Nature Conservation Council
The voice for nature in NSW

Major Projects
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

19 May, 2017

Submission of Objection: Santos Narrabri Gas Project, Application No. SSD 6456

Dear Sir/Madam,

The Nature Conservation Council of NSW (**NCC**) is the peak environment organisation for New South Wales, representing 150 member organisations across the state. Together we are committed to protecting and conserving the wildlife, landscapes and natural resources of NSW.

NCC objects to the proposed Narrabri Gas Project due to its significant environmental and social impacts. We are firmly of the view that the project is in direct contradiction of the principles of ecologically sustainable development. NCC in producing this submission draws on the considerable expertise of its staff and member groups.

Our **attached** submission outlines our specific concerns in relation to:

- Biodiversity Impacts
- Climate Change Impacts
- Water Resource Impacts
- Hazard and Risk - Bushfires
- Social and Economic Impacts

We recommend that the proposed project be rejected. If you seek any further information on the issues raised in this submission please do not hesitate to contact me on (02) 9516 1488 or ncc@nature.org.au

Yours sincerely,

Daisy Barham
Campaigns Director
Nature Conservation Council of NSW

NCC SUBMISSION – NARRABRI GAS PROJECT, DA SSD-6456

The Nature Conservation Council of NSW (NCC) **objects** to the Narrabri Gas Project for the reasons outlined below.

Biodiversity Impacts

Threatened Species under the EPBC Act:

Our submission will focus on three species that are iconic and listed as at least vulnerable under the Commonwealth EPBC Act 1999, although we note that the project would have significant impacts on many other species. Our submission focuses on:

Species	**EPBC Act listing**
Regent Honeyeater (Anthochaera phrygia)	Critically endangered
Swift Parrot (Lathamus discolor)	Critically endangered
Koala (Phascolarctos cinereus)	Vulnerable

Swift Parrot and Regent Honeyeater

These two rare and iconic bird species can be considered together because:

- They are both nectivorous;
- They are both migratory;
- They are both listed in the EIS as having a potential habitat of 57,579 in the study area[1]; and
- They are both subject to the listed key threatening process *"Aggressive exclusion of birds from potential woodland and forest habitat by over-abundant noisy miners (Manorina melanocephala)"*

Swift Parrot

In October 2015, the Swift Parrot was uplisted to Critically Endangered status by the International Union for the Conservation of Nature (IUCN)[2], on the grounds that the species is rapidly headed for extinction. The main reason given was nest predation in its Tasmanian breeding range, but habitat loss is also contributing to the decline. It was also listed under the EPBC Act 1999.

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[1] Narrabri Gas Project EIS, Vol. 8, Appendix A (Data Tables), pages 18-19
[2] www.iucnredlist.org/details/22685219/0
[3] Ibid www.iucnredlist.org/details/22685219/0

Individual Swift Parrots can travel up to 5,000 kms between their mainland wintering grounds and their Tasmanian breeding sites, making theirs the longest migration undertaken by any parrot in the world[3].

In 2010, the total Swift Parrot population was estimated to be no more than 1000 pairs and is most likely to continue to decline[4]. The Namoi River Catchment Management Area was listed as one of the areas in NSW containing swift parrot habitat, although the EIS claims that there are no records of Swift Parrot in the Pilliga itself.

Regent Honeyeater

The Regent Honeyeater is a beautifully marked black, white and yellow honeyeater which has become an icon for birdwatchers in NSW. It is acknowledged by the NSW Office of Environment and Heritage (OEH) that *"the Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna"*[5].

The EIS acknowledges that Regent Honeyeaters have been recorded sporadically in the Pilliga[6].

The Regent Honeyeater was listed as Critically Endangered under the Commonwealth EPBC Act in 2015. The NSW population of Regent Honeyeaters may now be fewer than 250 mature birds[7].

Given their Critically Endangered status, these two iconic bird species deserve to have their habitat protected wherever it occurs, and even the EIS acknowledges that the Pilliga represents known or potential habitat for the Regent Honeyeater and the Swift Parrot. The EIS in Appendix K attempts to argue that the Santos project is unlikely to have any impact on these two critically endangered species. NCC rejects this suggestion.

