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Nature Conservation Saves for Tomorrow

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Review of CSG Activities in NSW

1. Introduction

The Society is the largest regionally-based conservation group in NSW. It has a membership of about 850 and, although predominantly drawn from the Blue Mountains local government area, its membership includes people from the Greater Sydney and Lithgow-Oberon-Bathurst regions.

The Society has made representation to the local member (Ms Roza sage), the member for Penrith and the Lower Blue Mountains Glenbrook district (Mr S Ayres), and the Blue Mountains City Council (BMCC) expressing strong opposition to CSG exploration and exploitation in the Greater Blue Mountains area. The latter comprises the tract of National parks, State Conservation Areas, Nature Reserves, State Forests, and other public lands stretching from Mittagong to Denman (south to north) and from the western edge of the Sydney Basin through variously to the Lapstone Monocline or, beyond the limits of the monocline, the coast on the east.

As a result of this, BMCC and the contacted members (somewhat less clearly) have expressed their opposition to such exploration and exploitation.

The Society is a group member of the Lock The Gate organization, the Stop CSG Blue Mountains organization and has indirect links to the Stop CSG Sydney joint groups. It is affiliated to the Nature Conservation Council, and has close links with the Colong Foundation and National Parks Association. In this context and that of the CSG Review, the Society is opposed to inappropriate CSG exploration and exploitation on a state-wide, and indeed eastern Australian, basis. The Society specifically opposes such exploration and exploitation in parks, reserves public forests, drinking water catchments, environmentally sensitive regions, and ‘prime’ agricultural lands; it argues that these areas should be specifically excluded by governmental regulation, not left to the vagaries of the as yet tested and extraordinarily vague planning system.

2. Comment on the ‘Terms of Reference’ (ToR)

2.1 ToR1: involves site visits and a comprehensive study of compliance, as informed by regulatory officers.

The Society hopes that site visits will not be telegraphed and will not be at the discretion of the company. AGL is known to have ‘sanitized’ tours for those wishing to see the ‘better’ side of extraction, but there are sites in the Pilliga where there is abundant evidence of ‘less sanitized’ exploration and extraction.

The Society also hopes that references to ‘minor’ compliance issues are fully investigated. Experience with the coal industry and the EPA suggests that there is a tendency to be too lenient in relation to exceedances. In essence, how many minor issues make up a major problem, and is this in the judgement of the company, the regulator or the impacted environment or local community?

2.2 ToR2: deals with possible gaps in the identification and management of risk from CSG exploration, assessment and production as related to health, environment and water catchments.

The risks are well-known from the literature in many countries including the US, Europe (France, Scotland, England, Germany), and Australia (Queensland and the Pilliga). It is extremely unlikely that there are gaps in the identification of risks. Indeed, the industry’s own publications point to the various risks but inevitably attempt to down-play them and imply that they will be managed under ‘best practice’ as applied in NSW. Presumably it is the rest of the world that has the sloppy practices which characterise any commercial enterprise; recent history suggests otherwise!

Threats to health are being better understood in relation to PM_{2.5} and pollution generally (e.g. <http://www.smh.com.au/opinion/political-news/air-pollution-linked-to-heart-disease-study-20130424-2idsk.html>). The matter will hopefully be expanded upon by Dr Helen Redmond of Doctors for the Environment (see <http://dea.org.au/>; also see <http://dea.org.au/news/article/we-need-to-do-our-homework-on-the-health-risks-of-coal-seam-gas>)

The Society’s concern is that, as with the coal-mining industry, risk management is implemented in a way which enables ongoing extraction unless the ‘event’ becomes catastrophic. Fines for exceedances and other forms of infringement are inadequate relative to the magnitude of profit. Companies therefore accept and internalise the penalties, knowing full well that the bottom line is best served by maintaining extraction.

The Society very much regrets that the implications of ToR 2 envisage perpetuation of a deliberately inadequate process which protects the company at the expense of social and environmental wellbeing.

