



North West Protection Advocacy
PO Box 19, Coonabarabran NSW 2357
Email: NorthwestPA@protonmail.com.au

DPIE Submission response from NWPA 21/08/20

DPIE were asked to *“Provide particulars of the storage and beneficial reuse of salt waste in the Queensland gas field context”*

DPIE have provided information to the IPC around current CSG waste management in Queensland but we feel this response is inadequate and doesn't address any of the problems Queensland experiences with its handling of CSG waste or the concerns of the community here in NSW and we would like to expand on this for the IPC.

Firstly, as of August 20th the DPIE submission on salts waste was incomplete on page 25 – it ends with: The CSG companies

Currently in Queensland, brine from the treatment of produced water is currently being stored in appropriately engineered storage ponds in accordance with Queensland's regulatory requirements. As the brine is predominantly a chloride-based salt there are fewer beneficial reuse options than is the case for carbonate-bicarbonate salts that would be generated by the Narrabri Gas Project. The CSG companies



Figure 1 DPIE submission is missing words on page 25.

We will never know what DPIE intended to write here but we would like to finish the sentence. *“The CSG companies in Queensland including Santos have spent 10 years and millions of dollars trying to find a non-existent solution to the copious volumes of toxic salts waste that the CSG industry produces.*

The Queensland framework for Beneficial Reuse is not fit for purpose in NSW. Drilling mud (one of the more common waste streams) has recently been removed from being considered as a regulated waste in Queensland and now can be reused and made into

compost. See the End of Waste coding here: QDSE 2019a: Queensland Government Department of Environment and Science, End of waste code Coal Seam Gas Drilling Mud (ENEW07543018), 01 January 2019, available at <https://environment.des.qld.gov.au/assets/documents/regulation/wr-eowc-approved-drilling-mud.pdf>

The recently released Blue Environment Pty Ltd Final Hazardous Waste in Australia 2019 PREPARED FOR Department of the Environment and Energy contains more information on this along with descriptions of the various waste streams that the industry produces. <http://www.environment.gov.au/system/files/resources/b4335773-4e09-4d87-8648-592b2b94d2d9/files/hazardous-waste-australia-2019.pdf>

DPIE say: *The Queensland government has implemented policies **encouraging** the beneficial use of coal seam gas (CSG) water through the Coal Seam Gas Water Management Policy 2012* https://environment.des.qld.gov.au/_data/assets/pdf_file/0034/89386/rs-po-csg-watermanagement-policy.pdf

The operative word used is “encouraging”, DPIE do not say exactly how or even if this happens, it is clearly not mandated and for this reason the community strongly objects to the use of this word because they know it is meaningless.

Queensland doesn't have an EPA as NSW does, it's a totally different set up over the border. There have been problems with Departments in Queensland that do not communicate with each other adequately. Community does not have surety that environmental harm **IS NOT OCCURRING**. See the following articles which details these miscommunications. <https://www.abc.net.au/news/2020-03-09/audit-questions-confidence-in-csg-regulation/12026136>

Quoted from the above: *“A lack of transparency, ineffective compliance management and data, and failures of legislative function are just some of the criticisms levelled in a new audit of coal seam gas (CSG) regulation in Queensland.”*

Key points from the article:

- *An audit has found Queensland's Gasfields Commission has not been performing its legislated oversight function*
- *The report says the number of petroleum leases and environmental authorities for CSG activities could not be verified*
- *It also found landholders were being disadvantaged in negotiations with gas companies because of a lack of information*

"[The DNRME and DES] do not identify coal seam gas activities separately from their other regulatory activities, do not coordinate their planning and regulatory activities, and have disparate systems and data practices," the audit report found.

Queensland Audit Report: <https://www.gao.qld.gov.au/reports-resources/reports-parliament/managing-coal-seam-gas-activities>

"These limitations make it difficult to assess the overall effectiveness of the regulatory framework specific to coal seam gas activities."

The report also states: *The rapid growth of the coal seam gas industry has led to public concerns about impacts on the community, agriculture, health, and the environment. Some of the concerns relate to the effect of the industry on:*

- *ground water*
- *land access and land values*
- *agricultural produce*
- *the environment (for example, the long-term management of safe disposal of salt and brine waste)*
- *uncontrolled or unintended release of gas (referred to as fugitive emissions).*

And:

The long-term management of salt and brine waste is an unresolved issue. In the short term, there are risks associated with the management of salty water held in evaporation dams. In the medium and long term, the government and industry have not reached a solution for the safe disposal or management of this salt and brine waste. The Australian Petroleum Production and Exploration Association commissioned research into this issue in 2018. Its report identified four options all with varying environmental impacts. DES is considering the options and will provide advice to government on the issue.