Based on local information provided by the National Parks Association of NSW, NCC submits that the project, requiring the installation of 850 wells and associated roads and infrastructure, will seriously fragment the Pilliga Forest in the project area. The key threatening process of over-abundant noisy miner populations is related to land

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[3] Ibid

[4] D. Saunders et al. (2010). *Background Document – Swift Parrot Recovery Plan.* Commonwealth Department of Environment and Birds Australia, p 8

[5] See www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10841

[6] Narrabri Gas Project EIS, Volume 9, Appendix K, p K-33

[7] http://www.environment.gov.au/system/files/resources/286c0b52-815e-4a6c-9d55-8498c174a057/files/national-recovery-plan-regent-honeyeater.pdf

clearance and habitat fragmentation. Aggressive exclusion of Swift Parrots and Regent Honeyeaters is the outcome we would expect from the fragmentation that is an inevitable sequel to the approval of the project.

NCC recommends that the project be rejected because of the unacceptable impact on the habitat of the critically endangered Swift Parrot and Regent Honeyeater.

Koala

NCC agrees that more research needs to be done to determine the status of koala populations in the project area. We maintain that this research must be completed prior to the approval or otherwise of the project.

The discovery of a koala skull is surely hard evidence of the presence of koalas in the project area, and local evidence of sighting of koalas in the eastern part of the Pilliga Scrub has been provided to NCC. The Western Woodlands Alliance describes koala populations in the Pilliga East State Forest and classifies that State Forest as a priority area for koala conservation[8]. Obviously more independent research on koala populations in the project area needs to be done before the impact of the project on koalas can be assessed. Given the NSW Government is currently contributing significant public funds to koala conservation and developing a new koala strategy, we do not consider it a prudent decision to approve the project given the impact it will have on koala habitat.

Biodiversity Offset Package

The Nature Conservation Council has been following the development of the concept and implementation of biodiversity offsets in NSW for the last 10 years. Our recently published report[9] on biodiversity offsetting details our concerns, which can be summarised as:

- Biodiversity schemes in NSW have failed to deliver the promised outcomes regarding biodiversity;
- Biodiversity offsetting schemes in NSW have become weaker over time as standards have slipped; and
- The latest Biodiversity Assessment Methodology contains fewer best practice principles and standards than any previous scheme and will likely deliver worse outcomes.

[8] http://westernwoodlands.weebly.com/uploads/2/5/7/8/25788912/138831_ww_koala_park_report-summary.pdf

[9] NCC of NSW (2016) *Paradise Lost – The weakening and widening of NSW biodiversity offsetting schemes, 2005-2016*

Santos' Narrabri CSG Project EIS sets a low standard for biodiversity offsetting. It is unacceptable for the proponent to fail to provide sufficient details about their offsetting proposal as part of the EIS.

This deficiency is must be addressed prior to the ability of the NSW Government to approve the project. NCC requests that the proponents suggested process be completed prior to the EIS being finalised. The suggested 'process' includes:

- Checking the biobanking register
- Liaising with OEH and Narrabri Council
- Considering properties for sale in the area

NCC is of the view that the EIS for project has comprehensively failed in the area of biodiversity offsets and should not be approved on this basis.

Climate Change Impacts

Australia ratified the Paris Climate Change Agreement (the Paris agreement) in November 2016. This ratification requires a national commitment to limiting global temperature rise to below 2 degrees C (when measured against pre-industrial levels).

International researchers from the University College of London, following extensive modeling, have concluded that to have at least a 50% chance of keeping global warming below 2 degrees C throughout the twenty-first century, globally a third of oil reserves, half of gas reserves and over 80% of current coal reserves should remain unused[10].

The EIS deals with the important topic of greenhouse gas impacts of the project in an unsatisfactory way[11].

NCC maintains that the project should be rejected on the grounds of its greenhouse gas emissions, both fugitive and from the end use of the gas.

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[10] C. McGlade & P Ekins: *The geographical distribution of fossil fuels unused when limiting global warming to 2degrees C,* Nature, V. 157, 8th January 2015, pp 187-190

[11] Executive Summary, p ES-18; EIS Volume 12, Appendix R – Greenhouse Gas Assessment

Fugitive emissions

There is growing concern about the lack of baseline data on fugitive emissions associated with CSG mining, but readers of the Narrabri CSG EIS will find no detail on this in the sections on greenhouse gas impacts of the project.

Parties to the Paris agreement are required to report on national levels of, inter alia, methane (CSG) emissions. If fugitive emissions remain poorly assessed and measured then Australia will not be participating fairly in the ongoing implementation of the Paris agreement.

