

Conservation Council of Western Australia

Why the Scarborough LNG development cannot proceed

How Woodside and BHP's Scarborough to Pluto LNG project undermines global action on climate change and places World Heritage at risk





Previous CCWA reports on the impact of WA's LNG industry



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We acknowledge that we meet and work on the land of the Nyoongar people. We pay respect to their Elders – past, present, and future – and acknowledge the important role all Aboriginal and Torres Strait Islander people continue to play in advancing a more sustainable Western Australia.

We acknowledge and pay respect to the Ngarluma, the Mardudhunera, the Yaburara, the Yindjibarndi, and the Wong-Goo-Tt-Oo people as the Traditional Custodians of the Burrup and Murujuga National Park. We share their aspirations for the Burrup Peninsula to be world heritage listed and recognise sovereignty was never ceded.

How Woodside and BHP's Scarborough to Pluto LNG project undermines global action on climate change and places World Heritage at risk

Woodside and BHP's Scarborough to Pluto LNG project is the most polluting fossil fuel project currently proposed in Australia. It would result in annual carbon pollution equal to over 15 new coal fired power stations, and more pollution than the proposed Adani coal mine. The direct pollution from this project would increase WA's total emissions by almost 5% or 4.4 million tonnes per year.

Approvals for the project have been provided by the WA EPA and Commonwealth agencies without assessment of these impacts, or the damage the project would cause to World Heritage Aboriginal rock art. As environment groups challenge these approvals in court, and shareholders raise concerns about its carbon risks, Woodside and BHP are targeting final investment decision on the \$16bn development in 2021.

Western Australia's new Minister for Climate Action, Amber-Jade Sanderson, faces her first major test as she prepares to give final approvals for the project, including a Greenhouse Gas Abatement Plan and approvals for dredging, dumping and constructing a giant gas pipeline in the Dampier Archipelago - the richest area of marine biodiversity known in Western Australia.

This report details the impacts of the Scarborough to Pluto LNG development, and examines Woodside's management of climate change risks. Recommendations are presented for Minister Sanderson and for Woodside's Shareholders and Investors.



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1 Executive Summary

The Scarborough to Pluto LNG development is the first major component of Woodside's controversial Burrup Hub LNG mega project and the most polluting fossil fuel project currently proposed in Australia. It involves the development of a large new gas field 435km off the Pilbara coast, piping the gas onshore to be processed on the Burrup Peninsula, and doubling the size of the Pluto LNG facility to process the additional gas for export.

Woodside and BHP are targeting a Final Investment Decision (FID) for the \$16 billion development in 2021 despite unresolved legal questions surrounding the environmental approvals for the project, and in increasingly uncertain markets for LNG exports as Australia's trading partners transition to cheaper and cleaner energy sources.

The Scarborough to Pluto LNG development is estimated to release total carbon pollution greater than 15 coal fired power stations every year, or over 1.69 billion tonnes (giga tonnes) of CO₂ over the lifetime of the project – greater than the proposed Adani Carmichael coal mine. The International Energy Agency's demand projections confirm that the project is not aligned with the Paris Agreement and would directly undermine domestic and international efforts on climate change, despite Woodside and BHP's claims to support the Paris Agreement.

With Woodside's larger Browse Basin development on hold, the Scarborough to Pluto LNG development is by far the largest new source of carbon pollution currently proposed in Western Australia and it will be the major factor determining whether Western Australian emissions continue to rise or begin to stabilise in the coming years. Direct carbon pollution from the project would be at least 132 million tonnes of CO₂ over the life of the project, with annual emissions of over 4.4 million tonnes of CO₂ every year until 2055. This represents almost 5% of Western Australia's total emissions and a 132% increase on current pollution from the Pluto LNG facility.

Approvals to process the Scarborough gas were provided by the WA EPA in 2019 without assessment of carbon pollution or other environmental impacts including the damage to Aboriginal heritage proposed for World

Heritage listing. These decisions are currently subject to judicial review in the WA Supreme Court as a result of a legal challenge brought by the Conservation Council of Western Australia.

