



Darwin Pipeline Duplication Project

Submission to the Northern Territory Environment Protection Authority

The Darwin Pipeline Duplication Project is part of Santos' proposed Barossa gas project, which could be the most carbon-intensive gas project in the world. Barossa is incompatible with keeping global warming below 1.5 degrees and avoiding the worst impacts of the climate crisis, and the Pipeline would add to existing pressures on the marine environment beside Darwin. The Project also violates Tiwi rights and puts local livelihoods and threatened species at risk.

15 February 2022

Introduction

Jubilee Australia Research Centre welcomes the opportunity to make a submission to the Northern Territory Environmental Protection Authority (NTEPA) regarding Santos' Darwin Pipeline Duplication Project, hereby called the Project. The Project is part of Santos' Barossa gas project, which consists of the Barossa offshore development area and the Barossa Gas Export Pipeline Corridor (see Appendix 1).

As a research institution with considerable experience working with economic, social and environmental issues, in particular in extractive sectors, we have significant concerns regarding the risks and impacts of this project.

First, Jubilee Australia is concerned about the greenhouse gas emissions associated with this project. Although Santos claims that such emissions are irrelevant for the purposes of this referral, we strongly disagree. The Project is part of Santos' proposed Barossa gas project, which could be the most carbon-intensive gas project in the world.

Second, despite Santos' claiming that Carbon Capture and Storage (CCs) will reduce this project's carbon footprint, Santos has no comprehensive plan in place to capture the very high CO₂ content of the gas. Even if the CCS project was successful, it would fail to offset the Barossa project's emissions. In no scenario is the Barossa project compatible with keeping global warming below 1.5 degrees and avoiding the worst impacts of the ongoing climate crisis.

Third, we are worried about the local social and environmental risks that the Project could have on Darwin Harbour and the local communities. The marine environment outside of Darwin is already under pressure due to the ongoing industrialisation of Darwin Harbour (e.g. the Inpex LNG plant), and the Darwin Pipeline Duplication Project would add to this.

Fourth, the Barossa project as a whole could have severe environmental and social impacts, beyond that of the Project. It could put local livelihoods and Australia's fish supply at risk and the pipeline could destroy the habitats of dozens of threatened species including whales, dugongs and turtles. Of particular concern is that the pipeline will run for 70km along the Tiwi Islands' coastal lines and come within 6km of the southwestern corner of Bathurst Island (Cape Fourcroy), which is a crucial interbreeding area for the threatened Olive Ridley Turtle.

Fifth, the planned pipeline clearly violates Tiwi interests and rights. The pipeline's closeness to the Tiwi Islands contradicts the national recovery plan for marine turtles in Australia for Olive Ridley turtles, which defines an interbreeding buffer zone around the Tiwi Islands as being 20km.¹ Further, the Tiwi people are planning for a sea country Indigenous Protected Area (IPA), which will be formally recognised as part of Australia's network of protected areas and is partially funded by the Australian government. The Barossa gas pipeline will traverse this IPA, making it impossible to manage this sea country for conservation under International Union for Conservation of Nature (IUCN) category VI.

¹ Department of the Environment and Energy (2017) 'Recovery Plan for Marine Turtles in Australia', <https://www.awe.gov.au/sites/default/files/documents/recovery-plan-marine-turtles-2017.pdf> (accessed 14 February 2022).

Despite these risks, the consultation process with the impacted communities – the Tiwi people and the wider Northern Territory community – appears to be lacking.

Sixth, we have assessed the Offshore Project Proposal and are concerned that the project proponents have underestimated the potential environmental damages from oil and gas spills and leakage. We have identified gaps in three areas: the potential underestimation of stochastic modelling scenarios, the lack of evidence regarding the environmental impacts of condensate and other pollutants and that the transboundary damage could be significant.

The Barossa gas project is a significant, controversial and high-risk project, and it is in this light that the NTEPA should rigorously assess and review not just the Project, but the Barossa project as a whole.

Due to the high-risk and controversial nature of the Project and the Barossa project, we submit that NTEPA should:

1. Launch a public inquiry into the Project under s53 (1) of *the Environment Protection Act* and include the emissions associated with the Project due to the substantial risk they present.
2. Call in a referral of the Barossa project as a whole under s53 (1) of *the Environment Protection Act* to ensure that the entire project is rigorously reviewed.

CLIMATE RISKS

(1) The Barossa project is among the world's dirtiest LNG projects

The Darwin Pipeline Duplication Project is part of Santos' proposed Barossa gas project, one of Australia's many planned LNG expansions.

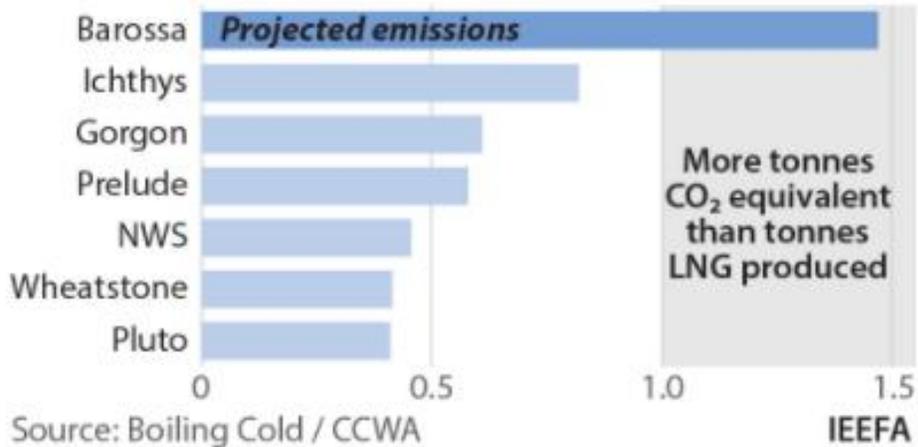
If the Barossa project goes ahead, it will be one of the most carbon-intensive projects in the world and eat a significant bite of the global carbon budget. It is fundamentally incompatible with keeping global warming below 1.5 degrees and avoiding the worst impacts of the ongoing climate crisis. It could also mean that Australia would not be able to deliver on its commitments to the Paris Agreement.