The problem of uncertainty of reported levels of CSG fugitive emissions was described in a 2014 research report from The Australia Institute[12]. The problem is that the current method of estimation of CSG fugitive emissions (used in the Narrabri CSG Project EIS) involves using data on fugitive emissions that were collected from conventional natural gas extraction. Unconventional natural gas, including CSG, uses a very different method of extraction, which sees more methane escape into the atmosphere rather than being captured and used to generate energy. The Australia Institute report states:

*"Australia assumes that fugitive emissions from unconventional gas equates to 0.12% of gas produced (*the figure used to calculate fugitive emission levels in EIS Appendix R). *The US EPA recently increased its estimate to 2.4% of gas produced - 20 times higher than in Australia…The claim that CSG can act as a bridging fuel cannot be substantiated. The level of fugitive emissions is simply unknown and far more research needs to be done before the claims by the gas industry can be taken seriously"[13].*

In 2014, the Federal Department of the Environment contracted the CSIRO to do a pilot study of actual fugitive emissions of methane from gas fields in NSW (Camden) and Queensland[14]. While only 43 wells were selected, and the researchers acknowledged that a non-random selection of less than 1% of the 5000 CSG wells across Australia meant that the results may not be representative, the pilot study nevertheless represented the first quantitative measurement of fugitive emissions from CSG wells in Queensland and NSW.

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[12] Fracking the Future, Australia Institute Research Paper March 2014
http://www.tai.org.au/sites/defualt/files/IP%2016%20Fracking%20the%20future%20-%20amended_0.pdf

[13] Op cit @ 13, pages viii – ix.

[14] S. Day et al, (2014) *"Field Measurements of Fugitive Emissions from Equipment and Well Casings in Australian CSG Production Facilities",* CSIRO, Australia.
http://www.environment.gov.au/system/files/resources/57e4a9fd-56ea-428b-b995-f27c25822643/files/csg-fugitive-emissions-2014.pdf

Some of the study conclusions are highly relevant to the Narrabri CSG Project:

- Apart from 3 disconnected wells, all wells tested had some level of CSG emissions;

- In addition to wells, there are many other potential emission points throughout the gas production and distribution chain that were not examined in this study (in other words, the true figure for fugitive emissions would inevitably be higher than the levels measured in the study); and

- Reliable measurements on Australian facilities are yet to be made and the uncertainty surrounding some of these estimates remains high.

The EIS gives estimated figures for venting and fugitive emissions[15] in a typical operating year, assuming that all 850 proposed wells are operating. In contrast to the EIS which relies on suspect calculations, actual figures for venting and fugitive emissions were measured in the CSIRO study. In the absence of figures from the Narrabri exploratory wells, it is possible to use the mean figures from other Australian CSG wells in the study as a model. By calculating a per well emission average on an annual basis, converting it to CO_2 equivalents (methane x 25) and multiplying by 850, a rough model can be used to compare with the artificial figures in the EIS.

In 2016, the same CSIRO group produced a report for the NSW EPA on methane emissions associated with a number of NSW industries, including coal mining and CSG extraction[16]. In this study, emissions from 6 Santos pilot wells at Narrabri were measured. The mean figures from these wells were analysed in the same way as the previous CSIRO figures to provide a comparison with the figures from the EIS (Table 5.3[17]):

Direct GHG Emissions in a typical operating year (850 CSG wells) (M tonnes CO_2-e)

Data Source	**Fugitive**	**Vented**
EIS Figures (Table 5-3)	0.002	0.004-0.005
Av. from NSW & Qld		

[15] Narrabri Gas Project EIS, Volume 12, Appendix R, Table 5-3, p 18.
[16] http://www.epa.nsw.gov.au/resources/air/methane-volatile-organic-compound-emissions-nsw-3063.pdf

[17] Op cit @ 16

wells, CSIRO study (2014)	0.019	0.017
Av. from 6 Narrabri CSG wells, CSIRO study (2016)	0.005	Not assessed

A recent report from the University of Melbourne Energy Institute, which is both authoritative and independent, throws further light on the issue of methane emissions from CSG production[18]. The report notes that:

- The Australian Government reported to the UN in its most recent greenhouse gas inventory that methane emissions from the Australian oil and gas industry amounted to 0.5% of gas production;
- This low level of reported methane emissions contrasts with unconventional gas developments in the USA where emissions ranging from 2 to 17% of production have been reported; and
- These measurements have led the US EPA to revise its estimates of methane emissions from gas production to 1.4% of total production.

