

How Do We Talk About Climate and Energy Transitions? Evidence from Australia's largest Coal Seam Gas Planning Inquiry

James Goodman, Riikka Heikkinen and Bruce Knobloch ¹

In August 2020 a public hearing was convened in Australia to decide whether a large Coal Seam Gas (CSG) project should go ahead in the rural Narrabri region of western New South Wales. The hearing was held online, and attracted an unprecedented number of 367 speakers, about 6% supportive to the project. The resulting official transcript, extending over seven full days is a remarkable historic record of how people from different rural and urban contexts talk about energy and climate transitions. After many years of severe drought and the collapse of rural waterways, followed by the most devastating bushfire season, and in the context of decades-long struggles over failing climate policy, the Inquiry sat at the centre of Australia's (and the world's) climate maelstrom. At it a wide range of concerns were raised about the project, from impacts on biodiversity, water and farming, to Indigenous heritage, local and regional development, energy transitions and climate change; a range of alternatives were asserted, for Indigenous culture, local livelihood, farming tourism, decarbonisation and renewable economies. At many levels the Inquiry enacted and dramatized the deep systemic rift that has emerged over fossil fuel developments, and, as we hope to demonstrate here, offers many insights into how it can be expressed (and addressed).

In 2018 the United Nations had announced emissions from fossil fuels had to fall by forty-five per cent by 2030 for there to be any change of climate stability (UN 2018). The twelve-year global deadline had in 2020 slipped into a 10-year deadline, yet the CSG project discussed at this Inquiry would deliver CSG to 2045. Further, the Narrabri project would secure a bridgehead for the CSG industry in the region, precipitating a regional carbon bomb over the following decades, at the very precise time when the world, and Australia, was required to halt and reverse its use of fossil fuels. How could this project go ahead in the context of the intensifying climate emergency, which was put the Australian continent and in particular rural society in such severe danger? How could the project be imagined to be possible was itself baffling, and this is expressed in the outrage expressed by many of the speakers at this Inquiry.

Ironically, the climate and transition narrative makes it all the more urgent for fossil fuel projects like the Narrabri gas project to go ahead: the window is still open for gas, but only just. The Narrabri gas project sits in the midst of a transition process, from coal to renewables, that in the

process of superseding it. Gas has been presented as a ‘transition fuel’, offering a dispatchable power source to complement intermittent wind and solar power. Industry and government continues to claim gas is a low emissions substitute for coal - despite the emissions of Co2 from methane wells and extensive uncertainty over how much gas escapes in the production process (‘fugitive’ emissions); methane itself is very potent greenhouse gas, with an impact over 20 years that is 84 times greater than an equivalent Co2.

Gas companies claim their product is ‘clean’ and ‘natural’ and Santos even suggests that increased reliance on gas reduces emissions. Yet, with the rapid development of highly-efficient and low-cost wind and solar power, that in combination can deliver continuous power with the aid of batteries, green hydrogen and pumped hydro, the idea of transition gas has become quickly superseded. ‘Peaking’ gas plants, ostensibly needed to supply power when renewables can’t, become unnecessary, or at least only required on the margins. Reflecting this, Australia’s Energy Market Operator (AEMO) maps a fall-off in gas demand as consumers and industrial users switch to renewables; it predicts this will continue into the future even with a shift to a system based on seventy-five per cent renewables. With the advent of dispatchable renewables, gas is ‘stranded’ by the very transition that it is claimed to be progressing. The closing window for gas is reflected in investment decisions, such as AGL’s decision to convert its coal-fired power station at Liddell in NSW to a battery plant not to a gas-peaking plant. With diminishing prospect that gas will have a market beyond the immediate future, gas assets are rapidly being written-off. The CSG and LNG industry has proved to be a high-risk sector: \$20 billion was written-off across the sector just in the first six months of 2020. Santos had already written-off \$7billion 2015-20, and an additional \$1billion in July 2020 (IEEFA 20.2.20; AFR 21.7.20). This is for a company that according to its 2019 Annual Report held \$13.6 billion in assets in Australia (\$17.5 billion globally).

There is clearly a degree of urgency to monetise its Narrabri gas project. Santos is said to have invested more than \$2 billion into the project since 2008 (with some return from the small power station that burns gas from the ‘production pilot’ wells). As with its other gas assets, the investment may also be written-off as stranded capital in the context of declining gas demand. Not surprisingly, the company has gone to great lengths to prevent the death of this last great hope for CSG in NSW and has spent considerable political capital to secure approval for it. Reflecting the difficulty of making what is a clearly flawed case, and also the necessity of having a ‘win’ to offset losses, the company has successfully put in place an impressive architecture of state capture to secure the approval. The scope extends from the Federal Government’s ‘gas-led’ post-covid recovery plans, to the NSW State planning department’s endorsement, and the local council’s decision to (conditionally) support the project. The Federal Government’s approach to advancing gas is especially noteworthy. The offer to NSW of an additional \$960 million in federal funding in assistance for energy transition to renewables on the condition that NSW Government facilitates “to inject an additional 70 petajoules of gas per year into the east coast market”, as well as to “remove barriers” of coal supply to Mount Piper Power Station, sets a new high in fossil fuel promotion. The notion that federal assistance for renewables could at the same time enable an indirect Federal regulatory intervention into State-level energy policy to favour gas (and coal) demonstrates the depth of the climate contradictions in play.

CSG has been highly controversial in Australia, and has faced strong grassroots opposition. The industry gained its first foothold in Queensland, and then was expected to spread across other States, but for a decade has been very effectively halted. A grassroots movement to deny gas companies access to land, ‘Lock the Gate’, organised communities across Queensland, and then into NSW and Victoria, learning from the Queensland experience. In 2012 the conservative Coalition was elected into government in NSW on a mandate of limiting the scope of CSG. The previous Labor NSW government had awarded exploration licences to prospect for CSG across forty-five per cent of the State and these had led to concrete proposals in places as diverse as inner-

Sydney St Peters, suburban Camden and rural Bentley; in all three cases, and others, gas was heavily contested. ‘Lock the Gate’ groups spread across the State, blocking the industry. The incoming Coalition government instituted a ‘buy-back’ of licences (sixteen in all) and as of 2020 there were only two places in the State where CSG was actively being pursued. In Camden the AGL CSG project was initiated in 2001 is due to wind-up in 2023 following AGL’s 2016 announcement that it would exit the industry.

In 2020 the only other remaining NSW focus for the industry, is in and around Narrabri where there are eighteen exploration licences, thirteen with Santos. These licences extend from Muswellbrook in the Hunter Valley, west to Dubbo and north to Moree and the Queensland border, a total of 56,250 square km (total land area of NSW is about 800,000 sq km). A production pilot in Narrabri led by the corporate gas giant Santos was established from 2012 with forty wells supplying a small (royalty-free) thermal power plant. Santos initially sought to establish gasfield across the entire agricultural region but facing opposition scaled-back to a 850-well gasfield mainly in the State-owned Pilliga forest. The proposed project would require pipeline infrastructure to the East coast and would open-up a much larger swathe of the country for CSG into the future. Already in 2020 the Santos-affiliated Mineral Sands gas company was moving to production piloting for its nearby exploration licences, extending across the agriculturally-rich Liverpool Plains.

Broad public interest and controversy over the Narrabri project has been clear since at least the 2017 EIS process. During the EIS exhibition period the Department received 23,000 submissions, a record number. In the recommendations to approve the project submitted to the current IPC the Department stated that the public submissions for the EIS were overwhelmingly against the project, and concerningly refers to this response as a product of ‘a concerted campaign against the project’; it states that locally there was greater support for the project but acknowledges ‘the majority were still against it’. On the next page Department continues stating by stating that many submissions “often ignored the significant differences of different types of gas development” (pp. 38-39). This same logic is taken further in Santos response to EIS submissions, which states that after removing the “the influence of form submissions”, the support from Narrabri local area was “around 58 per cent” (Santos not dated, p. ii).

Prompted by these claims we had a look of the both the letters and other submissions received from EIS and it seems that many of the supporting statements, as well as objecting statements, contained material that is copied and identical between statements. However, it should be noted that using copied material is not necessarily sign of ignorance. EIS material comprises of thousands of pages of text and assuming that everyone, whether supporting or opposing the project, had to have read the material before submitting their statement is unrealistic nor should be a requirement for citizen participation or a measure of genuine concern. The majority of the submissions that supported the project were likewise either very short and did not refer to any specific aspect of the Narrabri EIS material, or relied on copied letter material. This should not be counted as signaling ignorance towards project or non-genuine support. Similarly, the same courtesy should be extended to the objecting submissions. We would suggest they should be treated as genuine expressions of interest to participate in the decision making process of a project with national and global emissions and impacts, instead of ‘counting them out’ as the Department seems to be doing.

This report is a response to the Departments assessment report and to the supplementary material submitted by the Department and the company after the public hearing for this project had closed. We greatly welcome the opportunity to respond to this additional material in support of the project that has been put on the public record by tabling this detailed account of the public hearings and the key issues that emerged from the statements made by community members. We believe this offers an important corrective both to the earlier comments made by the company and the Department about the EIS submissions, and also to reassert the strength of the material that was presented in the

public hearings given that no public hearing schedule has been arranged to respond to the new material tabled by the company and the Department.

Approach

As we outline here, community participants at the IPC hearing, under the pressure of expressing their view in just five minutes, translated wider pressing contexts into language of remarkable power. The climate crisis poses abstract universal challenges that are hard, if nigh impossible, to translate into everyday contexts. The Inquiry offered a unique insight into how this can be achieved, to convey the urgency for climate and energy transition. Across the seven days of hearings the 367 speakers were broadly arranged into experts and community participants, as well as statements from the company and the department. For the purposes of this report we focus on ‘community’ responses, as we are interested in drawing out ways in which these issues arising from this project are spoken-about, in the more everyday language of the wider community. Accordingly, we focus on the 330 presentations from community members (we will address the company, department and expert presentations at another time). Of these 18 were in favour of the project and 312 against. Nine of the 330 stated they had Indigenous Gomerioi heritage. About 177 stated they were from the broad NW NSW region (NW NSW, including the Liverpool Plains and the Upper Hunter), the remaining 153 presenters included people from outside the area as well as those who did not state where they were from. here were many who presented themselves as farmers, some as businesspeople, young people or students, professionals or ex-professionals, but most did not disclose their line of work.

In terms of the research process we read all transcripts of all of the community speeches, sorting statements according to the DPEI’s set of categories for its assessment report. In this we hoped to gauge the community response to each of these aspects of the project. It should be emphasised this was not a small task: there are 385,000 words transcribed from the seven days, about eighty per cent being from community participants. Quotes from these transcripts were selected that were broadly representative of perspectives, that gave a particular insight into the issue at hand, or offered a particularly powerful means of expressing it. Each quote is labelled with the name of the speaker, allowing ready sourcing of the material back to the original transcripts which appear on the IPC website.

This report is a working draft, put together in order to meet the IPC’s extended deadline for submissions. In writing up the analysis we have left as many quotes in the text as possible, simply arranging them by subcategory as they emerged from the transcript (these will in time be analysed further). In the process of putting the responses together we realised that some issue areas were much more of a focus than others. As a result for instance, we separated-out issues of social impact from economic impact, added health impacts to social impacts, combined together climate and biodiversity issues, and grouped together a range of less prominent concerns under a ‘hazards’ category. We also added a separate section on the planning process as many participants made reference to this in their presentations. And finally, we re-ordered the categories so that Aboriginal heritage is addressed with first.

1. Indigenous Heritage and Sovereignty

The Narrabri gas project is located in a forested area that has extensive evidence of historical use by local Indigenous people, the Gomeroi, and is a key focus for on-going Indigenous connection to Country. Indigenous use of the Pilliga forest area is continuous through colonisation, with a direct lineage for local Gomeroi peoples to ancestral sites in the forest. Santos has conducted an archeological survey, as required, which has found extensive evidence of Gomeroi occupation and use, spread across the proposed project site. The company has said it will institute safeguards to protect Aboriginal heritage, but failed to detail what these would be.

Not surprisingly, several Indigenous speakers appeared before the IPC, some supportive but most opposing the project and raising concerns about the impact on Indigenous heritage and culture. Very many presenters, Indigenous and non-Indigenous, began by paying respects to the Gomeroi and their legacy of custodianship, ‘that, in their caring for the country, they did not poison the water, the air or the land’ (Summers).

There were many statements from local Indigenous representatives and Traditional Owners making heartfelt appeals to the Commission to reject the proposed project. Several represented localities affected by the project but not consulted, as one speaker put it: ‘CSG mining in the Pilliga shows a lack of regard and respect for an area the residents of Coonabarabran and surrounds hold deeply in their hearts, souls and minds’ (Brady). Opposition was widespread: ‘I’m a member of the Aboriginal Land Council for Pilliga. I’m a Kamilaroi man. I’ve lived here all my life. There’s no elder or anybody that wants this project to go through. To me, if this goes through, it’s a declaration of war, and I will take it to you. I don’t want to see my land destroyed. That’s all I’ve got to say.’ (Nicholls)

One statement in particular, from Polly Cutmore, a Moree Traditional Owner, brought the proceedings to a standstill: ‘We’ve had bushfires, we’ve had fish kills, we’ve had no water in our rivers in Gomeroi from the top as far as Inverell to Copeton all the way down to Walgett. My people have been suffering and we can’t suffer no more... We’ve had this done to us over and over for 250 years. It started with the massacres... Please – can you please just stop it. We don’t want it no more. We want to live. We want to be able to live and enjoy life in our country. We can’t have this any more’ (Cutmore). Following this statement there was no rush to get to the next speaker, nor to ask any follow-up question, just a stunned silence. A petition against the project she had initiated just a week before, and was submitted with the presentation, had attracted close to 16,000 signatures.

The presence of Aboriginal culture in the landscape is central, and its loss is felt as a desecration. One drew analogies with European culture: ‘The Pilliga holds places of huge significance. Out there you will find our churches. You will find our schools. You will find places where we celebrate. You will also find places ... where we perform our most sacred and secret ceremonies... We’re tired of being denied, as Gomeroi people, to practice our culture and to maintain, protect and preserve our heritage and our country and our waters... We don’t come into your community and tear down what’s important to you’ (Whitten). Another tried to convey the personal impact of ancestral loss: ‘In my culture all trees are special but some are sacred. Some are passed from generation to generation. And one such tree actually belonged to my grandfather and his grandfather before him and one day it might have been mine. But in 2015, for a very similar project, this tree was cut down. And so too was this pre-colonial connection to it. I cannot tell you how much that hurt’ (Field).

Many were anxious to express the depth of community anger at the continued erosion of Indigenous culture in NSW: 'We don't want this on the Kamilaroi/Gomeroi land. If it goes ahead, we're going to fight and fight and fight. One of our beautiful people from Pilliga Pottery, Maria, yesterday she fell ill after her speech and that. She had a mild heart attack and that – like, all the stress on us Aboriginal people and the farmers and that – you're putting that much stress on us and that. We don't want it out here. We say no to Santos. And I will have to finish with it there' (Connelly). The Santos project was a line in the sand: 'if the government rules with Santos in this, let no person ever say to any Gomeroi person ever again that the crimes of the past happened hundreds of years ago because they are happening right now. Right now. Right now. This very second. (Whitten)

The loss is presented in intergenerational terms: 'As a parent with a young child who I want to bring up strong in her culture and identity as a Ngarabul and Wirrayaraay person from the Gomeroi Nation, you know, it's important to me that she has access to those sacred sites on our country. It's important that she is able to grow up along the rivers and creeks and other waterways of our country, you know, like I did as a young Aboriginal person, and to learn her culture and to learn the song lines and stories of that country' (Winzer). The same presenter recalled powerful insight from her child: 'I remember last year when I was telling her about the mass fish death that had happened on the Macintyre River at Lake Inverell, you know, her – you know, she turned to me and she said, "If the river dies, what will happen to the story of Bulligalami and Goorai," who are two of the Dreaming figures associated with that river. She said, "Will that story die as well?" And as a parent, that's a really heartbreaking thing to hear from your child, you know, that something that's so central to their identity at such a young age they already feel is threatened by the impacts of extractive industries and climate change' (Winzer).

