

## Additional Points

- The huge amounts of extracted groundwater needed will have an impact on the aquifers in the Great Artesian Basin. This draw down will effect water necessary for our extremely important agricultural and community needs. Many inland towns and cities rely on groundwater for survival.
- The high possiblity of pollution caused by chemical use in the wells and pumped into holding ponds can effect our groundwater, waterways and our wildlife. If the waterways are polluted by pond leakage and flooding from heavy rainfall this would cause irreparable damage, not only to the immediate areas but much further down stream. This leakage and pollution has already been an issue with this project. Birds, bees and other animals risk being poisoned if able to drink from these ponds.
- The tens of thousands of tonnes of salt generated from this project will need to be disposed of and this also can cause major issues to surrounding areas. Wrapping in plastic and burying it is not satisfactory in the long term.
- The flaring which is occuring and will continue to occur is extremely dangerous in bushfire prone areas. We have very strong laws on fire restrictions and have experienced massive fire events in bushland and farmland yet this practice is still happening risking the lives and livelihoods of many people.
- CSG is harmful to our health. What price is life. The health of the community should be the Governments main priority. We have seen reports from various places in Australia and overseas where people are getting extremely ill when they live near CSG projects.

Signed.

*Beverly M. Steadman*

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Hugh Hunter

750 Harparary rd

Boggabri

2382

18/5/17

To whom it may concern,

I object to the Narrabri Gas project.

My name is Hugh Hunter and I live in the Narrabri shire within 20km of the proposed Gas project. My family and I own a small farm near Baan Baa and lease a property with cattle on it near the proposed gas project. ~~and~~ ~~we~~ <sup>We</sup> <sup>are</sup> very worried about the risks that it will pose. The gas will affect our cattle's health as there is a lot of gas that leaks into the air which can't be good for any animals' health. Although people will tell you the gas wells are very safe there is plenty of proof that these ruin human's health. ~~and~~ My grandparents also live near the new gas project and it could be a danger to their health which shouldn't be legal. Even though this is only a small violation of our rights compared to some of the atrocities other countries are facing. This violation is one step closer to all of our rights being lost due to pressure from foreign companies.

from Hugh

18<sup>th</sup> May, 2017

Rob Turner & Philipa Hamilton  
"Toreador"  
GURLEY, N.S.W., 2398

TO: NSW Department of Planning & Environment.

This is a submission to the Narrabri Gas EIS.

We **OBJECT** to this project and wish to have our details confidential.

- The depletion of underground water and contamination of underground and surface water, which will affect the Great Artesian Basin, which is heavily relied upon by western rural communities. It is the responsibility of the government to ensure that we have clean air, clean water and uncontaminated food.
- The effects on the Pilliga wildlife with Santos proposal to clear nearly 1000ha, this will have a devastating impact on the forest as well as disrupting natural wildlife habitat.
- Pollution - emissions from methane and carbon dioxide, potent greenhouse gases, which will be released into the atmosphere, adding to climate change.
- Treatment and disposal of contaminated waste water as well as large tonnes of salt deposits.

All the above problems have been experienced where coal seam gas has been extracted, both in Australia and overseas. This will have a devastating effect on Narrabri's, cost of living, as well as labour and renters. Santos claims that they will create jobs but if they are allowed to mine this will destroy our prime farming country ruining the food bowl putting thousands of people out of jobs. If we are to look after the future generations, we need to protect our asset. Australia grows some of the best crops in the world. Australian agriculture has established a clean-green image worldwide, growing quality commodities in a sustainable fashion. We don't believe it is worth putting all this at risk for an industry that will only have a short life span. Whatever gas is below the surface, has been there for thousands of years and it's not going anywhere, so leave it there until safer extraction methods are discovered and are less likely to have a negative effect on the environment and other industries.

We urge the Government to reject this project and make the Great Artesian Basin recharge off-limits to gas mining.