DPIE point to the Qld Coal Seam Gas Water Management Policy 2012 https://environment.des.qld.gov.au/_data/assets/pdf_file/0034/89386/rs-po-csg-water-management-policy.pdf as a waste management document and it mentions various methods.

DPIE say: *This policy is consistent with the NSW EPA's waste management hierarchy which would be applied to the Narrabri gas project, and includes a hierarchy for managing saline waste including:*

Priority 1: Brine or salt residues are treated to create useable products wherever feasible

NWPA do not believe that creating 'useable products' from brine or salt residues is sustainable/safe and economical in Australia. If it is possible (as Stuart Kahn suggests in his

submission) it would be good to see detail. There is not a great deal of transparency around what these 'useable products' are and what volume of goods/products they represent. With such a highly contentious issue Australia's largest oil and gas operator could have provided a lot more detail on their agreement with Natural Soda. At the very least some technical analysis showing how the chemistry could work.

DPIE add: *Priority 2: After assessing the feasibility of treating the brine or solid salt residues to create usable and saleable products, disposing of the brine and salt residues in accordance with strict standards that protect the environment.*

NWPA would like a great deal more information on where the brine and salt will be disposed of. There is no plan for this, no specific location. Communities in Queensland have objected to CSG waste dumps in their locality with examples being the Baking Board Hill dump and a salt dump near Roma. There can be no doubt that community in NSW will track and refuse any Santos waste.

Articles here: <https://www.queenslandcountrylife.com.au/story/5740151/chinchilla-landholders-still-fighting-proposed-salt-dump/>
<https://www.abc.net.au/news/2014-09-22/roma-group-against-new-csg-waste-site/5700094>

DPIE say: *The policy identifies management options and principles for salt and brine management options for beneficial reuse or disposal including:*

For beneficial reuse:

- *Identify potential uses; and*
- *undertake feasibility assessment of potential uses*

There are currently no options that are feasible, please allow us to discuss. Santos may claim they are investigating several options but it's all for show. The Tritton mine (Murrawombie Heap Leach Pads Trial) has not eventuated, the EPA have indicated that the trial has not progressed and the Natural Soda prospect is still years away from revealing if that particular proposal is even physically able to be pursued.

Santos also attempted beneficial use via irrigation. They managed to get one crop of lucerne which was seemingly smuggled out of NSW before it was revealed that they had been operating without a water use approval. EPA Media release here:

<https://www.epa.nsw.gov.au/news/media-releases/2018/epamedia181017>

The crop that Santos chose initially was barley. This looked to be a successful crop then Lucerne was planted and this did not appear to do so well. Santos have given no details on yield and no details of where the harvest went. The EPA had a very lax soil sampling

timetable and NORMs were not monitored for despite this being a requirement of the Secretary.



Image taken of Leewood irrigation area 161117

There are details of this beneficial reuse experiment here in this article:

<https://independentaustralia.net/environment/environment-display/is-the-santos-csg-waste-water-experiment-safe,11268>

DPIE go on to describe management options:

For disposal:

- *demonstrate that all reasonable and feasible reuse options have been considered;*
- *convert the waste to solid product where feasible;*
- *undertake risk assessment of disposal options*
- *dispose of brine and salt away from sensitive receiving environments and good quality agricultural land*

The operative word here is “feasible”. The Queensland Experience of waste management is that the only 2 re-use options for the brine & salt waste are re-injection and long-term storage in custom built structures. There is no transparency around where these hazardous

waste storage areas are. The details are often buried in Plan of Operation documents or management plans. Companies in Queensland are not transparent with this waste stream.

Santos stated during Panel questioning of Santos on 24th June, 2020 (transcript here: <https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/transcripts-and-material/2020/narrabri-gas/applicant-transcript.pdf>) that there was 'stockpiling of salt' – screenshot below.

10 So I might start with a couple of questions, then hand over to my fellow
commissioners as they'll have some questions as well. There was mention made in
that presentation regarding the potential for salt to be – some sort of beneficial reuse.
And from the department's presentation this morning, we understand Santos and
others in the Queensland coal seam gas industry have stockpiled supplies of salt
because of the potential for reuse and investigating those reuse options. We'd just
15 like to hear from your experience in Queensland what sort of progress you're making
with those investigations and what are some of the options that you're looking at.