There is controversy over whether Santos had consulted with the properly-constituted Indigenous representation of the area, through the local Land Council. The company worked with local Traditional Owners to verify the archeological survey. One owner who participated in this outlined that: 'There's about 250 Aboriginal recorded sites inside of the project boundary. We ground-truthed those and revisited them to make sure they were still there and existed' (Griffith). They expressed strong support for the company's efforts to minimise impact: 'I want to lead to culture now, because the culture, water, ecology is all encompassing of our laws and customs and traditions. They were going to put in avoidance principles inside of the project to avoid any of our cultural objects or places in regards to the project' (Griffith). They state the company has the capacity to locate wells so as to avoid disturbing significant places, that the company 'has a very, very strict and very aggressive process to – avoidance to it, because this project has the capabilities to avoid places. You can move the well. You can move where they're going to decimate these areas' (Griffiths).

Nonetheless, assent for the project, from one set of representatives had been successfully overturned by way of an electoral challenge, hence, 'By mid-July 2016 the authority of the claimants had been withdrawn. The final assessment was, of course, dated in October 2015. Therefore, it's entirely clear that Santos has not consulted with the present native title applicants' (Lyden). This is a serious challenge to the legitimacy of the project which, as the speaker suggests, renders the whole approval process invalid (though it is not clear how this will be given legal effect).

A parallel concern was the company's failure to 'identify the knowledge elders and conduct consultation in accordance with Gomeroi tradition and accordance with the NSW Office of Environment and Heritage 2011 Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales' (Talbot). More broadly, a number of presenters reflected on the lack of a meaningful role for Indigenous peoples in protecting culture, beyond rights to be consulted: 'My people have always been in these lands, we're treated like second, third class people, we're forced to the table to negotiate... if we fail, then we end up in the Land and

Environment Court and, as the Act said, the proponent's rights overrides ours. So we get nowhere' (Craigie).

This failure to address Indigenous peoples as custodians, not simply as stakeholders, is raised by several presenters: 'As one of the many Gamileroi people expressing their concern over the prospect of losing our identity and connection to country, it is integral that you understand that historically the Aboriginal voice has been omitted from the decisions which directly affect us. ... We do not need to add the Santos proposal for the Pilliga to the list of unheard and undervalued Aboriginal voices' (Tighe). As another stressed, the law presented Indigenous people with no choice: 'Aboriginal people are forced to the table, under duress... If we don't, we fail our people, we then – we fail, everything fails... we don't condone what's happening in our lands. (Craigie).

Process was central. One speaker stated the IPC was itself culturally exclusionary: 'I feel frustrated that we're not standing before Gomeri Commissioners but yet again in this 250 year history of colonisation we're not giving the traditional owners the respect to make decisions about their land that they have a sacred responsibility to uphold' (Watson). The format for the IPC hearings ignored the very different and widely recognized norms of Indigenous expression: 'This is an intimidating, non-Aboriginal hearing, not an Aboriginal-led process of yarning and deep listening to Gomeri Gamilaraay elders' (Maltby).

Some supported company claims that Indigenous people would benefit from the project: 'The change to Gomeri families' lives and breaking the cycle of poverty through these businesses and this development [brings] economic opportunities... So just how do we find the balance and to change Aboriginal families' lives through economic and social wellbeing development inside of our communities? And through these negotiations with Santos and then the signed agreement, provides that for Aboriginal people' (Griffiths). They emphasised the scope to negotiate benefits for the local Indigenous community: 'You have benefits for Aboriginal people... There's business development, agricultural site management, language, culture, and elderly and youth programs, economic and well-being development. That's for our people. Contracts and opportunities for Aboriginal businesses, employment ratios'. There would also be jobs for Indigenous people: 'They say 200 jobs. Well, the normal – normally this is about 10 to 15 per cent ratios. That's 10 to 30 jobs directly to Aboriginal families, income directly onto Aboriginal families' tables. (Griffiths).

Related to this, another local Indigenous speaker stressed the benefits of the project for building-up local skills and employment: 'One thing I can see, especially in our rural and regional areas, we're running out of opportunities for apprenticeships, traineeships and to provide those long-term skill sets. A lot of our kids are actually growing up now and finding better opportunities to go to Sydney' (Fordham). As a businessperson they had 'reached out to Santos a fair few times to actually see if there's any opportunities in the future for work or for local Indigenous businesses, but also to other Indigenous businesses that are in the area and other small companies within the local zone to help provide those opportunities for a bit of assistance to go on forward' (Fordham).

Others were more critical: 'I have heard the bought and paid for testimonials of employees, businesses and those of the financial stream connected to coal seam gas and Santos. They simply do not ring true for our communities. If indeed there are any benefits to be had, they are on an individual basis and not a whole of community gain' (Tighe). Another stated that Aboriginal elders has been misled: 'Dharriwaa Elders Group doesn't believe that coal seam gas mining will bring significant jobs to Aboriginal people in the region. Those who lie to communities with high unemployment like ours about promised jobs enrage us' (Spencer). As another emphasised, this was causing deep social division and stress on communities: 'I know Santos has consulted with registered Aboriginal parties but what I've been told is that promises of possible money and jobs has served to divide and create extremely stressful splits between Gomeri families leading to

severe mental health issues' (Maltby)

Some made a direct connection with the concerns of farmers and other community members, about water especially: 'For Gamileroi people to attain and maintain cultural wellbeing, the preservation of the Pilliga Forest is essential. ... Water is the cultural thread which binds our Gamileroi identity and connection to country through oral histories. I cannot stress enough the importance and the significance of water. Truth be told, water is the great unifier bringing Aboriginal and all non-Aboriginal people alike. There is no doubt that Santos will commercialise, over-extract and pollute our water' (Tighe). Many non-Indigenous presenters expressed deep concern at the impact of the project on Indigenous culture, stressing the absence of any safeguards to protect Indigenous culture and heritage in the project area: 'across this continent that the processes and laws around identifying and protecting Aboriginal cultural heritage are weak and are not being implemented properly' (Creenaune).

2. Impacts on Water and Land

The impact of the project on water availability was a key concern. There are a number of dimensions to this: impacts of drilling on the Great Artesian Basin; impacts of drilling on local shallow aquifers and the risk of local pollution; impacts of the project's water use; implications for water security and food production; and impacts on the cultural meaning of water. The discussion is organised across these types of impacts, beginning with points made about water and CSG in general, encompassing the uncertainty of models, and consequent risk to water supplies, and scepticism given the experiences of affected bores in Queensland. This is followed by discussion of impacts on the Great Artesian Basin, followed by points relating to water security, food production and farming, especially in relation to the impacts of climate change and drought in the region. In general, any uncertainty or risk over water was seen as unacceptable due to the irreplaceable nature of ground water, especially given the long term impacts are to be felt well after the CSG has been extracted. Quite a few participants stress that all the CSG wells will inevitably fail eventually, depressurising the bores and creating connectivity between gas and water. Overall, water and CSG are in put in collision: 'The choice is so simple...Water or CSG?' (Munro).

Underground connectivity

Many presenters stressed that the drilling would create connectivity between gas and water. Methane is released by drilling below the water table and the artesian basin - gas rises, water falls, creating an inevitable risk: 'The movement of gas and fluids from high pressure areas to low pressure areas is one of the first and most basic scientific principles... To say that there will be no migration, no drawdown, no lateral drawdown, no movement of gases and fluids within layers above and below, is offensive' (Green). Given 'the lack of detailed information about the deeper geological strata, the confidence expressed in the assessment report regarding physical separation of aquifers by aquitards is misplaced' (Quince). The department had 'made the concession that more work needed to be done around the issue of faults. For us, this is not acceptable. Field development plans post-approval are not the answer. It is a cop out. The risk is either there or it isn't. And if it is, well, this project is not approvable' (Watt).

Supporters of the project emphasised that there were 'several impermeable aquitards... separating and protecting the high shallow aquifers from the strata below' (Brennan). Opponents argued the weakness and uncertainty of the modelling, together with the extent of long-term risk required a rethink: 'I do not believe that the commission can give the project a green light with such weak and flawed modelling, and we know, with groundwater, once there are - once there are mistakes, you can't fix them. You can't glue them back together, so the impacts are very significant' (Creenaune). This was a necessary conclusion even if the modelling was to be accepted: 'even the government's own water agency has admitted the Santos underground model has a high level of inaccuracies... a damaged, polluted aquifer cannot be cleaned or rehabilitated' (Kirumba)

Gas and water have their own biophysical logic, that has to be respected: 'Once you fracture them to get hold of the coal seam gas, you're going to release the methane, and there's no stopping the methane' (McKinlay King); 'the aquifers, they're all interconnected. You get water in one, you get water in them all, you poison one, you poison the lot'. (Craigie). There was no confidence the company would be able to manage the resulting risks. One drew an analogy with the management of above-ground water: 'we're still not even able to yet manage water above the ground that we can

see. The complexity of groundwater hydrology perplexes even the best geologists in the world' (Leedham). Another pointed to Santos' record: 'Santos had flatly refused to commit to installing ground water monitoring bores' (Vickers).

Drilling is to be permitted regardless of where bores are located: elsewhere in NSW it is recognised that 'gas wells need to be two kilometres from a water bore to not impact it, yet the draft conditions of consent only state that wells cannot be within 200 metres of a residence; nothing about distance from water bores' (Hunter, S). Many referred to the experience in Queensland where CSG had damaged water supplies: 'In southern Queensland, nearly 600 bores on farms have lost their water supply due to CSG' (Mateer); 'it's not unreasonable to suggest that these same negative impacts are likely to be seen within our own region' (Nalder). There was direct testimony from one Queensland resident: 'I had 250 acres... they drilled 350 gas wells around my home; they built a compressor station next to my home; they built a reverse osmosis plant next to my home, holding ponds' (Pratzky).

Damage to the Great Artesian Basin (GAB)

One of the most culturally resonant aspects of the debate was the reverence that so many of the presenters expressed for the Great Artesian Basin. As the world's largest underground body of water, feeding almost a fifth of Australia's land mass, the Basin is seen as having world heritage value, as well as immense cultural significance for Indigenous culture, and a central foundation for livelihood across much of inland eastern Australia.

The proposal to drill for CSG in one of the main recharge zones for the Basin is seen as irresponsible. Perhaps the clearest statement was that 'The single greatest asset that Australia has is not coal or gas or minerals, but our Great Artesian Basin' (Kennedy). Another asked 'do we want to be the generation known to have wrecked this incredibly valuable resource?' (Terrey). Several expressed dismay at the extent of the risk: 'the Great Artesian Basin, one of the seven hydrological wonders of the world, is at risk of being destroyed' (Abbott); the 'GAB is considered one of the seven hydrological wonders of the world; the Pilliga Forest is one of the very few known groundwater recharge areas for the GAB' (Gray).

The likely impacts from disrupting the aquifer were manifold: 'There is only one Great Artesian Basin, and placing agricultural production over vast areas of Western New South Wales at risk is short-sighted and poses great risk to the rural and regional communities that depend on the farming sector in these areas' (Jackson). The Basin is treasured as the continent's 'lifeblood', and the personal impacts of its loss would be devastating: 'If something happens to the Great Artesian Basin, our access to the life blood of all of our lives out here, then we're finished, we're done, we don't have the ability to live, to grow our produce, and to sustain ourselves' (Sanders). Another reiterated the point: 'almost a quarter of this country, most of inland Australia, would be entirely uninhabitable without our GAB and the most critical recharge area for the GAB is Pilliga sandstone' (Kennedy).

Again, many stated the impacts were irreversible, stressing the uncertainty: 'no one fully understands the cumulative impacts of this proposal on the Great Artesian Basin' (Walker). One provided an analogy: 'In the same way you can't get the milk out of the tea, you can't fix the Great Artesian Basin' (Chadwick). There is no return to the status quo: 'leakage from the Pilliga sandstone recharge could have substantial effects on the Great Artesian Basin. If this occurs it cannot be reversed... but the damage will be permanent, like Humpty Dumpty, you can't put it together again' (Vickers).

Not surprisingly, the company had sought to deny that the significance of the Pilliga as a Basin

recharge zone. This is heavily contested: ‘In the first chapter of the EIS Santos states... “the project is not located within a major recharge zone of the Great Artesian Basin”. In fact the area that Santos’ EIS covers is ‘termed “The Southern Recharge of the Great Artesian Basin”’ (King). The same point is made by another: ‘Santos in their introduction stated: “The project is not located within a major recharge cell of the Great Artesian Basin”. All the CSIRO maps, geoscience, all the GAB mapping show clearly and irrefutably that this statement was untrue’ (Kennedy). Another stressed the ‘Pilliga Sandstone, including areas impacted by this project supply the majority of the GAB recharge in New South Wales’ (Hogan). Scientific knowledge rebuts the Santos claim, as does local knowledge: ‘I once asked an old bushie about the Pilliga. He said, “Why do you think there are no big rivers coming out of such a big area?” I realised that it is made to be a sponge. It is a recharge area of the GAB, just as nature intended’ (Marshall).

One Narrabri landholder explained the process: ‘we do know that the location of the planned gas fields includes one of the main recharge areas of the Great Artesian Basin, and one of the very few locations, which in total make up only about .2 per cent of the whole basin where the recharge is greater than 30 millimetres per year. Drawdown at this location has the potential to stop free flow of water to surface springs and bores’ (Whitehouse). There are concerns about the loss of the recharge, but also about contamination of the Basin: ‘It is axiomatic, in my opinion, that the poisonous water will leak into the great artesian basin either during the extraction or as a consequence of the extraction when Santos is long gone, 20, 30, 50 or 1000 years away, when the infrastructure begins to break down’ (Breen).

The time frame for these impacts extends across generations, and many invoke intergenerational injustice. Several presenters invoke responsibility to today’s young people, and sought to personalise the injustice, literally putting a face to the issue: ‘You will be helping to ensure that in 2111, when Neve is as old as her great grandmother, there is still a Great Artesian Basin to feed her cousins and their peers. That would be true intergenerational equity. And there they are [showing pictures of the next generation], if you can see them’ (Vost). The attitude of the company, and the planning department, is seen as inhumane: ‘There might be some damage but what we don’t know won’t hurt us... when something does go wrong it will be too late to do anything about [it]... The project plan is that the operation will be for a period of around 25 years. That is just a fraction of the cycle time for water flowing into the Great Artesian Basin (Oldfield).

One challenge from supporters of the project was that farmers were routinely wasting water flowing from the Basin: ‘The forecast result, annual leakage of some 60 megalitres, maximum, from the shallow aquifers, which take some 200 to 250 years to occur, is a number that is negligible compared to the 165,000 megalitres of extraction by our other industries’ (Brennan). There is discussion in the presentations of declining pressure in the artesian bores, which had led to the regulation of bores under the NSW ‘Cap and Pipe Bore’ program, which had capped over 8000 bores (Russ-Deans). This was stated to be a successful program that had restored bore pressure, yet was now under threat with the Santos project. Project supporters levelled accusations at farmers for still wasting water – one presenter expressed concern that the Cap and Pipe scheme ‘still has about five per cent of bores to cap in its program’, asking ‘why is this water use not criticised, but the water use by Santos – by the Santos project – is’ (Flower). Other reported that efforts at addressing falling water pressure had been successful over some years: ‘I was on the GABSI Cap and Pipe Bores Committee and as I tried to get people to cap and pipe their free flowing bores to save the water and to conserve the pressure... We had been conserving the water and building up pressure while CSG mining does the exact opposite. It drains the water and destroys the pressure’ (Kennedy).

Loss of groundwater

There are parallel concerns about the impact on groundwater, which, again, is critical to the survival of farming communities. Presenters emphasise that ‘water is without question the most precious asset we have’; importantly, it mattered little whether the company respected farmers’ choice in whether to host CSG wells or not as the impacts were much too widescale: ‘groundwater depressurisation and drawdown in aquifers together with contamination is a real risk and does not respect property boundaries’ (Ciesiolka).