2.3 ToR3: refers to identifying best practice in relation to CSG projects and looking at ways to manage the interface between residences and CSG activity.

Much of this is covered under ToR2.

ToR3 effectively comprises *prima facie* acceptance of a substantial CSG industry in NSW in close proximity to residential regions. Best practice is defined in terms of the operational methods employed by the industry, yet there are known to be substantial risks. Best practice therefore becomes taking the risks and ‘managing’ the consequences. And it invariably comes down to imposing ‘compromises’ between the requirements of the company and the concerns of those to be impacted. Typically in such a ‘nimby-driven’ debate, environmental consequences are treated as incidental, while the focus is placed on how best to suppress the outcry from residents. One typical approach, because of the magnitude of the anticipated profits, is to buy out affected properties, irrespective of how this impacts the quality-of-life of the erstwhile owners.

2.4 ToR4: explain how the NSW CSG industry compares with the industry nationally and internationally.

This is ridiculous pandering to an industry which has barely become established on any substantial scale in NSW. They will, of course, have learnt from the modes of operation in Queensland and the errors made in the Pilliga. Naturally all the industry’s claims about its superior modes of operation will be taken at face-value.

Such a ToR effectively encourages the local industry to discount transgressions, both overseas and in Queensland, on the grounds that ‘technology has improved’, ‘mistakes have been taken on board and will

not be repeated', and 'any research in those regions is inapplicable to NSW because the geology is different, etc., etc'. The simple fact is that the majority of companies operating in the CSG and other unconventional gas areas are multinationals or have links to multinationals; the operations are driven by the same commercial practices, the risks are just the same, and the geology and hydrogeology, although differing in detail, encompass the same types of problem.

Typically, the government banned fracking and then removed the ban; BTEX is still banned but numerous other chemicals which you would hardly drink with your morning tea remain in use; AGL stated that it would not be fracking and then finally admitted fracking would be used 'if needed'; concern is raised about the proximity to residential areas, the destruction or contamination of aquifers, the damage to agricultural land, and the impact on environmentally sensitive ecosystems. These are the same issues faced internationally. The one interesting fact is that fugitive emissions in Australia are **claimed** to be much less than in the US, but there is little clear idea of how the fugitive emissions are determined and how the situation changes with the ageing of infrastructure. Any sane approach would be to recognise that what happens elsewhere in the world will also happen in Australia and is already happening in Queensland; there is nothing magical about NSW. Bottom-line greed for business and government is international!

2.5 ToR5: inspect and monitor current practices including water extraction, fracking and aquifer protection.

Refer back to ToR1 about not telegraphing visits and ToR2 about the deficiencies of risk management.

Inspection and monitoring are two of the tools used in risk management processes. In most cases they comprise a form of occupational therapy which the company uses to demonstrate how socially and environmentally responsible it is. But rather like the GI-GO (garbage in - garbage out) for computers, monitoring a process when you have no idea about the level of damage occurring and whether or not it should be treated as acceptable ends up by building masses of data which actually reveal little of value.

The commonly-presented argument is that only through the accumulation of data is it possible to make science-based decisions. This is a truism! But the point remains that if the monitoring is incapable of meeting its objective, or yields inconclusive data, or is carried out over too short a period, or there has been no base-line study with which to compare, then interpreting the data very much depends on the integrity of the company's consultant.

Without being too facetious, fracking is done to increase or maintain the rate of CSG recovery; if this happens, it is successful. If the fracking concurrently affects the hydrologic regime (which it must!) and/or increases the level of fugitive emissions, what level of change in the monitoring data (assuming that these aspects are being monitored) would be deemed to negate the operational success of the fracking?

2.6 ToR6: produce information papers to inform policy decisions and assist with public understanding.

The majority of the items listed in the ToR are already available in the literature, including that put out by the companies, the industry's representative body (APPEA) and also by CSIRO. Assuming that the CSE's information papers are even-handed, they might conceivably help public understanding. But if pitched at that relatively basic level they are unlikely to inform policy development; or could it be that the Society is being a little naïve about the machinations of government?