In addition to emissions arising from processing the gas, the Barossa gas field has among the highest levels of CO₂ reservoirs in the world (16-20% reservoir gas). The project's total yearly greenhouse gas emissions would amount to 5.4 million tonnes of greenhouse gases while producing only 3.7 million tonnes of LNG. This is twice the amount of greenhouse gas emissions from other offshore gas fields in Australia and probably the highest in the world. Chemical engineer and industrial economist John Robert has called the project a "carbon-dioxide emissions factory, with an LNG by-product."²

² Daniel Fitzgerald (2021) "Santos' \$4.7 billion Barossa gas field could produce more CO₂ than LNG, report says", ABC, available at <https://www.abc.net.au/news/rural/2021-06-24/santos-barossa-gas-carbon-emissions-twiggy-forrest/100224254> (accessed 14 February 2021)

Australia's LNG Carbon Intensity

Emissions from Barossa will be greater than LNG produced



Source: <https://ieefa.org/ieefa-santos-barossa-gas-field-emissions-create-major-risks-for-shareholders/>

Once the gas is developed and burnt, the emissions will amount to 15.6 million tonnes, which is more than 140 around-the-world flights every hour for each year the project operates.

Notably, Santos' documents reveal that two-thirds of the CO₂ from the Barossa offshore gas field will be vented directly into the atmosphere before the gas is piped into Darwin. Also, the powerful greenhouse gas methane will be emitted throughout the life cycle of the project. Methane is a significant component of gas, which is approximately 40 times more potent than CO₂ over a 100-year period and 84 times more potent than CO₂ over a 20-year period. Methane is also emitted in large quantities across the entire gas life cycle, and the emissions arising from Barossa would jeopardise the goal set by the Paris Agreement.³

Given what we know about the role fossil fuels play in contributing to climate change, development of the Barossa gas field is inconsistent with steps that the world and Australia needs to be taking to prevent the worst climate impacts on our planet. The International Energy Agency has made it clear that if we are to stay below 1.5-degree warming and avoid the worst impacts of the climate crisis, the world cannot afford any new fossil fuel developments.⁴

According to recent research by the Climate Council of Australia, the ecological systems that have sustained human life and societies for generations are already being severely damaged by increasing heat and worsening extreme weather events. As of 2022, the global average temperature has increased by 1.1°C, and in Australia, it has increased by 1.4°C. People in Australia are experiencing more powerful

³ John Robert, Institute for Energy Economics and Financial Analysis, Should Santos' Proposed Barossa Gas 'Backfill' for the Darwin LNG Facility Proceed to Development?, p.12, https://ieefa.org/wp-content/uploads/2021/03/Should-Santos-Proposed-Barossa-Gas-Backfill-for-theDarwin-LNG-Facility-Proceed-to-Development_March-2021.pdf (accessed 14 February 2022).

⁴ Climate Council of Australia (2021) "Aim High, Go Fast: Why Emissions Need to Plummet this Decade", available at: <https://www.climatecouncil.org.au/wp-content/uploads/2021/04/aim-high-go-fast-why-emissions-must-plummet-climate-council-report-210421.pdf> (accessed 14 February 2022).

storms, destructive marine and land heat waves, bigger floods, increased coastal erosion and a new age of mega-fires.⁵ Our closest neighbours in the Pacific are on the frontlines of climate change and already feeling the impacts of sea-level rise, king tides, increased tropical cyclones, rising temperatures and changing rainfall.⁶

Due to the significant risks arising from the greenhouse gas emissions associated with the project, Jubilee Australia Research Centre urges the NTEPA to include the emissions in its assessment of the project and assess it at the highest level - a public inquiry. Further, we submit that NTEPA calls the whole Barossa project in for a referral under s53 (1) of *the Environment Protection Act*.

(2) Santos is banking on Carbon Capture and Storage (CCS) which is an expensive and unproven technology

Jubilee Australia Research Centre urges NTEPA to thoroughly investigate the feasibility of Santos' plans for Carbon Capture and Storage (CCS) at Bayu-Undan, for which the Darwin Pipeline Duplication Project is a critical component. Santos makes various misleading claims about CCS throughout the referral document, claiming that it can make the gas at Barossa cleaner. Despite this being a key selling point for Santos, the company has no comprehensive plan to capture the very high CO₂ content of the Barossa gas (16-20% reservoir gas). The technology is also untested in an offshore gas reservoir like Bayu-Undan.

Santos is not alone in promoting CCS as a way of reducing emissions; the fossil fuel industry has falsely claimed that CCS is a viable solution to the climate crisis for decades. CCS' track record, however, shows that CCS is an "unnecessary, ineffective, uneconomic, and unsafe technology".⁷ As pointed out by the Australasian Centre for Corporate Responsibility: "the rate of CCS project failure is striking: a recent study of all CCS developments in the United States of America (home to a significant majority of the world's CCS capacity) found that more than 80% had ended in failure."⁸ This is despite governments around the world spending billions of taxpayer dollars on CCS over the last decades. The Australian Government alone has spent 4 billion dollars – yet; they have hardly any results to show for it.⁹

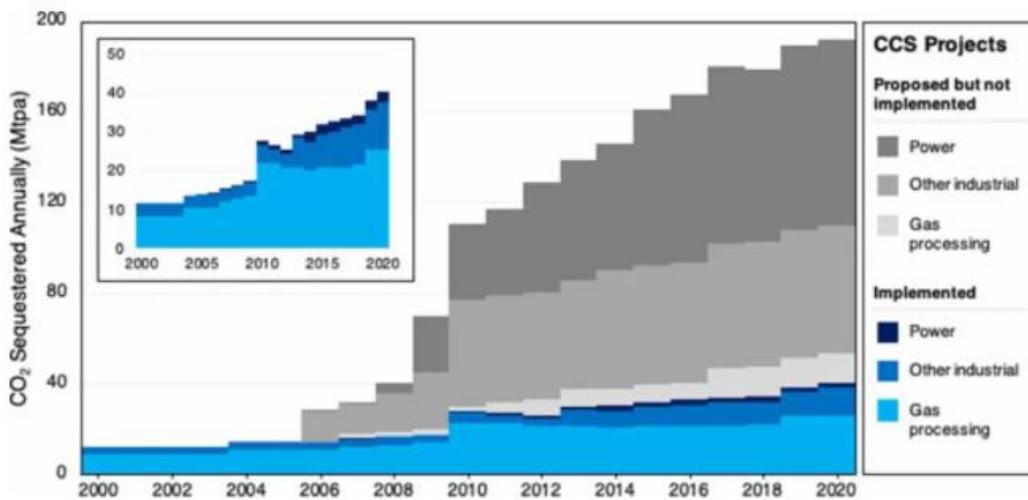
⁵ Climate Council of Australia (2021) "Aim High, Go Fast: Why Emissions Need to Plummet this Decade", available at: <https://www.climatecouncil.org.au/wp-content/uploads/2021/04/aim-high-go-fast-why-emissions-must-plummet-climate-council-report-210421.pdf> (accessed 14 February 2022).