Groundwater depressurisation was acknowledged by the project’s Water Expert Panel, yet this was not considered a serious risk (Jackson). One supporter of the project reported minimal impact: ‘The water supply from the reserve comes from the bore on the reserve and the bore has been stable in terms of its supply – well, forever, really, and there has certainly been no issues have arisen in that bore supply since Santos commenced its operation virtually next door’ (Booby). The drought had magnified the importance of groundwater: ‘I thank my lucky stars, the blessings every day to having access to this beautiful spring water that sustains not only our property that produces beef and other crops, but sustains – it’s the life blood of this country’ (Sanders). A straightforward zero-sum game is proposed: ‘Even the slightest risk to the water supply for stock and country towns is unconscionable... If the water level in my bores were to recede, I would not be able to run stock or have a sufficient water supply for my home. This would be the position for thousands of farmers’ (Hunt).

Reliance on a single bore is commonplace: ‘Our farm relies on underground water, and our main water supply comes from the Gunnedah-Oxley Basin in the form of our main bore, which is 307 metres deep on the eastern side of the Pilliga’ (Donaldson). The loss of groundwater is widely feared: ‘For many communities around us, this is their only source of water. Where do they go if this water is no longer there? I fear that many of these families will become displaced from their homes and lives and with that goes jobs in the communities and agriculture’ (Perry).

Water contamination

Concerns about contamination relate to the underground migration of methane and other contaminants into aquifers due to disruption caused by drilling. Depressurisation underground is itself seen as disruptive, drilling itself is seen as exacerbating fault lines and abandoned drill wells are seen as vulnerable to corrosion: ‘All wells will fail eventually: an impermeable layer of rock is no longer impermeable when you drill a hole through it. Migration will occur between aquifers and coal seams eventually’ (Bragg). As another presenter stated: ‘Experiences in the US and in Queensland suggest that over time, failures in well integrity are inevitable, despite the best intentions of the operators and the regulators. This fact is indisputable and the industry itself recognises it’ (Adams). At least one farmer was preparing for a drawn-out contest: ‘I’ve gone to the personal expense of getting full CSG testing done on our bores... so I have a baseline done prior to the potential CSG invasion of our district’ (Bragg). Another resident joked ‘I’m not keen to bake a cake with cadmium and other heavy metals’ (Schultz).

The process of extraction and processing is itself highly risky, with extensive ponds used to store large quantities of contaminated water. The existing production pilot, even as its small scale of operations, had been associated with a number of spills. These generally involved wells or waste storage overflowing and contaminating the land with salts and heavy metals including uranium and hydrocarbons. Several participants reported on having visited these spill sites that had not only killed existing vegetation but had so badly contaminated the land that regrowth was failing, despite the best efforts of Santos to replace topsoil, re-plant and water the areas: ‘Despite spending \$17 million, Santos have been unable to rehabilitate these dead areas’ (Schultz). At one storage on the production pilot site an overflow in 2014 included uranium as well as other heavy metals, ‘at 20 times higher than safe drinking water guidelines’ (Tanner). This was said to have attracted a \$1500

fine from the NSW Environmental Protection Agency (Walsh). Another visitor to the area stated ‘I have been involved in bush regeneration for over 10 years, and it certainly didn’t look like that site was going to be regenerating anytime soon. (Juteram)

The expectation is of more spills if the project was to go ahead: ‘When – not if – there is another toxic spill... our properties, bores, soil, forests will become worthless and uninhabitable by us, our children, their descendants, [and] all the wildlife we value and cherish’ (Bragg). The wells are seen as insecure even in the near term: ‘sooner or later there will be a serious issue and the cracking or the leaking will lead to an issue that will put contamination into our water supply’ (Wallis). One quotes the latest science on the viability of the wells: ‘industry records show that 6.5 per cent of well casings fail initially, 60 per cent fail over 20 years, but all fail over time’ (Bennett). Another underlines the point: ‘Corrosion of the proposed plant and infrastructure, and this includes the CSG well casings and tubes, will ensure the failure of 100 per cent of wells over time. This is the chemistry; not some company’s marketers international best practice which would appear to have been carefully selected to maximise that company’s profits. This is real chemistry’ (Fleming).

Supporters of the project were more sanguine. One had followed-up on claims of negative impacts from CSG in the US: ‘I looked at the site of that movie of Gaslands, so looked for the wastelands they described. It’s just – it wasn’t there. The greens had lied about the impact on Dimock in Pennsylvania. It was just a rural community that was getting on with its life. You couldn’t see the impact on the community. They were getting on with their world. There was no environmental degradation’ (MacDonald). They acknowledged the ‘regulatory framework’ was important and had evolved in Australia: ‘that’s proven to be the case in Queensland. I’ve mentioned you go up there – and, look, it’s certainly evolved over the last 15 years or so, but I think the industry is in – is well regulated and a good corporate citizen up there... So, look, we need to follow the science. When this industry is rolled out properly, it’s regulated properly, it can do incredible benefit to the community’ (MacDonald).

Implications for livelihood, food production and culture

Concerns are greatly magnified by the impacts of climate change: ‘All over the world the aquifers are drying up. Fossil water is now far more valuable than fossil fuel’ (Kennedy). There are concerns about the water take that the project will require, especially in the context of drought: ‘To give a private company our future water that is needed by a whole community is irresponsible’ (Thompson). The water usage figures again are seen as speculative and over-optimistic: ‘Santos may be using more than 100 times more water than they will be licenced for, but we wouldn’t see this for decades’ (Broughton). Many farmers stated they had become absolutely dependent on groundwater, and that any loss of pressure in the aquifer would leave them with nothing: ‘At the core of my property is a spring, and that provides me with fresh drinking water...depressurising of the aquifers – and Santos admits this – mean that I will lose that spring. According to the development-consent document, I will be compensated, but the compensation is absurd. Santos have offered me a water tank’ (Pockley).

Many farmers testified to the impacts of drought, demonstrating their dependence on the artesian basin: ‘Our farm is totally dependent on rain that we store in our fallow soils. We have no other surface water. Last year our farm ran out of surface water, our dams dried up, our tanks were empty, and our soil moisture was totally depleted. Our stock survived on the artesian water (Kirkby). The pattern was plain: ‘Our business, like most farming businesses in the region, is completely reliant upon underground water to meet our water requirements, which is primarily to water livestock. We’re very fortunate to have this resource, and we treasure it. In this hot and variable environment, we simply cannot rely on rainfed surface water (Adams). Again: ‘We’re a mixed farming family at Warren... For the previous drought we relied totally on underground water

for 18 months. The surface water was all gone and we still kept people employed and produced, at a reduced capacity, because of that underground water source (Russ). And again: 'In the last three years we have had unprecedented drought and in the last year there has been no water in any of our 28 dams, plus the river didn't run below Warren. If we did not have our seven bores, there would have been no water... If we damage the Great Artesian Basin we will return this country to pre-1900 levels of production in relation to water where you leave when you run out. That doesn't sound like a good plan. Let's go with renewables' (Irving). Something of the harsh personal reality is conveyed in this statement 'we would literally have to walk off our property if we lost our artesian water; our property would be worthless' (Kennedy).

More generally, several presenters invoked the wider meaning and centrality of water: 'Water is life and without water we have no life. No plants, no creatures. We all need water. ... There are alternatives for energy but ...there is no replacement for good quality water' (Matchett). Both farmers and Indigenous participants stressed that land and water are inseparable: 'We want our land to be protected. We want our water to be protected. We are going to need every drop of water we can have' (Kvelde).

Overall, the question of water, and the intense anxieties expressed over the impact of even a marginal loss of supply, can be seen as a proxy for climate change and resulting recurrent drought. One presenter raised this directly: 'I don't know if the panel understand the anxiety and stress we have had – have as a community in the last three years because of the unprecedented and relentless drought. The key factor of getting through was the permanent underground water' (Parker). Another put it this way: 'In our often drought-stricken land where the Darling no longer flows as a continual river it is water that we need, not gas' (Vickers). The unity and depth of outrage was apparent: 'We can survive droughts but can we survive Santos and coal seam gas? Mentally, this will be a region of crisis as we wait for the unknown impacts of this project. After years of investment in water infrastructure let's not see it wasted. We have a duty of care as we are custodians of the land and water for future generations. We have never seen the depth of feeling with communities united in their opposition for this project' (Parker).

3. Climate Change and Biodiversity

Climate change was raised by the vast majority of respondents as a key impact of the Narrabri gas project. It is raised in the abstract, in terms of greenhouse gas emissions resulting from the extraction and burning of CSG, but also more concretely in terms of the impact in the present, especially in terms of drought and bushfires, and into the future for the children and grandchildren, held-up (literally in some cases) as the real bearers of the project's cost. The challenge to the resulting injustices is sharpened by extensive documented illustrations of the manipulation of climate concerns by the company and the planning department in its assessment of the project. These ways of translating and politicising abstract global warming hold many lessons for understanding how to talk about climate change today. The discussion here proceeds along this trajectory, from the abstract to the concrete, from science to politics.

Climate change impacts

The civilisational threat of climate change was asserted by many: emissions were 'putting the final nails in the coffin of life on earth as we know it' (Wagnet); 'contemplation of any new CSG project is simply laughing in the face of the certain death we are designing for our environment' (Richter). The risk was extreme: as one put it, 'Pandora does not go back into her box', adding, 'The earth is strewn with unintended consequence and I implore you to remember the precautionary principle and think deeply about this tremendously profound question that you have to consider for all of our wellbeing' (Longmuir). Another presenter took the long view, invoking historical responsibility: 'Homo sapiens as a species has been in existence for 200,000 years. The second most significant decision ever made by humankind was 100,000 years ago, when our ancestors walked out of Africa, proliferated and dominated the planet. The most significant decision will be made this decade when we will decide to stop runaway climate change and prevent the extinction of our species and most others' (Gray).

The inter-related impacts of climate change, revealed in the landscape, are asserted as signalling a transformation in rural life and livelihood. One stated 'Climate change gnaws away at me day after day because complex life cannot survive without water, without food, without a stable climate' (Jacobs). Several farmers spoke of the unprecedented heat and drought: 'I farm on the Liverpool Plains and we are now operating at summer temperatures 330 per cent above our long-term average'; as they explained, historically there had been a yearly average of twenty days above 35 degrees, 'in the last decade this has risen to over sixty-five days' (McCalman). The change in climate was a signal for change: 'The scale and magnitude of the drought and following fire season have been a wake up call to all of us. We must change the way we do things and we have to start today. Only then do we give ourselves a fighting chance to turn things around' (Walker).

There are reported effects on health and livelihood: 'Farmers have to work fewer hours out of doors because of the increased risk of heat stroke. We live the increased severity and frequency of droughts, having just come through the worst drought in living memory. The fear and expectation of another is always with us' (Fletcher). Cropping cycles were becoming increasingly uncertain: 'We currently have farmers in our region, they're having to spray retardants on their barley crops because our winters are too warm. They're having to make decisions about things like that. We

have amazing sorghum crops that have been lost because we have an earlier heatwave than usual, and it's cooked a week and a-half before harvest and turned it into stock feed' (Matchet). As another farmer outlined: 'Climate change is our biggest threat. In the recent drought we were totally destocked for three years. That means no income. We sell our livestock earlier than most in order to preserve vegetation and groundcover. The Macquarie River has never dried up in my lifetime, and I'm over 60. We had no surface water left, no river water, and relied upon bore water for human needs. Wildlife had no water either. We experienced fish kills of yellowbelly and Murray cod, some over 80 years old' (Mildner).

Global justice and responsibility

There is a strong appeal to international responsibilities: 'According to the UN Sustainable Development Report, Australia ranks 176th out of the 177 countries that they assessed regarding climate action. That is the second worst in the world; the second worst of all the countries assessed. I'm shocked and ashamed that a wealthy and developed country like Australia, with so much renewable energy potential, could do so badly' (Osborne). Another stressed 'Australia has such opportunity – or rather, responsibility to position itself as a leader, for change for a better future instead of a spoilt kid at the party, scratching for the last of the lollies' (Teagle).

There is a strong appeal to fairness and international justice: 'If we don't do our fair share [of emissions reduction], we are being freeloaders, free riders, laggards, shirking our duty to make a fair contribution to tackle climate change' (Creamer). As another put it: 'The whole world is being asked to leave fossil fuels in the ground and reach net zero emissions by 2050. So why on earth are we proposing to develop yet another gasfield at Narrabri. ... It seems to me the Department is just thumbing its nose at the widely accepted call for urgent action on climate change and saying that it is someone else's problem. Nothing else could be further from the truth. Their role should be to plan for a better future' (Jessup). The fossil fuel addiction is seen as a treatable affliction: 'Australia has the largest resources for renewables anywhere in the world and is no less morally bankrupt than a drug dealer for opening up new fossil fuel industries when there is no need' (McDonald).

The responsibilities translated directly into policy and law: 'Courts in Australia and all over the world are rejecting proposals that risk exacerbating anthropogenic climate change and the Narrabri Gas Project would do exactly that' (Phillips). Several mentioned the 2019 Rocky Hill judgement: at it, Justice Preston, 'Australia's most senior environmental judicial officer' stated 'that no new fossil fuel project, no matter how small, no matter whether it's coal or gas, can be approved at this point in history' (Clyde).

Intergenerational justice

Many participants referred passionately to the intergenerational injustice of climate change; as one put it, the project was 'an intergenerational obscenity' (Boyd). One participant posed the question in terms of intergenerational trust: 'In a world where climate change is on the many children's television programs and podcasts, in the school curriculum, a normal consideration, the daily decision-making, why on earth is the department of planning, infrastructure and environment considering approval for a gasfield to cover inland New South Wales? I ask of our government how they expect the youth of our nation to trust them' (Hunter, N).

Many of the older participants, many of them grandparents, voiced the responsibility to future generations: 'Yes, I'm old, but I'm a parent and a grandparent. Not only that, but every human on the planet needs to look out for next generations – of the coming generations and a key reason why this project should be refused is that we do not need fossil fuels' (Dey). In a similar vein, another stated 'Speaking as a concerned wife, mother, grandmother, grazier, teacher and community

member, but foremost is speaking up for my granddaughter, whose first year of life saw drought, fires, skies filled with dust, smoke and ash. Whilst she is not old enough to speak, she needs to be heard' (Perry).

There was a powerful empathy for the justifiable fears of young people, that the project 'will exacerbate climate change, bringing us closer to an unliveable world. It impacts us all, but it is a fresh hell for our youth, who are right now, at best, confused but more likely terrified as to how to ensure they will have a liveable future. Right now, we can help by stopping this project' (Teagle). There was shock at realising how climate change was creating a generation without hope: 'My sons and daughter-in-law and many of their friends, who are all intelligent, employed, contributing and functional members of society, are so pessimistic about the future of the world that they have made the decision not to have children' (Hendriks). Another made a similar point: 'In the face of an unstable climate the richness of life's opportunities are diminished. Choices we have taken for granted like where to live, buying and insuring a home and whether or not to have a family are becoming harder. Anxiety levels in young people are increasing, and the capacity of young people to emotionally invest in their futures is being affected' (O'Leary).

The project marked a key moment in the struggle to reduce emissions: 'This project has the potential to be a pivotal choice for our nation. Our kids and their kids and generations that follow will judge us on the choices we make now. Let us not demand their forgiveness' (Vaughan). And again: 'One day my children will turn to me and ask, "Mum, did you, in the face of decisions leading to catastrophic climate change, how did you raise your voice?" At that point I want to be able to look them in the eye and say, "Everything I could"' (O'Leary).