Put bluntly, the information papers are likely to be window dressing. They will focus on the positive side of the processes and disregard the levels of extreme uncertainty, particularly over the longer term. Only then, some twenty or more years down the track when the gas flow is becoming sub-economic, the infrastructure is ageing, and the companies start using stop-gap measures to squeeze out the last elements of profitability, will the time-cumulative social and environmental consequences become increasingly accepted. And by that time, today's politicians will be long gone!

2.7 In general: the ToR and the objective

The Society firstly notes that only an **initial** report will be available by July 13. Will that be aimed at any of the more complex problems concerning the environmental, medical, agricultural and other social consequences of CSG exploration and exploitation? Or will it just pluck the low-hanging fruit and enable the government to make reassuring noises and token gestures? This would certainly be in keeping with the government's clearly stated intention of having a substantial CSG industry in NSW.

The Society recognises the high level of cynicism in some of the above comments, but having experienced the same level of social manipulation by governments (not just the current one) in relation to the management of the coal industry, it is extremely hard to avoid cynicism. Where short-term gain is set against longer-term pain and the broader environmental consequences, governments almost invariably salivate over the dollars. The objective then becomes one of spin and massaging recalcitrant individuals and organizations (e.g., like de-funding the EDO and producing complex, seemingly contradictory planning regimes).

3. Other comments reflecting the Society's position on CSG

NSW lacks its own conventional natural gas (CNG). However, the mains gas supply for much of NSW consists of CNG and comes from the Cooper Basin in SA. LPG (liquid petroleum gas) is refined from oil or 'wet' natural gas, mainly comprises propane and butane, and has a relatively small share of the market. It is typically sold in liquid form in pressurised steel containers, is used domestically if there is no 'mains' gas supply to the household, is ideal for barbecues and camping, and is popular with the taxi industry.

Contrary to claims by NSW government, there is no shortage of CNG¹. The Cooper Basin has enough to last for the next 10-20 years at ~400 TJ per day² and envisages supplying the east coast with CNG and unconventional natural gas (UNG) for the next 50 years³. The reality is that the long-term CNG-contracts with NSW expire in 2014 and new domestic contracts will need to reflect the anticipated international price-levels⁴. Santos (the principal supplier) is unsurprisingly looking at higher prices for its gas and the government is framing this as a shortage to justify CSG production in NSW. This is paradoxical because renewable energy sources have now reached or are reaching price-parity with gas⁵, so if gas prices were to disproportionately escalate, the competitiveness of renewables would be further enhanced; surely this would be a good outcome! It makes far more sense for the NSW government to accelerate the move to renewable energy resources, and not depend on an industry producing high levels of greenhouse gas emissions (GGE).

Were the NSW government to adopt such a sensible position [i.e., continuing to purchase gas from SA as it (NSW) transitions to renewable power sources] there would be little need for a review of the CSG industry in NSW by the Chief Scientist and Engineer (CSE). Regrettably, the NSW government insists

¹ <http://www.smh.com.au/environment/energy-smart/gas-supply-to-dwindle-in-the-next-two-years-20120418-1x7pq.html>

² For comparison, Woodside's NW Shelf plant, Australia's biggest, produces 600 TJ per day

³ <http://www.theaustralian.com.au/business/gas-price-rise-prompts-santos-to-revamp-cooper-basin/story-e6frg8zx-1226060673357>

⁴ <http://www.smh.com.au/environment/energy-smart/gas-supply-to-dwindle-in-the-next-two-years-20120418-1x7pq.html>

⁵ <http://www.abc.net.au/environment/articles/2012/08/13/3565263.htm>

http://www.catherinecusack.com.au/index.php?option=com_content&view=article&id=427:policy-to-kick-start-nsw-renewable-power-as-250-green-jobs-axed&catid=1:media-releases&Itemid=200011

<http://theconversation.edu.au/renewable-energy-can-provide-baseload-power-heres-how-2221>

<http://www.smh.com.au/business/carbon-economy/rising-risk-prices-out-new-coalfired-plants-report-20130207-2e0s4.html>

that there will be a sustainable CSG industry in the state⁶, and has endeavoured to quieten opposition by commissioning the review by the CSE.

