine River Alluvium Aquifer (CRAA), 2013:

"The presumed hydrogeological effects of CSG production upon the shallower CRAA have been delineated but are yet to be adequately quantified. It is our view that the hydrogeological knowledge-gaps should be addressed before (or at least simultaneously with) predictions of CSG activities effects can be made." "The groundwater budget of the CRAA suffers from large uncertainty in all its inflow and outflow components." ¹¹

Southern Cross University, Centre for Coastal Biochemistry, Fugitive greenhouse gas emissions research, 2014:

"Fugitive greenhouse gas emissions from unconventional gas extraction processes are... poorly understood... The distinct patterns observed within the CSG field demonstrates the need to fully quantify the atmospheric flux of natural and anthropogenic, point and diffuse sources of greenhouse gases from individual Australian gas fields before and after production commences." ¹²

Southern Cross University, Centre for Coastal Biochemistry Research, Groundwater chemistry research, 2015:

"We are investigating whether fracking and groundwater extraction by CSG mining will interfere with groundwater surface water exchange... We propose to determine the baseline chemical composition of groundwaters potentially (or currently) impacted by CSG exploration and to prepare regional maps of groundwater chemistry" ¹³

Other peer-reviewed scientific research on the connectivity between the Condamine River Alluvial Aquifer (CRAA) and the underlying Walloon Coal Measures, 2015:

¹¹ Dafny E., Silburn D.M., 2013. *The hydrogeology of the Condamine River Alluvial Aquifer (Australia) - critical review*. University of Southern Queensland, Toowoomba, Australia. Retrieved from [http://eprints.usq.edu.au/24080/1/glossy\(v.2.3\).pdf](http://eprints.usq.edu.au/24080/1/glossy(v.2.3).pdf)

¹² Maher, D.T., Santos, I.R., Tait, D.R. (2014). *Mapping Methane and Carbon Dioxide Concentrations and $\delta^{13}C$ Values in the Atmosphere of Two Australian Coal Seam Gas Fields*. Water, Air, & Soil Pollution. 225:2216. Retrieved from <http://link.springer.com/article/10.1007/s11270-014-2216-2>

¹³ Source: <http://scu.edu.au/coastal-biogeochemistry/index.php/20> (Updated at 24: November 2015)

*"...To assess this impact we need to determine the background groundwater chemistry ... There are insufficient baseline CH₄ data of near-surface ambient air and dissolved gas in groundwater within the Condamine Catchment, and our understanding of the extent of hydraulic connectivity between the Walloon Coal Measures and the CRAA is limited..."*¹⁴

John Hillier, Consultant Hydrologist, regarding the Condamine River Alluvial Aquifer and the underlying Walloon Coal Measures targeted for CSG extraction (August 2010):

*"There is little data to identify if they have separate hydrological properties, but generally they appear to be hydrologically connected... Very few bores have been construct to monitor either water levels or quality"*¹⁵

John Hillier, Consultant Hydrologist, regarding movement of groundwater:

*"There is very little data on which even rough estimates of water movement from one formation to another can be based...it is essential that this possible transfer of water from the alluvium to the coal seams that contain the gas and will be dewatered be quantified"*¹⁶

Dr Gavin Mudd, Monash University School of Engineering, says:

*"Claims are made that things are safe or that it's very low risk, but often that's based on assumption, that's not based on good field data and long-term monitoring of existing coal seam gas projects. ... there are big issues that the industry and science hasn't really addressed yet... There's a whole bunch of things in the research field where we would like to see extensive data to back up various claims, are really missing at the moment so I think that's a big weakness."*¹⁷

Australian Government, National Water Commission, December 2010:

"Adequate monitoring, including baseline assessment of surface and groundwater systems, should be undertaken to provide a benchmark for