Philipa Hamilton

Robert Turner

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Ms Susan Michell  
Cuulmara  
4530 Spring Plain Road  
Wee Waa NSW 2388

21 April 2017

Executive Director  
Resource Assessments  
Department Planning and Environment  
GPO Box 39  
Sydney NSW 2001

Dear Madam / Sir

**Re: Public Feedback EIS Narrabri Coal Seam Gas Project**

I object to this project and strongly believe it should be rejected. Coal Seam Gas (CSG) mining is a short sighted and will result in irreversible long term destruction.

- Of particular concern is the compromise of the Great Artesian Basin – water relied upon by many individuals and businesses already established in this area.
- This project lacks detail and the proposed constraints are weak and subject to change.
- CSG has impacted negatively on the value of property in Queensland, greatly impacting on quality of life, community and sustainability of existing lifestyles and businesses. It is reasonable to expect it will do the same here in New South Wales. Many land holders in this area are relying on the capital gain of their asset to afford retirement, with compromised water, air quality and increased waste and industrialisation this will be negatively impacted upon.
- The desire to have something to hand on to the next generation is strong. We go to great lengths to make long term decisions, to have something that will be viable and ecologically diverse. The pleasure derived from seeing wildlife is great. Some species I have only seen when a given season occurs.
- The Pilliga is a spiritual, cultural and social icon for Gamilaraay and Gomeroi people. Fragmentation and industrial development alienates people from their connection to country and heritage.
- The Pilliga's biodiversity will be seriously compromised and irreversibly damaged. This area is significant to many animal species including the already compromised Koala, Pilliga Mouse and Regent honeyeater to name a few.

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- Social Impacts will be significant. Labour dynamics will change both short and long term, neither of which will be of benefit to those already established in this community. Housing prices may assist investors but will disadvantage locals trying to rent or buy a house.
- Health Impacts – there is mounting evidence for health damage as a result of unconventional gas operations. A proper health impact assessment has not been provided by Santos.
- Waste products of the project including salt generated waste, compromised air quality, as well as light pollution and deliberate significant methane emissions further indicate how totally inappropriate this proposal is.
- A huge percentage of this community has been surveyed and certificates presented to our local mayor indicating that over 90% of people living in this area are strongly opposed to CSG development.

We are so very fortunate to live in a beautiful part of the world. We have chosen to live here to be away from industrialisation, to have clean water, good air with easy access to observe and enjoy wildlife. We have visited the Pilliga three times in the last 12 months and find it a truly special part of the world. I would hate to see it so terribly compromised and aspects destroyed.

I urge you to have the long term vision necessary and courage to reject this project and protect our Great Artesian Basin.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Susan Michell', with a large, stylized initial 'S'.

Susan Michell (Ms)

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Name: Henry Adams  
Address: 947 Mount Nombi Road,  
Mullaley, NSW, 2379  
Date: 26/4/2017

Attn: Executive Director, Resource Assessments  
Department of Planning and Environment  
GPO Box 39  
Sydney NSW 2001

**This is a submission to the Narrabri Gas EIS.**

I object to this project and believe it should be rejected.

Living near Mullaley, I am truly concerned at the prospect of so much of the productivity eastern states being compromised through such a project as the Narrabri Gas mining.

The potential breach to the integrity of the Great Artesian Basin in my mind is something that needs to be avoided at all costs.

The role of farming and agricultural production is sure to be a significant part of the Australian GDP and the country's competitive position in global markets for many years to come.

To compromise our water sources for what is, in the scheme of things, a short-term windfall, would be irreversible, and extremely irresponsible.

Such a mining process is too high risk and should not be allowed to proceed.

I urge the Government to reject this project and make the Great Artesian Basin recharge off-limits to gas mining.

Signed,

Henry W Adams

26/4/17.

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Name: Brian Donoghue  
Address: 'Rokewood'  
Date: Tambar Springs 2381  
17/05/2017

Executive Director, Resource Assessments,  
Dept. of Planning and Environment,  
GPO Box 39,  
SYDNEY NSW 2001

Dear Sir/Madam,

**This is a submission to the Narrabri Gas Project Environmental Impact Statement**  
I object to the project and request that it be rejected.