The Society will consider some of the implications of such an industry, and will start this by highlighting the process of CSG extraction.

Extraction for the purposes of exploitation is typically described as⁷:

- a steel-cased well is drilled vertically some 200 to 1000 m to the coal seam;
- water is pumped from the well, thereby lowering the pressure at the coal seam and allowing the adsorbed gas to be released;
- the gas and water are pumped to a separator at the well head and gas is separated from the water; and,
- the gas is then sent via a compressor station into the natural gas pipelines, while the water is stored for further use.

This is very much an over-simplification. It disregards the need to prevent CSG-leakage by pumping cement in between the steel casing and the host-rock, the need for perforated casing within the coal seam to allow ingress of water and gas, and the increasingly common practice of drilling horizontally along the seam for distances up to 1000 m. It also fails to mention that the well is one of many within a grid with anything from 500 to 1000 m centres, variously linked by a network of roads, pipes and compressor stations; the destructive footprint is substantial⁸. It further fails to mention the need for cryogenic plants and port facilities should the export market (not improbable in view of the scale of investment required for CSG exploitation) be targeted.

The principal threats posed by CSG exploitation are:

- ‘Global’ in terms of it: (i) producing direct and indirect GGE and thereby contributing to climate change; (ii) impeding the full adoption of renewable energy sources; and (iii) purporting to be transitional between dirty coal-fired power and renewable (or nuclear!) power.

The magnitude of the ‘global’ threat is made clear by the fact that *“Australia exports twice as much CO_{2e} via coal and gas than it emits at home from burning fossil fuels for energy.”*⁹

- ‘Local’ through: (i) destruction of surface carrying capacity of agricultural lands and biodiversity in environmentally sensitive regions; (ii) contamination of the hydrologic regime comprising surface water, groundwater and deeper aquifers; (iii) health risks associated with gas-field leakage; and, (iv) adverse impacts on scenic values and tourism.

These are collectively exacerbated by:

- Fracking – typically used (unless totally prohibited by government) to extend the life of a gas field when a company wants to maximise return on the infrastructure-investment, and/or for deeper, more cohesive coal seams.
- In-fill drilling to reduce the spacing of the production grid and maximise gas-recovery.
- Greed and sloppy practices – for example, deliberately taking short cuts or using lower grade materials to increase profitability, and through laziness and/or incompetence producing adverse outcomes; more politely, accidents do happen!

⁶<http://www.premier.nsw.gov.au/sites/default/files/TOUGH%20NEW%20RULES%20FOR%20COAL%20SEAM%20GAS%20ACTIVITY.pdf>

⁷ <http://www.environment.nsw.gov.au/licensing/coalseamgas.htm>

⁸ http://candrconsulting.com.au/wp-content/uploads/2012/10/csg_field.jpg

⁹ <http://www.guardian.co.uk/environment/blog/2013/feb/21/dirty-fossil-fuel-exports-australia#start-of-comments>

- The disturbing fact that the coal remains in the ground and could potentially be exploited by underground mining depending upon such factors as the depth and thickness of the seam – this would be the ultimate ‘double whammy’.

CSG exploitation carries very real risks¹⁰. The NSW Premier has partly acknowledged these risks by placing a two km exclusion buffer around ‘residential zones’ and ‘critical industry clusters’ which “...have not yet been approved under the EP&A Act or the Petroleum (Onshore) Act”¹¹, and requiring the CSE to undertake the present review of CSG activities.

The Premier’s attempt¹² to address community concerns regarding ‘real and present’ risks is notable for its uncertainties and omissions.