It is worth noting that the measurements from the 2016 CSIRO study only look at the production stage of the project, while other studies such as Howarth[19] suggest that the bulk of fugitive emissions occurs during the flow-back stage after hydraulic fracturing.

The 2016 CSIRO study states:
"It would be expected therefore that the bulk of the CH4 contained in the produced water at seam pressure would be released very soon after the water was pumped to the surface (e.g. at the separator at the well head, high point vents in the gathering lines, and soon after entering the holding ponds), with the remainder slowly degassing in the holding ponds. It is the latter component that was measured during the site visits to the Leewood facility. Accurately determining emissions from CSG water treatment would therefore require detailed measurements to be made over the entire water handling process."

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[18] D. Lafleur et al (2016) *"A review of current and future methane emissions from Australian unconventional oil and gas production", Melbourne Energy Institute*
http://www.tai.org.au/sites/defualt/files/MEI%20Review%20of%20Methane%20Emissions%20-%2026%20October%202016.pdf

[19] Howarth, Santoro and Ingraffea (2011), *Methane and the greenhouse-gas footprint of natural gas from shale formations*, available at:
http://www.fe.doe.gov/programs/gasregulation/authorizations/2012_applications/sierra_exhibits_12-77-LNG/Ex._84_-_Howarth_Methane.pdf

Many of the existing estimates for measuring fugitive emissions are "bottom-up" are unlikely to capture all routes of fugitive gas escape. Given the high uncertainty in fugitive emissions estimates, and the high probability that the proponents EIS underestimates them by up to two orders of magnitude, we request that baseline measurements be taken, both bottom-up (eg. continuous equipment monitoring at all wells) and top-down (eg. regular aerial surveys) measurements, as a condition of approval.

Furthermore Melbourne University researchers note that:

"If natural gas is to provide maximum net climate benefit versus coal, the release of methane to the Earth's atmosphere (both intentional and unintentional) must be held to less than 1% of total gas production".

Without a scientifically credible and independent study of the greenhouse gas contributions from venting and fugitive emissions from the proposed Narrabri CSG project, NCC asserts that approval of the development would be imprudent and inconsistent with the Paris Agreement. No credible greenhouse gas figures for fugitive emissions of CSG from the proposed Santos CSG project can be calculated from the EIS.

Water Resource Impacts

The Narrabri CSG Project proposes to bring up to the surface ancient, contaminated coal seam water from the depths of the earth. Santos seeks approval for the drilling of 850 wells through the Pilliga Sandstone aquifer (part of the Great Artesian Basin) and into the coal seams beneath. The aquifer contains good quality groundwater sources used for stock, domestic use and irrigation. The proposal will remove around 1.5 gigalitres of water per year from the coal seams which will allow the coal seam gas to escape to the surface through the bores[20].

The farming and rural communities of the Narrabri district rely heavily on irrigation water from the Great Artesian Basin (Pilliga Sandstone Aquifer and the Namoi Alluvium see figure ES 4, p ES 13). The extent of irrigation activity is dramatically illustrated by the EIS map showing groundwater bore locations within 30kms of the project area boundary[21]. Many irrigators in the Narrabri region are understandably concerned about the potential for the large amount of water extracted from the coal seams (average 1.5 gigalitres/year) to contaminate the Great Artesian Basin aquifer on which they rely for water for stock, domestic or irrigation purposes.

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[20] Narrabri Gas Project EIS, Executive Summary, pages ES 12 – ES 15
[21] Narrabri Gas Project EIS, Volume 2, Chapter 11, p 11-32

NCC understands that a significant component of the local opposition to the Narrabri Gas Project relates to concerns that the 850 wells will contaminate the Pilliga sandstone and the Namoi Alluvium aquifers with produced water from the coal seams beneath them. The produced water is not the same as the good quality groundwater that the community of the Narrabri area are using. The water from the coal seams has been in intimate contact with the coal for hundreds of thousands of years, or even longer, and has absorbed the elements from the coal which could be harmful if they leak into the irrigation water in the aquifers.