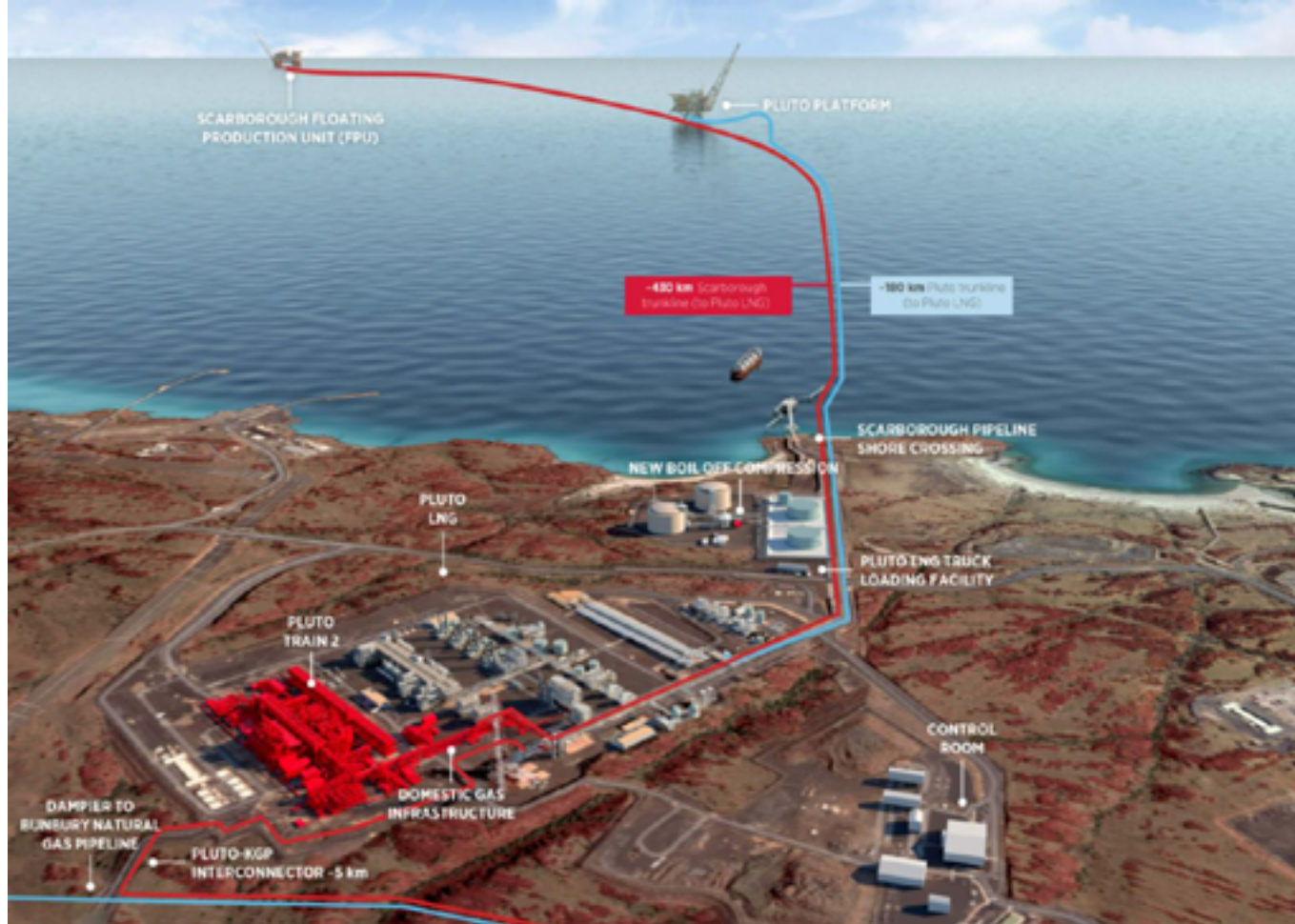
The company is now seeking further approvals from the WA Minister for the Environment and Climate Action, the Hon Amber-Jade Sanderson, including approval for a revised Greenhouse Gas Abatement Program (GGAP) for the Pluto LNG facility, and approvals for dredging, dumping and pipeline construction in the Dampier Archipelago - the richest area of marine biodiversity known in Western Australia. How the Minister responds will determine whether the Australia's most polluting new gas project is able to proceed without environmental assessment, and whether Western Australia's carbon pollution continues to rise for the next few decades.

Given the issues identified in this report, no further approvals should be provided until the outstanding legal issues are resolved, and a comprehensive public environmental impact assessment is undertaken. In the meantime, the Minister should exercise her powers under the Environmental Protection Act to initiate a review of the Ministerial Statement and conditions governing the Pluto LNG facility.

Shareholders and investors should be aware that Woodside's public statements on climate change, including the company's emissions reduction targets, are not credible and fall far short of what is required under the Paris Agreement. The company has failed to adequately disclose the climate change and carbon risks associated with its highly carbon intensive existing operation, or it's even more polluting growth projects including the Scarborough to Pluto development.

So far, Woodside has not taken meaningful steps to transition to renewable hydrogen or other cleaner energy growth opportunities. The investment of \$16 billion in the Scarborough to Pluto development would likely foreclose this opportunity for the company, instead locking Woodside into a high pollution, high risk business model that is unlikely to be profitable in a low carbon global economy with reducing demand for LNG.





Schematic of Woodside's Scarborough to Pluto proposed LNG development²

2 Introduction

The Scarborough gas field development and Pluto LNG expansion

The Scarborough gas project and Pluto LNG expansion (Scarborough to Pluto LNG) are the first major components of the Woodside's Burrup Hub development, the most polluting fossil fuel project ever proposed in Australia.

Together the Burrup Hub developments are projected to release around 6 billion tonnes of direct and indirect carbon pollution, making the Burrup Hub roughly four times more polluting than the proposed Adani coal mine.¹

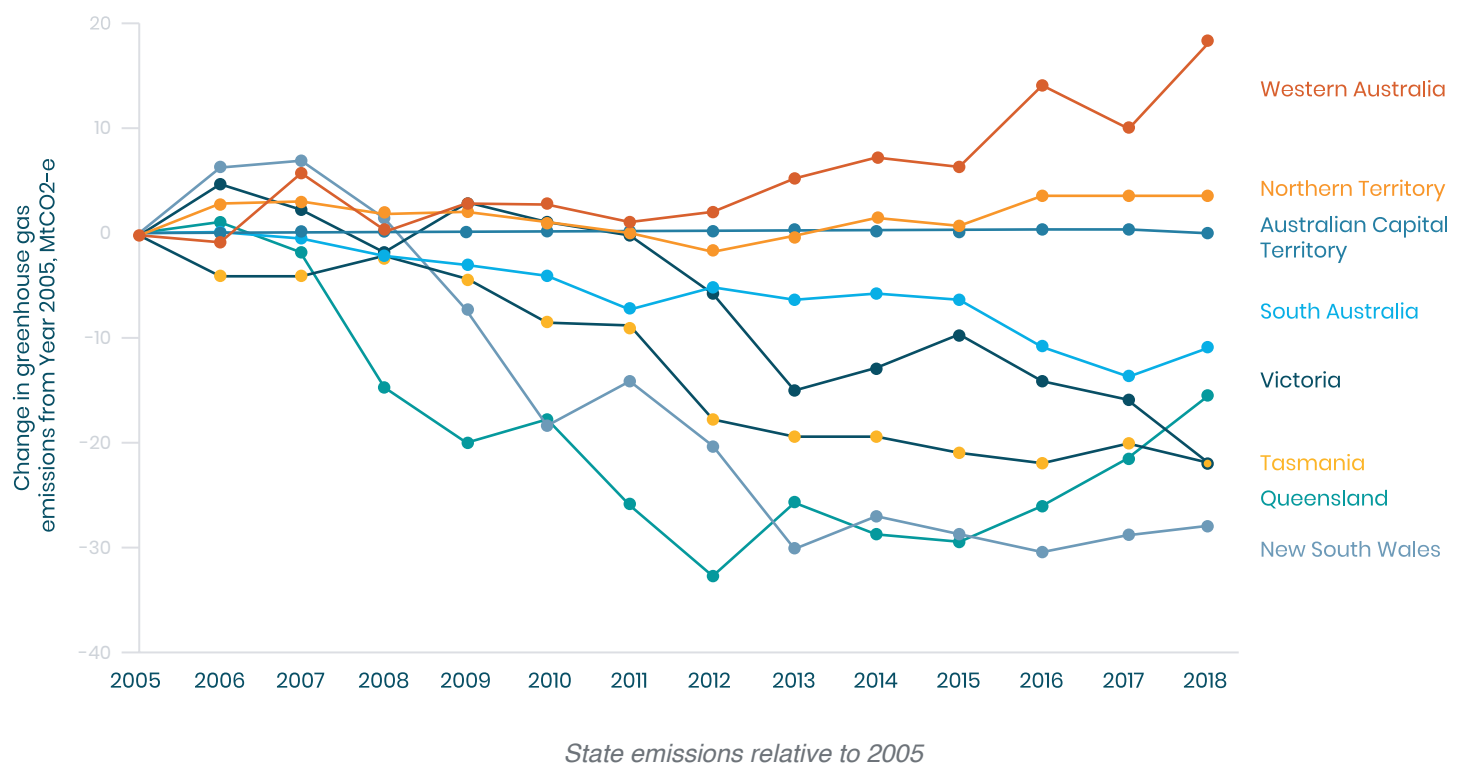
The Scarborough to Pluto LNG development consists of the following elements:

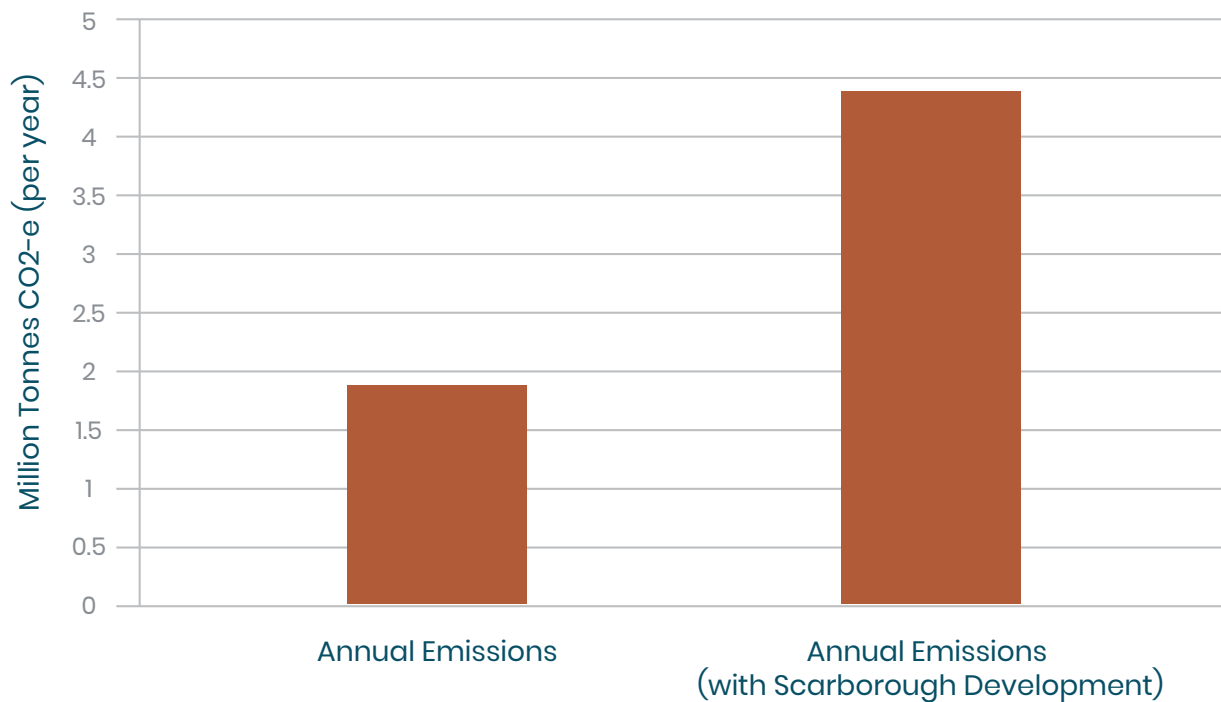
- Drilling and extracting gas from beneath the seabed some 435km off the Pilbara coast
- Connecting this field by pipeline to the existing Pluto LNG facility on the Burrup Peninsula
- Expanding the size of the Pluto LNG facility to double its current size
- Extending the operating life of the Pluto facility until at least 2055

Impact of the LNG industry on Western Australia's carbon pollution

Over the last few years, gas developments have caused WA carbon pollution to rise significantly, making WA the only state with significantly higher pollution than in 2005 – the baseline established under the Paris Agreement.³

In 2021 the WA Government released its climate change policy which formally established a policy to achieve net zero emissions by 2050. This policy, and Australia's commitments under the Paris Agreement, requires the rising trend in WA emissions to be reversed – WA emissions must stabilise and begin reducing as soon as possible.





Increase in annual carbon pollution from the Pluto LNG facility resulting from the Scarborough gas development

3 Impacts of the Scarborough to Pluto LNG development

Carbon pollution from the Scarborough to Pluto development

The Scarborough to Pluto development is by far the largest new source of carbon pollution currently proposed in WA. If pollution from the Scarborough to Pluto development is not reduced, controlled, and offset, then the development will be the principal factor driving up WA's total carbon pollution in coming years.