There was political force to this demand for intergenerational justice: 'Our children are fed up with the lip service we pay to intergenerational equity, distributed equity, distributed inequity, distributive justice, the precautionary principle, ecologically sustainable development. What they want is urgent action from all levels of government, not approvals of fossil fuel projects' (Abbott). Another presenter offered the hope of a move beyond the 'colonial exploitative mindset': 'We have seen the destruction our colonial exploitative mindset has caused with the devastating cascading effects of the recent droughts and fires. Surely it is time for a new reasoning in considering projects such as the Pilliga gas field.... leave a legacy of hope for future generations in the outcome of this pivotal decision by showing we do care for the needs of future generations over short term political agendas' (Dolphin)

NSW climate policy

There were many comments expressing concern that greenhouse gas emissions from the project are said by the department to be acceptable. This was set against the NSW government commitment to emissions reduction. One speaker highlighted the contradiction: 'There seems little connection between the Department's assessment and the climate policies of the NSW Government. NSW has adopted a net zero plan 2020 to 2030, the foundation for NSW action on climate change, yet the assessment fails to address how the project advances the goals of the plan specifically and how it helps to achieve a 35 per cent reduction in NSW emissions by 2030' (Richardson). The department assessment calculates the overall greenhouse gas emissions from the project in terms of overall national emissions, but not in terms of NSW emissions reduction goals. 'NSW has a target of net zero greenhouse gas emissions by 2050 but no genuine detailed plan to achieve this target; does the government expect to reach this target by magic instead?' (Stuart)

Claims in the Department's assessment report that gas that was otherwise exported would meet the market demand that Narrabri gas could supply, and that therefore the NSW emissions would not rise if the project went ahead was condemned: 'Suggesting that carbon emissions are acceptable

because they will happen as a matter of course is highly inappropriate from a government department in New South Wales' (Oldfield).

At the national level there was growing concern at the impact of CSG, especially in terms of methane emissions: 'Researchers have singled out rapid growth in gas exploration in Australia over the last decade as something that must be addressed to give a chance of limiting warming to two degrees' (Dark). 'The Department seems comfortable with a contribution of up to one per cent of the nation's greenhouse gas emissions that this project will contribute to... [Yet] we have leading climate scientists warning us that we have no carbon credits left to burn and all fossil fuels should stay in the ground if we want to avoid catastrophic climate change (Pryor).

Transition fuel?

For several supporters of the project a shift to renewables was seen as desirable but not immediately available: 'You know, I agree, in principle, that we need to move towards renewable energy sources, and there's been lots of talk about that, and it's all very valid. But, you know, there's a long way for us to get to that point' (Condon). One supporter stressed the project would help Australia move to renewables: 'It would go as far to contribute towards diversification of the Australian economy so that it is not so reliant on fossil fuels, which as renewable technologies progress will lose their value' (Campbell).

One supporter emphasised the US shift from coal to gas in reducing overall greenhouse gas emissions: 'I think it's important to acknowledge that the greenhouse gases in the United States are back to the levels when President Clinton was president, and that's largely attributed to the gas and shale industry there' (MacDonald). Another illustrated the point: 'Modern [gas] generators produce 50 to 60 per cent less carbon dioxide per kilowatt produced than does coal', adding 'Ever wondered why forklifts in buildings are run on gas and not petrol or diesel? Because it is such a clean fuel' (Flower). As another supporter stated, succinctly: 'As the coal fleet retires the gas industry will become even more and more important' (MacDonald).

The department's assessment report accepts this broad argument that gas is a 'transition fuel' required to underpin intermittent fossil fuels. It argued Narrabri CSG would replace high-emitting coal and hence would reduce overall emissions. Many speakers challenged this claim. One presenter was succinct: 'Burning one fossil fuel to replace another does not make sense' (Donley). Another likened the claim to 'spruiking the benefits of carpet bombing over a nuclear strike' (Lyford). One reported 'It's deeply disturbing that the Department of Planning subscribes to the misrepresentation that CSG is a transition fuel' (O'Hara).

One speaker acknowledged there may be a need for 'firming' of renewable energy but questioned the extent to which it was required: 'We do need natural gas as a transition to clean energy, but the experts say we have a huge supply of gas which will take us well into the next decade... So we don't need this extra gas' (Davis). Others stressed how fast renewable energy and storage was developing: 'If it's a transition fuel, I don't think it will be with us in 10 years as the major source, the way renewables are moving. But more importantly, it certainly won't be with us in 50 years. But we will still require food in 50' (Chadwick)

Calculating project emissions

To be characterised as a 'transition fuel' CSG has to be presented as producing lower emissions than coal. When burnt, pure methane produces about half as much in aggregate CO₂ equivalent emissions as coal. Whilst this may hold in the abstract, it is not necessarily a given. In fact, as several speakers argued, when all the various forms of greenhouse gas emissions associated with

CSG are factored-in, it very closely approximates the coal emissions.

One initial issue is the nature of the generation process: if gas is to be used to cover for intermittency in renewables then it must be available at the flick of a switch, as 'peaking' power. The problem is that thermal power plants, where the fossil fuel is used to produce steam pressure to power turbines, are much more inefficient when they have to be turned on and off. This requirement, at the point of power production, reduces the emissions efficiency of gas. As one speaker put it: 'Gas peaking plants are less efficient and potentially reduce emissions by only 31 per cent compared to coal. The 50 per cent applies to gas baseload plants and these are neither proposed, nor do they make financial sense' (Richardson).

Further, the burning of the gas itself is not the only source of emissions from CSG production. The drilling process releases underground CO₂ and the production process leaks methane into the atmosphere. The company and the department's assessment report claim that the gas wells would produce very little carbon dioxide and that there would be minimal leakage of gas in the production process. But both these claims were challenged by many speakers.

In the department's report it is assumed that leakage of methane, so-called 'fugitive' emissions, is negligible. This, as noted below, is based on 'pilot' data from a small number of wells in Queensland published in an industry-funded report; emissions were only at the well head, 'measured from well pads, so cannot give a full representation of the whole of life emissions' (Richardson). Several speakers referred to other studies showing the likely figure for leakage as high as three per cent, which, 'across the gas production system, would wipe out any of the emission benefits of burning fossil gas over coal for electricity' (O'Leary).

The issue of the CO₂ content of the wells was also highly controversial, with the company stating there was a very low CO₂ content in the wells, against historical evidence from the Pilliga provided by experts showing CO₂ content as high as thirty per cent. With the company refusing to release its own data to establish the facts, it was impossible to assess the overall emissions of the project: as one presenter said, 'I can't actually work out the true emissions, because all the base data is not in the EIS to allow you to do that, so you have to trust some of the figures that is presented' (Kelly).

There is the further and perhaps more pressing problem of the timeline used for calculating the impact of methane emissions. Methane gas is 86 times more powerful as a greenhouse gas than CO₂ but it dissipates much more quickly: while CO₂ remains in the atmosphere to warm the planet for centuries, methane dissipates rapidly, so its warming effect is large initially and then tapers off rapidly. Consequently it matters what date is chosen to calculate the warming effect of methane emissions. The company and the department assess the warming effect at 100 years, hence the methane is assumed to have an overall warming effect just 25 times higher than CO₂. Yet in just 20 years time the warming effect is considerably higher, at about 86 times the warming produced by CO₂.

Hence, on a 20-year timeline gas will be considerably more damaging. As one presenter put it: the '100 year global warming potential used for methane was 25... on a 20 year timeline it is 84 to 86, and that would be a better assessment timeline for the Narrabri Gas Project' (Kelly). And most significantly, it is the 20-year timeline that matters in terms of climate tipping points: 'Methane is around 86 times the warming potential of CO₂ over a 20 year period. This is the critical period that will make the difference between containing climate change, and losing the battle' (O'Leary).

The accumulated evidence of apparently wilful effort to massage the emissions potential of CSG and the Narrabri project leads many to question the motives of the company. Some clarity was offered by one presenter, who reminded the IPC: 'Just three years ago, Santos told its shareholders

that its business plan was based on an increase of four degrees Celsius in the global climate' (Hinman). Santos' statement had been made by the Chair of the company at a shareholder meeting in 2017, where he clarified the 4 degree C target was consistent with the International Energy Agency's 'business as usual' scenario and as such was 'sensible' and 'consistent with good value' (as reported in the *Guardian*, 5 May 2017).

Biodiversity

The impact of the project on the Pilliga State Forest, and on related biodiversity, was raised by several community speakers at the IPC. The large area known as the Pilliga Forest is sometimes referred to as the 'Pilliga Scrub', reflecting the extent to which it cannot sustain agricultural use. Instead, at colonisation it became a logging resource, with the larger trees removed over time, leaving a large relatively cleared yet still integrated forested zone, the largest temperate forest in NSW. The proposed gasfield will impinge on the forest, segmenting it into wells connected by roads and pipelines.

Several stated the Pilliga was a unique biodiverse remnant: 'The Pilliga Forest is a globally recognised, key biodiversity area. It is 500,000 hectares of rare, intact, temperate eucalypt woodland' (Goswell); 'The Narrabri Gas Project will slash its way through the largest temperate rainforest in eastern Australia' (Louise). After scientific review the Pilliga had qualified as a 'Key Biodiversity Area' under the International Union for Conservation of Nature mainly due to the presence of endangered species (Goswell). Concepts of biodiversity can help reveal the interconnectedness of socio-ecological life. As one speaker put it: 'Respect for traditional custodians and respect for clean air plus dark skies plus intact forests plus clean water equals interconnected healthy biodiversity and communities for the long-term, for future generations. The Pilliga is a national jewel too precious to plunder' (Hosking).

Several spoke of their immediate personal experiences in the forest: 'the days and nights I have spent camping in the Pilliga watching the emus dashing by and wild flowers springing up near the sandy creek beds, these have been some of my most treasured moments' (Hogan). Another recalled: 'I stood up high on a fire tower and looked out over the intact, beautiful Pilliga Forest where birds, koalas, and rare and endangered plants have survived for millennia... the largest unfragmented block of temperate, dry forest and woodland in eastern Australia... a biodiversity hotspot' (Costello).

A long-time observer of forest birdlife recounted, 'For nearly the whole of these 32 years I have been doing these [bird] surveys both in the Warrumbungle area and also in the Pilliga Forest. ... people are aware that birds are declining in their range – declining in number and their ranges are shrinking. The main culprit has been lost habitat... The proposed Narrabri gas field would fragment our forest and farmland. It would be like a cancer creeping through the largest woodland bird habitat in western New South Wales' (Stevens).

Several stated the department had failed to properly assess the biodiversity of the forest, emphasising that even in terms of what had been assessed the cost was too high: 'The department is prepared to say this vandalism is in the public interest, when, although only limited surveys were actually undertaken as part of the assessment of the gas field, even these found 10 threatened plant and 35 threatened fauna species in the gas field area, including Pygmy Possums, koalas, and Pilliga Mouse' (O'Hara).

One supporter of the project suggested that increasing access to the forest would enhance management: 'One of the big benefits of having this project in part of the scrub is, when you've got people in there, you can get some land management benefits... So all of these access tracks and

people going regularly into the scrub in that project area can bring some major benefits' (Flower). One example was dealing with traps for feral cats, which required regular attention. Yet the wells were also expected to have a severe impact on forest life: 'Having six pilot wells across the region permanently alight will both fragment the region and affect the behaviour of wildlife and their interactions with flora such as pollination' (Martin). There was also a concern about the impact on water in the forest: 'The unique flora and groundwater dependent ecosystems rely on clean water. They don't need polluted castoff waste water disposed of down Bohena Creek by a company that has no other way of disposing of it' (Druce). Another made the spatial comparison between impact on land and impact on the ecology: 'While the DPIE looks at the map and sees only 181 hectares impacted, I look at the map and see thousands of localised population extinctions across the entire gas field' (Green). There were manifold risks: 'I think the project will have unacceptable impacts on the Pilliga Forest by fragmentation of the landscape, with tracks and gas wells... There's also unacceptable impacts on groundwater, dewatering of the coal seams, toxic chemicals brought to the surface, which will also impact on biodiversity in the forest, as we've seen in some of the previous coal seam gas water spills throughout the Pilliga Forest, where the vegetation hasn't returned' (Stanton).

And climate change made conservation more urgent: 'We should be treating this native woodland as precious, seeing it as a haven for threatened species, a potential recovery site for the koala population so damaged by the recent summer fires, and doing everything we can to enhance its ecological health' (Alcorso). Concern about the impact on koala habitat was critical: 'After the devastation of the recent fire season, it means we do not have any native habitats to lose. The areas left that survived need to be protected as the oasis they are' (Evans).

4. Other Hazards

There were a number of less prominent issues but no less important raised by presenters, which were also addressed by the department. These are grouped here under the rubric of ‘other hazards’: fire, light pollution and waste.

Fire

Presenters described the Pilliga as a ‘tinderbox’ over summer. Into this context the Narrabri CSG project would bring flares, ‘naked flames that will burn 24 hours a day, seven days a week, through all seasons including the most extreme fire days’ (Watt). The flares take two forms: ‘pilot flares’ of four metres in height six metres off the ground; and ‘safety flares’ of one and a half to thirty metres that are fifty metres off the ground. A local firefighter stated ‘It is absolutely plausible that partially combusted material could be carried down to nearby vegetation, outside the vegetation free zone of 40 metres and 130 metres, respectively’ (Watt). In the event of fire, in the midst of a ‘network of pipes of flammable gas’... who ‘will risk their lives fighting the fires and save the gas infrastructure?’ (Gray). Another asked ‘How well prepared is Santos for their disaster? Will they be prepared for a fire, maybe like the fires on the South Coast? How many firefighters will have to risk their lives?’ (Perry).

Several presenters described their experience of bushfires during the 2019-20 summer (see the Climate section above). One described living under the threat of fire, ‘Waking up in the morning, unsure of what each day would bring, and going to bed totally exhausted from the trauma. It wasn’t a question of if, it was a question of when’; after experiencing this why would the government ‘willingly bring into a forest a potential fire starter’, for them this is ‘not only illogical, it is immoral’ (Madigan).

Then idea of flaring-off gas during a total fire ban was incongruous: ‘The burn-off from the gas extraction, the gas flares, which must proceed even in times of total fire bans, will pose a large threat of bushfires in this region’ (Hendriks). It was like a ‘loaded gun’: ‘Santos has got these flares running in the scrub... they’re directly downwind. If there’s a hot nor’wester it’s very much like a loaded gun pointed at us all summer. And to be quite honest, Santos’ complacency, I think, is laughable if it weren’t so bloody serious’ (Donaldson).

Light Pollution

The construction of large flares across the north of the Pilliga, permanently alight, would be have a major impact on local residents. One presenter stated that ‘just one exploration flare at the Bibblewindi site and the Pilliga Forest, which is unmanned, produces more light pollution than the entire town of Coonabarabran with over 3000 people’ (Small). This was a flare five metres off the ground: ‘Santos plan in their EIS to remove their five-metre stacks and replace them with 50-metre high stacks with flames capable of another 30 metres... 10 times the current height, 40 metres above the tree line, nothing will block the light pollution on neighbours, nocturnal life, and surrounding townships’ (Small).

There were impacts in terms of locals and tourists viewing the night sky, and also for local animals in terms a permanent light disturbance: ‘Our dark skies; I cannot emphasis how important they are, astrologically, environmentally, economically, culturally, and spiritually, not just for our First Nations people, but for all of us up this way’ (Matchett). This had implications in particular for the nearby Siding Springs Observatory, a major focus for science and tourism: ‘Light associated with gas development in the dark sky region has the potential to reduce the ability of the optical telescopes to do their work. Mount Stromlo, predecessor to Siding Springs, became redundant, precisely because of increasing light pollution as Canberra developed in the 1950s. The New South Wales department of Planning and Environment’s own Dark Sky Planning Guidelines 2016 include gas flares, dust, lighting, and truck movements on gasfields as potential major emitters of light pollution’ (Sagar).

A representative of the Siding Spring Observatory stated the current extent of flaring was not affecting their ability to view the night sky: ‘The good news is the dark – is the skies above the observatory are still dark. But we have to remain vigilant’ (Lidman). They outlined a range of ways in which the project could minimise light pollution, expressing some hope that ‘If the project follows these guidelines, then it would be a satisfactory outcome from the perspective of the observatory’ (Lidman). Allowing excessive light would have a negative effect: ‘bad lighting threatens the long-term future of the observatory and the status of the Warrumbungle Dark Sky Park, negatively affects the lives of humans and fauna, and costs companies and towns more money’ (Lidman).