The project will clear close 1,000 hectares of the Pilliga, the largest temperate woodland in NSW, yet our small timber mill was locked out of the area?  
The project will extract over 35 billion litres of groundwater from the Southern Recharge of the Great Artesian Basin. Santos state their activities will cause a significant impact on the groundwater resources of the Gunnedah – Oxley Basin. Ref. page 65 Referral to Federal Government Environmental Protection Biodiversity Conservation Act. October 2014.  
The Great Artesian Basin is the only reliable source of water which supplies agriculture, industry and rural communities over 22% of Australia.

Santos plans to spread out over large areas of strategically classified highly productive agricultural land. In November 2014 Santos mapped 7 large gas fields to their investors.

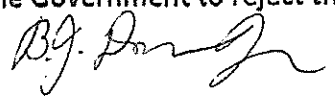
The EIS does not provide maps to indicate where the 850 gas wells will be located nor does it provide any detail of associated infrastructure.

The EIS does not address the Director General's requirements.

The EIS has ignored recommendations from the Chief Scientist.

The EIS does not include any environmentally safe way to dispose of the thousands of tonnes of salt that will be produced. In a peak year 41,900 tonnes of salts would need to be disposed of in an environmentally safe way.

The Social Impact Assessment included in the EIS is three years old and inadequate. There are worrying results from studies conducted in QLD relating to health and social impacts in areas where coal seam gas extraction is entrenched.  
Recent research by the Melbourne Energy Institute – University of Melbourne has shown that methane emissions have not been accurately measured. A CSIRO study four years ago only focussed on methane emissions from well heads. There is growing concern that large undetected levels of methane is escaping into the atmosphere over the Surat Basin in QLD.  
**I urge the Government to reject this project to protect our water and agricultural sector.**

Signed, 

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P.O. Box 1055.

Jamunah, NSW 2340.

20 May 2017

Dear Madam (or Sir)

I was delighted recently to hear news of Santos and its plans to develop its gas mining presence in the Pilliga Forest.

The ancient North American Indian saying flashes and says in part 'when nature or its bounty disappears we cannot eat gold.' The commandment is true to-day; right here in our great Southern land.

The Pilliga Forest is a major in-charge area for the great artesian basin. Fresh  $H_2O$  is the No #1 asset in our globe of 7 Billion people.

Could you please ask Santos to keep our pilliga pristine please. (2 x Pleases in my last sentence - I don't want to delete either of them)

Yours sincerely

Ally Hux



**I object to this project for the following reasons:**

**The Spatial Intensity of CSG extraction amplifies all risks to water, air and soils.**

It is difficult to get gas from coal seams, shale and tight sandstone - it can only be achieved through unconventional gas extraction technologies which drive spatially intensive, spreading gasfields. All forms of unconventional gas extraction require a dense network of wells, pipes, vents, compressors, holding ponds and treatment facilities. Unlike conventional gas, the productivity of these wells diminishes relatively quickly. To deal with declining productivity, more and more wells must be drilled, so that infrastructure spreads across landscapes – hence aerial photos of CSG, shale and tight gas fields show the same pattern of gas infrastructure spreading relentlessly across the land. This spatial intensity entails multiple points for contamination and leakage. It therefore amplifies all risks to water, soil, air, farming operations and communities.

**There is now a large body of evidence that shows harm from unconventional gasfields.** In 2016 Hays and Shonkoff published a review of 685 peer-reviewed papers on unconventional gasfields.<sup>1</sup> The growth of the literature has been exponential – more than 80% of these papers were published since January 2013, many after the report by the NSW Chief Scientist in 2014:

- 84% of studies on health contained findings that indicate public health hazards, elevated risks or adverse health outcomes
- 69% of studies on water contained findings that indicate potential, positive association or actual evidence of water contamination
- 87% of studies on air quality contain findings that indicate elevated air pollutant emissions and/or atmospheric concentration.

This review of evidence alone should be sufficient reason to halt the Santos Narrabri project.

**Santos has already demonstrated that they cannot prevent spills and leaks.** There have already been 20 known instances of leakage and environmental incidents, including the Bibblewindi dead zone and contamination of an aquifer with uranium. If Santos cannot prevent spills during exploration, the failure rate will grow along with the gasfield.