⁶ Nikola Casule and Genevieve Jiva (2021) *Te Mana o Te Moana: the state of climate in the Pacific 2021*, Greenpeace, available at: https://f.hubspotusercontent30.net/hubfs/8586633/Te_Mana_o_te_Moana-The_state_of_the_Climate_in_the_Pacific_Report_2021.pdf?hsCtaTracking=-02277be6-c1a3-462d-81cb-aed83d45 (accessed 14 February 2022)

⁷ Center for International Environmental Law (2021) "Confronting the Myth of Carbon-Free Fossil Fuels", available at

⁸ Australasian Centre for Corporate Responsibility (2021) "Submissions: Clean Energy Regulator", available at <https://www.accr.org.au/research/submission-clean-energy-regulator/> (accessed 14 February 2022)

⁹ Nathan Morris (2021) "As carbon capture, storage commitments near \$4b, what are the options for heavy industry?", ABC, available at <https://www.abc.net.au/news/2021-08-21/taxpayer-bill-for-carbon-capture-and-storage-hits-4-billion/100375854> (accessed 14 February 2022)

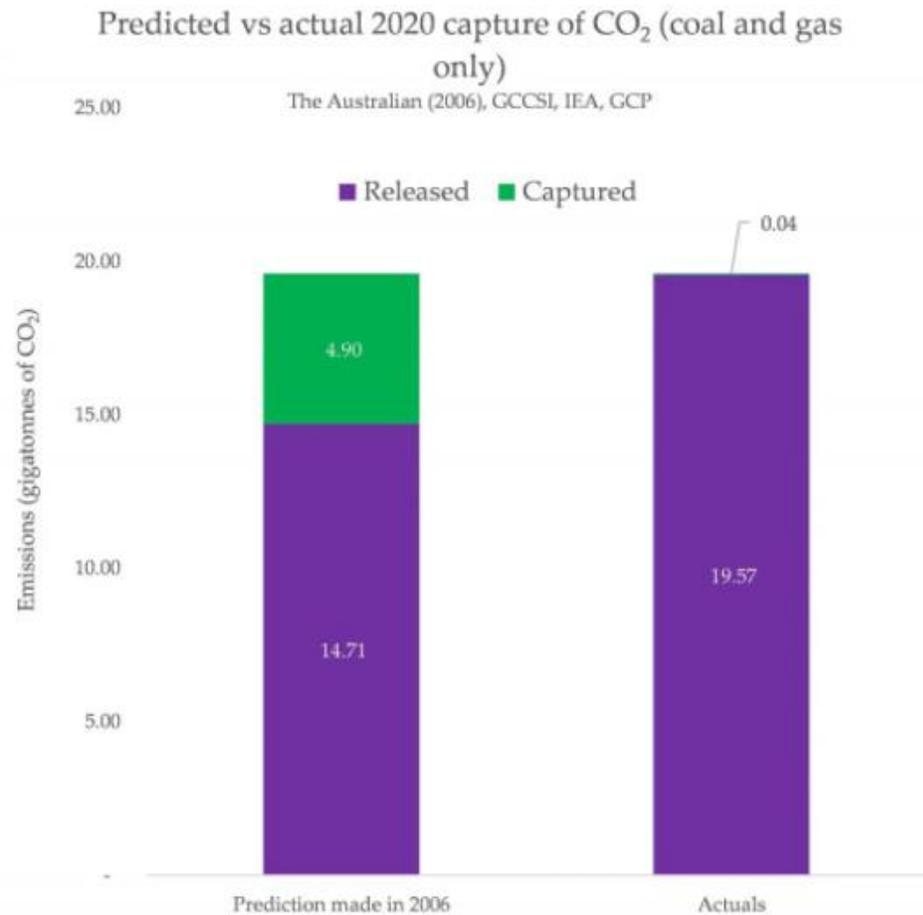


"Figure 1. Global proposed vs. implemented annual CO₂ sequestration (main figure), and global implemented annual CO₂ sequestration by type (inset). Both are in million tons of CO₂ per annum (Mtpa). More than 75% of proposed gas processing projects have been implemented. The corresponding figures for other industrial projects and power plant projects are approximately 60% and 10%, respectively"

Only 10 % of carbon capture plant for power generation globally has been completed since 2000. Source: <https://iopscience.iop.org/article/10.1088/1748-9326/abd19e/pdf>

But even when CCS projects do move ahead, they often fail to deliver on its promises. One of the most egregious examples of this can be found in our own backyard. Chevron's Gorgon LNG project in WA was touted as a major test case for CCS before it started operating in 2016, but it ended up being unable to deliver on its promises. Chevron said that it would capture 80% of carbon emissions in their approvals document, but so far it has only captured 30% of the emissions it was supposed to. Further, during its more than five years of operation, there has never been a day where all of the CCS elements have worked simultaneously. Ian Porter, a former oil and gas industry executive who is chair of the advocacy group Sustainable Energy Now, has described the project as a "shocking failure of one of the world's largest engineering projects".¹⁰

¹⁰ Adam Morton (2021) " 'A shocking failure': Chevron criticised for missing carbon capture target at WA gas project", The Guardian, available at <https://www.theguardian.com/environment/2021/jul/20/a-shocking-failure-chevron-criticised-for-missing-carbon-capture-target-at-wa-gas-project> (accessed 14 February 2022)



Source: In 2020, CCS only captured a fracture of what it was estimated it would in 2006 (<https://reneweconomy.com.au/carbon-captures-litany-of-failures-laid-bare-in-new-report/>)

It is a real concern that Santos' track record with CCS is unimpressive. In fact, Santos has no experience in successfully operating projects involving CCS. In November 2021, Santos announced a final investment decision on the 1.7 million tonnes per annum CCS project at Moomba, South Australia. This will be their first attempt at CCS and is three times too small to capture Barossa's 5.4 million tonnes of CO₂ emissions per year.