The Scarborough to Pluto development will result in:

- 132% increase on current annual pollution from the Pluto LNG facility⁵
- Increase lifetime direct carbon pollution by 93 million tonnes, representing a 230% increase in carbon pollution compared with processing Pluto gas only⁶
- Additional indirect (scope 3) carbon pollution of 1.55 billion tonnes, representing a 350% increase compared with processing Pluto gas only⁷
- Additional direct and indirect carbon pollution of 56 million tonnes per year, equal to over 15 coal fired power stations and around 61% of Western Australia's total pollution from all sources combined.
- Additional total lifetime carbon pollution of 1.69 billion tonnes, more than the proposed Adani Carmichael coal mine

Despite these impacts, there has been no environmental assessment of this carbon pollution, or the impacts of ongoing acid gas emissions on the World Heritage Murujuga rock art on the Burrup Peninsula.

In 2020 the Conservation Council of Western Australia published the report *Why Woodside's Burrup Hub Development Should Not Proceed*.⁸ This report estimated

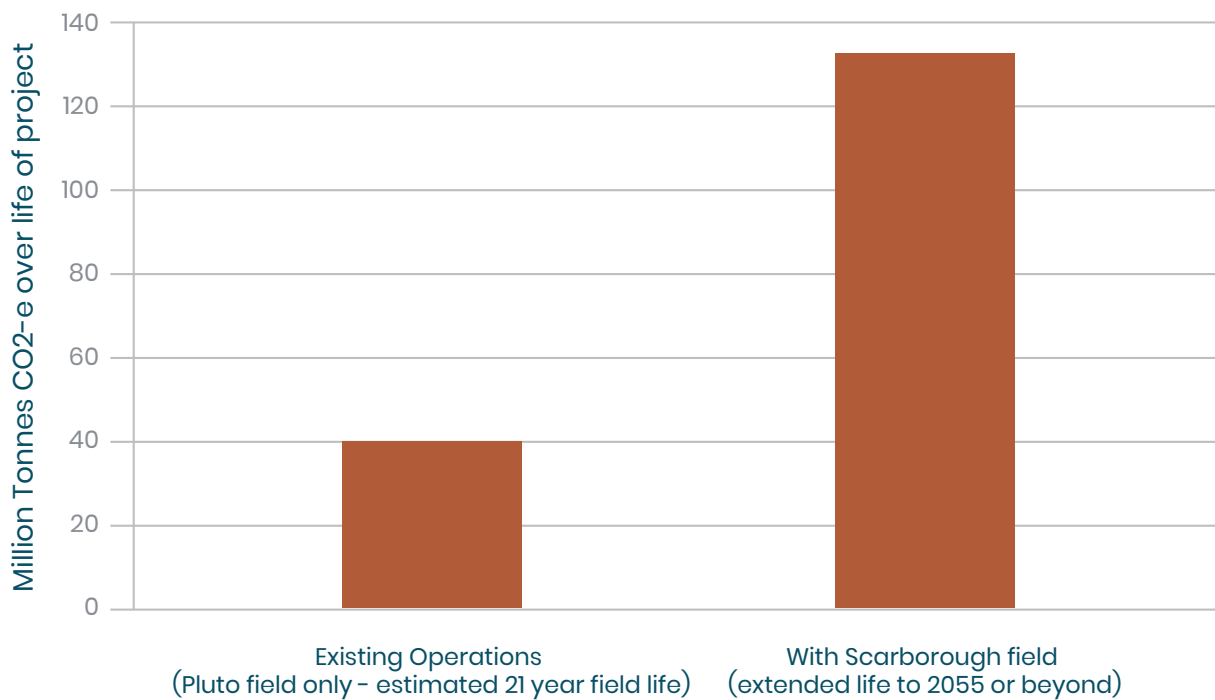
total carbon pollution from the Burrup Hub (including Scarborough to Pluto) would be around 6 billion tonnes (gigatons), making the Burrup Hub the most polluting development ever proposed in Australia. Climate Analytics later provided similar estimates of the carbon pollution from the Burrup Hub. Since these reports were published, Woodside has revised the size of the Scarborough gas resource to 52% greater than previous estimates.

The Scarborough to Pluto development is estimated to have the following impacts on carbon emissions.

132% increase on current annual pollution from the Pluto LNG facility

The vast majority of direct pollution from the Scarborough to Pluto development will be released from the expanded Pluto LNG processing facility, with annual emissions from this project set to increase from 1.9 million tonnes per year to 4.4 million tonnes per year. This represents a 132% increase on current emissions from the Pluto facility.

At the expanded level, emissions from the Pluto LNG facility will be equal to around 5% of WA's current total emissions from all sources every year.



Increase in lifetime direct (Scope 1 and 2) carbon pollution from the Pluto LNG facility when Scarborough gas is added

Lifetime direct carbon pollution will increase by 230%

Over the extended life of the project, the Scarborough / Pluto LNG development is estimated to result in the release of up to 133 million tonnes of additional direct (Scope 2 and 2) carbon pollution. This represents a 233% increase on expected lifetime emissions from processing the remainder of the Pluto gas.