Data on analysis of produced water is hard to find in the 15 volumes of the Narrabri Gas project, but NCC was able to locate one table which gave the concentrations of various potentially toxic elements in the produced water[22] (in addition to the high levels of salinity which have to be treated before the produced water can be used for irrigation purposes). Elements such as the following are found in the produced water from the coal seams:

- Arsenic
- Cadmium
- Chromium
- Cyanide
- Fluoride
- Lead
- Mercury
- Molybdenum
- Nickel
- Selenium

All are potentially toxic to animals or capable of causing residues if they become concentrated to higher levels in irrigation water or the crops and pastures that it irrigates. All are important for the classification of wastes under NSW EPA Waste Classification Guidelines.

NCC considers that the potential contamination of heavily utilised aquifers constitutes a major potential environmental problem that should have been assessed in detail in the EIS. Yet it is barely mentioned.

A risk assessment table in the Appendix F Executive Summary does mention a potential impact of water extraction in coal seams causing a change in water quality for existing uses. However, the "possible mitigation measures" which would supposedly resolve this

[22] Narrabri Gas project EIS, Vol. 14, Appendix T3, Part 2, Table F-1

problem provide no assurance that, even if fully implemented, they would make sufficient difference.

NCC is concerned that gas well integrity cannot be guaranteed and that gas well failure that allows the mixing of produced water and gas from the leaking well with good quality water in the aquifer, is common at other similar projects. A review article published in 2014[23] showed that from a number of well datasets from multiple countries (including Australia), the percentage of wells showing integrity failure was highly variable, ranging from 1.9% of wells to 75% of wells (note that none of the datasets showed **no** wells failing).

The abstract of the paper described a situation analogous to the Narrabri Gas Project proposal in these terms:

"Boreholes drilled to explore for and extract hydrocarbons must penetrate shallower strata before reaching the target horizons. Some of the shallower strata may contain groundwater used for human consumption … Although it has been routine practice to seal wells passing through such layers, they remain a potential source of fluid mixing in the subsurface and potential contamination. This can occur for many reasons, including poor well completion practices, the corrosion of steel casing and the deterioration of cement during production or after well abandonment. Boreholes can then become high-permeability potential conduits for both natural and man-made fluids"

The situation we have here with the Narrabri CSG Project is a threat of irreversible damage to the environment coupled with a lack of full scientific certainty about whether it would occur and how it could be rectified. This triggers the precautionary principle which should result in the project being rejected on the grounds that it is inconsistent with the principles of ESD.

Assessment against the EPBC Act 'water trigger'

The EIS acknowledges that the project requires the approval of the Commonwealth Environment Minister under Section 24D of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) – the 'water trigger'. Potential impacts of the proposal must be assessed against the Commonwealth Significant Impact Guidelines[24]

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[23] R. Davies et al," *Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation",* Marine and Petroleum Geology, Vol. 56, September 2014, pages 239-254

[24] *Significant Impact Guidelines – Coal seam gas and large coal mining developments – impacts on water resources,* Australian Government Department of the Environment (2013).

(the guidelines). The action is prohibited if it is likely to have a significant impact on a water resource[25].

The EIS deals with the assessment of the water trigger guidelines in a brief and dismissive manner[26], and arrives at the conclusion that the project will have no significant impact on the water resources in the vicinity of the project. NCC rejects this notion and maintains that this project may have a significant impact on water resources which warrants rejection under the 'water trigger'.

Below is a brief summary of assessment of the project against the 'water trigger' guidelines.

5.1.1: Is the impact significant?

NCC maintains that if the contamination of the Great Artesian Basin aquifer by produced water occurs as a result of the Narrabri CSG project, the impact will certainly be significant – defined as an impact which is 'important, notable or of consequence'.

5.1.2: Is the impact likely?

The guidelines require there to be a 'real or not remote chance or possibility'. If the review in the Journal of Marine and Petroleum Geology referred to above at Reference #23 is to be followed, the impact of produced water leaking into the Pilliga sandstone aquifer and/or the Namoi Alluvium is almost certain. All of the gas well datasets reviewed in a number of countries had at least some leaking wells.

5.2.1: Is the water resource valuable?

The EIS acknowledges that the shallow groundwater resources of the Namoi Alluvium and the Pilliga Sandstone aquifers have high value[27]. One has only to look at the map of registered water bores in the EIS to see the value of groundwater in the Narrabri area.

5.4: Guidelines on changes to water quality.