Even if Santos were to defy all odds and successfully build a CCS plant at Bayu Undan CCS, the Barossa gas could never be considered low emissions as only a small amount of the overall project emissions would be captured. It would still be the most carbon-intensive offshore gas project in Australia and possibly the world. In no scenario is the Barossa project consistent with Santos' own net-zero emissions target by 2040.¹¹

¹¹ John Robert, Institute for Energy Economics and Financial Analysis, How to Save the Barossa Project From Itself: Carbon Capture and Storage Will Not Help as Barossa Gas is High CO₂ Gas, available at https://ieefa.org/wp-content/uploads/2021/10/How-To-Save-the-Barossa-Project-FromItself_October-2021_3.pdf (accessed 14 February 2022)

Despite of this, Santos continues to greenwash the Barossa project by claiming that the CCS project at Bayu-Undan will help Santos “meet its emission reduction targets and achieve net-zero Scope 1 and 2 absolute emissions by 2040”.¹² One of Santos’ joint venture partners, the Korean energy company SK E&S, is currently being sued by Solutions for Our Climate for claiming that the gas from the Barossa field will be “CO₂-free”.¹³ Santos itself is also currently being sued by ACCR over its claims that natural gas is “clean fuel” and that the company has a credible pathway to net zero emissions by 2040.¹⁴

Banking on unproven and expensive technology to mitigate the emissions risks associated with this project is a sign of poor due diligence on Santos’ behalf. Following this, Jubilee Australia urges NTEPA to include emissions when assessing this referral due to its high emissions profile and to assess the project at the highest possible level – a public inquiry. Further, we submit that NTEPA calls the whole Barossa project in for a referral under s53 (1) of *the Environment Protection Act*.

ENVIRONMENTAL AND SOCIAL RISKS

We have identified four environmental and social risks for the project, above and beyond the specific climate risks mentioned above. The social and environmental context in which the Project and the Barossa development take place is discussed in detail in the appendix.

(3) The Project poses a threat to the marine environment in Darwin Harbour and nearby areas

The marine environment outside of Darwin is already under pressure due to the ongoing industrialisation of Darwin Harbour, and the Darwin Pipeline Duplication Project would add to this. In 2016 for example, a 30 km oil spill in Darwin Harbour impacted mangroves, intertidal mudflats and coastal zones, which provide a home to various marine and bird species such as turtles, mud crabs, spawning fish and the critically endangered Far Eastern Curlew.¹⁵ Another example is that since the construction of the Inpex LNG plant and shipping channel began in 2011, the dolphin population has dropped by 50%.¹⁶ The dredging operation of the Project will require up to 750,000m³ of seafloor in

¹² Santos (2022) “Darwin Pipeline Duplication (DPD) Project NT EPA Referral”, available at https://ntepa.nt.gov.au/_data/assets/pdf_file/0010/1081369/referral-report.PDF (accessed 14 February 2022)

¹³ Heesu Lee (2021) “A South Korean Company Said a Natural Gas Project Was ‘CO₂-Free.’ It’s Being Accused of ‘Greenwashing’”, Time, available at <https://time.com/6131226/sk-natural-gas-greenwashing-lawsuit/> (accessed 14 February 2022)

¹⁴ Environmental Defenders Office (2021) “World-first Federal Court case over Santos’ ‘clean energy’ & net zero claims”, available at <https://www.edo.org.au/2021/08/26/world-first-federal-court-case-over-santos-clean-energy-net-zero-claims/> (accessed 14 February 2022)

¹⁵ The Department of Environment and Natural Resources (2018) “Prosecution Proceedings Commenced Over Oil Spill in Darwin Harbour”, available at <https://depws.nt.gov.au/news/2018/prosecution-proceedings-commenced-over-oil-spill-in-darwin-harbour> (accessed 14 February 2022)

¹⁶ Jane Bardon (2018) “Darwin Harbour scientist calls for research funds as dolphin populations drop”, available at <https://www.abc.net.au/news/2018-11-30/darwin-harbour-dolphin-population-decline-worries-scientist/10157960> (accessed 14 February 2022)

Darwin Harbour to be removed and dumped within the Beagle Gulf, 12 km of Lee Point.¹⁷ This process will take 15 months to complete, leaving some of the area off limits to recreational fishers.

Conservation groups, fishing groups and first nations organisations have already raised the alarm of the impact of the industrialisation of Darwin Harbour.¹⁸ In 2020, Larrakia man and Chief Executive of the Larrakia Development Corporation, Nigel Browne, spoke to ABC about how he used to catch fish and mud crabs with his father in Darwin Harbour: "He knew where different fish species lived, different areas, where he would take me mud-crabbing in the mangroves — catching crabs by hand. Darwin Harbour is a very different place now". Mr Browne further said that the places he visited as a boy no longer existed because of a gradual industrialisation of Darwin Harbour.¹⁹ In 2021, Jason Rogers who has been a fishing guide for 30 years said that he has seen a decline in the numbers of fish they're able to catch and that local communities are left to deal with the damage inflicted by big companies.²⁰

Local communities and organisations should have a say in projects that will impact their Country and way of life. Following this, Jubilee Australia therefore urges NTEPA to assess the Project at the highest possible level – a public inquiry. Further independent research needs to be conducted on how dredging activities can be done in a way that avoids and mitigates harm to the marine environment before such activities can commence.

(4) The Barossa project as a whole pose a huge environmental and social risk

The Barossa project as a whole could also have severe environmental and social impacts, beyond that of the Project. The project could put local livelihoods at risk and endanger a critical source of Australia's fish supply.

The pipeline connecting the Barossa gas field to land would cut through the Oceanic Shoals Marine Park's habitat protection zone, which supports an important tropical snapper fishery.²¹ Santos plans to dredge and trench 61km of sea floor through this marine park in order to make way for the pipeline, which will put the fish stocks under duress and result in the fishery losing access to parts of its fishing ground.