Waste

There was extensive technical discussion amongst experts presenting to the panel of waste production and disposal at the Narrabri gas project. Waste falls into three categories – salt, hydrocarbons and heavy metals, and contaminated water. Community speakers addressed these issues more in relation to associated water, economy, biodiversity and health concerns. There was less of a focus on this issue per se from community presenters, though some direct comment was made.

The extent to which the department had approved the project without any meaningful plans for disposing of waste was considered illogical in the extreme: ‘As someone who is engaged in the process of issuing development consents, I personally would not approve the demolition of a carport if I didn’t know how the construction waste going to be managed’ (Mackenzie). A wait-and-see-approach was preferred against proper regulation: ‘This project has stages with localised uncertainties and risks, and you can’t find out about all these risks unless you do the drilling. These are (the department’s) David Kitto’s words, not mine’ (Druce). The government’s own waste management procedures had been flouted: ‘The proponent should have been required to undergo the step 5 of the Waste Classification Guidelines... the department has not even required them to do it’ (Christie). There was an unaccountable veil of secrecy over the chemicals used by Santos: ‘Chemical additives that Santos add to the pipes to extract the gas found 113 chemicals, 44 of them are harmful. But the government assessment report notes that their disclosure is not mandated, so we have no idea what these chemicals are’ (Wynter).

The sheer scale of the waste problem was emphasised by several: the ‘licenced waste facility has to take the 850,000 tonnes of salt produced over the life of the project, plus 720,000 cubic metres of coal-based drill cuttings, which is equal to 10,000 40-foot shipping containers’ (Barrett). The risks had been demonstrated - the spillage of toxic ‘produced water’ from the pilot wells could not be cleaned-up: ‘Once the spill has occurred, the Pilliga sands act like a filter. They absorb the pollutants. These pollutants are again brought up to the surface during rainfall and spread further and further each time. One pollutant spill can still be viewed in the Pilliga Forest which started in an

area of 50 square metres when we were pumping a dam out which has now turned into two kilometres long by about half a kilometre wide' (Tough). As another stated, CSG is 'toxic and dangerous in every sense - the safest place for gas is to be left where it is in the ground' (Mercier)

5. Social and Health Impacts

In terms of the social impact of CSG, many presenters raised concerns at the impact of Santos in terms of its efforts to gain consent for its proposals. The company had spent more than a decade in the region, offering employment and financial inducements, including contracts related to its production pilot operations and in terms of community funding. As a result, opponents of the project are highly cynical of the company's claims to have local support, stating for instance that the 'only people who want coal seam gas are the people with a vested interest in it' (Storer). Supporters of the project, understandably, were offended they had been characterised as financially-driven and uncaring: 'I reject the common statement that we do not care for the local environment, and we're only supporters for financial reasons. How could I possibly support a development that damaged the future of our shire, and ultimately the future of my family?' (McClure).

Supporters tend to welcome company support for the community, including for their own businesses. Several stressed the company had already invested in the community and the company planned 'to inject \$100 million-plus, which [will] provide long-term direct economic benefits to our local community and help foster prosperity in our region' (Brennan). Business owners supporting the project emphasised their interests with a wider community interest in the project: 'Now, do I have an interest in Santos getting an approval for this project? I guess I do. Yes. And so does every other member of the community surrounding this nation-building project. You know, the successful implementation of this project going ahead will provide so much opportunity for direct and indirect growth for the region, and regional growth will see improved educational and health facilities, diverse employment sectors, prosperity, confidence in our region, and once started this will continue to support itself. (Condon).

Another made a similar point: 'My support for this project is based on more than being a local contractor to Santos... if we are just one representation of just one contractor for Santos, multiply this number to get a further idea of the flow-on effects that this industry will bring to the economy of our shire. (McClure). They elaborated: 'I'm a proud Narrabri local, and I would not put my name to anything that I did not fully believe in, as reputation in a small regional community is absolutely everything. Santos has allowed our business to grow and develop into a financially stable business which, in turn, means that my brother and I and our family can stay in Narrabri and one day raise our children here. I've witnessed so many of my mates that have left our town to further their careers and business opportunities elsewhere. However, having a reputable company like Santos in our shire means that we have a future here in Narrabri' (McClure).

Supporters of the project, not surprisingly, stated it had local support and social licence. They emphasised good working relations with the company: 'They've been very obliging, they've integrated themselves within our community' (Redding). There is hostility to the claim that local people reject CSG: 'The publicly-quoted figure of 98 per cent anti by the anti-coal seam gas groups is clearly fabricated for their purpose... another example of their willingness to deceive the public on this issue' (Stewart). Another was 'blown away by the extent of the measures in place to mitigate workplace and environmental health and safety risks... Even the tough old Aussie blokes were comfortable to speak up with concerns for the safety of their workmates. This was a stark contrast from my previous experiences working for companies where showing concern for your safety was frowned upon' (Campbell). This experience contrasted with the 'image of a faceless

corporation riddled with greed who recklessly disregards the environment for shareholder profit... I've dealt with many different people in Santos, from tradesmen and enviros to middle and upper management, and I've even had conversations with Kevin Gallagher, the CEO. Everyone has the same positive outlook. They all just seem to be trying to provide a service, minimising risk and maximising benefits to the communities surrounding them' (Campbell). Another stated 'Santos' standard in construction and engineering is second to none. I can stand here today and state from firsthand experience that their overall operational standards are to the highest we have ever seen' (McClure).

In recent years Narrabri Council had moved to actively support the project but on the basis of a wide range of conditions, as the Mayor stated: 'We want to be sure our groundwater resources are safe from harm, we want to be sure that our farmers are treated with respect and compensated where it is fair and reasonable, we want the recommendation from the Chief Scientist's report on financial assurances to be enacted, we want the Department of Planning to say that the compensation and insurance funds are adequate and explain to us in plain English why they come to this conclusion, and we want continuous monitoring of gas wells in place until the science on abandoned wells is settled'. Most of these conditions were not on the table at the IPC, perhaps suggesting the Council would remove its support. The Mayor clarified: 'With the right safeguards in place and with the proponent's commitment to fund further research in the area of abandoned gas wells, I believe this project should be approved. Our support for the project is largely premised on social and economic benefits' (Redding).

Opponents of the project tend to interpret company support for community organisations as part of the company's public relations effort. One participant had observed this for a number of years: 'Santos bought Eastern Star and started handing out beads and trinkets to win favour and to compromise the community local council, giving sporting facilities, school prizes, et cetera, et cetera... Just like Captain Cook did when he encountered the traditional owners of this continent' (Ciesiolka). The social divide is sharply drawn, between a group of immediate beneficiaries, and those bearing the cost, potentially of their entire livelihood. One resident made this social antagonism clear: 'At the Santos AGM in Adelaide in 2014 in front of 800 shareholders and the Board, I asked the then CEO of Santos, David Knox, if he would give me a guarantee Santos will not poison our water. He refused. We have no confidence in Santos. People who are employed by Santos, or local business, or those who have a financial interest in this project are the only ones who support the Narrabri Gas Project' (Robinson).

There is evidence the company fostered a division between town residents who gained 'co-benefits' and farmers who would generally anticipate project impacts. One supporter of the project accused those opposing the project as deploying irrational argument: 'In a modern, civilised society we cannot rely on emotion based on misinformation to guide our decisions. We must rely on scientific evidence and expert advice' (Campbell). One supporter of the project stated their organisation, an environmental trust had 'specifically voted at a meeting to express their support... they took the view they wanted to show their support' (Booby). Yet the company appears to have deliberately sidestepped engagement with farmers who were critical of the project. One farmer put it this way: 'The project boundary is approximately 1500 metres from our back fence... Despite our proximity to the project, we have not once been contacted by the proponent for any sort of consultation... I would have expected that consultation with landowners to explain and identify impacts from the project would be an essential element in the development of any project, let alone one of this scale. To me, this just exemplifies Santos's disregard for the community they are claiming to be working with and supporting' (Watt).

One presenter described the social impacts as 'unmanageable', especially in terms of 'social conflicts over the proposed gas project, loss of rural livelihoods, impacts on Aboriginal people, and

the impacts of the Narrabri community as an already socially disadvantaged community' (Park). The company had failed to gain social licence for the project: the 'results of eight surveys show the opposition to the project varies from 2 to 1 against for the local Narrabri area and up to 9 to 1 against and even more when the wider community is included' (Murray).

The resulting local social conflict between the corporate, with its allies, and the opposition, is figured as a war of attrition: 'For over 10 years now, the people of this region have been nothing less than terrorised by the ongoing threat of coal seam gas mining in the area. I have watched many people's health, finances, their properties, their mental stability, all erode over time' (Wiles). The effects are negative sum, inducing a widespread spiral of confidence in the future of the region. One presenter recalled the EIS process: 'It is truly unbelievable. It is awful for the farmers, the environmentalists, all highly stressed over many years, absolutely fearful of the likely destruction of their businesses and everything else with it. Clearly frightened. All presenting carefully researched material including the inability to obtain insurance to conduct their businesses. The inability to have their product signed off as clean and green' (Roberts).

The corporate and governmental pressure translates directly into a regional psychological crisis: 'I am also concerned for people's mental health. After the longest drought in history, I have seen myself and husband as well as watched many farmers and in the community under enormous pressure and stress. I wonder how many will cope when they are faced to encounter the continued stress and pressure from the coal seam gas industry' (Perry). One opponent's personal story exemplifies this: 'I have sacrificed a lot in speaking out about gas. It has meant mine and my husband's prospects are reduced – job prospects are reduced. It has caused rifts with friends and extended family, and I have been publicly derided in the media, yelled at in the street, abused on the phone, ignored, spent many nights and weekends away from my children, and many a sleepless night' (Hunter, S).

There is a personal toll, in positive terms as the local population become citizen scientists, and lay policy experts, but at a cost as 'ordinary citizens to have no choice but become experts about this toxic industry in their communities. This is a massive social impact that robs people of time, emotion and productivity' (Lyford). For many the impact was profound: 'Since 2009 I have dedicated my life to protecting this valuable food producing region from coal seam gas extraction. It's hard to imagine unless you've lived through a long, protracted battle against a seemingly insurmountable foe, the toll it takes on your whole being' (King).

A researcher reported in their extensive interviews seeking to understand the social impacts of resource extraction, and their account is worth quoting at length: 'Respondents described feeling the loss of relationships with neighbours and friends, within social circles and community groups, and the overwhelming feeling of being unable to speak about this project for fear of the breadth of the divide between those in favour and those opposed. There was also a consistent fear that this social divide would only become more prominent, should the project be approved... Another key impact raised by participants was the sense of loss – lost time, lost livelihood and the cumulative effect that has on both mental and physical health... individuals had had to take time away from family, friends and even work in order to investigate questions which the proponent failed or refused to answer' (Viney).

Reporting on the failed attempt to introduce CSG in a nearby region one presenter outlined in detail some of the direct social effects: 'We experienced major social impacts of depression in our community, people who were on suicide watch and hospitalisations from stress and despair. When conservative communities long loyal to government and industry realise that they have been betrayed by the very institutions that should be protecting their livelihoods and environments, when deep trust is lost, the catastrophic social impacts are profound. We are sick of government decision-

makers ignoring the distress and decline in the mental and physical health of those impacted by such a toxic, risky and unwanted coal seam gas industry' (Lyford).

These stories of loss, and of hope, appear throughout the IPC hearings, and it is difficult to do justice to them. One story in particular, addressed directly to Gallagher, the Santos CEO, encapsulates many of the personal struggles that are reported across the IPC hearings. It is reproduced here in full (see Box 1).

Box

A Statement to the Santos CEO

My motivation every step of the way was simply that I wanted our region to improve, not regress. And I believe that the CSG industry wreaks more havoc than the benefits it creates. I grew up on a property in Western Queensland near Roma. My parents' certified organic beef cattle property was under direct threat from gas wells that were popping up around us. There was no way they could maintain their organic certification with hundreds of vehicle movements a day during construction and the contamination risk during operation. They were approached a few times over the years by CSG companies, were threatened with tight timeframes to make decisions, had long legal documents to wade through, and implications for their business to research and consider. Finally, when they aired their wish to not sign an access agreement, they were told that that was fine because the neighbours already had, and they could directionally drill two kilometres under our farm anyway without our permission. This compounded the stress that my parents were under to a point that they could not handle. My mum had an emotional breakdown, physically collapsing in the main street of Roma. When I picked her up, she was in a kind of walking comatose state. She couldn't handle crowds, bright lights, or loud noises, sleeping for days on end. My parents divorced and my dad sold our farm within weeks. CSG was the straw that broke the camel's back. My husband, three sons, and I, have committed to this region for the long haul. We have a mortgage and we have our roots in the beautiful limey creek flats of Huntley. Even though we were pushed to the brink during the drought, having to sell down our cattle herd and leave the region to secure work, we still chose to come back and resume life here. We have personally committed to this region. Have you, Mr Gallagher?' (Hunter, S)

Human health

Health impacts from the project were not considered separately in the department's assessment but were raised a number of times by community members. Health impacts were understood as both direct, especially from contact with toxic hydrocarbons and heavy metals, and indirect in terms of socio-psychological impacts and downstream climate change impacts. There was an insistence that health is non-negotiable, and could not be traded-off for presumed economic benefit: 'The Department of Planning will often make comments against health risks by stating that the benefits of a project outweigh health risks. Nothing outweighs health risks to our children and future generations' (Vickers). As another stated: 'We must not put jobs and business activity for a finite period before a healthy environment and the long-term health and quality of life for these rural communities' (Milson).

A number of current and former health professionals offered insights into the health risks from CSG. One listed in detail the causes and effects: 'Hydrocarbons, naturally occurring radioactive materials and heavy metals are associated with increased rates of bone marrow cancers, miscarriage, prostate cancer, decreased male fertility and infant neurological disease.... There is a

25 per cent increase in low birth weight babies in instances of mothers living within 1.5 kilometres of coal seam gas wells and this effect continues up to five kilometres away' (Vickers).

Hydrocarbon compounds, specifically BTEX compounds, released by drilling, were highly toxic, yet not properly assessed: 'Drilling and the removal of produced water release BTEX from the coal seam. Their short-term health effects include skin, eye and nose irritation, dizziness, headache, loss of coordination, and impacts to respiratory system, while chronic exposure can result in damage to kidneys, liver and blood systems. These BTEX chemicals are not assessed or addressed fully in this EIS' (Gaillard).

Several referred to the health effects of CSG in Queensland: 'The many evident public health effects experienced by residents that live in the gas field are, but not limited to, nose bleeds, headaches that continue for months, nausea, breathing issues, should I say, serious asthma attacks and hair falling out in clumps. These were experienced by Danielle Hodges and all of her family members, not just her' (Wilkinson). Again referring to peer reviewed papers, another stated that 'Apart from the mental health issues, known health effects include headaches, nausea, dizziness, vomiting, dermatitis, nose and throat irritation, coughs, difficulty breathing, burning and irritated eyes, nosebleeds, skin rashes, seizures, genetic defects, heart issues and cancers' ... Referring to other peer-reviewed research one presenter outlined findings that 'Blood immune disease in five to nine-year-old children in the CSG area... was a 467 per cent increase compared to the rural area with no mining activity' (Wilson).

Reflecting these risks, 'those employed in construction and mining have the highest suicide rates which makes these jobs the deadliest jobs in Australia' (Ranclaud). Though a trade union representative emphasized that work in the CSG sector was well regulated and that risks to workers were minimised: 'We are absolutely concerned that any work our members undertake is to be done safely and in a manner which means that they go to work and they come home safely. We've got a long and proud history of standing up for our members' safety at work, and we would not in any way, shape or form propose projects that would put our members' lives in jeopardy'. He argued CSG had proven to be a safe industry: 'The simple fact is that gas, be it on-shore gas development through CSG, through fracking... operates throughout the world and has been proven scientifically to do so safely, and we believe that there is enormous opportunities for the New South Wales industry and for New South Wales jobs' (Walton).