Contamination of the aquifers with produced water would trigger the only three relevant criteria out of five in (a), and would also meet the water quality criterion in (b).

It is instructive to look at the wording under 11.6.3 in the EIS[28], which refuses to even consider the possibility of water quality in the aquifers being impacted by leakage from bores. NCC rejects the statement:

"There is no potential for low quality groundwater at depth in the Gunnedah Basin to contaminate higher-quality groundwater sources in the overlying Pilliga Sandstone and Namoi Alluvium"

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[25] EPBC Act, 1999 (Cth), Section 24D(1)(b)(ii)

[26] Narrabri Gas Project EIS, Volume 2, chapter 11, pages 11-54 to 11-58

[27] Narrabri Gas Project EIS, Volume 2, Chapter 11, p 11-54

[28] Volume 2, Chapter 11, p 11-55

NCC maintains that the project may have a significant impact on a water resource and calls on the Government not to approve the project until a thorough assessment under section 24D of the EPBC Act (Cth) is satisfactorily complete.

Waste Water Management

The Narrabri Gas Project needs to treat and dispose of a significant quantity of produced water from the underground coal seams every day. The salt concentrated out of that produced water amounts to a long term average of 47 tonnes of salt per day, with a peak of around 115 tonnes per day in project years two to four. At peak, daily disposal of the salt concentrate would require 2.5 B-Double truck movement equivalents per day[29].

The Executive Summary states that the salt would be:

- Classified as general solid waste under NSW EPA Guidelines; and
- Transported by truck to be disposed of at an appropriately licensed facility[30]

NCC disputes both of these assertions.

The assertion that the salt concentrate will be classified as general solid waste, under the most generous analysis can only be based on analysis of salt extracted from the small number of pilot CSG wells already operating on the Santos site. The difference between general solid waste and restricted solid waste under the NSW EPA guidelines for elements such as arsenic, cadmium, cyanide and fluoride, for example, is only a factor of four. The community has a right to know whether, when all 850 CSG wells are in production, the levels of these elements may not be high enough to classify the waste as restricted solid waste, which would presumably have a different number of appropriately licensed facilities where restricted solid waste could be disposed of legally.

We request that the proponent make the following assessments with respect to disposal of the significant amounts of contaminated salt from the Narrabri project:

- A worst case scenario assessment of what would happen to salt disposal options if some or all of the salt were to have sufficient concentrations of key potentially toxic elements to classify it as restricted solid waste under EPA guidelines[31].

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[29] Narrabri Gas Project EIS Executive Summary, p ES-19
[30] Narrabri Gas project EIS Executive Summary, p ES-19
[31] http://www.epa.nsw.gov.au/resources/wasteregulation/140796-classify-waste.pdf (pages 14-15)

- A statement from the NSW EPA that appropriate sites exist for the safe disposal of up to 115 tonnes per day of restricted solid waste.

NCC maintains that the EIS lacks a credible waste management strategy as required by the Secretary's environmental assessment requirements, and fails to adequate plan for possibility of highly contaminated salt needing to be managed on a daily basis. NCC notes that one of the reasons why the AGL coal seam gas project at Gloucester was unsuccessful was the proponent's attempts to clandestinely dispose of waste through unapproved Hunter Water sources.

Legal and environmentally appropriate disposal of the large amount of salt generated by the Narrabri Gas Project (regardless of its solid waste classification) is a fundamental constraint on the project. The failure to deal with this fundamental environmental problem in detail is unacceptable. Approval of the project in the absence of such data independently assessed by the EPA is unacceptable.

Hazard and Risk – Bushfires

The existing and proposed CSG infrastructure in the Pilliga Forest have been identified as being at extreme risk in the Narrabri/Moree Bush Fire Risk Management Plan and almost certain to be impacted by bushfire. Bushfire risk assessment for a project of this scale should be concerned not only with the need to minimize the risks associated with the project infrastructure and activities, but also with the potential for infrastructure and operational procedures to worsen the impact of bush fires on the surrounding State Forest and private lands.

The EIS only investigates the impact of fires/explosions that may be caused by its operations on 'sensitive receivers', mainly identified as rural dwellings, but does not attempt to assess the potential additional impacts due to changes in fire behaviour exacerbated by CSG operations on high value conservation assets such as threatened species, nor on commercial forest activities such as beekeeping. It is intent only on justifying how ignition sources within its area of operations will be mitigated and its own assets protected.