Further, the pipeline could also destroy the habitats of dozens of threatened species including whales, dugongs and turtles. Of particular concern is that the pipeline will run for 70km along the Tiwi Islands' coastal lines and come within 6km of the southwestern corner of Bathurst Island (Cape Fourcroy), which

¹⁷ Santos (2022) "Darwin Pipeline Duplication (DPD) Project NT EPA Referral", available at https://ntepa.nt.gov.au/_data/assets/pdf_file/0010/1081369/referral-report.PDF (accessed 14 February 2022)

¹⁸ Top End Coasts "The industrialisation of Darwin", available at https://www.topendcoasts.org.au/industrialisation_of_darwin_harbour#:~:text=This%20industrialisation%20in%20our%20Harbour,the%20risk%20of%20toxic%20spills (accessed 14 February 2022)

¹⁹ Felicity James (2020) "Darwin Harbour to face more industrialisation under Territory Economic Reconstruction Commission plan", available at <https://www.abc.net.au/news/2020-12-03/territory-economic-reconstruction-commission-middle-arm-plans/12943406> (accessed 14 February 2022)

²⁰ Top End Coasts "The industrialisation of Darwin", available at https://www.topendcoasts.org.au/industrialisation_of_darwin_harbour#:~:text=This%20industrialisation%20in%20our%20Harbour,the%20risk%20of%20toxic%20spills (accessed 14 February 2022)

²¹ Jubilee Australia, The Australia Institute and the Environment Centre Northern Territory (2021) "Barossa submission", available at <https://jubileeaustralia.org/storage/app/media/uploaded-files/jbic-submission-on-santos-barossa-project-2021.pdf> (accessed 14 February 2022)

is a crucial interesting area for the threatened Olive Ridley Turtle. The construction of the gas export pipeline will likely destroy the feeding habitat for Olive Ridley turtles and create a major threat from light and noise pollution for an extended period of time. For example, the highest light on the pipe laying vessel is 65m above sea level and is visible for 29km presenting a likely distraction for turtle hatchlings along one of Australia's most important areas for this species.²²

Moreover, the planned pipeline clearly violates Tiwi interests and rights. First, the pipeline's closeness to the Tiwi Islands contradicts the national recovery plan for marine turtles in Australia for Olive Ridley turtles, which defines an interesting buffer zone around the Tiwi Islands as being 20km.²³ Second, the Tiwi people are planning for a sea country Indigenous Protected Area (IPA), which will be formally recognised as part of Australia's network of protected areas and is partially funded by the Australian government.²⁴ The Barossa gas pipeline will traverse this IPA, making it impossible to manage this sea country for conservation under IUCN category VI.

(5) A lack of free, prior and informed consent

Despite of these risks associated with the Barossa project, the consultation process with the impacted communities, the Tiwi people and the wider Northern Territory community, appears to be lacking.²⁵ Of particular concern is that the Indigenous Tiwi People have not given their Free, Prior and Informed Consent to this project, as they have a right to do as per the United Nations Declaration on the Rights of Indigenous Peoples.²⁶ In December 2021, some Tiwi Traditional Owners wrote to various stakeholders associated with the Barossa project, asking them to rethink their involvement:

Antonia Burke, said:

Nobody told any of us that this was happening. We have not been consulted. There are going to be huge risks if this does go ahead without any consultation with the Tiwi people... We want to know why we haven't been told anything up until now.

Therese Burke, said:

This is my home, I've been here my whole life. I feel very worried about this pipeline, if it goes ahead it will have massive impact on our lifestyle, on the environment, it'll change everything,

²² Marine Biodiversity Hub (2014), "Exploring the Oceanic Shoals Commonwealth Marine Reserve", page 1, https://www.nespmarine.edu.au/system/files/Exploring%20the%20Oceanic%20Shoals%20CMR%20brochureCaley%20etal_Feb2015_6pageVersion.pdf (accessed 14 February 2022)

²³ Commonwealth of Australia (2017), "Recovery plan for marine turtles in Australia", <https://www.awe.gov.au/sites/default/files/documents/recovery-plan-marine-turtles-2017.pdf> (accessed 14 February 2022)

²⁴ Tiwi Land Council 2018, Towards a Tiwi Islands Indigenous Protected Area, p.11, https://tiwilandcouncil.com/documents/Uploads/TLC_Towards-a-Tiwi-Islands-IPA.pdf (accessed 29 November 2021)

²⁵ Jubilee Australia Research Centre, The Australia Institute and The Environment Centre NT (2021), "Barossa submission", <https://jubileeaustralia.org/storage/app/media/uploaded-files/jbic-submission-on-santos-barossa-project-2021.pdf> (accessed 14 February 2022)

²⁶ Food and Agriculture Organization of the United Nations (2016), "Free, Prior and Informed Consent", <https://www.fao.org/3/i6190e/i6190e.pdf> (accessed 14 February 2022)

especially if something goes wrong... and they've got no guarantees that they're going to stay safe, I mean just the fact that the boats and ships are going to be travelling up and down, that's going to have an impact on our waters, sea life, our food, everything like that.

Marie Munkara, said:

I would say, don't invest in this, don't put your money there, because you might regret it one day, what you've done.

Following this, Jubilee Australia urges NTEPA to call the whole Barossa project in for a referral under s53 (1) of *the Environment Protection Act*, and the assessment is undertaken at the highest level—a public inquiry. This is the only way to ensure that all the potential impacts of the Barossa project on Sea Country, the environment, local livelihoods, wildlife and communities are properly assessed and impacted communities heard.

(6) The project proponents have underestimated the potential environmental impacts from oil or gas spills or leakages

Jubilee Australia Research Centre is also concerned by a number of specific factors within the Offshore Project Proposal which highlights the need for NTEPA to call the Barossa project as a whole under s53(1) of the *Environment Protection Act*: (1) The potential underestimation of stochastic modelling scenarios; (2) the lack of evidence regarding the environmental impacts of condensate and other pollutants; and, (3) transboundary damage could be significant, yet the OPP lacks accompanying detail.

The potential underestimation of stochastic modelling scenarios

The EIS provides stochastic modelling of the potential spread of condensate, marine diesel oil (MDO) and intermediate fuel oil (IFO) in the event of a maritime emergency. However, it is unclear how these scenarios and their specific volumes of release were chosen, including the quantum of pollutant, or the estimated length of time of their exposure. Therefore, we assert that it cannot be definitively claimed that these represent 'maximum credible scenarios'.