There was also the effect on the wider community. The region was already suffering from the effects of coal dust: 'We don't want our children and their children, in fact anyone's children living anywhere near gas exploration, extraction or transportation... we have already had folk hospitalised from toxic coal mining blasts targeting the coal seams; and we see the dirty smudge in the sky each morning full of chemicals' (Laird). There were also indirect pathways: 'any consumption of contaminated water by livestock or access to contaminated land will not only have adverse implications directly on livestock health, but it will provide a pathway for such contamination to enter the human food chain' (Adams). And finally, several raised the indirect health effects of climate change (discussed above in the climate change section).

The failure of the department to seriously address these issues was seen as very telling: 'the lack of health in the Department's final assessment is negligent... [They] do not care about the health of the local community' (Pedashenko). One made it plain that: 'Our community overwhelmingly wants and supports clean air, clean water and clean food, and our children deserve it' (Row).

6. Economic Impacts

The economic impacts are discussed here in the first instance in terms of the ‘opportunity costs’ (Chadwick) for other sectors of the economy, especially farming and ancillary industries, such as farm contracting, wholesaling and the regional retail sector. A key issue for farmers was the questions of who would bear the on-farm risks associated with CSG. Several farmers had checked whether their insurer was willing to bear these risks and were told it would ‘not insure public liability risk on land where there is coal seam gas infrastructure or mining’ (Russ). One had discovered that ‘the companies will not insure property with CSG infrastructure’, adding that ‘without insurance, we’re exposed to all forms of crippling litigation, a direct threat to our livelihoods’ (Irving). Another stated the problem would be broader, stating ‘I cannot get any cover over the CSG activities on my land. That’s frightening, when the biggest risk-takers in the world won’t insure you’ (Chadwick). One presenter was ‘concerned at the risk of inadequate or non-existent insurance cover’, adding ‘The exposure to my business I find completely unacceptable’ (Walker). This had implications for insurance against any losses resulting from CSG: ‘farmers could lose their industry accreditation in the event of a spill or gas infrastructure failure’ (Wilson).

There are believed to be wider risks from contamination, as one farmer stated: ‘We in primary production sign statutory declarations declaring our food to be clean and green. If we lose that clean, green image, we’re in a lot of trouble’ (Chadwick). Contamination or loss of groundwater could spell ruin: ‘Any contamination and drawdown of the Great Artesian Basin will make our property unviable, uninsurable, unliveable and unsaleable’ (Robinson). This was seen as a key issue: ‘Detection of contaminants would also mean that we would be immediately suspended from current and future market for our product... It is completely unconscionable that landholders will be placed in this position both now and into the future, essentially, having the risk of CSG operations transferred to them’ (Ciesiolka). One farmer clarified in detail the extent of this risk: ‘If we have a CSG operation on or within our ground water system, we cannot legally sign the required National Vendor Declaration as we cannot categorically say what chemicals or contaminants animals may ingest if land or water is impacted. For Meat & Livestock Australia, the MLA’s integrity system on farm risk assessment for persistent chemicals and physical contaminants require that we guarantee the animals that we sell do not have unacceptable residues of CSG production chemicals’ (Chirlian)

And the costs are understood to extend well beyond the immediate confines of Narrabri: one presenter referenced the Great Artesian Basin, ‘supporting a population of 120,000 people’, asking ‘Can we risk the current jobs sustained by this water in agriculture, town businesses and tourism, all for the creation of a possible 200 Santos jobs? Please remember that New South Wales’ agriculture is an 11.7 billion dollar industry’ (McCalman). One farmer summarised the impact: ‘The disruption, stress, lack of control over future family and business plans, the lack of public liability insurance, and what this means to financial institutions, and how do you run a large productive agricultural business without public liability insurance’ (McCalman). Another made this apposite point: ‘Why, then, if this industry poses no risk to my region, can’t we get an insurance policy to cover the risks? If they are as miniscule, as unlikely, as Santos would have us believe, why do I bear the risk?’ (Macrae).

There were further ‘opportunity costs’ in the wings. Currently there is no pipeline for the Narrabri Santos gas: gas from the pilot wells is burnt-off or used in the Wilga power station. The project depends on the construction of a pipeline across western NSW to the coast. That pipeline remains at

feasibility stage though the federal government, as noted, has mooted a taxpayer infrastructure subsidy to enable it to go ahead. The pipeline itself will have immediate impacts on landowners, and will open-up these western districts to further CSG exploration. Landowners highlight the negative impact. One argues it has ‘the potential to kickstart our Murrurundi Gas Field into further exploration, testing and production. The sacrifice looks like the diminishing prospect of ever selling our farms. It looks like the devaluation of our farms, our nest eggs, our retirement plans’ (Wallis).

The overall impact is intimidating and fear-inducing for many, including accounts of visits to Queensland regions polluted by CSG: ‘Families in the Chinchilla area... tearfully told us of the bathwater burning their children, of cancer clusters, of being able to ignite their tap water. We saw photos of damage and pollution on their farms. Many sold out to the company, their dreams dashed, and their homes were bulldozed. I cannot see why it would be any different in the Pilliga’ (Horton). One stated ‘We don’t like to air our dirty laundry, but we are suffering. Why would anyone look to the future in this area when CSG mining instantly devalues everything around it? Why would you build for the future in this area when it will be worthless? ... The constant nagging fear that we all have worked for will be nothing once the wells start popping up’ (Brady).

The DPIE’s assessment of the economic impacts had failed to factor in these important impacts: ‘The cost benefit analysis does not provide for impact on agricultural land which continues long after extraction of coal seam gas is finished... The calculations assume that agricultural production recovers instantaneously’ (Quince). One presenter asked the Commissioners to consider what the cost-benefit of refusing the project would be: ‘I ask you to consider what personal sacrifices the proponent, Santos, will make if the gas project does not go ahead. Apart from financial losses for the company and its shareholders, whereas our agricultural lands, precious water, farming, families and communities will make personal sacrifices and will suffer for generations to come if you recommend this project to be approved’ (Carrigan)

Economic benefit?

Setting aside the opportunity costs of the project, there was extensive discussion of the presumed benefits. For project supporters a key benefit of the project was to enable greater regional economic diversity: ‘Narrabri is fortunate to have diverse industries that can all coexist. Maintaining diversification means a stable and consistent economy and a strong future for our town’ (McClure). The local Chamber of Commerce representative, supportive of the project, also stressed the need to diversify: ‘Business has been extremely hard-hit by drought and we’re very aware that they can no longer survive and employ staff based solely on agriculture alone. The possibility of the establishment of a coal seam gas industry offers much hope and stability for them for their economic survival’ (Stewart).

There was a strong expectation the project would help local people stay in the region: ‘Retention of our quality young people is the absolute key to healthy growth in regional communities. We must be able to offer our young people quality long term varied career opportunities or they simply just are forced to leave. Santos has shown that they do predominantly hire and focus on local people, so we are confident that this will continue’ (Stewart). Another project supporter also emphasised diversification: ‘The employment capacity of the Narrabri project would be a massive boost to the Narrabri Shire and surrounding communities, not only during construction but long-term. With coal seam gas in our shire, we will have balance and local businesses another income stream vital for future opportunities, sustainability for our existing businesses and give the next generation an opportunity for employment in the bush, which is so desperately needed. The alternate is we keep following the slow decline and watch regional towns die’ (Goddard). They summarised: ‘We believe there is no future for the next generation within our area without diversification and the energy security created by the Narrabri Gas Project’ (Goddard).

There were hopes the project would bring growth to Narrabri: ‘Once you create an inland city, it will feed off itself. Once you have the population, the opportunities will follow. It will allow health care to improve, our schools to grow, retail shops to open and hospitality to thrive. Tourism will follow’ (Goddard). Several supporters stressed industrial spin-off effects: ‘It’s a wonderful once-in-a-lifetime opportunity for this region. There are numerous businesses just waiting for the approval of this project so that they can invest their money and their efforts into our region’ (Stewart). The Council was aiming to transform Narrabri into an ‘inland port’: ‘The other social benefits are the gas to our inland port. As I spoke of earlier, we are developing a very large inland port which will focus on manufacturing, and with the manufacturing will come jobs, will come growth, and it is what will sustain our community well into the future’ (Redding). One supporter anticipated that cheap energy from Santos would help support the region: ‘The supply of cheap energy from Santos, combined with cheap land, access to an efficient logistical rail link to all major Australian ports in close proximity to primary production make for a solution... All this development would see Narrabri’s population grow by the thousands and would see local business grow with it’ (Campbell)

The fear of regional decline was an important motivation for project supporters: ‘Most of the last remaining timber mills associated with the Pilliga Forest were shut down, leading to job losses and an industry shut down... Farms are now operating with a significantly less number of employees... We need economic diversity to survive into the future, and I believe this project fits’ (Brennan). Another stated: ‘I also support the diversification of this project; you know, what this will bring to the region that’s suffered so much through, you know, regional isolation, drought, and now pandemic. The Narrabri Gas Project will bring diverse income streams that would help ride through the droughts and the floods and the variable commodity prices that massively impact, you know, our ag businesses and the communities... (Condon). Another stated ‘I think it is important to have regional development and the gas industry can provide that. Agriculture is employing fewer and fewer people. A resources industry has the capacity to step up there. It’s important to have that diversification in communities’ (MacDonald). As another supporter of the project stated: ‘Societies that are not diverse economically are not resilient societies... We cannot just continue to rely on farming, which has always – and I emphasise “always” – been subject to such a wide variation in production, due to seasonal and climate conditions’; there was a need to ‘future-proof our town, area, and economy, with both agriculture and industry’ (Flower).

Many more were critical of this assumption that the region was in decline, and that CSG was necessary to help turn it around. The context of hard times for farming was particularly important: the proposal was activated in the aftermath of the region’s worst drought. The idea that a fossil fuel company should insure the region against the effects of climate change was in itself confronting. For many, as noted, the drought demonstrated not the failure of agriculture but its resilience: ‘Yes, there’s been a downturn due to the drought, but there is no reason to threaten a permanently sustainable industry for a quick buck’ (Marshall). The argument that the region needed CSG to diversify was not taken seriously. As one speaker put it: ‘Santos have said many times the Narrabri Gas Project will drought-proof the region. We haven’t been told how. Of course it is impossible and it’s ridiculous to even suggest it’ (Robinson).

Many speakers who opposed the project also demonstrated their support for regional diversification – into new forms of regenerative farming, tourism, Indigenous economies, and especially renewables – all threatened by CSG. Opponents were in general not against industrial development of the region per se: they generally supported tourism for instance, and backed the renewable economy. The issue was the specific environmental impacts of CSG. As one put it: ‘We are able to coexist with renewable energy sources, but we’ll never be able to coexist with the gas industry’ (Perry). One presenter spoke of the Pilliga Bore Bath: ‘For over 100 years people have stepped into

these waters in full faith that the water is safe. If this coal seam gas project goes ahead, we can no longer be sure of this' (Dolphin). One resident spoke passionately about the legacy they anticipated for the town of Narrabri: 'The tourists will stop coming because no one goes to a toxic dump for fun. Young people will move away in droves. Old people will see a town that was strong in their youth wither and die. ... We know what CSG is, what it will do to us, and we don't want it here' (Brady).

The boom-bust cycle of CSG was contrasted with the long-term viability of the farming economy: 'This industry erodes resilience of communities leaving them worse off than before the industry came to town' (Hunter, N). As one put it: 'We have right under our nose agriculture and tourism, both of which are economic powerhouses that are sustainable, established and capable of tremendous growth in the long term... [it] improves the value of land indefinitely, creating a platform for further investment and employment and in doing so tremendous intergenerational equity' (Macrae). Presenters spoke of the fall-off in social viability for towns in Queensland blighted by CSG: 'After the gas rush... the sports clubs who had previously received contributions from CSG companies now had all the gear and no volunteers, as so many families had left. Perhaps what I found most surprising was how the business community's perceptions changed over time. In 2011 senior business managers in Chinchilla were excited about what the industry could bring. In 2013 they were making money; in 2016 their disenchantment was striking' (Luke).

Many reference the long-term viability of farming as against CSG. One presenter stressed the regenerative benefits of farming: 'My model is based on 186 years and still counting, of sustainable, profitable prime agriculture, with good clean water needed to continue to produce food and fibre for the world' (Perry). Was 'the questionable short-term gain of the coal seam gas industry worth the risk of destroying a guaranteed sustainable long-term agricultural industry and a clean and liveable environment?' (McKenzie). Another stressed the financial reward: 'Farming, going forward, is potentially worth trillions of dollars to our country over the next century or so. There is no way fracking could offer the same' (Hargraves). The scale of agri-industry in the region was itself offered as testament to the risks of undermining it: 'Our medium sized farming operation produces approximately 40,000 kilograms of lamb, 100,000 kilograms of beef, 38,000 kilograms of wool, three and half thousand tonnes of wheat, 500 tonnes of chickpeas. To do this we employ four people full-time as well as some seasonal workers in an average year. We are taxpayers as we are profitable – unlike Santos' (Irving).

The CSG operation would employ only a small number of local people on an on-going basis, but these were not welcome: 'We do not need the few jobs this hazardous polluting project may provide. There are a million other [renewables] jobs out there' (Lips). For one trade unionist organisation this was a key reason for opposing the project: 'As a union body, we support the creation and maintenance of good, safe, long-term jobs. This is why we're opposing the project' (O'Leary). Another trade union representative supported the project, stating the jobs were 'high-skilled... some of the highest paying jobs in the Australian market', adding 'They provide huge opportunities for training and development not just for operators that we traditionally look after but throughout the skilled tradesperson – through to engineers, scientists and others who operate within this area' (Walton).

The company's claim that the project would produce 'up to' 200 jobs was questioned, drawing on the experience in other gasfields. One presenter had calculated that in 2016 the extraction of million cubic metres of gas required no more than fifteen workers, stating 'if we apply that ratio to the Narrabri project, we end up with 131 long-term jobs for the Narrabri region, not the 200 that is in the EIS. And we need to remember also that there are 50 jobs already there, so that's a net gain of 81 jobs' (Watson). Others quoted published research, again from the Queensland experience, that showed the net outcome was a reduction on overall jobs, with 'any jobs created... largely offset by

the loss of jobs in other sectors' (Bennett). Another joked: 'Where CSG was introduced in Queensland that for every one gas job created, 1.8 jobs in agriculture and .7 of a service job was lost. We know that tourism is not a feature of any gasfield in the world' (Crossman). The overall 'net negative impact on manufacturing jobs both locally and at a state level' had in fact has been acknowledged in the assessment report but discounted (Hunter, S).

Development futures?

Many presenters stressed there was no possibility of coexistence between CSG and agriculture – in the immediate future either one or the other would prevail (Mills). Supporters of the project disagreed: 'After much genuine consideration of the chief scientist's report and other independent scientific studies into the coal seam gas industry in the Narrabri area, the members of the Narrabri & District Chamber of Commerce are comfortable and convinced that the project can safely coexist with already existing local industry and community' (Stewart). For others, the Narrabri project was the 'thin end of the wedge'. As one put it: 'they do get a foothold... it will push agriculture out and this is only the beginning if this project's approved. That's one of the things that really concerns me' (Mateer). CSG may spread across the entire region but even then would be a temporary phenomenon: 'over the long term... it will be ag that is left to pick up the pieces in 30-plus years' (Marshall). This question of coexistence is critical to the arguments for CSG, as something that adds to regional development options, as a positive sum. As one supporter of the project put it: 'it is possible to have both agriculture and industry co-existing. We don't have to choose one or the other; we can have both' (Flower).