**Santos have no safe way to dispose of tens of thousands of tonnes of salt.** Given their high spillage rate noted above, Santos cannot be trusted to manage tens of thousands of tonnes of salt generated by their proposed wastewater treatment. There is no safe disposal plan for this salt, which is toxic for plant life.

**Northwest farming communities reject coal seam gasfields.**

A total of 101 Northwest communities have undertaken a grass-roots democracy process, visiting every house in their district to ask “Do you want your road and lands Gasfield Free?” To this question, a massive 96% of respondents answered YES. Having achieved this extraordinary result, these communities have expressed their resolve by declaring their districts Gasfield Free. They unequivocally reject the CSG industry. They have a right to live and farm without the threat of invasive gasfields. For this reason alone, the Narrabri project should not go ahead.

**The Santos Narrabri project is high cost and high risk.** This month, a Wood Mackenzie financial analyst has stated that Queensland’s coal seam gasfields have high costs because, unlike

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<sup>1</sup> Hays and Shonkoff, ‘Towards an Understanding of the Environmental and Public Health Impacts of Unconventional

conventional gas, they “have to keep drilling hundreds of CSG wells each year to maintain gas supplies”.<sup>2</sup> Coal seam gas is expensive to get out of the ground, and the Narrabri CSG project has the highest costs of all. A recent report by Melbourne University’s Climate and Energy College identified that the Santos Narrabri project would cost over \$9 per gigajoule to extract and deliver.<sup>3</sup> It does not make sense to develop a gasfield whose costs are so high, the project bears massive financial risks, not to mention investor risks due to organised and determined resistance in the region.

**Gasfields and gas power are a climate risk.** The window for gas as a ‘transition fuel’ has passed.

- A Melbourne Energy Institute *The Risk of Migratory Emissions* found there is a significant risk of methane migrating to the surface as a result of coal seam dewatering and depressurisation for CSG production, and that the presence of free methane in water bores can be the direct consequence of depressurisation of the coal seams.<sup>4</sup>
- Tim Forcey’s report *Infrared Video Recording Methane Emissions in Qld CSG Fields* documents the release of methane into the atmosphere from CSG wells, vents and associated infrastructure near Chinchilla, Queensland. In addition to this Australian evidence, in the US the Four Corners region is the largest source of coal seam gas. Satellite observations have revealed a hot spot – a large volume of methane being admitted into Earth’s atmosphere from this region.<sup>5</sup> Methane is a greenhouse gas 86 times more potent than CO<sub>2</sub> over 20 years. With significant impacts already from climate disruption, we cannot afford to emit methane from large spreading gasfield. To allow it to proceed would be irresponsible and unconscionable.
- A report by the Climate Council *Pollution and Price: the Cost of Investing in Gas* shows that in Australia, old gas plants are as polluting as coal fired power stations. When the entire supply chain is considered, new gas power plants are not significantly less polluting than coal.<sup>6</sup>

**Cost-competitive renewable energy is available to provide reliable and clean energy.**

The cost of renewable energy is not just falling, it’s plummeting.<sup>7</sup> Not only this, but new technologies such as battery storage and concentrated solar thermal can stabilise the grid and provide power on demand. In this context it should be noted that the Australian Energy Market Operator revealed that during the NSW heatwave in February 2017, fossil fuel generators failed in the extreme heat.<sup>8</sup>

With renewable energy now cheaper than new gas, the Narrabri gas project makes no sense in environmental, power generation, and economic terms. To proceed would be reckless.