Increased levels of human activity related to CSG mining operations are still likely to increase the incidence of fire ignitions. The likelihood of potential causes such as plant and equipment malfunctions; maintenance activities; accidents/carelessness by workers; greater public access leading to more accidental fires and arson; and use of flare stacks on high fire danger days may be reduced by the preparation of a Bush Fire Management Plan, maintenance works programs and operational procedures.

However, there are complications that should be addressed in the EIS. Many shutdown procedures depend on electronic-based techniques to be performed remotely. This will be reliant on a continuing supply of power, which may become unavailable during major bush fire events.

With a proliferation of tracks to be established as part of the project, not only will there be greater opportunity for unplanned fires to be lit, it is unlikely that all tracks will be accurately mapped, leading to the potential for confusion by firefighting crews, particularly those from out of area. Apart from this, the potential escape of methane gas is a considerable obstacle for firefighters untrained in dealing with its occurrence during a bush fire.

The fact that flare stacks are not shut down on high fire danger days, including Total Fire Ban declarations, is a significant flaw in the mitigations described in the EIS to reduce the risk. Rightly, potential ignition sources are highly regulated for all of society under the Rural Fires Act 1997. The continuance of flaring disregards the potential for wind-blown debris to become alight as it travels through the flame and cause ignitions in vegetation growing outside the compound.

The contribution of fugitive emissions of methane from CSG mining infrastructure is a significant risk, with the potential for leakage likely to be increased when infrastructure is subjected to extreme temperatures from direct flame attack and radiant heat. Any concentration of leaking methane could provide additional fuel in a bush fire, and over time the exposure of methane transport infrastructure (e.g. erosion of soil uncovering buried pipelines) and deterioration of construction materials will increase the risk to people and the environment.

The proponent states that a maximum of 6 pilot flares (average flame height about 4 metres) are proposed, in addition to safety flares (at least 1-2) at Bibblewindi and Leewood. The normal safety flare height will be 1.5 metres, but on occasions, flame height may be up to 30 metres. Not only is this extraordinary information not assessed in the EIS as an additional significant bushfire risk, but it is located, not in Appendix S, Hazard and Risk Assessment (Volume 12), but in Appendix Q – Landscape and Visual Assessment[32].

The overall bush fire risk to workers, residents, visitors, fire fighters and others will be increased by this proposal. This EIS does not take into account the safety of all those living and working in the region, nor of the environmental assets which abound in the Pilliga Forest. It does not include all available measures to ensure bush fire likelihood is not increased, nor to ensure that fire behaviour is not exacerbated by the development.

[32] Narrabri Gas Project, Volume 12, Appendix Q, p82

NCC maintains that this project poses unacceptable bushfire risk to the Pilliga. Whilst we strongly recommend this project is not approved by the NSW Government, if the Government does approve it we strongly urge the Government to require the proponent to indemnify any landholders in the vicinity of the Pilliga Scrub for any financial loss associated with bushfire damage where an independent assessment confirms that the bushfire was initiated by an activity associated with the Narrabri Gas Project. The community should not be put at risk by the proponent, nor should they carry the financial impact on their own shoulders.

Social and Economic Issues

Community concern

Feedback from our member groups and local residents living near the project area indicates that there is a high degree of community opposition to the project. NCC is firmly of the view that the socio-economic issues associated with the project have not been sufficiently assessed and that were the project to go ahead it would cause significant distress to many members of the local community.

Santos Annual Report 2016

The company reported to the market and its shareholders a net debt position of $US3.392 billion at the end of FY 2016[33]. This represented a significant improvement over the previous year. To strengthen the balance sheet and reduce net debt, the company took the brave step of not paying any dividends for the year, after over 20 years of regular dividend payments to shareholders[34].

In addition to reducing net debt, the Santos Board documents the focus of the business to "five core, long-life natural gas assets". One of these is the GLNG project, based on export of gas from the LNG plant at Gladstone, Qld. Santos has a 30% interest in GLNG[35], along with several other business partners which do not appear to be involved in the Santos Narrabri Gas Project. The Narrabri project is described in the Annual Report as one of "Santos other assets" (part of East Coast Australia Gas). The portfolio of other assets "will be continually optimised to drive efficiency and shareholder value"[36].