In particular, the quantum of pollutant modelled in Scenario 4 (16,833m³ subsea release of Barossa condensate over 80 days (approximately 210m³/day) to represent a long term subsea well blowout in the Barossa offshore development area) appears to be significantly underestimated. The subsea release of Barossa condensate over 80 days estimates a release of approximately 210m³/day, however it is estimated that the project will produce approximately 4,109 barrels of condensate per day.

Figure 85 of the Hydrocarbon spill modelling study clearly shows the vast reach of potential hydrocarbon exposure in Scenario 4, which may still be significantly underestimated:

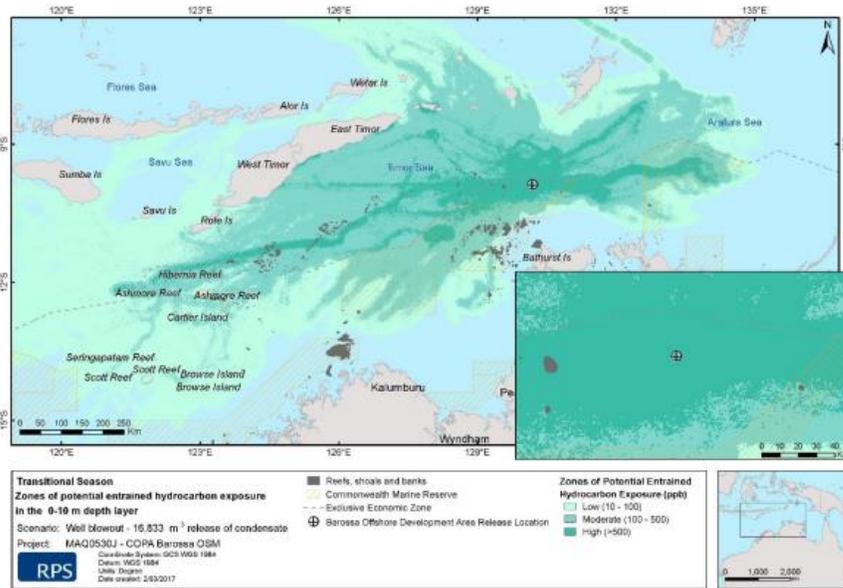


Figure 85 Stochastic modelling outputs showing the potential entrained hydrocarbon exposure and adverse exposure zones (0-10 m depth layer) during transitional conditions (16,833 m³ Barossa condensate)

The lack of evidence of environmental impacts of condensate and other pollutants

Of the six scenarios modelled, 4 anticipate the broad spread of pollutants, anticipating significant reach across Indonesian and Timor Leste territorial waters. These include modelling for Scenario 2 (a vessel collision releasing marine diesel oil ~ 2,975m³); Scenario 3 (vessel collision leading to loss of a fuel tank ~ 2,975m³ marine diesel); Scenario 4 (long term well blowout, releasing an estimated 16,333m³ condensate); and Scenario 5 (vessel collision leading to loss of fuel tank ~ 650m³ heavy fuel oil). Scenario 6 (loss of 500m³ IFO-180 following vessel collision) anticipates that the waters and coastline of the Tiwi Islands, and reefs and shoals within the Commonwealth Marine Reserve would be adversely affected

The following image relates to Scenario 2, revealing a broad reach across Indonesian and Timor Leste territory, which would occur in a remote area that would necessarily frustrate recovery efforts:

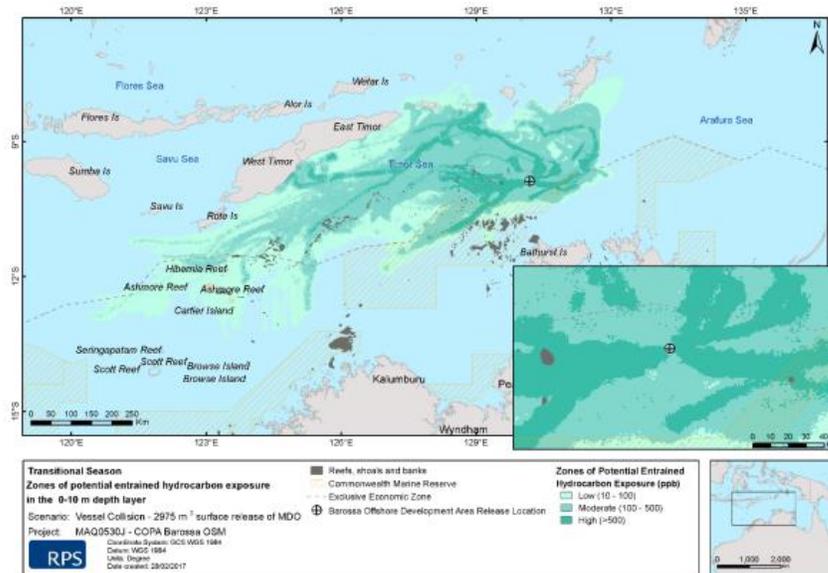


Figure 53 Stochastic modelling outputs showing the potential entrained hydrocarbon exposure and adverse exposure zones (0-10 m depth layer) during transitional conditions (2,975 m³ MDO)

The following image relates to Scenario 6, which anticipates adverse exposure to the Tiwi Islands, surrounding waters, reefs and shoals, and the Commonwealth Marine Reserve:

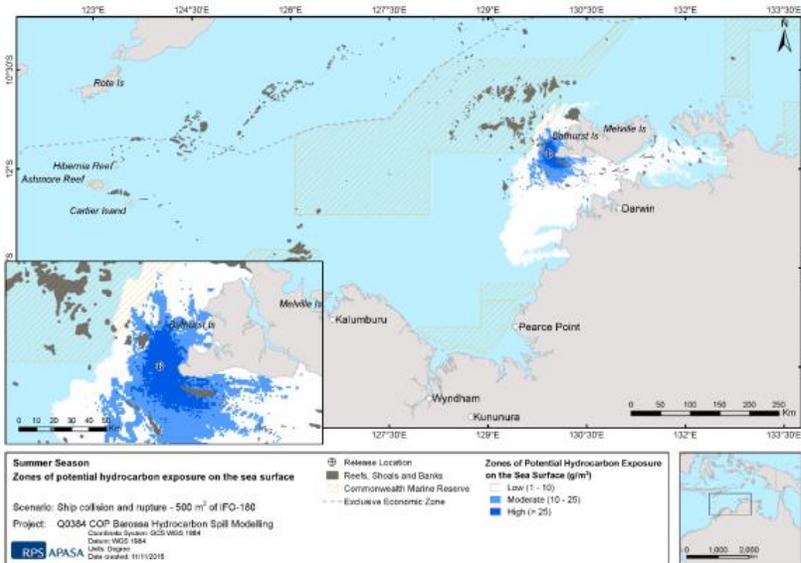


Figure 101 Potential sea surface hydrocarbon exposure and adverse exposure zones during summer conditions (500 m³ IFO-180)

Despite the broad reach of potential hydrocarbon exposure and the spread of condensate in the Timor Sea, there is a paucity of evidence regarding the environmental impacts of these pollutants.