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<sup>2</sup> <http://www.afr.com/business/energy/gas/queensland-lng-exporters-at-risk-in-looming-lng-wars-20170514-gw4kvx>

<sup>3</sup> [http://www.lockthegate.org.au/shortlived\\_shortfall](http://www.lockthegate.org.au/shortlived_shortfall)

<sup>4</sup> <http://tai.org.au/content/risk-migratory-methane-emissions-resulting-development-queensland-coal-seam-gas>

<sup>5</sup> [http://www.lockthegate.org.au/flir\\_camera](http://www.lockthegate.org.au/flir_camera)

<sup>6</sup> <http://www.climatecouncil.org.au/solar-report>

<sup>7</sup> Climate Council State of Solar 2016: globally and in Australia <http://www.climatecouncil.org.au/solar-report>

<sup>8</sup> <http://www.afr.com/news/politics/gas-and-coal-failures-were-behind-nsws-power-scare-aemo-20170221-guiesi>

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Nic Clyde  
65 Prince Edward Avenue  
Earlwood, Sydney, 2206

17 May, 2017

Attn: Executive Director, Resource Assessments  
Department of Planning and Environment  
GPO Box 39  
Sydney NSW 2001

**This is a submission to the Narrabri EIS**

I object to this project and believe it should be rejected.

I am deeply concerned about the impact of this proposed development on local farmers, water, biodiversity, Aboriginal cultural heritage and in regard to the mobilisation and disposal of salt.

In addition, I have specific concerns about unconventional gas and human health, fugitive emissions and the impact that approval of this project would have on what is already a very sorry record of failure in NSW on emissions reduction policy.

## **Coal seam gas is bad for human health**

Application of the precautionary principle demands that this project not be approved until the health risks of unconventional gas are better understood.

An article published in the Rural and Remote Health journal in December 2016 summarised health concerns associated with unconventional gas mining in rural Australia thus:

*"Discussions with communities and experts, supported by the expanding research from the USA and Australia, revealed increasing health concerns in six key areas. These are absence of a safe solution to the toxic wastewater management problems, air pollution, land and water competition, mental health and psychosocial wellbeing risks, fugitive methane emissions and lack of proven regulatory regimes. Emerging epidemiological studies suggesting interference with foetal development and birth outcomes, and exacerbation of asthma conditions, are particularly concerning to rural families and livestock."*<sup>1</sup>

### **Medical Journal of Australia, October 2015**

*"The limited evidence from the US should serve as a warning to those intent on expanding gas extraction in the absence of epidemiological studies."*

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<sup>1</sup> Haswell M, Bethmont A, Health concerns associated with unconventional gas mining in rural Australia, Rural and Remote Health 16: 3825. (Online) 2016, Available: <http://www.rrh.org.au>

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### Acting Chief Health Officer of Victoria

In September 2015, the Acting Chief Health Officer of Victoria - Professor Ackland - stated that the sort of health effects that can occur as a result of exposure to chemicals associated with the unconventional gas industry, include effects on the immune system, the nervous system, liver and kidney toxicity, reproductive issues, cancers, respiratory and cardiovascular illnesses and psychological effects. Professor Ackland said that the *"full range of hazards posed by the industry is currently unknown and that for the known hazards, the scientific data is limited"*.<sup>2</sup>

### Australian Medical Association

The AMA passed a motion in 2013 calling on Australian Governments to ensure all coal seam gas operations are *"subject to rigorous and independent health risk assessments before they are allowed to proceed."* AMA President, Dr. Steve Hambleton said, *"[i]n circumstances where there is insufficient evidence to ensure safety, the AMA recommends that the precautionary principle should apply. This is essential given the threat of serious and irreversible harms to human health."*<sup>3</sup>

In May 2014, the AMA renewed their call for health risk assessments. They said that despite urging government to be cautious about the potential health impacts from coal seam gas projects, little is being done to address the issue.<sup>4</sup>

### Doctors for the Environment Australia

Doctors for the Environment Australia (DEA) are calling for *"a moratorium on UGD until the health and environmental consequences are adequately understood and the appropriate monitoring and regulations are in place to protect human health."*<sup>5</sup> DEA wants:

- Health Impact Assessment for all UGD under nationally developed guidelines
- Support for research on potential health effects of UGD independent of industry funding, including long-term prospective health studies
- Health surveillance of persons living and working near major UGD.