[33] Santos Annual Report 2016, p 21
[34] https://www.santos.com/investors/dividend-information/

[35] Santos Annual Report 2016, p 19
[36] Santos Annual Report 2016, p 20

The clear implication here is that the Santos East Coast Australia Gas portfolio, which includes the Narrabri CSG Project, is subordinate to the core business of the GLNG project, which is in the business of export of LNG from Queensland.

Gas supply

In the light of recent statements and actions by Santos itself, the claim that the Narrabri Gas Project has the capacity to deliver up to 200 terajoules of gas per day, sufficient to meet up to half of NSW's natural gas demand[37], is highly dubious. Given the current Santos gas operation in Eastern Australia (documented below), there is little basis for this statement. It is highly likely, based on the company's recent track record, that most, if not all, of the production from the Santos Narrabri Gas project, if approved, will be sent to Queensland to the Gladstone Liquified Natural Gas Plant (GLNG) for export to global LNG markets.

In this event, the main justification given in the EIS to persuade the NSW Government to approve the Narrabri Gas Project would not eventuate.

The emerging political and economic crisis caused by the high price of gas for industry and consumers in Eastern Australia has been followed with interest by the Australian business media, especially the Australian Financial Review (AFR) between March and May 2017. Santos has consistently received unfavourable mention as a major reason for the Eastern Australian gas shortfall:

"Scrutiny of Queensland's monster LNG export projects is expected to focus in particular on Santos' $US18.5 billion GLNG venture, which is buying much more gas from the domestic market than originally envisaged"[38]

"Santos will struggle to become a 'net domestic gas contributor' from its GLNG venture. It relies on buying gas from other producers for a chunk of its export needs, creating a bigger drain on domestic supplies than ever expected when the $US18.5 billion project got the green light in 2011"[39]*.*

By April 2017, AFR was documenting price hikes for manufacturers depending on gas for their operations at almost triple the cost of gas in 2016. The report stated:

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[37] Narrabri Gas Project EIS – Executive Summary, pages ES 5 to ES 7; EIS Volume 2, Chapter 32 – Justification and Conclusion

[38] AFR 10th March, 2017, Business Summit Report, pp12-19

[39] AFR 16th March 2017, p 6

"…The manufacturers blame Santos' GLNG venture, which is sucking up gas from the southern states to help fill its export plant, rather than relying on gas from its own coal seam gas acreage in Queensland"[40]

In April 2017, the Commonwealth government announced a mechanism which aimed to resolve the domestic gas problem – the Australian Domestic Gas Security Mechanism (ADGSM). The mechanism which is planned to be in operation by July 1st 2017 will allow for the imposition of export controls on selected gas companies when there is a shortage of gas supply in the domestic market. As AFR explains:

"…the orders can only be issued against LNG exporters that are drawing more gas from the domestic market than they are putting into it…right now, the only operator achieving that dubious double is the Santos-led GLNG project, which last quarter (March 2017) relied on third party suppliers for nearly 60% of its production…this is a cleverly designed lever aimed at encouraging Santos and its partners to accept that they have failed the test of their social licence by drawing excessively on the domestic market for the gas required to feed their LNG export trains…"[41]

The Australian newspaper explains how this all relates to the NSW Narrabri CSG project:

"Santos had planned to offset gas GLNG was taking out of the domestic market with gas from the Narrabri coal seam gas project in NSW. But this remains undeveloped because of struggles to get state government approval, community opposition and reserves not being as good as hoped"[42]

The Climate Council has also named Santos as being responsible for the over-commitment of unconventional gas supplies into LNG exports:

"The Australian Energy Market Operator (2017) notes that new gas supplies to meet LNG export demands and domestic gas needs will rely on unconventional gas resources that are uneconomic at current prices and much more costly to produce. Some gas companies have impaired their LNG investments as they are unable to economically develop sufficient unconventional gas at current prices (e.g. Santos, 2016)"[43]

NCC requests that the proponent confirm that the gas extracted by the project would be maintained for domestic use, as suggested by Santos' public comments.

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[40] AFR 19th April, 2017, p 6
[41] AFR, 28th April, 2017, p 32
[42] The Australian, Friday May 5th, Business section, p 22
[43] https://www.climatecouncil.org.au/uploads/d15f6fc35d779951e8893693efdbbc10.pdf (p 22)

We recommend that this be listed as a condition of approved if the project is to be approved.