The OPP does not further qualify with evidence its assertions regarding the environmental impacts of condensate. The omission of further scientific data regarding the environmental impacts of condensate within the OPP is a glaring omission.

We submit that further scientific evidence regarding the environmental impacts of condensate and other pollutants is essential. This is especially the case given that uncontained condensate has been modelled to spread over thousands of square kilometres, affecting the waters or coastlines of three nations (Australia, Indonesia and Timor Leste), and could also potentially affect the Tiwi Islands and their surrounding waters, and Commonwealth Marine Reserve.

The Tiwi Islands and surrounding Sea Country, which are subject to native title rights and interests, are predicted to be subject to sea surface films (up to 34% chance, within the parameters of the modelling conducted). The Project Proposal further outlines that mangrove forests could be adversely impacted, which could have a flow on socio-economic impacts for communities, including flooding from the ocean – a factor not outlined in the Project Proposal. While the Proposal anticipates adverse exposure to benthic communities, it also does not appropriately address social and economic impacts upon the Tiwi people, who depend heavily upon the sea for their food, livelihood and culture. The Proposal does not address potential impacts on human health, culture, or the difficulty in remediating a remote environment.

The Hydrocarbon spill modelling study gives some information in regards to weathering, stating that the Barossa condensate would ‘undergo a series of changes to appearance, colour and phase state. Within 24 hours of release, the remaining condensate would be expected to be almost semi-solid at average sea surface temperatures. As weathering continues, the weathered residues of the Barossa condensate would be mostly in the form of paraffins, which would remain afloat as the hydrocarbon spreads out and thins. As the residues become solid, they would form thin, clear sheets with patches of white crystalline ‘pancakes’ which would then begin to break up into small, white, waxy flakes due to the action of the waves and wind over time.’

However, further evidence is not provided as to the environmental impacts of these weathered residues. The weathering of residues in and of themselves does not eliminate the risk of environmental and socioeconomic damage – in fact, the description of weathered oil in the case of *Sanda v PTTEP Australasia* eerily mirrors the description of weathered condensate.

In the case of *Sanda v PTTEP Australasia*, evidence was given by the owner of a guesthouse in Rote Island that ‘he observed waxy, white substance floating all over the ocean...He said that it looked like a very large river—a couple of hundred metres wide—moving east to west, in the direction of the wind. He observed this substance all over the beach near his home (Boa Beach). He touched it. It felt like greasy wax with salt in it. He had not seen anything like it before. Over the next few days he observed the substance coming and going, “sometimes in very big quantities and sometimes in lesser quantities”. The substance was present for “a couple of weeks”.

The judge was satisfied that the grease and wax was oil spilled from the Montara wellhead (which was located more than 250km from Rote Island), and that ‘more likely than not, found its way in and around Oeseli Harbour, and was the cause of... seaweed loss’.

The Barossa project is located only 130km from the Indonesian coastline, and far less from Indonesian fishing grounds. Therefore, there is also less distance and time for weathering of residues than in the case of the Montara oil spill.

Transboundary impacts could be significant, and the OPP lacks detail

Transboundary impacts can be significant, as was the case following the Montara oil disaster, when 15,500 seaweed farmers from 81 villages in eastern Indonesia sued Australian company PTTEP Australasia for negligence, following the devastation of their seaweed farming industry. The class action, *Sanda v PTTEP Australasia (Ashmore Cartier) Pty Ltd (No 7) (Sanda (No 7))* was ‘the first judgment against an Australian company for cross-border pollution loss suffered by foreign claimants’. The case is currently under appeal.

The Barossa project is located far closer to the Indonesian coastline than the Montara oil disaster - only 130km – compared with Montara’s 250km, and modelling (even if underestimated) clearly shows the potential spread of pollutants to impact upon thousands of kilometres of Indonesian and Timor Leste coastline, and thousands of square kilometres of Indonesian and Timor Leste waters.

If a spill or major blow out were to occur, while the OPP provides an assessment of what could be affected in Australian waters, there is no comparable assessment of the shoals that could be affected, fish species, bird species, or the impact of gas condensate or pollutants on aquaculture, or upon the thousands of citizens of East Nusa Tenggara and Timor Leste who depend on the seaweed farming and fishing industries for their food, livelihood and income.

This means that efforts to monitor, mitigate or investigate within Indonesian or Timor Leste territory in the event of a major disaster would be starting from absolute scratch, in a remote location, while the disaster is unfolding.

Yet the time available to respond to such a crisis is also predicted to be a small window. For example, the modelling study predicts that in the event of a major subsea blowout, that low sea surface thresholds could be detected more than 1,100km away, and entrained concentrations could reach Indonesia in 14 days.

We also understand that, unlike oil, condensate cannot be contained once dispersed, and thus its spread would continue completely unmitigated. This also stands in contrast to Montara, in which booms and dispersants were applied to mitigate the oil’s reach.

While we understand that Australian legislation does not in and of itself specifically require transboundary assessment, we submit that the quantum of potential damage to Indonesia and Timor Leste is reasonably foreseeable and significant. Therefore, Jubilee Australia urges NTEPA to call the whole Barossa project in for a referral under s53 (1) of *the Environment Protection Act*, and the assessment is undertaken at the highest level—a public inquiry. Further research needs to be conducted about the impacts the spread of pollutants could have in Indonesian and Timor Leste waters.