Indirect (scope 3) carbon pollution will increase by 350%

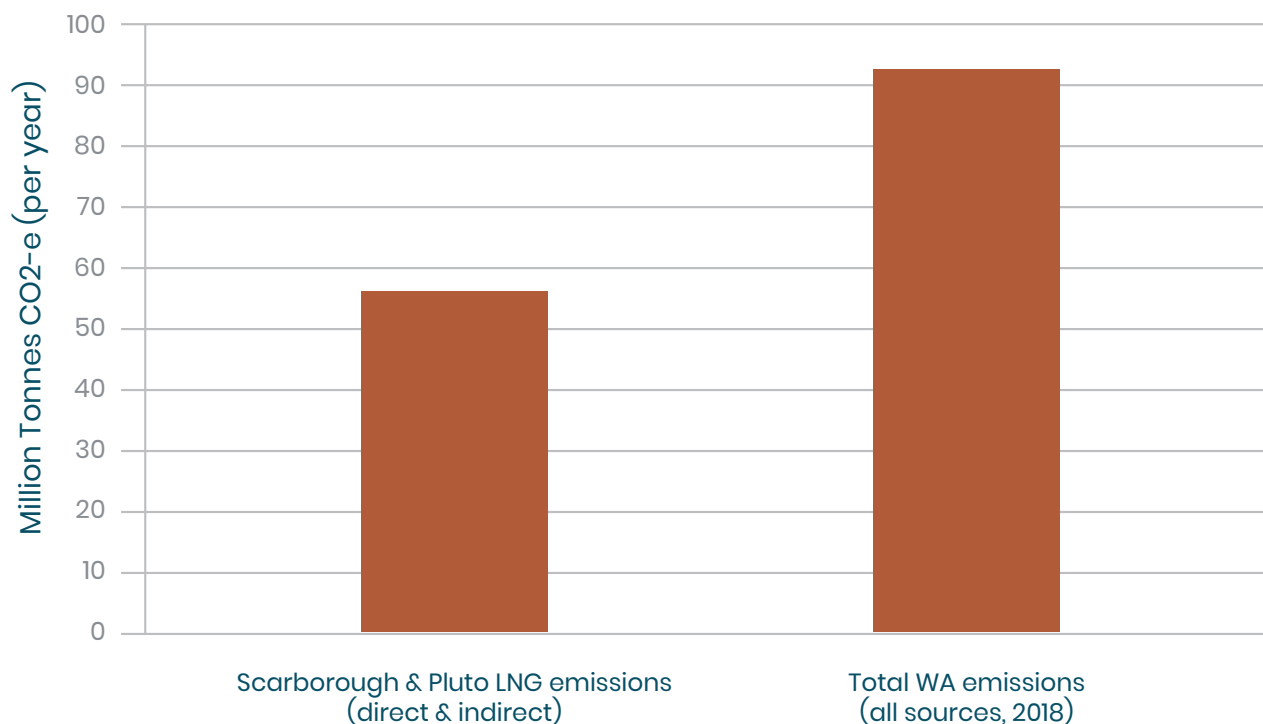
Indirect or 'scope 3' emissions from the burning of gas produced from the Scarborough field are estimated to be around ten times greater than the direct pollution from the project here in Western Australia.

Over the life of the project, it is estimated that Scope 3 pollution from the Scarborough to Pluto development will add more than 1.5 billion tonnes of CO2 into the global atmosphere.

Key Finding

Over the life of the project, it is estimated that pollution from the Scarborough to Pluto development will add 1.69 billion tonnes of CO2 into the global atmosphere.

1.69
billion tonnes
of CO2 into the
global atmosphere



Annual emissions from Scarborough / Pluto (direct and indirect) compared with total WA emissions.

Total annual carbon pollution will be equal to over 61% of Western Australia's entire emissions

The combined direct and indirect (scope 3) carbon pollution from the Scarborough to Pluto LNG development is estimated to be over 56 million tonnes per year, equal to over 61% of WA's total direct carbon pollution from all sources.

Total annual carbon pollution will be equal to over 15 coal fired power stations

Western Australia's Muja coal fired power stations produces 3.6 million tonnes of carbon pollution every year. This is one of the oldest and least efficient coal fired power stations in Australia. By comparison, the Scarborough to Pluto development will produce 4.4 million tonnes per year in direct emissions and around 56 million tonnes per year when scope 3 emissions are included. This means the total pollution from the Scarborough to Pluto LNG project would be equal to 15 Muja-sized coal fired power stations every year.

Total lifetime carbon pollution greater than the proposed Adani Carmichael coal mine

With total lifetime emissions of 1.69 billion tonnes, the Scarborough to Pluto LNG project would release nearly 1.2 times the total lifetime emissions from the proposed Adani coal mine (1.42 billion tonnes¹¹)

Key Findings

Total annual carbon pollution will be equal to over

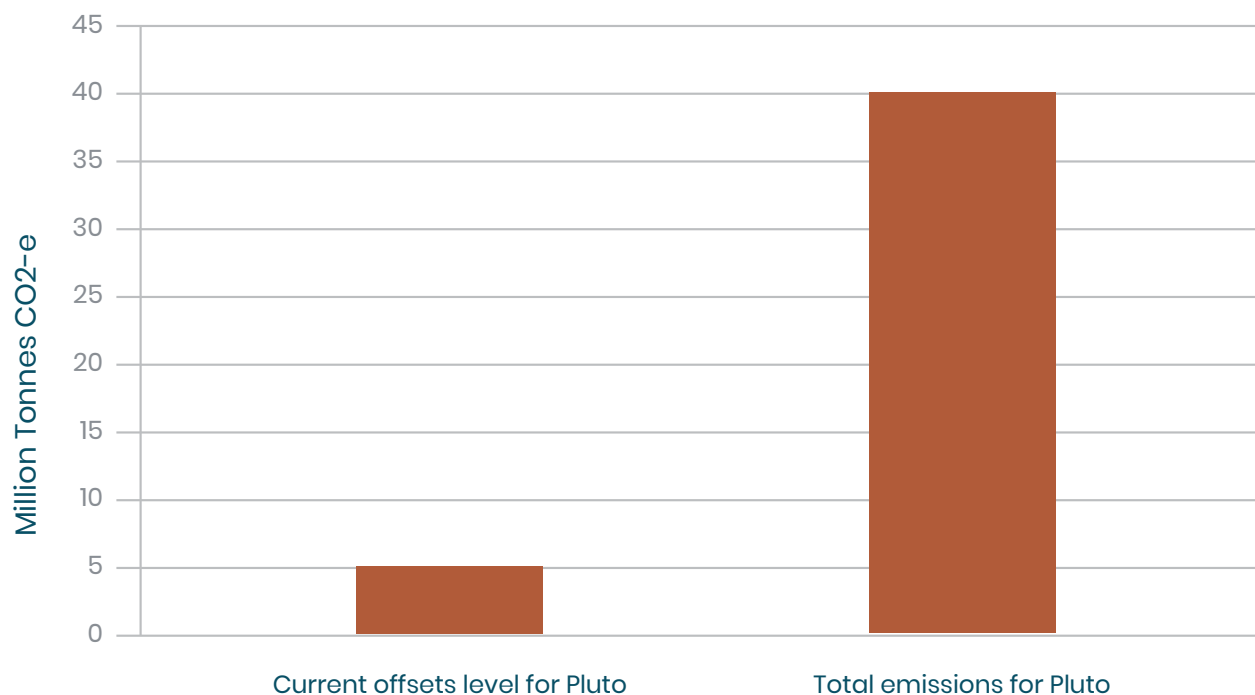
15 coal fired power stations



1.2x

the total lifetime emissions from the proposed Adani coal mine (1.42 billion tonnes)