Several questioned how such a project could in any way secure a viable socio-ecological future: 'How can one compare and justify profits gained from this short term 25 year mining project with the long term impacts on people's lives, the environment and particularly the loss of the most precious resource in the world, water' (Kilminster). Another emphasised 'Only 25 years' (Hendriks). As another put it: 'Farming is sustainable and replenishing. Farming does not have an expiration date. ... The Narrabri Gas Project has a predicted life term of 25 years. It's non-renewable and poses a threat to our most guarded commodity, groundwater' (King). Another underlined the short-termism: 'The Narrabri gas fields are estimated to be productive for 25 years. After the wells are exhausted 'all of north-western New South Wales will then be Swiss cheesed to no purpose' (Chiffey).

Several speakers stressed the extent to which the Narrabri project was designed to lock-in infrastructure and dependence for the gas industry. As one put it, 'This is hooking us on gas and creating the demand, isn't it?' (Kelly). Another argued the government should be phasing out the industry, not promoting it: 'For the benefit of all, governments implement policies that reduce demand for harmful drugs, similarly, governments can implement policies to reduce demand for harmful fossil fuels' (Stuart). There is concern at the extent to which the CSG plans are distorting other infrastructure commitments, especially the proposed pipeline, but also proposals for a new inland rail, which had been re-routed to Narrabri through the Pilliga forest. These and other infrastructure commitments were the 'only thing that's making this project viable at the moment' (Lanzini). The claim that the region, and even the country, needs CSG at all is heavily questioned – asking why NSW 'need its own polluting, environmentally destructive and highly contentious coal seam gas industry' (Donley).

NSW impacts: price of gas?

One of the key economic arguments in favour of Narrabri CSG project was the claim that it would increase gas supply onto the NSW market and help reduce gas prices. There is a related argument that NSW should be able to produce its own gas supply and that this would be of benefit: 'New

South Wales as a state needs to develop its own energy resources for its own energy security and not find itself beholden to other states for its energy needs, which is the case with gas' (Brennan). Another stressed there was a threat that gas supplies from Victoria would run out; supplying NSW-based industry was seen as a priority: 'a feedstock source that's incredibly important for our manufacturing jobs across New South Wales, and of course also as a electricity generating fuel' (MacDonald). Another project supporter stated: 'we have a responsibility to extract some of the energy that we use from our area and not just import it from overseas' (Flower). This was also supported for the regional benefits it could bring: 'I support Australian companies having a go and investing in long-term projects that will benefit our local economies and communities, rather than all the arguments that have been given for importing and all... it's about creating jobs and opportunities for Aussies as well' (Condon).

Gas prices had more than doubled on the Eastern seaboard from 2014 (AER 2020), not because of undersupply, but because the vast amounts of gas extracted from CSG operations in Queensland and other LNG projects had largely been shipped offshore. In this respect, the Narrabri project was favoured to overcome the failed national gas policy. This was a major rationale advanced by the department for approving the project, yet, under pressure from counter evidence this was quickly retracted: 'I was astounded when I – when I read the opening paragraphs which asserted that this would reduce the price of gas. Of course, that was – that's a – that assertion has now been retracted, but it doesn't really give you a lot of confidence in the document' (Maltby).

The question of how much Narrabri gas would cost, whether it would secure a net increase in gas supply to NSW, and whether there was growing demand for gas into the future were key points of contention. One presenter pointed to Western Australia's gas reserve policy as a solution (Kilminstare), another stressed AEMO's predictions that there was 'most certainly... no need for more gas generating capacity' (Holley). The question of cost was critical: one presenter estimated the cost would be 'at minimum... \$9 per gigajoule', compared with the 'current average cost of production in eastern gas region is \$2.91 per gigajoule' (Gregory). In its cost-benefit analysis the company had stated the break-even point for the project was at 30% below their expected sale price of \$8.70: 'We're seeing prices well below 50 per cent at the moment, and likely to fall further' (Watson).

The project would be uneconomic on this basis - and so also would the wider gas industry as renewables was already undercutting its viability. Importantly, this was a structural shift, not a product of price volatility or market capture: 'The Australian Energy Market says gas prices would need to be low in order for gas to be able to compete with increasingly affordable renewable energy alternatives' (Nielson). Economic assessments of the proposal had unaccountably neglected to mention renewables: 'Income projections by CSIRO have misleadingly ignored competition from the growth in renewables' (Howard). AEMO assessments in 2020 pointed to a static demand for gas even with electricity generation at seventy-five per cent renewables (Goodman). Structurally, CSG was an 'outdated industry that is on its last legs' (Robson); 'in a real open market, fossil fuels would be dead in the water' (Wagner). One speaker drew a particularly sharp analogy – it was 'like trying to work out how a horse and carts can travel on modern expressways and then who will clean up the mess after them' (Crossman).

An uneconomic gas project would be rent-seeking, in terms of seeking to capture government subsidy along the supply chain, from gas pipelines to gas generators. At the same time it would be forced to drive down its own costs: it would be 'looking for ways to cut costs... any other kind of corner they can cut' (Campbell).

Expansion plans

No presenters believed that the current Narrabri gas proposal was the extent of Santos's ambitions. As one put it: 'I don't trust Santos at all. What they are planning behind the scenes and what they are saying to the public are very different. ... Santos has been concealing their intentions for a much larger operation across the north west with partners Comet Ridge and Carbon Minerals... Narrabri Gas Project is the Trojan Horse for the rollout of the CSG industry throughout New South Wales' (Spark). Another had a sense of a creeping takeover: 'What I have seen can be likened to an invasion, a slow creeping, insidious takeover of land, air and water' (Evans). As another stated: 'I believe this project is a gateway project. If it goes ahead, it potentially opens up the central west for further gas exploration and export and will only guarantee more harm to our systems and climate change' (Evelyn). 'Those affected by stage 1 of this project are in fact the guinea pigs for stage 2' (Murray).

The Narrabri proposal was clearly part of a wider gambit. Another observer commented on the tactical process gaining a foothold for the industry: 'Santos' plans to establish themselves on the high gas-yielding coal seams below Liverpool Plains failed following a massive landholder opposition, and they quickly retreated to the seclusion of the Pilliga Forest, where governments' approval were likely, indicating the Narrabri Gas Project is their Trojan horse. We saw the same modus operandi of industry targeting government-run forests to establish a gas field toehold when we visited Queensland in 2014. The feeling of guilt and betrayal for leaving those distraught people we had met in Queensland behind who had shared their heart-wrenching accounts of the reality of living in a gas field will never, ever leave me' (Kuhn). The Pilliga gasfield was a loss leader, unviable in itself, but a 'gateway' to much richer deposits across the plains: 'For me, the maths is not adding up. 850 wells, \$360 billion worth of pipe. Santos has shown investors plans for at least seven other gasfields in the area. Now the maths add up. So in effect, this is the first of many. To me, it looks like the Planning Commission is only being shown the effects of the first little bit. It seems to be a try and see approach, not a planning approach' (Irving).

The company's denial it had plans for expansion only fuelled distrust: 'Kevin Gallagher has stated that Santos has no plans to drill on the Liverpool Plains. We doubt this. Santos has mapped seven gasfields. We are in the Murrurundi gasfield. There is a current farming agreement in relation to ongoing CSG operations in PELs 1 and 12 between Santos and Carbon Minerals Limited. Carbon Minerals recently informed the ASX that they intend to pursue a works program in 2020 in these PELs' (Chirlian). As another put it, this was potentially a breach of corporate disclosure requirements: 'We have a clear case here of two public companies involved in the same venture contradicting each other. At least one of them is not disclosing honestly to its shareholders' (O'Hara). Another stated 'this is a clear case of two public companies involved in the same venture contradicting each other, or at least not disclosing to their shareholders. It would appear that Carbon Minerals is a passive partner to Santos' (Murray).

The logic of expansion beyond the Pilliga would be inexorable: 'each gas well has a limited life span and that once the supporting infrastructure is in place it only makes economic sense to maximise the investment in the infrastructure by drilling new wells as the old wells reach the end of their life span' (Green). The development of the Narrabri Gas Project would provide a catalyst to other projects... a disastrous catalyst for our area' (Carrigan). The analogy was repeatedly drawn with cancer, and with perhaps most apposite, with a virus: 'Like a virus, CSG extraction must continually find new hosts and it spreads across the landscape to infect the forest and farmland' (Hartley). 'We just don't need to do this. It is just a very unnecessary proposal. I'm not usually that outspoken but this is just crazy. It's like I said, once we commit, we – it's so hard to change track' (Mercier).

Several participants used the language of 'stranded assets' to describe the likely outcome: the project would 'condemn future generations of Australians to be lumbered with this stranded asset,

this toxic, useless white elephant of a project' (O'Shannessey). Another stressed 'Stranded assets are the result of non-viability, so stranded assets can never ever deal with the 16 recommendations of the chief scientists. Stranded assets can never provide indemnity against environmental damage. Stranded assets can never pay taxes or provide revenue to government and neither do they employ anybody. They are stranded and permanently damaging' (Boehm). 'The Narrabri CSG Project will become a stranded asset, and will have done all... this permanent damage to our land, water and air for nothing' (Davis); said another, 'Santos bought a lemon' (Tough); 'with the benefit of my former experience in the mining business.... the chances of Santos returning a profit on the project, in my opinion, are Buckley's and none' (Breen).

This was the 'conundrum at the heart of the Narrabri project' – it was only commercially viable with 'extremely high gas prices' (Alden). As one stated: 'I would believe now, if this benefit-cost analysis was redone, it would be a net negative benefit for this project' (Walker). If NSW needed additional gas, the NSW Government has already identified at least two other options – 'an already approved gas import terminal at Port Kembla, and a second possible terminal at Newcastle' (Clyde). Another outlined that the gas, if needed, could quite feasibly come from Port Kembla: 'The department's assessment claims the project is critical for the state's gas supply and that it will lower pricing. We have a project that has been approved at Port Kembla by Twiggy Forrest and some partners that will be online by 2022, two years earlier than this proposal would be up and running. It's forecast to supply 75 per cent of the state's gas, not 50; so more. And at a lower price' (Pryor). The Department had failed to explore these options, and other possibilities for reducing gas demand in the NSW, that were already underway for instance in neighbouring Victoria.

In contrast, many participants embraced renewables as an alternative and viable industry for the region into the future. This was seen as a foundation for 'sustaining economically strong regions' where 'small towns share solar PV and storage wherein better networks, microgrids and virtual power plants operate, where local investors own community generation assets, where hospitals, airports and local industry are served by local generation such as pumped hydro, solar, wind or bioenergy, such regions offer more energy security, greater resilience in the face of natural disasters, and create stronger local economies with more long term jobs' (Maltby). 'Australia is fast moving towards renewables that are safe, cheap and reliable. Gas is not a transition fuel' (Kirumba). Against CSG 'There are vastly more cost-effective alternatives in the form of clean energy and clean energy jobs' (Hodgson). The gas project was presented by the Department as necessary for a 'post-COVID' recovery. Presenters disagreed, stressing the role that renewables and other industries would play: 'Our current economic predicament brought about by the COVID-19 pandemic is giving us the chance of a new start... the future for Australia is in the manufacturing driven by the abundance of renewable energy that lingers so far largely untapped at our very fingertips' (Richter).

7. The Planning Process

Remarkably, virtually every person who presented at the IPC expressed their faith in the process they were participating in. Very few questioned the independence of the appointed commissioners and the constraints of the process, notably that an IPC decision is final and where a public hearing is held cannot be appealed. There were complaints about the formal nature of the hearings, from Indigenous representatives for instance, and also about the time slot granted to the company: ‘the proponent, who has had many hours of one-on-one meetings with the IPC already, immediately has a dedicated 47-minute timeslot (Watt). There were complaints about the requirement to state whether a speaker was ‘directly’ or ‘indirectly affected’ by the project, with many arguing that all the effects, including via climate change, were direct (Lips). And there was scepticism about whether the commissioners were capable of making the right decision ‘from your very privileged position in our society’, asking ‘How many coal projects has the IPC waved through in the last five or 10 years?’ (Tym).

On many occasions, though, community members made direct and sometimes emotive appeals to the commissioners, suggesting a strong faith that they were being listened-to. Several speakers referred to the Commissioners’ wider responsibilities and their role in history: ‘The more decisions against projects like this by Commissioners such as yourselves, the more likely our leaders will stop backing them and industry will stop investing in them, turning to projects where win-wins may be achieved instead’ (Teagle). One spoke of ‘the unmeasurable benefit of providing hope in a time when it is so needed that we can grow sustainable communities together’ (Barnes). Another statement, made at Day 7 of the public hearing conveys the sense of historic mission: ‘I ask the IPC, which side of history would you like to be remember on, the side that listened to the people’s wishes and made a real change, protecting our future for the generations to come, or that caved to the wishes of big business and corporate greed. Over the last 10 years, and especially, the last four days, the people have continually said no to the Narrabri Gas Project, however, you now have the power to stop this project once and for all’ (Mills).

One observer even likened the IPC process to ‘people’s assemblies to advise and inform our democratic processes. It seems to me that this process demonstrates one possibility of how that might look in the modern world’ (O’Shannessey). By the same token if the IPC chose to approve the project it would flout its own rationale: ‘This inquiry was undertaken to assure the community that the industry could be safely managed. Undertaking an inquiry then ignoring the findings will create the opposite effect for an already deeply concerned community’ (Hodgson). Another pointed to the process leading to the IPC as a litany of abuse: ‘This whole project has been built on lies, smoke and mirror tactics, deceit and corruption from the outset from all three tiers of government, with names like Anderson, Humphries and Joyce associated, it really makes you wonder, doesn’t it? If this project were to go ahead, you, Commissioners, will be signing off on the ongoing corruption and, therefore, considered complicit’ (Wiles)

Faith in the IPC contrasts with a general disquiet, in the main amongst opponents of the project, about the process that had led to it. There are many dimensions to this disquiet, from the actions of the company itself over the decade of more that it had been active in the region, to the role of the planning department in endorsing the project, and the role of other players, from the federal government to the local council. At all levels there is a commonly-voiced concern at the capture of state power and of the democratic system by the fossil fuel sector and in this case of course the CSG industry. In voicing these concerns presenters highlight some of the key political barriers to

effective energy transitions away from fossil fuels. At the same time, they often assert and highlight the legitimacy of more democratic alternative means of addressing the issues. For all these reasons, the comments on this aspect of the IPC are among the most fascinating.

There is extensive concern at the planning department as having enabled privileged influence for the proponent. At one level this relates to consultations, for instance a Santos-organised tour of Queensland CSG sites, ‘escorted by Santos around several sites on a private briefing and familiarisation tour’ (Evans); the tour was only revealed via a GIPA application. Many speakers condemned the planning department for its ‘grovelling assessment’ of the project (McEvelly). One reminded the IPC of their predecessor in 2014 which had made recommendations ignored in the 2020 planning assessment: ‘Will you be like them; a toothless tiger that gets thanked, and then forgotten?’ (McEvelly). There is particular outrage at the way in which the planning department had patronisingly dismissed local concerns as ill-informed, as arising from its ‘limited exposure [to CSG]... and its reliance on reports about the actual or perceived impacts’. As one speaker stated, ‘I find these comments utterly disingenuous and unacceptably biased; an improper attempt to belittle both the community’s concerns and capacity to make valid criticism’ (Hartley).

There is an immediate personal call to arms: ‘I am unsure how I will be able to look the younger members of this community in the eyes if I do not take this opportunity to speak out against this injustice’ (Webb). Another states ‘We’ve been told just to remain calm as our country turns to dust and ash’ (Perry).

Democratisation and the movement

Several speakers referred to the strength of community opposition to fossil fuel projects. One local opponent stressed the new alliances that were changing rural life: ‘I’ve been a stock and station agent in the eastern half of Australia for 40 years. Over that period I’ve never seen such vehement and united opposition to any project where aboriginal town and farming communities stand together in solidarity against a risk to our water’ (Chadwick). Another stated that ‘Unlike Tasmania in the 1980s the protest movement is not a nascent one, it is already in full swing, highly organised. It is farmers, it is town folks, it is Greenies, it is Aboriginal landowners, and many, many more’ (Lawrence). Another spoke of the power of irresistible movements in history: ‘Ours has become a mass movement that’s lasted the distance. Why is that you may ask? The answer to my question is written large through history. In the final analysis the people and its mass movements never get it wrong’ (Boehm).