### National Toxics Network

*"There has been no comprehensive assessment of the health implications of UG air pollutants to residents or workers in Australia. A US based human health risk assessment of air emissions concluded residents closest to well pads i.e., living less than half a mile from wells, have higher risks for respiratory and neurological effects based on their exposure to air pollutants; and a higher excess lifetime risk for cancer. Children living in close proximity to UG activities are at particular risk from air pollutants, due to their unique vulnerability to hazardous chemicals. Children's exposure to chemicals at critical stages in their development may have severe long-term consequences for health. WHO has expressed a priority concern around children's exposure to air pollutants."*<sup>6</sup>

<sup>2</sup> Parliament of Victoria, Environment and Planning Committee, December 2015, Inquiry into onshore unconventional gas in Victoria, Final Report, pg 63

<sup>3</sup> AMA. May 2013. "AMA calls for coal seam gas health checks." Media release. <https://ama.com.au/media/ama-calls-coal-seam-gas-health-checks>

<sup>4</sup> <http://www.abc.net.au/news/2014-05-26/renewed-call-for-csg-health-risk-assessments/5478634>

<sup>5</sup> Doctors for the Environment Australia, April 2015, 'Position Statement on Unconventional Gas Development'

<sup>6</sup> Lloyd-Smith, M, November 2015, National Toxics Network, Unconventional Gas Exploration and Production: Human Health Impacts and Environmental Legacy, pg 17



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## Fugitive emissions are a significant threat to a safe climate

Methane gas is a powerful greenhouse gas; up to 80 times more powerful than carbon dioxide emissions.

Evidence emerging across the globe of fugitive emissions from coal seam gas development is raising questions about the industry's impact on the global climate.

Tim Forcey - a specialist researcher with the Melbourne Energy Institute at the University of Melbourne – says: *"If you release enough of the gas — the methane in that gas into the atmosphere, then gas can be dirtier than coal; more than about 3 per cent emissions, it is actually worse than coal if you are making electricity."*<sup>7</sup>

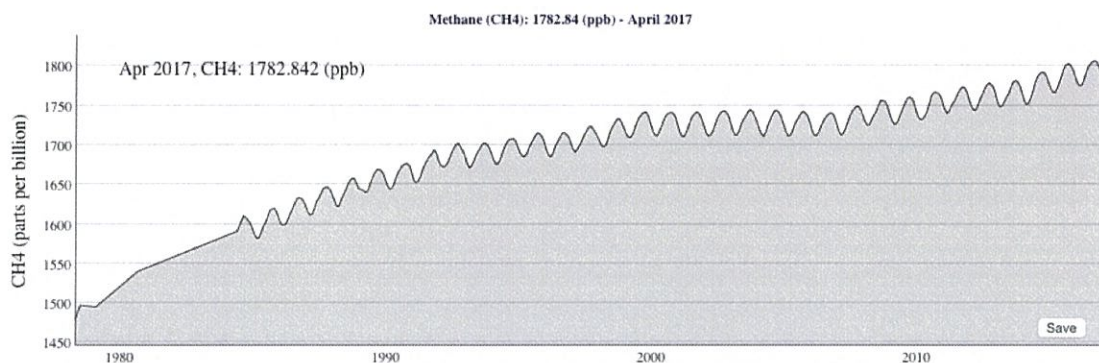
Studies in the United States have detected methane emissions in some coal seam gas fields of between 2 per cent and 17 per cent.

How much methane is leaking from the coal seam gas fields here?

According to Mr Forcey, nobody really knows.

Former NSW scientist of the year Andy Pitman once said: *"we have no idea how close we are to a tipping point, and that should worry you."*

I think NSW DoPE should take this advice seriously and not risk large-scale release of fugitive methane from this project at this time.



Source: CSIRO, Cape Grim, Tasmania, <http://www.csiro.au/greenhouse-gases/>

## For 27 years, NSW has failed to deliver on mitigation pledges - approval of this project will further entrench policy failure

*"Halting the global average temperature rise at any level will require **net zero global CO<sub>2</sub> emissions**" [2015 – IPCC]. The longer action is delayed, and new fossil fuel projects are approved, the warmer the world gets. Just this week, the SMH published an article about new research demonstrating the very real advantages for NSW of limiting warming:*

<sup>7</sup> <http://www.abc.net.au/news/2017-02-28/methane-emissions-from-coal-seam-gas-climate-change/8310932>