¹⁴ Iverach, C.P., Cendón, D.I., Hankin, S.I., Lowry, D., Fisher, R.E, France, J.L., Nisbet, E.G., Baker, A., & Kelly, B.F.K., 2015. Assessing connectivity between an overlying aquifer and a coal seam gas resource using methane isotopes, dissolved organic carbon and tritium. Scientific Reports 5, Article number: 15996 doi:10.1038/srep15996 Retrieved from <http://www.nature.com/articles/srep15996>

¹⁵ Hillier, J (2010). *Groundwater connections between the Walloon Coal Measures and the alluvium of the Condamine River: A report for the Central Downs Irrigators Limited*, pp.2-9. Retrieved from <http://research.ccsq.uq.edu.au/projects/groundwater-connections-between-walloon-coal-measures-and-alluvium-condamine-river>

¹⁶ Hillier, J (2010). *Groundwater connections between the Walloon Coal Measures and the alluvium of the Condamine River: A report for the Central Downs Irrigators Limited*, pp.20-21. Retrieved from <http://research.ccsq.uq.edu.au/projects/groundwater-connections-between-walloon-coal-measures-and-alluvium-condamine-river>

¹⁷ Dr Gavin Mudd, as quoted by Joanne Shoebridge, ABC North Coast (8 November 2012). *Clear science or muddy waters? Academic questions CSG research*. Retrieved from <http://www.abc.net.au/local/stories/2012/11/08/3628589.htm>

*assessing cumulative impacts on other water users and water-dependent ecosystems.”*¹⁸

Shallow fracturing in Queensland coal seams

Queensland coal seams targeted for CSG extraction are located at a shallow depth of approximately 300m (although can be less).¹⁹ Up to 40% of the more than 40,000 gas wells planned for Queensland are likely to be hydraulically fractured.

Various papers report on the height of upward propagating hydraulic fractures.²⁰ Davies et. al (2013) reported that “*it has long been known that fracture systems of 1000 m extent occur in sedimentary rocks*”, and stimulated hydraulic fractures may extend for 600m vertically.²¹

Despite the likelihood of induced fractures extending vertically, there appears to be no limits on the vertical distance between the location at which hydraulic fracturing activities are occurring within coal seams and the overlying surface waters or groundwater resources.

The Australian Government Independent Expert Scientific Committee on Coal Seam Gas advises (2014):

“The US EPA (2004) and US DOE (undated) exhaustively reviewed and discussed the controls on the fractures that are created by hydraulic fracturing. The following is a brief summary of the key points:

At depths less than 300 m, the direction of the least principal stress tends to be vertical because of the relatively low weight of the overlying geologic material. The hydraulically induced pressure forces the walls of the fracture apart in the direction of the least stress (which is vertical), resulting in the formation of a horizontal fracture. Hydraulically induced vertical fractures at shallow depths initiate from existing vertical fractures.

¹⁸ Australian Government (2010). *Position Statement: Coal Seam Gas and Water*. National Water Commission. Retrieved from

http://www.nwc.gov.au/__data/assets/pdf_file/0003/9723/Coal_Seam_Gas.pdf

¹⁹ Australian Government, Department of the Environment, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (June 2014). *Aquifer connectivity within the Great Artesian Basin, and the Surat, Bowen and Galilee Basins*, p.73. Retrieved from

http://www.environment.gov.au/system/files/resources/004450a8-cf4f-4666-96b2-7be88a10add3/files/background-review-aquifer-connectivity_0.pdf

²⁰ Davies, R.J., Mathias, S.A., Moss, J., Hustoft, S., & Newport, L. (2012). *Hydraulic fractures: How far can they go?* *Marine and Petroleum Geology*, 37, 1-6.

doi:10.1016/j.marpetgeo.2012.04.001 Retrieved from

<http://www.sciencedirect.com/science/article/pii/S0264817212000852>

²¹ Davies, R.J., Foulger, G.R., Mathias, S., Moss, J., & Hustoft, S. (2013). *Reply: Davies et al. (2012), Hydraulic fracture: How far can they go?* *Marine and Petroleum Geology*, 43, 519-521. Retrieved from <http://community.dur.ac.uk/g.r.foulger/Offprints/DaviesReply2013.pdf>

Generally, at depths greater than 300 m ... the direction of the least principal stress becomes horizontal (i.e. the weight of the overlying geologic material acting in the vertical becomes significant). Thus, the orientation of the hydraulically induced fractures tend to be vertical (i.e. the walls of the fracture are pushed open in the horizontal direction). A vertical fracture initiated at these greater depths could propagate vertically to shallower depths and develop a horizontal component.