MS WINTERS: Chair, it's Tracey Winters here. Look, we can certainly provide
you with a response on what's happening with salt in Queensland. We're probably
20 not in a position to do that today, just to make sure that we give you very accurate
information. When it comes to Narrabri, we're in the process of considering, you
know, a beneficial reuse option there, but we haven't – we're not – it remains a
commercial-in-confidence issue and, again, we'll take that away and come back to
you. But certainly in the case of Narrabri, we are making very good progress on that
25 front and we can give you a – you know, we'll also give you the details for the
Queensland salt stockpiles and so on in – you know, promptly after this meeting.

Santos then denied stockpiling salt in Questions on Notice:

https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2020/03/narrabri-gas-project/correspondence/applicant/200717_in_santos-responses-to-ipc-questions-on-notice.pdf saying "There are no salt stockpiles in Queensland as a result of the coal seam gas industry. The three major coal seam gas projects in Queensland all have water treatment plants that use reverse osmosis technology to remove salt from produced water so that the water can be beneficially used for stock, irrigation, environmental flows or other purposes. The water treatment process produces a concentrated brine which is safely stored in engineered ponds to prevent any leakage into groundwater or the environment."

DPIE say: *The policy identifies brine injection underground and/or disposing of salt waste to regulated waste facilities as suitable options.*

There has been no mention of brine injection in any of the documents provided by Santos for assessment or DPIE documents. If the IPC would go back please and look at the SEARs, they state:

In the SEARs, under "CSG waste management", Santos was required to put the following in its EIS:

4.1 Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements for the NGP said Environmental Planning Instruments, Guidelines and Policies should be complied with, and as a General Requirement "a waste management strategy, having regard to the NSW Environment Protection Authority's (EPA) requirements".

1. *Proposed storage, management and disposal of CSG produced water and waste products, including, but not limited to:*
 - i. *beneficial reuse*
 - ii. re-injection into groundwater aquifers**
 - iii. *irrigation*
 - iv. *transfer to a licensed waste management facility.*

The environmental impact statement must address all the environmental assessment requirements of the Secretary, but it does not. Re-injection seems to have fallen off the agenda, but managed release into Bohena Creek, a magnificent pristine ephemeral sandy waterway is envisaged where no other options *seem feasible?*

DPIE has mentioned reinjection in their reference to Queensland but we object to this management option being included as no study has been done on its efficacy.

DPIE say: *The Department has recommended conditions consistent with Queensland's approach to the management of waste and the waste management hierarchy outlined in the NSW Government's Waste Avoidance and Resource Recovery Act 2001 which promotes avoidance, followed by resource recovery, followed by disposal options.*

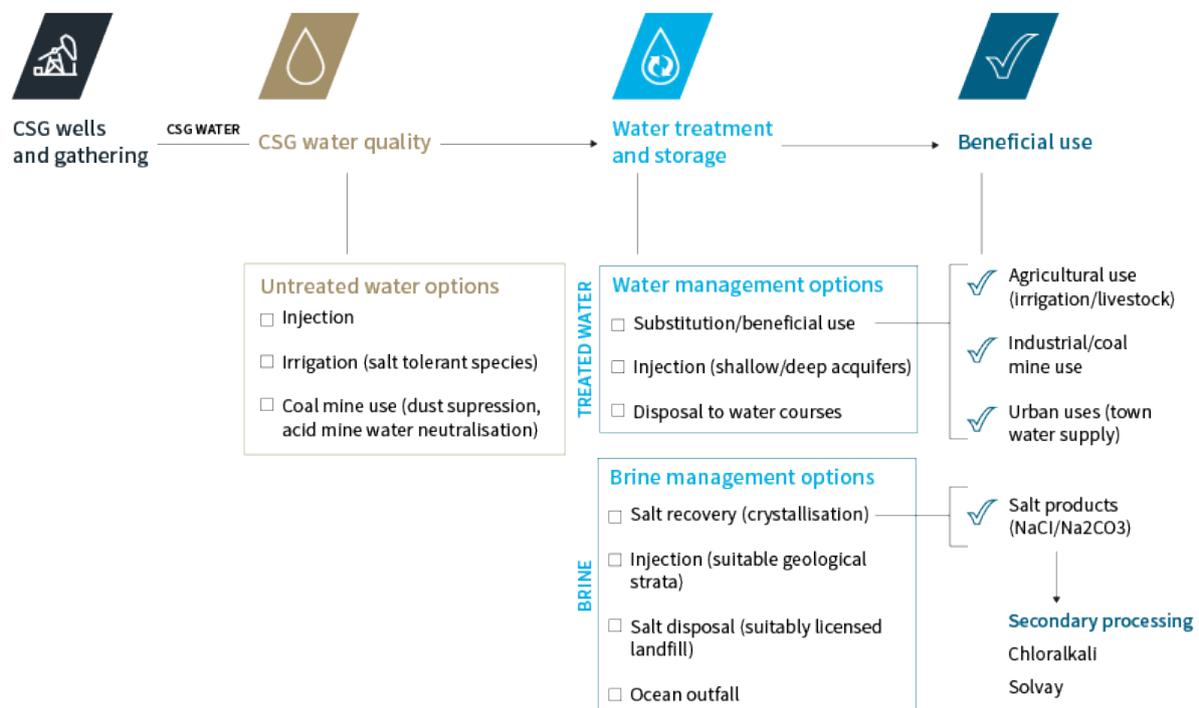
A problem with the conditions is that they seem to give approval for Phase 1 and then Santos have to get lots of management plans in place before they can start Phase 2. We believe that this warrants rejection of the project. These plans should have been provided at this stage of the approval process. Community will not have an opportunity to comment later and transparency is essential, furthermore Santos has in reality been operating a gasfield in Narrabri now for 8 years under guise of an exploration licence, and after 8 years of extracting gas, piping gas, separating gas from the water and doing everything but crystallising the waste they have still not been able to develop the required plans to the requirements.