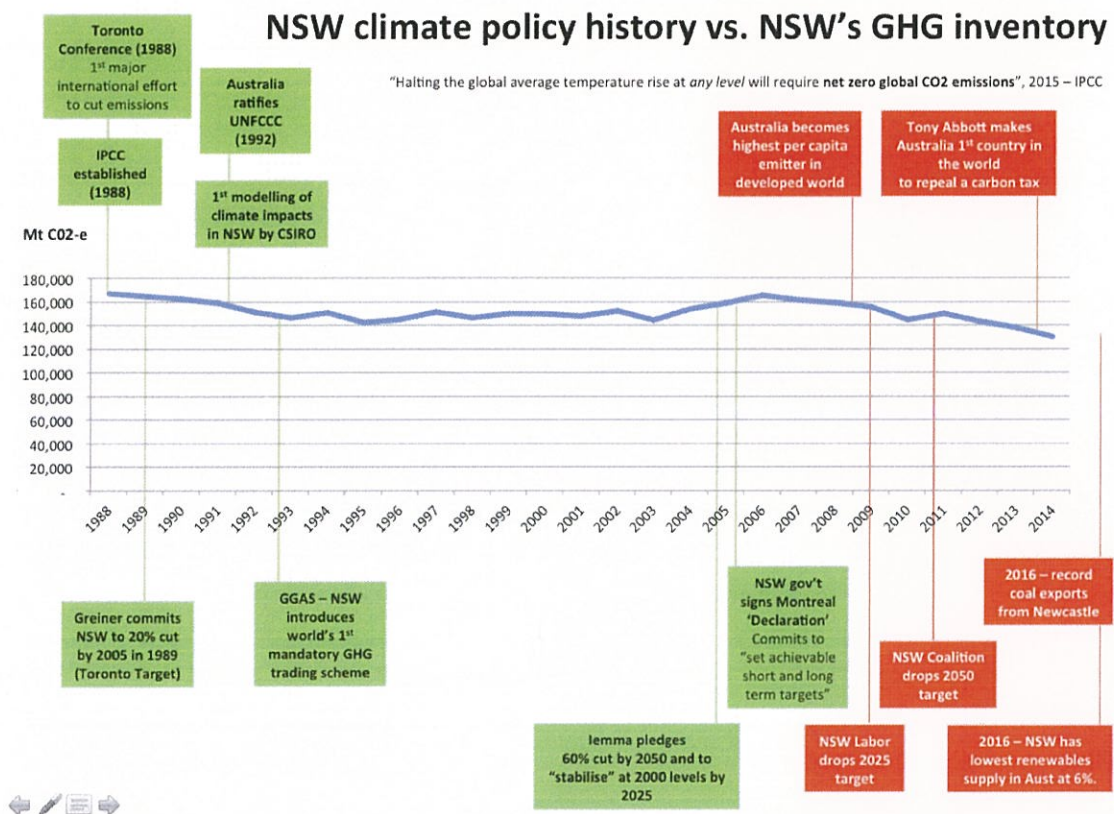
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*"Australia will endure more heatwaves, droughts and coral bleaching at 1.5 degrees of warming but the extremes will be considerably less than if global temperatures increase by 2 degrees, new research shows."*<sup>8</sup>

Why is this research routinely ignored (which – in effect – it is when new fossil fuel projects are approved)?

As you can see from the info-graphic below, NSW has been talking up action on climate change for the last 27 years. Approval of yet another new fossil fuel project simply proves how hollow these commitments have been, and continue to be.

The trend line of NSW's GHG emissions has – from a climate system perspective – been essentially flat since talk of cutting emissions began.



For all of these reasons and more, I urge the NSW Government to reject this project.

Yours truly,

*Nic Clyde*  
Nic Clyde

<sup>8</sup> Hannam, P, 16 May, 2017, 'Alarming': Keeping warming to 1.5 degrees to shield Australia from big extremes, <http://www.smh.com.au/environment/climate-change/alarming-keeping-warming-to-15-degrees-to-shield-australia-from-big-extremes-20170514-gw4so1.html>