The pressure will opportunistically dissipate via the path(s) of least resistance (i.e. preexisting fractures/cleats and other structural flaws in the coalbed).

Increased connectivity is dominated by the extension of the natural fractures, not by the creation of new fractures.

The extent of the induced fracturing depends on the properties of adjacent strata (i.e. thickness, in situ stress differences, stress-strain characteristics), the presence of natural fractures, the type of fracturing fluid being used, the injection pressure and the target depth.”²²

Induced hydraulic fractures cannot be contained

The behavior of induced hydraulic fractures is situational, highly complex and difficult to predict, as documented by inter-disciplinary researchers.²³

Experts in mechanical sciences and structural engineering studying fracture propagation, published in the *Asia Pacific Journal on Computational Engineering*, 2014:

“In the field, it is unfortunately rather difficult to obtain direct information about the evolution of a crack in the ground, and very little data are known or accessible.” “Fracturing can also induce small earthquakes.” “peculiar behavior of fracture propagation...has been confirmed experimentally”. “...hydraulic fracturing exhibits avalanche behavior and hints of Self-Organized Criticality.”²⁴

²² Australian Government, Department of the Environment, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (June 2014). *Aquifer connectivity within the Great Artesian Basin, and the Surat, Bowen and Galilee Basins*, p.73. Retrieved from http://www.environment.gov.au/system/files/resources/004450a8-cf4f-4666-96b2-7be88a10add3/files/background-review-aquifer-connectivity_0.pdf

²³ Australian Government, Department of the Environment, Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (June 2014). *Aquifer connectivity within the Great Artesian Basin, and the Surat, Bowen and Galilee Basins*, p.73. Retrieved from http://www.environment.gov.au/system/files/resources/004450a8-cf4f-4666-96b2-7be88a10add3/files/background-review-aquifer-connectivity_0.pdf

²⁴ Secchi, S., & Schrefler, B.A. (2014). Hydraulic fracturing and its peculiarities. *Asia Pacific Journal on Computational Engineering*. DOI: 10.1186/2196-1166-1-8 Retrieved from <http://apjcen.springeropen.com/articles/10.1186/2196-1166-1-8>

Mass balance

An independent examination of the mass balance associated with hydraulic fracturing does not appear to have been undertaken prior to the ending of EIS assessment and evaluation in Queensland in 2010. It is unclear how government regulators assessed the inputs, and resultant products, of the underground (physical and chemical) hydraulic fracturing reactions.

Waste volumes

Massive volumes of solid, liquid and gaseous waste products both remain in the ground and are brought to the surface.²⁵

In 2010 had calculated (with the assistance of _____ from Department of Environment and Resource Management) that approximately 45 million tonnes of contaminated solid waste would be brought to the surface in Queensland's gas fields, based on the volumes of water stated in EIS documents. I put that figure in my draft of the Coordinator-General's Evaluation Report, but the figure was removed.

Later, the Federal Government Water Group also attempted to calculate the extent of the waste problem. The EIS documents had considerably underestimated the volumes of contaminated water. The Federal Government Water Group calculated a 'Highly-likely estimate' of 93 million tonnes and a 'Possible worst-case scenario' of 154 million tonnes of contaminated solid waste from the 'big three' companies (Santos, QGC and Origin). The National Water Commission estimated 31 million tonnes.²⁶

Untreated contaminated wastewater released onto land, stated as being for the purposes of 'dust suppression', is unmonitored.²⁷ Contaminated waste results in ongoing liabilities for current and future generations due to:

- ongoing cost of waste storage, waste management, monitoring and land remediation;
- ecological, agricultural and human health impacts associated with movement of contaminants to the soils, water table and surface waters;
- human health impacts resulting from air-borne contaminant exposure; and

²⁵ Lloyd-Smith, M. (2015). *Unconventional gas exploration and production: Human health impacts and environmental legacy*. National Toxics Network. Retrieved from <http://www.ntn.org.au/stop-csg/new-report-impacts-of-ug-exploration-and-mining>

²⁶ Estimates summarized by ABC web site 'CSG By the Numbers'. Retrieved from <http://www.abc.net.au/news/specials/coal-seam-gas-by-the-numbers/waste/>

²⁷ Refer to my submission to *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39, Simone Marsh), and *Committee Hansard* record of 'in camera' evidence provided on 28 November 2014.

- losses in land use capability and land value due to surface and groundwater contamination, increased land salinity, soil contamination and erosion.

The associated short-term and long-term costs of the abovementioned impacts were not provided, evaluated nor justified in the EIS processes for Queensland CSG-LNG projects in 2010. Hence, the impacts of coal seam gas activities were not properly assessed under environmental laws.²⁸

It is not clear whether shareholders or the ASX are been notified and updated regarding the contaminated land liabilities.

Assessment by Queensland's environment department

The 'Final Advice' regarding QGC's Queensland Curtis LNG Project EIS, from the Queensland Department of Natural Resource Management (DNRM) to The Coordinator-General on 2 June 2010, is found within Right To Information document 12-330, File C, Part 1.²⁹ It notes:

"...there are aspects of the QCLNG Project where insufficient information has been provided in the EIS and SEIS for DERM to assess the potential environmental impacts..."

The advice provides a detailed and substantial list of outstanding information.

Health impacts of unconventional gas mining³⁰

The burden of proof, that intensive coal seam gas extraction and processing is *not* harmful, falls on those taking the action. However, baseline health data does not appear to have been gathered, nor health impact assessments undertaken. Further, health impact assessments do not appear to have been provided nor considered during government evaluation and conditioning.³¹

The volumes of chemical inputs and pollutant outputs resulting from coal seam gas extraction and processing within the gas fields is alarming.³² In spite of the likelihood and consequences of harm through exposure and biological uptake of

²⁸ Refer to my submission to *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39, Simone Marsh), and *Committee Hansard* record of 'in camera' evidence provided on 28 November 2014.

²⁹ Released by DNRM under RTI Act 2009.

³⁰ Senate Inquiry on Unconventional Gas Mining, Terms of Reference item (b)

³¹ Refer to my submission to *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39, Simone Marsh), and *Committee Hansard* record of 'in camera' evidence provided on 28 November 2014.

³² *Unconventional gas exploration and production: Human health impacts and environmental legacy*. National Toxics Network. November 2015. Retrieved from <http://www.ntn.org.au/stop-csg/new-report-impacts-of-ug-exploration-and-mining>

toxic substances, environmental authority conditions are lacking limits for, and lacking monitoring of, a range of pollutants of health concern.³³

There have been disturbing reports, regarding the health of people living within Queensland's gas fields, from independent health specialists monitoring the situation.³⁴ Similarly, elsewhere there have been reports of

The psychological distress to person's impacted by CSG development has also been well documented, and is of concern to health professionals.³⁵

Personal health and wellbeing impacts

This section provides a brief account of personal impacts.

In 2010 it was my job to ensure development proposals conformed with environmental laws enacted in our Parliaments and assented to by our Governors. The environmental laws were designed to protect land, soils, air, waters, flora, fauna and allow for ecologically sustainable development. Consequently, our environmental laws are designed to protect our environment and our people from harm.

When I reported misconduct of law to my employer in 2010, I was told that there was no contract for my secondment to Queensland Government. As a whistleblower, I expected that allegations of wrongdoing would be investigated, and upon finding that one or more crimes had been committed, the activities would be stopped and perpetrators brought before courts of law. However, this has not been the case.