Putting forward Queensland as a model for how the Narrabri Gas Project should be regulated in regards to Beneficial Use and Waste Management seems to ignore the many problems that have arisen in Queensland as a result of a rapidly expanding industry that has required numerous applications of adaptive management and policy made on the run to

keep up. After years of being told that coal seam gas in NSW will be different to Queensland it appears it will be exactly the same. It does not sit with the ideal of the NSW Gas Plan to adhere to “Worlds Best Practice”.

Gas companies in Queensland have been attempting for over a decade now to come up with a scheme to deal with their waste that is cost effective, feasible and environmentally safe. So far, despite millions of dollars being spent they have nothing to show for it.

Advisian article: <https://www.advisian.com/en/global-perspectives/coal-seam-gas-water---the-challenge-of-upstream-interfaces>



Advisian say in the article by Stephen Page, Brisbane, above: *“The risk associated with salt recovery must not be underestimated and many factors must be considered such as the commoditised nature of salts and their susceptible to fluctuations in the market price and the value of the Australian dollar, the product value being generally less than the distribution costs to market, and the proprietary technology involved in salt recovery leading to build-own-operate contractors not accepting price and distributions cost risks.”*

These investigations/schemes/grants/feasibility studies and trials have included:

- Aquaculture
- Ocean disposal
- Concrete substitution
- Selective Salt Recovery
- Water licence substitution (as compensation for loss of bore)

- Chemical production including sodium hydroxide
- Sodium hypochloride production
- Xencrete – Queensland Government funding of \$140,000, Xencrete was to be a concrete substitute composed of contaminants found in wastewater from the production of coal seam gas. The company's patent has now lapsed and the company website no longer accessible.

To date there are no public reports or feedback on any of these trials succeeding that we have been able to locate. Some of these trials would have absolutely no social licence within community for example: Swimming pool salt and compost. Concerns also exist around the potential for there to be drilling waste in potting mix.

What CSG waste can currently can be used for:

- Road spraying
- Coal washing
- Dust control
- Amend for operational water including rehab
- Landspraying while drilling
- Injection
- Compost production
- Stock watering
- Irrigation
- Cooling tower operation
- Road construction
- Sunwater/Chinchilla water supply amendment
- Release to watercourse
- Salt recovery (Brine crystallisations)
- Chloralkali

<https://www.researchgate.net/publication/244307850> Treatment of saturated brine in chlor-alkali process using membranes

<https://www.coogee.com.au/Our-Businesses/Chemicals-Manufacturing/Manufacturing-Facilities/Chlor-Alkali-plant-in-Lytton,-Queensland>

The chloralkali process makes Sodium Hypochlorite which is used in swimming pool products. http://www.chemlink.com.au/caustic_oz.htm

- Solvay

Salts waste

The CSG industry in Queensland produces large volumes of waste. This recent report (link below) from Blue Environment Pty Ltd on Hazardous Waste details a missing dataset 2017-2018. End of Waste codes introduced for drilling mud (Waste Group C – Alkalis) confusing

details on volumes of wastes, it contains details on non-toxic salts which have risen sharply in the last few years.