Current offset requirements for the Pluto LNG facility

Current conditions on the Pluto LNG facility only require Woodside to offset ‘reservoir gas’ emissions,¹² or CO2 that is removed from the feed gas and vented into the atmosphere before the gas can be processed. The current offset requirement amounts to around 5.1 million tonnes of CO2 over 20 years, or around 13% of the total 40 million tonnes of scope 1 carbon pollution that would be released over the lifetime of the Pluto gas field.

Woodside initially contracted CO2 Group Australia to meet these offset obligations through Australian oil mallee projects. Recently, Woodside disclosed that these projects have not delivered the carbon abatement that was originally anticipated. The company has sourced alternative offsets from international markets to make up the shortfall however it has not disclosed what kinds of projects have delivered these offsets. It is assumed these offsets have been purchased at a much lower price than purchasing offsets on the Australian market.¹³

Woodside’s compliance with these conditions was audited by the Department of Water and Environmental Regulation (DWER) when the company tried to sell to the federal government carbon credits that it created to satisfy the offset requirement under MS757 and declined to surrender the certificates for the offsets it had purchased to the WA regulator.¹⁴

Impacts on World Heritage Murujuga rock art

Experts and Traditional Owners have raised concerns that acid gas emissions from LNG processing and other related industries are impacting the Murujuga Rock art on the Burrup peninsula which is proposed for World Heritage listing.¹⁵

The petroglyphs of Murujuga are a globally significant Australian Indigenous heritage site, where 45,000+ years' record of continuous human culture and spiritual beliefs are being slowly eroded over time because of ongoing industrial development and emissions.
(Friends of Australian Rock Art Submission to the Senate Inquiry into the destruction of Juukan Gorge)



Examples of petroglyphs affected by flaking and weathering

Peer-reviewed scientific evidence shows that the petroglyphs on Murujuga are being destroyed because acids formed from LNG processing and related industries are dissolving the outer surface layer (patina) into which significant images and elaborate symbols have been engraved. Destruction of the patina by industrial emissions is irreversible and the loss of the Murujuga petroglyphs would be permanent.

Processing the Scarborough gas in the Pluto LNG facility will add additional acid gas emissions in the atmosphere around the Burrup Peninsula and significantly increase the duration of time that the petroglyphs are exposed to these acid emissions.

Documents revealed through Freedom of Information (FOI) indicate that the Commonwealth agency responsible for the protection of National Heritage recognises the risks to the Murujuga Rock art from acid gas emissions from Woodside's LNG processing operations on the Burrup. When examining Woodside's proposed Browse Basin development, the Department of Environment and Energy noted:

“The Department considers that impacts from emissions of NOx, CO2 and volatile organic compounds (noxious emissions) are an indirect, adverse impact that the proposed action is likely to have on the national heritage values of the Dampier Archipelago National Heritage Place. The continuation of, and the change in composition of the noxious emissions may each have impacts on the petroglyphs by contributing to an acceleration in the weathering of the petroglyphs.”¹⁷

Despite this, there has been no assessment by either the State or Commonwealth Government of the significantly greater increases in acid gas emissions (and resultant damage to the Murujuga rock Art) that would inevitably result from the Scarborough to Pluto LNG expansion.

Impacts of acid gas emissions on the Murujuga Rock art was not assessed or considered at the time State Government approvals were given for the Pluto LNG facility in 2011 and these impacts are not regulated by the Ministerial Statement governing the operation of the facility. Despite its status as a series of protected sites under the WA Aboriginal Heritage Act, Woodside does not have 'section 18' approvals under the Act to authorise impacts from its air pollution on the rock art



Karratha gas plant



Sea Turtle in the Pilbara



Dampier Archipelago. Image @NatureByNathan

Impacts on the marine environment

The offshore field developments and connecting pipeline from the Scarborough gas field to the Pluto LNG facility would also cause significant impacts on the marine environment, including within the Montebello Islands Marine Park,¹⁸ the Dampier Marine Park and the Dampier Archipelago. Seismic testing, drilling and offshore gas processing operations would affect marine fauna including whales, turtles and other marine species.

Woodside propose to undertake dredging and spoil dumping operations in the Dampier Archipelago – the richest area of marine biodiversity known in Western Australia. In addition to these impacts, the expanded Pluto LNG facility would involve increased industrial noise, pollution and collisions associated with industrial shipping movements through the highly sensitive area.

The Dampier Archipelago is the richest area of marine biodiversity known in Western Australia, with coral reefs, sponge gardens, seagrass and more than 650 fish species¹⁹.

An independent scientific review of the Scarborough nearshore development proposal identified several limitations in the environmental impact assessment process with both availability of information and suitability of management and monitoring plans.²⁰

The Marine Environmental Quality impact assessment and relevant monitoring and management plans are inadequate to address the impacts of this proposal. The high degree of uncertainty about the conclusions reached in the assessment to date raise questions about the quality of information relied upon in the assessment process, and demonstrate that there may be a significantly greater risk level than what the EPA and the proponent have identified. (Oceanwise Australia)

4 Assessment and approvals for the Scarborough to Pluto development

No assessment of carbon pollution and other impacts

The vast majority of carbon pollution from the Scarborough and the Pluto LNG development (up to 4.1 million tonnes per year) is released during the processing of the gas in the Pluto LNG facility. This processing is also the source of acid gas emissions at the center of concerns about ongoing impacts on the Murujuga rock art.²¹

Despite this, the WA EPA authorised the processing of Scarborough and other new gas at the expanded Pluto LNG facility with no assessment of the environmental impacts.