After speaking publicly in 2013³⁶, I was defamed by numerous persons acting on behalf of the industry. After making a complaint to the Queensland Crime and Misconduct Commission (CMC) in 2013 regarding unlawful approvals, a CMC media release misled the public regarding the weight of evidence supporting the complaint. The CMC did not provide a copy of their assessment report.³⁷

³³ Refer to my submission to *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39, Simone Marsh), and *Committee Hansard* record of 'in camera' evidence provided on 28 November 2014.

³⁴ McCarron, G. (2013). Symptomology of a gas field: An independent health survey in the Tara rural residential estates and environs.

³⁵ Dr Wayne Somerville (2013) *Self-help Risk Management Tools: A Report on the Health Impacts of CSG and Shale Gas Mining*. Retrieved from <http://www.creeksbend.com/CSG%20Health%20Risk%20Management%20Tools%20-%20Dr%20W%20Somerville.pdf>

³⁶ Refer to ABC Four Corners 'GasLeak!' program, 1 April 2013

³⁷ Refer to my submission to *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39, Simone Marsh), and *Committee Hansard* record of 'in camera' evidence provided on 28 November 2014.

The intrusive thoughts are present on a daily basis. The visual imagery of the widespread environmental impacts, the awareness of the human impacts and corrupted processes, and the associated anxiety does not go away. My personal time has become hijacked, privacy lost, career lost and resources depleted; part of what the industry terms ‘collateral damage’, but does not quantify.

The cumulative ‘collateral damage’ has not been quantified.

Table 1. False and/or misleading statements by unconventional gas industry representatives regarding the ABC Four Corners ‘GasLeak!’ program, 1 April 2013.

Representatives and context	False and/or misleading statements	Evidence
<p>ex-Santos, APPEA</p> <p>Interview by ABC 4 Corners journalist Matthew Carney (March, 2013)</p>	<p>makes numerous statements implying that missing information was supplied in a Supplementary EIS after The Coordinator-General’s Evaluation Report. ⁴⁰</p>	<p>The ABC makes an Editor’s Note at the end of the interview (p.18) correcting the record: <i>“The supplementary Environmental Impact Statement does not occur after the Co-ordinator General’s Report. It is part of the Co-ordinator General’s assessment process.”</i> ⁴¹</p>
<p>Santos</p> <p>Interview by Fran Kelly, ABC Radio National and</p>	<p><i>“...there is some falsehoods and dishonest claims being made. There was a very extensive set of groundwater studies done...We do not in any way affect the</i></p>	<p>Significant groundwater drawdowns in localized regions were predicted in company and government reports. A lack of baseline data, has been documented by independent researchers - as noted in this submission.</p>

³⁸ Peter Hannam, The Sydney Morning Herald, 1 March 2015. Senators move to give CSG whistleblower air. Retrieved from <http://www.smh.com.au/environment/senators-move-to-give-csg-whistleblower-air-20150227-13qymm.html#ixzz42PnGUjeE>

³⁹ Peter Hannam, The Sydney Morning Herald, 1 March 2015. Senators move to give CSG whistleblower air. Retrieved from <http://www.smh.com.au/environment/senators-move-to-give-csg-whistleblower-air-20150227-13qymm.html#ixzz42PnGUjeE>

⁴⁰ Retrieved from <http://www.abc.net.au/4corners/documents/CSG2013> _transcript.pdf

⁴¹ Retrieved from <http://www.abc.net.au/4corners/documents/CSG2013> _transcript.pdf