Blue Environment Pty Ltd on Hazardous Waste:

<http://www.environment.gov.au/system/files/resources/b4335773-4e09-4d87-8648-592b2b94d2d9/files/hazardous-waste-australia-2019.pdf>

Serious concerns are still not being addressed about how much of this waste ends up washed into local creeks, then rivers and eventually the Murray Darling Basin. It is imperative before this project is approved that the IPC ask serious questions how the industry has managed to get fully established in Australia without providing a sustainable solution for its waste stream.

DPIE say: *The recommended conditions include:*

Condition B35 – Water Management Performance Measures for Salt Management requiring the proponent to:

- *maximise beneficial reuse of produced salt, **as far as reasonable and feasible**;*
- *dispose salt waste not able to be beneficially reused to appropriately licenced waste facility*

Can someone please detail where these appropriately licenced waste facilities are as community has the right to know. This is the detail the DPIE should be asking Santos to disclose before recommending the project for approval.

The remainder of condition B35 whilst out of scope for this submission (Water management performance measures) are going to prove impossible for Santos to adhere to.

DPIE then invoke Condition B38 – Water Management Plan including:

- *Salt Management Plan including a program for investigating and implementing beneficial reuse options for the salt product, in accordance with the Produced Salt Beneficial Reuse and Disposal Study;*

This condition is completely prohibitive. Every single Management Plan listed below should have been supplied for assessment and been available for perusal by the Public.

Erosion and Sediment Control Plan
Site Water Balance
Surface Water Management Plan
Groundwater Management Plan
Produced Water Management Plan
Irrigation Management Plan
Dust Suppression Protocol
Managed Release Protocol

Salt Management Plan
Pollution Incident Response Management Plan

These plans form the bare bones of the project. They are formative for safe operations. Santos has been the operator for a good 8 years in the Pilliga and this work should have been completed for review. Santos has a great deal of experience building gasfields and should have the in-house expertise with which to have provided in detail.

DPIE mention Condition B63 – Waste Operating Conditions including requirements to:

- *implement all reasonable and feasible measures to maximise beneficial reuse of waste;*
- *minimise the residual waste generated by the development*
- *dispose of all waste at appropriately licensed waste facilities;*
- *monitor and report on the effectiveness of waste avoidance, minimisation and management measures;*

Why did Santos not provide detail to the Department about their attempted Murrawombie Heap Leach Trial or detail about how the bicarbonate tech is being used in China?

Condition B65 – Produced Salt Beneficial Reuse and Disposal Study including:

- *an assessment of reasonable and feasible beneficial reuse options;*
- *strategy for maximising beneficial reuse for identified reasonable and feasible reuse options; and*
- *a strategy for disposal of any produced salt that is not able to be beneficially reused, including demonstrating that occupiers of waste facilities can lawfully accept and will permit the volume and composition of salt waste.*

Does DPIE mean “operators” of waste facilities not occupiers? Will the IPC please act in regards to what is now clearly a significant error in the representation of this project. Santos cannot be permitted to proceed when it is not clear that waste facilities are reasonably and feasibly adequate in both capacity, content and indeed existence.

Page xiv of the DPIE Assessment Report states “*the salt is likely to be classified as general solid waste which can routinely be disposed of at one of the 11 licenced waste facilities within 150 kilometres of the site*” [6].

Where are these facilities? The community has the right to know. Building new landfills to accommodate CSG is out of the question.

This is a direct quote from our earlier submission: “In NSW we are faced with a situation whereby the company Santos, and the Government refer to the “Queensland Experience” as being a positive one. When something is negative and bears further investigation

government agencies in NSW, like the EPA, say “That’s Queensland, that won’t happen in NSW”.

From our experience though Santos will operate in exactly the same way and DPIE seems to be giving them permission to do so.

Furthermore, "Beneficial reuse" appears to be Australia's version of the U.S. "[Halliburton Loophole](#)" – which represents a significant reduction of federal oversight in fracking operations – and citizens would be right to be concerned about the food and water security of the east coast of Australia.

NWPA feel absolutely justified in reiterating our opposition to this project just on the issue of waste alone as we strongly feel the latest submissions of both DPIE & Santos have failed to address the concerns of the community.