“It is truly astonishing that one of the world’s most polluting fossil fuel projects has been secretly authorised by the EPA with no assessment of its most significant environmental impacts. Processing new gas from the proposed giant Browse Basin and Scarborough offshore gas fields that would result in billions of tons of carbon pollution and potentially catastrophic impacts on Aboriginal heritage of global significance.”

Piers Verstegen, Director Conservation Council of Western Australia

The EPA provided authorisation for processing gas from the Scarborough field and other new sources by amending the existing 2007 Ministerial Statement for the Pluto LNG facility (MS757). This was done even though the original assessment for the Pluto facility did not consider the possibility of processing gas from the Scarborough or other fields, and did not examine the impacts of acid gas emission on the Murujuga rock art.

The changes to MS757 were made under Section 45c of the Environmental Protection Act. These powers are reserved for making minor changes to approved projects where those changes have no reasonable possibility of causing significant additional or different environmental impacts. Since both the climate and the rock art are subject to cumulative effects of pollution, extending the operational life of the Pluto facility for decades, and allowing the processing of millions of tonnes of additional gas resulting in over a billion tonnes of additional carbon pollution clearly has a significant impact that is additional to what was assessed by the EPA at the time the Pluto facility originally approved.

The decision by the EPA to authorise the processing of Scarborough and other new gas in the Pluto LNG facility is now subject to judicial review in the Supreme Court of Western Australia as a result of a legal challenge brought by the Conservation Council of Western Australia.²² While this case is being heard the authorisation remains in place, however if the legal challenge is successful, a fresh assessment may be required.

Other approvals uncertain and unresolved

While the impacts from processing Scarborough gas have not been assessed at all, Woodside has divided the remainder of the development into at least three major components which have each been considered for environmental assessment and approvals individually. This has denied the opportunity for comprehensive assessment of the impacts of the entire expansion.

For each component of the development, significant issues have been raised and many of these remain unresolved. The lack of comprehensive environmental assessment and legal questions surrounding key approvals present a major risk to Woodside and its investors and project partners for the Scarborough to Pluto development.

Scarborough offshore gas field development

Located 430km off the Pilbara coast, in Commonwealth waters, Western Australian environmental laws do not apply to this aspect of the development. Approvals for the offshore field development have been provided by the Commonwealth offshore oil and gas regulator (NOPSEMA) however Environmental Management Plans are yet to be finalised or approved. The offshore part of the development has significant impacts on nationally listed threatened species, however the proposal has not been assessed under the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act and Woodside is relying on the NOPSEMA approvals to satisfy the requirements of the EPBC Act.

Scarborough nearshore development

The WA Environmental Protection Authority (EPA) has recommended approvals for nearshore section of the subsea pipeline connecting the Scarborough gas field to the Pluto processing facility, however, the final decision on this is yet to be made by the WA Minister for the Environment. The recommendation from the EPA has been the subject of a significant number of appeals from public and experts which are not resolved. During the appeals process, concerns were raised by marine ecology experts regarding the impact on marine systems and by Aboriginal heritage experts concerning impacts on submerged Aboriginal heritage and rock art.

The Greenhouse Gas Abatement Program (GGAP)

Woodside propose that carbon pollution the Scarborough and other new gas processing at the Pluto facility will be managed under the existing 2007 Ministerial Statement for the project (MS757). This Statement contains conditions requiring Woodside to develop and implement a Greenhouse Gas Abatement Program (GGAP) which must be approved by the Minister for the Environment on the advice of the EPA. An updated GGAP is now required before the Scarborough to Pluto development can proceed.

Conditions in MS757 relating to the control of carbon pollution (including the GGAP) are out of date and no longer reflect contemporary science or policy. In addition, the conditions in MS757 are drafted in a way that is unlikely to support robust regulatory enforcement of the GGAP by the State Government.

The GGAP is also limited to addressing only greenhouse gas emissions and cannot manage and control the impacts of other air pollution on the Murujuga rock art - another significant additional impact that will result from the processing of Scarborough and other new gas at the Pluto facility.

The GGAP cannot replace the need for environmental assessment

The GGAP review does not involve any assessment to determine if the processing of Scarborough and other gas at the Pluto facility is environmentally acceptable, or if the project can be managed in a way that meets the objectives of the WA Environmental Protection Act.

Given the outdated Ministerial Statement, the legal questions around the lack of assessment, and the lack of robust enforcement, the GGAP cannot be considered an adequate measure to manage carbon pollution, or a replacement for a full and comprehensive environmental assessment of the Scarborough to Pluto LNG project. It is strongly recommended that no decision is made on the GGAP until the legal issues surrounding the approval to process the Scarborough gas at the Pluto LNG facility are resolved and a full public assessment of the project is undertaken.

Review of Ministerial Statement required

It is recommended that the Minister exercise powers under the Environmental Protection Act to initiate a comprehensive and public review of the Ministerial Statement and conditions for the Pluto LNG facility. While this would not examine the question of whether the Scarborough to Pluto proposal is environmentally acceptable, it is necessary at a minimum to ensure that the conditions are contemporary and relevant for the purposes of controlling carbon pollution and other impacts on the environment. Any review of the Ministerial Statement must include public consultation.



Murujuga rock art with LNG facility in the background

5 How Woodside fails the credibility test on climate

Woodside has comprehensively demonstrated that it does not take climate change seriously and cannot be trusted to act in a responsible manner when it comes to disclosing or managing climate change and carbon risks. The dogged pursuit of a fossil fuel expansion program that would directly undermine the goals of the Paris Agreement has been a central feature of Woodside's business planning over the last decade. This has resulted in a company that has no credible alternative growth options and few credible options to manage its carbon risks. The principal risk management strategy the company has engaged to date amounts to a campaign of greenwash, withholding information, regulatory capture, and advocacy against action on climate change by State and Commonwealth governments. Reliance on these strategies by Woodside now presents very significant risks to investors and shareholders and is having an ongoing toxic effect on public policy in Australia.