<p>repeated on ABC Inside Business⁴² (April, 2013)</p>	<p><i>groundwater in any substantive way. And that's what the studies show."</i></p>	
<p>Group (QGC) BG Questioning by Senate Standing Committee on Environment and Communications (18 April 2013). Senate hearing on EPBC Amendment Bill. ⁴³</p>	<p><i>"Our submission was made to government, with all of our studies, in 2008 ... She [Simone Marsh] was brought in after the assessment which took two years to conduct, had been completed" ⁴⁴</i></p>	<p>The EIS was released on 29 August 2009. The Supplementary EIS, in which QGC significantly up-scaled the project, was released on 10 February 2010. ⁴⁵ The Coordinator-General's EIS evaluation abruptly ended on 23 June 2010, coinciding with my last day of work on the CSG-LNG projects.</p> <p>Note: In 2010 was employed as Principal Resources and Energy Advisor and Chief of Staff to the federal Resources and Energy Minister, Martin Ferguson. Minister Ferguson was present at the March 2010 sale of Queensland's gas in Beijing (which occurred before the legislated approvals processes had been completed). Both and Martin Ferguson later moved from their government roles into BG Group.</p>

Social, business and economic impacts of unconventional gas mining ⁴⁶

In 2009 the Queensland government published Blueprint for Queensland's LNG Industry.⁴⁷ The document identified the '*real problem*' of impacts on domestic gas supply. According to page 6 of the Blueprint, a Gas Reservation Policy and a Prospective Gas Production Land Reserve were to be considered in a Regulatory Impact Statement (RIS) scheduled to be available to the public by September 2009.

"Each of these options will be detailed in a Regulatory Impact Statement which will be released during September 2009 for public comment. Interested parties will have one month to respond with a final Government decision to follow as soon as possible thereafter."

Myself and other public servants were told during meetings with the proponents and senior government officials in 2010 that arrangements were being made to ensure produced gas from certain tenements (held by the LNG export proponents) would be directed to domestic gas supply. We were told that a percentage of total production was to be reserved for domestic gas supply. This

⁴² ABC Inside Business <http://www.abc.net.au/insidebusiness/content/2011/s3731460.htm>

⁴³ Retrieved from <https://vimeo.com/64289148>

⁴⁴ Retrieved from <https://vimeo.com/64289148>

⁴⁵ Retrieved from <http://www.statedevelopment.qld.gov.au/assessments-and-approvals/queensland-curtis-liquefied-natural-gas-project.html>

⁴⁶ Senate Inquiry on Unconventional Gas Mining, Terms of Reference item (b)

⁴⁷ Retrieved from <http://rti.cabinet.qld.gov.au/documents/2009/aug/lng%20impacts%20review/Attachments/LNG%20Industry.pdf>

does not appear to have eventuated.

The EIS Terms of Reference (August 2008) for the Santos GLNG project required economic costs to other industries and the wider community (Queensland and Australia) to be summarised.⁴⁸ Section 1.4.2 states:

"This section should summarise; the economic costs and benefits to other industries and the wider community, Queensland and Australia arising from the Project; and regional social impacts including employment ..."

The same information was required by the EIS Terms of Reference (May 2009) for the QGC Queensland Curtis LNG (QCLNG) project. Refer to Section 1.4.2, p.17.⁴⁹

However, there was no cumulative economic costs analysis by either proponent for a proposed new LNG industry as a whole. Nor was there a formal assessment of how an LNG industry might affect other industries and the wider community in Queensland and Australia. Also, the subsidies given to the CSG-LNG industry were not discussed.

The EIS submitted by QGC in 2009, for the QCLNG project, did not contain an economic cost analysis associated with environmental impacts across QGC's proposed gas fields. Regarding domestic gas impacts, the EIS simply states:

*"QGC believes Queensland CSG resources are larger than the domestic market can absorb. Therefore any increase in domestic gas price due to the export of LNG is expected to be minimal. In addition, increases in domestic demand are part of QGC's overall business plan: there will be no conflict between domestic and export demands."*⁵⁰

The EIS submitted by Santos in 2009, for the Gladstone LNG project, did not contain a cost analysis for environmental impacts across Santos' gas fields. Regarding Santos' LNG facility (refer to EIS Section 8.15.5), general and contradictory statements are made regarding domestic impacts, such as:

- *"The GLNG Project is unlikely to have a significant adverse impact on any existing business in the project region in terms of their sales volumes..."*
- *the economic impact of the project causes output of some other industries in the economy to decline slightly...*
- *world LNG prices will rise to reflect the higher costs associated with*

⁴⁸ Retrieved from <http://www.dsdip.qld.gov.au/resources/project/gladstone-liquefied-natural-gas/glng-tor-aug-08.pdf>

⁴⁹ Retrieved from <http://www.dsdip.qld.gov.au/resources/project/queensland-curtis-liquefied-natural-gas-project/curtis-lng-tor.pdf>

⁵⁰ Refer to QCLNG EIS Volume 1, Chapter 2 - Project Overview, Section 2.5.4.2 -Economic Impact. Retrieved from [http://www.qgc.com.au/environment/environmental-impact-management/qclng-environmental-impact-statement-\(eis\)/vol-1-process-overview.aspx](http://www.qgc.com.au/environment/environmental-impact-management/qclng-environmental-impact-statement-(eis)/vol-1-process-overview.aspx)

- the purchase of emissions permits...*
- *direct impact on agricultural productivity is therefore likely to be negligible and, in any case, the project is required to pay compensation to landholders...*
 - *the large increase in exports associated with the project results in a slight appreciation of the real exchange rate, reducing the international competitiveness of other exporting and importing projects. This applies to industries throughout the Australian economy, including businesses in the project area. As a result, the profitability of these businesses will fall to some extent. However, given the size of the project relative to the overall economy... the impact on any one of these businesses will be very small...*
 - *the economic impact analysis did not consider the economic implications of decommissioning of the CSG field infrastructure, the pipeline or the LNG facility."*⁵¹

On 24 May 2010, whilst seconded to the Queensland Department of Infrastructure and Planning and tasked with writing sections of the Coordinator-General's evaluation of CSG-LNG projects, I wrote an internal email

*"...I am concerned that the information, as currently presented does not provide a clear need or justification for the project beyond the potential for short-term economic benefits. In my opinion, those short-term economic benefits have the potential to be negated and outweighed by the detrimental short, medium and long term environmental impacts and associated long-term social and economic costs (of which there are likely to be many, and that have not been assessed)."*⁵²

Whilst some local businesses benefited temporarily during the construction phase (and other local businesses were drained of staff), significant financial benefits went off-shore: construction of all six LNG plants was awarded to private company Bechtel; Houston and Thai worksites were utilized for construction of the GLNG facility and the maintenance contract was awarded to GE Oil and Gas Australia Pty Ltd, a subsidiary of NYSE:GE.⁵³

Revolving doors, lobbying and political donations

The abovementioned events regarding intensive coal seam gas entry has occurred at a time in which we are witnessing revolving doors between industry

⁵¹ Retrieved from [http://www.santoslng.com/media/pdf39693/08%2015%20Economics%20\(Section%208.15\)%20FINAL%20PUBLIC.pdf](http://www.santoslng.com/media/pdf39693/08%2015%20Economics%20(Section%208.15)%20FINAL%20PUBLIC.pdf)

⁵² Refer to my submission to *Senate Select Committee on Certain Aspects of Queensland Government Administration related to Commonwealth Government Affairs* (submission 39, Simone Marsh), and *Committee Hansard* record of 'in camera' evidence provided on 28 November 2014.

⁵³ QGC: A BG Group Business, April 2013. *The Energy*. Issue 28.

personnel, industry lobbyists and government officials –representing potential for conflicts of interest. ⁵⁴

We are also witnessing significant political donations and lobbying that is unreported. Please refer to The Australia Institute publication '*Too Close for Comfort: How the coal and gas industry get their way in Queensland*' October 2015. ⁵⁵

Yours sincerely,

Simone Marsh

⁵⁴ Refer to <http://jeremybuckingham.org/2015/03/27/revolving-doors-queensland/>

⁵⁵ Retrieved from http://www.tai.org.au/sites/default/files/P117%20Too%20close%20for%20comfort%20FINAL_0.pdf