Appendix 1: Environmental and social context

The Barossa Gas Export Pipeline Corridor

The proposed Barossa Gas Export Pipeline corridor extends 260km from the Barossa gas field to the existing Bayu-Undan pipeline below the Tiwi Islands. The proposed route traverses two areas within the Oceanic Shoals Marine Park: a 30km section through the Multiple Use Zone (IUCN Category VI) and 31.5

km through the Habitat Protection Zone (IUCN Category II).²⁷ The Oceanic Shoals Marine Park supports rich sponge gardens, corals and a diversity of fish life, as well as providing important resting and feeding areas for breeding marine turtles. Under the sea there are carbonate (limestone-like) banks, terraces and pinnacles formed during reef-building times when sea levels were high, then exposed, weathered and cut through by rivers as sea levels fell. Submerged again today, these features support rich sponge gardens, corals, sea squirts, sea snakes and many different fish.²⁸

Further south, the pipeline corridor comes within 6km of the Tiwi Islands' western coast and passes Shepparton Shoal before joining with the existing Bayu-Undan pipeline.²⁹

The Tiwi Islands' Western coastline is recognised as a biologically important interesting area for Olive Ridley turtles (*Lepidochelys olivacea*) and Green turtles (*Chelonia mydas*). A 10-year study of all turtle species on the Tiwi Islands found that the highest number of recordings occur along the southwestern corner of Bathurst Island (Cape Fourcroy), directly opposite the closest point to the proposed Gas export pipeline.³⁰

The Barossa Offshore Development Area

The Barossa Offshore development area lies 100km North of the Tiwi Islands. The immediate development area is situated on a plain comprising homogenous flat, soft sediments and observed benthic macrofauna groups include octocorals (particularly sea pens) and motile decapod crustaceans (mostly prawns and squat lobsters), anemones, starfish, brittle star and soft corals. Several shoals and banks surround the development area, including Goodrich Bank, Lynedock Bank, Evans Shoal, Tassie Shoal and Marie Shoal.

The shoals/banks appear to be in a healthy condition and support a diverse and varied range of benthic communities, including algae, reef-building soft corals, hard corals and filterfeeders.³¹

An EPBC Protected Matters search identified 18 listed threatened fauna species and 29 listed migratory species (17 of which are also listed as threatened species) that may occur or have habitat in the area. This includes four threatened and 12 migratory cetaceans. The pygmy blue whale (endangered) and

²⁷ ConocoPhillips Australia (2019), "Barossa Gas Export Pipeline Installation", <https://static.conocophillips.com/files/resources/barossagas-exportpipeline-enjan2019.pdf> (accessed 14 February 2022)

²⁸ Parks Australia (2022), "Oceanic Shoals Marine Park", <https://parksaustralia.gov.au/marine/parks/north/oceanic-shoals/> (accessed 14 February 2022)

²⁹ ConocoPhillips Australia (2017), "Barossa Area Development Offshore Project Proposal", <https://static.conocophillips.com/files/resources/barossagas-exportpipeline-enjan2019.pdf> (accessed 14 February 2022)

³⁰ Chatto, R, Baker. B (2008), "The distribution and status of marine turtle nesting in the Northern Territory", https://dtc.nt.gov.au/_data/assets/pdf_file/0006/279915/marine_turtle_nesting.pdf (accessed 14 February 2022)

³¹ ConocoPhillips Australia (2017), "Barossa Area Development Offshore Project Proposal", <https://static.conocophillips.com/files/resources/barossagas-exportpipeline-enjan2019.pdf> (accessed 14 February 2022)

Bryde's whale (migratory) are most likely to occur in the project area. Both species were recorded in the project area during noise monitoring undertaken for the project in 2014/2015.³²

The area of influence of the project is much larger, extending across the Timor and Arafura seas and into the Indian Ocean. This includes the Indonesian islands of Timor and Tanimbar and Australia's Ashmore Reef and Cartier Island to the West. This is primarily due to the strong Indonesian Throughflow and Holloway ocean currents sweeping across northern Australia that would rapidly spread any contamination over a vast area.

The Tiwi Islands and its First Nations Peoples

The Tiwi Islands are located approximately 80 kilometres north of Darwin in the Arafura Sea. The islands are occupied by more than 3,000 people, 90% of whom are First Nations people, the Tiwi people. There are three major communities on the islands, Wurrimiyinga, Pirlangimpi and Milikapiti.³³

Tiwi people have a long and unbroken history with their Country as they have lived there for more than 18,000 years and their traditions go back more than 40,000 years. English is not their first language, as they have their own language, Tiwi. The Tiwi people do not consider themselves to be aboriginal; rather, they consider themselves to be uniquely Tiwi, which is echoed in the translation of the word Tiwi: 'we, the only people'. They share their unique culture and traditional stories through artworks such as paintings, sculptures, ceramic and jewellery, using vibrant colors.³⁴

The islands are known for their rich biodiversity. They are home to at least 1,200 species of native plants, 17 frog species, 81 reptile species, 222 bird species and 36 mammal species, some of which are not found elsewhere in the world. Due to the island group's unique flora and fauna, it has been acknowledged as a Site of Conservation Significance by the Northern Territory Government in Australia.³⁵ Their natural and cultural resources have been carefully managed by Tiwi people for thousands of years. Traditionally, the resources were used for food, shelter, medicine, spiritual purposes and tools. The Tiwi people view their resources and their people as their greatest assets, which they believe are key for their long-term economic development.³⁶

³² Day Ryan D, McCauley Robert D., Fitzgibbon Quinn P., Hartmann Klaas, Semmens Jayson M (2019) Proc.R.Soc.B.2862019142420191424 <http://doi.org/10.1098/rspb.2019.1424>

³³ Tiwi Land Council (2019), "Towards a Tiwi Island Indigenous Protected Area", https://tiwilandcouncil.com/documents/Uploads/TLC_Towards-a-Tiwi-Islands-IPA.pdf (accessed 14 February 2022)

³⁴ Tiwi Land Council (2019), "Towards a Tiwi Island Indigenous Protected Area", https://tiwilandcouncil.com/documents/Uploads/TLC_Towards-a-Tiwi-Islands-IPA.pdf (accessed 14 February 2022)

³⁵ Tiwi Land Council (2019), "Towards a Tiwi Island Indigenous Protected Area", https://tiwilandcouncil.com/documents/Uploads/TLC_Towards-a-Tiwi-Islands-IPA.pdf (accessed 14 February 2022)

³⁶ Tiwi Land Council (2019), "Towards a Tiwi Island Indigenous Protected Area", https://tiwilandcouncil.com/documents/Uploads/TLC_Towards-a-Tiwi-Islands-IPA.pdf (accessed 14 February 2022)