- The EPA is charged with enforcing the environmental and health legislation, but the EPA is hard-put to manage its existing role, so where is the money for extra staff with the necessary expertise to sensibly undertake the mission? Informal discussion with a senior person within the EPA suggests that these issues have not been considered and that there is little likelihood (without appropriate resource increases) of the EPA being able to adequately undertake the required work.
- The exclusion zones will apply to any CSG activity not yet approved under the *EP&A Act* or the *Petroleum (Onshore) Act*. Yet all licences and leases, whether for exploration (PEL), assessment (PAL), or production (PPL), are issued and therefore approved under the *Petroleum (Onshore) Act*. Could it be that a company with a PEL can continue exploration but a PAL will never be approved, or that a company with a PAL will never be issued with a PPL? This requires clarification!
- Will the 2 km buffer around residential areas and ‘Critical Industry Clusters’ apply to all surface workings and the surface trace of the vertical projection of subsurface activities such as horizontal drilling? The Society has been told informally that horizontal drilling has been considered and will be subject to the 2 km buffer, but the details remain unclear and any resulting anomaly will be exploited by companies. More clarification is needed!
- World Heritage areas, National Parks, State Conservation Areas, Nature Reserves, State Forests, areas of high scenic value and/or environmental sensitivity (including those on which ecotourism is focused), water supply catchments and reservoirs, and prime agricultural lands, have not been explicitly excluded. There is a suggestion in the case of the World Heritage area and National Parks that this is unnecessary because they will be excised from the licences ‘at some stage’. But this is not satisfactory because the government’s resources maps show licences covering parts of the WHA and the encompassed National Parks. Also, such an assurance doesn’t resolve the other types of area listed in the first sentence. Clear statements are required in relation to all these uncertainties.
- Protection for groundwater resources in terms of avoiding disturbance and contamination of unconfined and confined aquifers is not covered other than by referring the issue to the CSE’s review. Such protection is essential in view of the Position Statement of the National Water Commission¹³. Should such protection not be forthcoming, the CSE’s review must state the grounds for rejecting the Position Statement of the National Water Commission.

¹⁰ <http://www.smh.com.au/opinion/the-question/is-coal-seam--gas-worth--the-risk-20110819-1j20j.html>
http://www.csiro.au/2Fnews%2F~%2Fmedia%2F3C0EBC3E287F436880FDB5959B0796D0.ashx&ei=kT4nUd_eO66LmwXO14DwCg&usg=AFQjCNGmo4_xx4ec_aEdSo_4aFLv9g4AHw
<http://www.resources.nsw.gov.au/community-information/coal-seam-gas/what-are-the-potential-impacts-of-csg>
<http://www.bluemountains.org.au/csg-information.shtml>
<http://www.stopcsgbm.net.au/>

¹¹ <http://www.premier.nsw.gov.au/sites/default/files/TOUGH%20NEW%20RULES%20FOR%20COAL%20SEAM%20GAS%20ACTIVITY.pdf>

¹² <http://www.premier.nsw.gov.au/sites/default/files/TOUGH%20NEW%20RULES%20FOR%20COAL%20SEAM%20GAS%20ACTIVITY.pdf>

¹³ http://nwc.gov.au/__data/assets/pdf_file/0003/9723/Coal_Seam_Gas.pdf

- Given the list of recommendations in the Senate Committee’s Interim Report on the Impact of Mining Coal Seam Gas on the Murray-Darling Basin¹⁴, and the Legislative Council’s Inquiry into Coal Seam Gas¹⁵, the Society wonders why the government feels the need to disregard the significance of those reports and commission the CSE’s review. The Society regrettably believes that the government is seeking sufficient ‘wriggle room’ to justify proceeding with its intention to permit a large CSG industry in NSW. This would then be in the face of the concerns of CSIRO, the findings of the above-mentioned government-commissioned reports, the reports of adverse impacts as substantiated in other countries, the disgusting (and potentially criminal) associated with governance surrounding CSG approvals in Queensland, and the decision to effectively call in CSG development proposals by the federal government.
- Although not the purview of the CSE’s review, the Society wonders why the destructive capacity of open-cut coal mines (which in relation to some risks are either as bad or worse than CSG exploitation) has largely been neglected by this and previous governments.