The scope of the new alliances is remarked-on by many: ‘Farmers, environmentalists, Gamileroi community, teachers, engineers, tourism operators, health professionals, stock and station agents, young families, business owners, unemployed, part-employed, retired, chemists, astronomers, archaeologists, investing their intellectual capacities, their time and physical labour, making sacrifices in their working and family lives, to extend their knowledge in depth and breadth across a multiplicity of issues, to ask and keep asking critical questions about coal seam gas’ (Hartley). Another noted: ‘What strikes me is the diversity and nature of those who would express their opposition to unconventional gas in the Pilliga and around New South Wales for years... Rarely do we see farmers, scientists, urban, rural, and indigenous communities all standing together in opposition to a project for common and varied reasons’ (Francis-Coan).

The creation of an active public, insisting their that knowledge and perspective mattered in the political process, as exemplified in engagement with the IPC, is seen as a key product of the community struggle over CSG. Hartley, again, makes the point: ‘Formulating these questions and many more, people have challenged themselves to become political lobbyists, researchers, community educators, to conduct surveys, a few trips to the Pilliga and to Queensland gas fields, to

make films, host forums, petition and protest, address hearings and make submissions, all the time alert to the next polluting event. This, in addition to decades of citizen contribution to state-wide water, land, and biodiversity planning, including the large-scale studies and data sets referred by – referenced by the department.,. the phenomenon of this particular opposition is going to have implications for how we imagine and conduct future conversations between citizens, science, and the state (Hartley).

The opposition had successfully redefined the question of whether the project should go ahead into a question of whether decision-making should be democratic – or not. As one speaker put it: ‘I haven’t drunk the Santos Kool-Aid, and I still have faith in democracy’ (Hunter, N). This is a central insight, voiced with great power: ‘Where now wonderful, strong, enormous bodies like the New South Wales Farmers Association and the CWA – the two largest and most representative organisations for regional New South Wales and our farmers – when they loudly and directly oppose this project then surely the government must listen. When 96 per cent of the three and a half million hectares of the north-west which was surveyed said that they opposed the Narrabri Gas Project surely the government must listen to them, or is this not a democracy any more? I have never in my 72 years seen such incredibly united communities, towns, farmers, traditional owners all so strongly united to stop this project and to save our land and water’ (Kennedy).

Again, the assertion of a multiplicity of voices, and of unity, is central: ‘You’ve heard from experts in the sciences, the law, economics and industry. You’ve heard from traditional owners, local farmers, fireys, mums and dads, grandparents and relatively young people. Hundreds of citizens of New South Wales have spoken here against the Santos proposal. For everyone who has spoken, thousands stand behind them’ (O’Shannessey). With this there was a sense of humour, and modesty: ‘Someone likened the North West Alliance to David against Goliath. I feel we’re more like Dad’s Army, a motley crew aligned against corporate power, money and resources. Most of us do this in our own time at our own cost. It has taken large slabs of our lives’ (Judd).

Several speakers detailed the community surveying that had been undertaken to gather a mandate for ‘gasfield free’ zones: these had extended across the region, over the several years preceding the IPC, as an exercise in grassroots democracy. As noted, the surveys demonstrated 96% opposition to CSG and in several areas saw local councils declaring themselves gas-free; as one speaker outlined, ‘We proudly displayed the result on signs on the five entries to the shire. Gilgandra Shire's community declared gasfield free’ (Fraser). At the same time, direct action protests to halt the Santos production pilot wells were common, with many local people willing to risk arrest and fines to make their protest. The response of the NSW Government, in 2016, to both increase the fines tenfold for disrupting CSG, and at the same time to dramatically reduce the penalty to CSG companies for wrongdoing, was seen as clear evidence of the nexus between the CSG industry and the State Government to ‘protect gas mining businesses’ (Small).

Planning and ‘adaptive management’

One of the most notable aspects of the planning assessment report is the extent to which it is willing to take on trust many of the company’s key claims, and not in any meaningful way assess them. Across many aspects there is resort to on-the-job learning rather than foresight and planning. Research was inconclusive across many aspects of the project, on faulting, fugitive emissions, CO₂ content, Aboriginal cultural heritage management, waste disposal and reuse, and there was extensive reliance on adaptive management and ‘wording such as “minimise impacts”, not language such as “prevent” or “avoid”, that would hold Santos accountable’ (Barnes).

One speaker put it this way: ‘Santos says they can’t give a better model until the project starts. This is just a see how we go approach. They’re saying they don’t know what will happen. This seems to

be enough for the Department to approve the project. In effect, get started, self-regulate, putting the fox in charge of the henhouse (Sherwood). The logic of self-regulation, monitored by government agencies, is well known: ‘Compliance regulators, as we know, are under resourced and understaffed. So will it be left to Santos to self-monitor, as Whitehaven Coal did? Ticking boxes on pages of strict conditions does not guarantee what happens on the ground’ (Sherwood).

The logic is shocking to many: ‘irreversible impacts are dismissed and empty assurances freely given in a flurry of meaningless phrases and deliberate loopholes’ (Munro). As another puts it: ‘The department of planning is assuming Santos will be good citizens and will do the correct environmental protection now. Please can someone with some common sense put the brakes on this out of control madness’ (Matchett). The use of contingent language is critical, not least as it confirms the anticipation of risk by the company: ‘In the 19 pages of the executive summary they use vague words like “impacts of the project can be reduced”, “avoiding to the greatest extent practicable”, “minimise the economic, social and environmental impacts”. These phrases were used on 64 occasions. This is ample proof there will be negative impacts associated with the Narrabri Gas Project, despite the attempts to reduce and minimise them’ (Murray). Another referred to the ‘many subjective words and phrases come up with regularity; the “coulds”, the “shoulds”, “it’s likely”, “unlikely”, and the phrase “that that be measured”. There is little in the assessment that offers surety or positivity. A concluding statement in the assessment only reinforces doubt: “the project can”, not “will” – be designed to avoid and minimise impact... This is not planning; this is a disaster in the making’ (Pryor).

Many speakers express frustration at the extent to which key issues are left to be addressed at a later date: ‘so much of the detail is marked as requiring further assessment, ongoing studies, adaptive management, combined with uncertainties involved in the project and unknown cumulative impacts’ (Nalder). One declared: ‘I’m just left feeling – and, as I imagine most people would be, just full of distrust. How can we accept or believe that this is going to be okay when we’re told things that are ridiculous?’ (Kvelde). One asked ‘We would like to know what Santos’ measure of minimising the impacts are before the project goes ahead. What will it be minimised to? Minimise is not good enough’ (Hannigan). The assessment deliberately approved uncertain risky outcomes: ‘We come to you as everyday down-to-earth Aussies who just want to get on with living life without this huge threat hanging over us every day. You’re being asked to determine if Santos can operate and safely extract coal seam gas from over 850 wells in the Pilliga Forest. How can you do that with certainty when, by their own admission, they are still determining how they will safely do so?’ (Macrae)

The company had itself deliberately denied key information on the project. As one speaker put it: ‘Santos refuses to answer key questions about the project such as the gas composition analysis, where they will dispose of tonnes of toxic salt waste, and where the gas wells themselves will be located. Santos cannot even provide key information about the project so how can they be trusted with such a high risk project?’ (Ottignon). One speaker spoke of their exasperation: ‘It has been a trying 10 years of researching, navigating spin and enduring moving goal posts, which has resulted in an acute mistrust of the CSG industry for our community’ (Robertson).

The industry appears to rely on silencing those who have experienced its negative effects. A favoured technique is to require those who sell-up to sign a confidentiality agreement: ‘When you complain, they come to your house and they beat you down and they beat you down and they beat you down. Then, when you’ve got nothing left in you, they do this to you. They buy your property and they silence you. They silenced thousands of people in Queensland. Twenty of my friends have been silenced that I know directly. So when the industry says to you it’s okay, it’s not okay. You will not hear the voices of the real people on the ground because of garbage like this’ (Pratzky).

Our representative on the Santos-backed Narrabri Community Consultative Committee has had a similar experience with Santos. There has been no openness, transparency or any meaningful answers to questions causing him to withdraw his participation in the Narrabri CCC' (Mills). Another reiterated this experience: 'Locals have complained to me that much of Santos' information... is confidential for business and they can't access those because of confidentiality agreements. The proposed CCC provides no comfort that the project will be received – receive community acceptance' (Ciesiolka).

One recounted their experience with the company's EIS process: 'They hosted small community meetings in local halls. It became clear that Santos had either hired ill-informed consultants, or those who were instructed to tell us on a need to know as little as possible basis. Questions were answered vaguely, if at all. ... A thorough examination of the Environmental Impact Statements of five different PELs found that each one was nearly identical. Goran Lake did not exist. Our soils and vegetation had large cut and pasted sections...' (Nankivell)

Some former insiders offered an important insight into the abuse of process in play. One had been a large shareholder: 'During my farming time, I bought a large holding of Eastern Star Gas shares and at some stage was asked to join the Eastern Star Gas CCC. When Santos bought Eastern Star Gas, I was asked to join that CCC. At the first meeting, Peter Mitchley, then Santos Eastern's manager, told the CCC that Santos had 15 million to upgrade the gas field facilities, and five million dollars to buy the community. As time went on as a member of the CCC I could see that I wanted no part in helping Santos pursue their agenda and soon sold my shares. Santos never, ever tells the whole story' (Campey). Another recalled a report in 2016 of an overheard comment, 'We will just back you' on the Narrabri project, made by the NSW energy minister to his federal counterpart (published in the Australian) (SOURCE).

Chief Scientist's recommendations

In 2014 the NSW Government approved a series of preconditions that had to be met before CSG projects could go ahead. These had been developed by the NSW Chief Scientist and included baselines for monitoring impacts, environmental insurance and rehabilitation funding. A NSW Upper House Inquiry in 2020 found that only two of the sixteen preconditions had been fully met in the Narrabri project, and six had been partially met, stating it should not be approved.

Not surprisingly, this issue was raised by many of those opposing the project, with many expressing outrage that compliance failure on this scale should be passed-over by the planning department. There was special concern the department had 'unashamedly tried to mislead the committee and the public' until 'their assertions that recommendations had been implemented fell apart' (Field). The failure to put in place adequate insurance was seen as a tell-tale indicator of financial risk: 'One suspects that this is due to the poor financial prospects of the project. Prefer to transfer the risk from the project to the landholder and the environment, rather than have to internalise the cost' (Laird). Approving the project without the conditions being met 'justifiably increases community cynicism, frustration and their sense of injustice' (Munro). As another said, 'Who would trust Santos ... after all these years not even bothering to meet most of the Chief Scientist's recommendations (Wawn).

NSW energy policy

As noted in the climate section, many respondents referred to inconsistencies between the project's approval and NSW climate policy. Others noted the extent to which it also flouted existing energy and gas policy. Compliance requirements under the NSW Gas Plan of 2014 had not been met, unused licences had been retained and the company has been granted a decade of tax-free production at the Wilga Park Power Station (Small). Additionally the Gas Plan had required

implementation of the Chief Scientist's recommendations. Others pointed to the NSW Electricity Strategy, the state's plan for a 'reliable, affordable and sustainable electricity system' (Richardson).

Reliance on industry-funded research

Many presenters criticised the planning department for failing to recognise key sources of independent research and instead relying on research undertaken by the partnership between the CSIRO and the gas industry (including Santos), the 'Gas Industry Social and Environmental Research Alliance' (GISERA). As one presenter put it: 'The Department constantly rejects independent science in favour of industry-funded modelling... filled with subjective terms like "minimal damage"' (Irving).

Supporters of the project emphasise the independence of the GISERA group and especially its report on local social resilience: 'I'm particularly pleased that we have got the extra benefit of GISERA, who have really pulled out the key points of concern of the community, both social and environmental, and they have researched those on an independent basis' (Flower). Despite concerns the group was 'corrupted, and... speaking with a forked tongue' they believed it was of great benefit and would have 'an ongoing role as this project folds forward, because if it is approved, there are ongoing problems that haven't been thought of, and to give the community comfort that there's independent science' (Flower).

Opponents of the project were highly critical of the research: reliance on the especially the GISERA report on fugitive emissions in Queensland, which reported on emissions from six wells out of nineteen thousand, was specifically condemned. As one put it: 'This miniscule sampling size demonstrates a gross bias and a manipulation of statistics. It represents a complete lack of rigour and poor scientific methodology that my year 12 students would recognise. Despite this, the Department of Planning continues to refer to this report' (Webb). Another reported that 'the wells were chosen by the gas company so they weren't – even these six were not randomly chosen', adding 'if you were doing a test on the harm of tobacco, you wouldn't test six smokers out of 19,000. It would be pretty easy to find six people who aren't going to get sick out of 19,000 and then use that to argue that everyone else is going to be fine. This – this actually shocks me. And what does this do to the reputation of CSIRO that they allowed themselves to get caught up in this?' (Kvelde). Another said it was like checking six from a 'flock of 19,000 sheep or hens' and saying "'Oh, therefore, it's all fine. Yeah, they're a healthy herd – healthy flock,'" it's not a valid sample' (Martin).

There was concern at the misuse of opinion polling by GISERA in its social impacts report for the project, with a 'clear bias as the responses were skewed to the positive with four out of five of the response options could be perceived as positive and only one negative. This led to a conclusion that only 30 per cent would reject it [the project]' (Holley). There was general frustration with the manipulation of publicly-funded research bodies. One insider stated 'I've worked as a cell biologist at the CSIRO... and what frustrates me when I see things are published as if they're rigorous science from the CSIRO when, in fact, they're industry-driven scientific research that doesn't take into account very important evidence' (Walsh). Another was reminded of 'research funded by pharmaceutical and tobacco companies' (Holley).

Provisional Conclusions

This working paper has been compiled to help inform the IPC process, especially in terms of enabling some further reflection on the material presented by community representatives at the public hearings. The intent has been to draw out some of the key experiences, viewpoints, evidence and perspectives from the large number of statements made at the IPC hearings by the community members. Inevitably the findings are provisional, requiring further reflection and contextualisation in the wider literature and research into how climate and energy issues are being discussed today.

At this stage we are able to emphasise a general conclusion that the material gathered here demonstrates the powerful way in which climate and energy transitions are transforming society. At one level that transformation redefines how we understand the role of energy in society – both in terms of the impacts of fossil fuels and of renewables. At another level it creates a new set of social and political antagonisms, that cascade across disparate social fields and contexts. These are highly generative, producing new possibilities in their wake, for instance for a re-valuing of Indigenous cultures, a reassessment of biodiversity, a questioning of social divisions, a rethinking of economies, a new engagement with the future of climate, and a transformed understanding of the political process.

Driving these changes we would emphasise the centrality of the climate crisis – that politicises social fields in new ways, opens up the possibility of new social relations with ecology, and new forms of engagement and democratisation. It is noteworthy that climate-related issues are key drivers across virtually every dimension of the debate about the Narrabri CSG project – from Indigenous culture and water, farming and drought, wildfires and heat, issues of social inclusion and questions about a renewable economy, and even issues of social and political empowerment in the energy transition, all in some way are engaged with climate concerns. As reflected in many of the community statements at these public hearings, climate magnifies existing issues but also reorders priorities, forcing new agendas into view. What we are witnessing, we would argue, is a ‘climatisation’ of society, that produces new ways of understanding our world and our place in it, as expressed in so many ways, and so powerfully, by the community members speaking to the Narrabri IPC. Finally, we especially wish to thank those making these statements, and hope our analysis does some justice to them.

ⁱ James Goodman is Professor and Director at the Climate Justice Research Centre, University of Technology Sydney, Riikka Heikkinen is a Phd Candidate at the Centre and Bruce Knobloch is a Research Assistant Sydney. This report is not externally funded.