4. Concluding remarks

In view of the abundance of information now available regarding climate change (the principal ‘global’ risk) and what the Society chooses to term the ‘local’ risks from CSG exploitation, the CSE’s review must surely oppose the government’s intention to promote a CSG industry in NSW. However, the Society appreciates the restrictive nature of the review’s ToR and appreciates the problem confronting the CSE.

There is no doubt that industry will make substantial submissions which will inevitably include the statement that the CSG industry has now been operating ‘successfully’ for about 50 years in the US. This statement is specious: it disregards the damage inflicted by the years of operation; it is essentially saying that the ‘business’ has operated profitably, whilst it indirectly comprises an indictment of the regulating authorities in the various states.

Business will certainly argue that given ‘best practice’ the risks are ‘low’ and can be handled through rigorous consent conditions, carefully designed (for whose benefit?) risk-management processes, rigorous monitoring programs, and on-site inspections by government instrumentalities. It is all too easy to fall back on these ‘placebos’. And when things do go wrong, it will be ascribed to human error, equipment failure, or sub-contractor deficiencies and, following a symbolic smack on the wrist, the money will still roll in!

But the ‘placebos’ don’t answer the following questions:

- What does commitment to this industry mean in terms of global environmental damage, the state’s commitment to reduce GGE by encouraging an uptake of renewably-sourced energy, the potential impairment of the renewable energy sector, and the unacceptable implications for the adoption of nuclear energy?
- Who actually defines the risk as low? [The answer to this is government departments in conjunction with the industry and its highly paid consultants, within the confines of a risk-assessment panel in which environmental and affected community organizations have no or minimal input. This is the coal industry ‘model’.]
- How acceptable is a ‘low’ risk to the current and longer-term health of the various aquifers and drinking water supplies? And if the risk materialises, how will the problems be remediated, is it even feasible, and what would be the time-frames of the disasters?

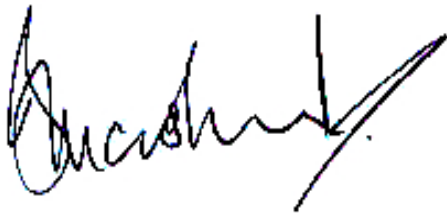
¹⁴http://www.apf.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=rrat_ctte/mdb/interim_report/index.htm

¹⁵[http://www.parliament.nsw.gov.au/Prod/parliament/committee.nsf/0/318a94f2301a0b2fca2579f1001419e5/\\$FILE/Rreport%2035%20-%20Coal%20seam%20gas.pdf](http://www.parliament.nsw.gov.au/Prod/parliament/committee.nsf/0/318a94f2301a0b2fca2579f1001419e5/$FILE/Rreport%2035%20-%20Coal%20seam%20gas.pdf)

- How acceptable is a ‘low’ risk (and the Society would place this risk as ‘high’ or even ‘certain’) in the context of compromising some of the state’s prime agricultural lands, and again what are the time-frames factored into any acceptance of such a risk?
- What levels of compensation will be paid to those whose health is impacted, bearing in mind the warnings given by the Doctors for the Environment’ and the increasing body of research showing that such impacts are inevitable?
- How can any government be prepared to risk compromising the natural environment in a world where there is increasing encroachment by human and there disastrous activities?

Obviously more such questions could be raised, but the above is sufficient to imprint on the CSE’s review the ongoing audacity of governments which connive with business in the interests of ‘the economy’. Very simply, big business (in which the government effectively holds a conflict of interest) pushes ahead with over-confident assurances, while the onus is on inadequately-funded research organizations and negligibly-funded environmental and community groups to prove otherwise.

The society appreciates the opportunity to make this submission to the CSG review.

A handwritten signature in black ink, appearing to read 'Brian Marshall', with a long, sweeping flourish extending to the right.

***Dr Brian Marshall,
For the Management Committee***