Woodside's emissions reduction targets amount to greenwash

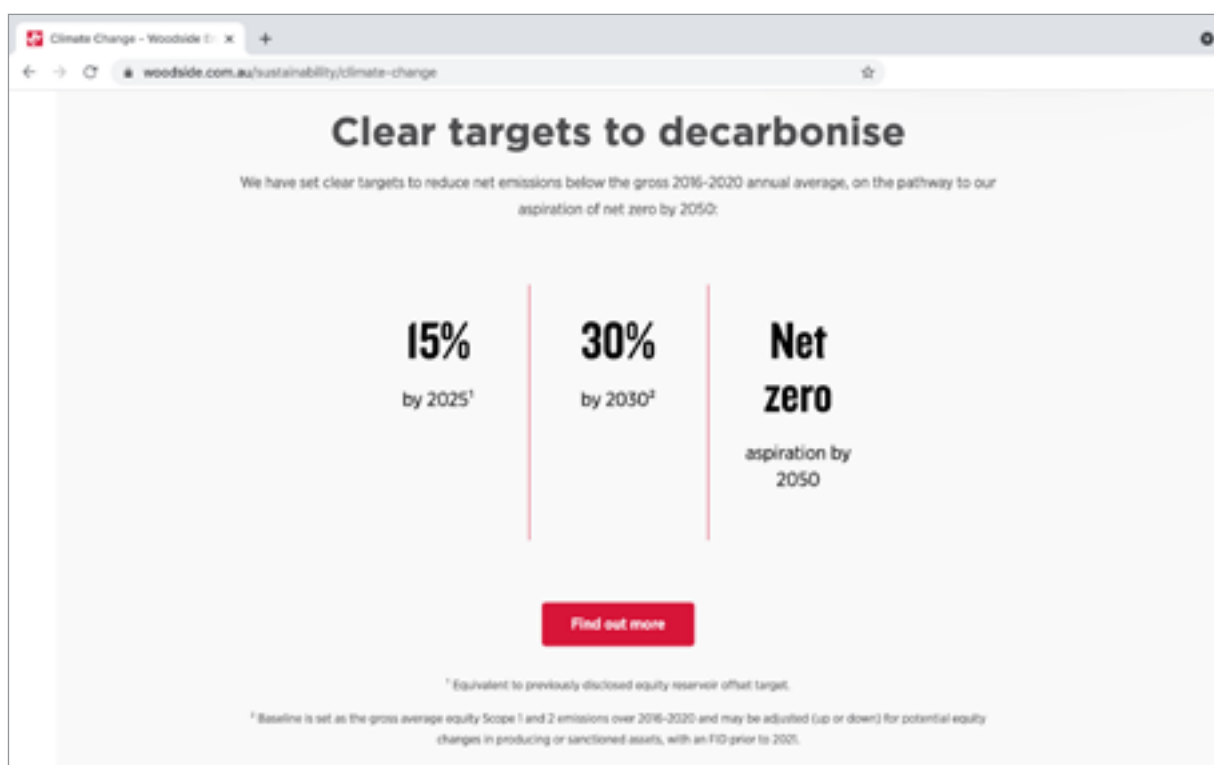
In 2020, Woodside announced to new corporate carbon pollution reduction goals in an effort to demonstrate to investors and the public that the company was taking climate change and carbon risks seriously.²⁵

These targets should not be trusted by stakeholders as they are neither credible nor sufficient to address the company's growing carbon pollution liability. Woodside's climate goals fail to deliver what is required under the Paris Agreement, they fall short of what the Australian Government policy requires, and they allow absolute pollution to substantially increase while the company relies on carbon offsets to achieve its commitments. In short, Woodside is using an empty promise of net zero emissions by 2050 to facilitate a major expansion in fossil fuel operations and corresponding increase in pollution.

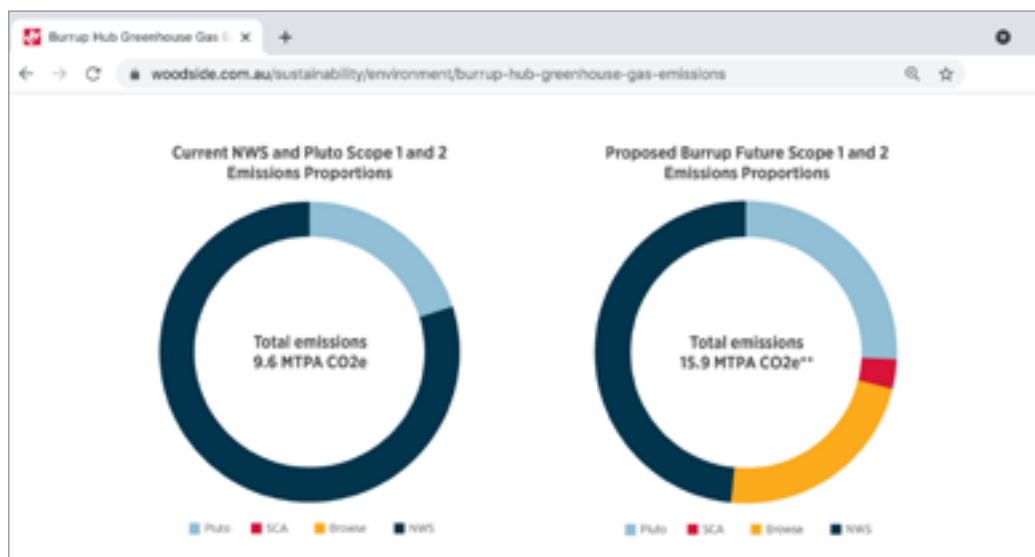
Woodside's targets fail the Paris Agreement

The targets announced by Woodside include net zero carbon pollution by 2050, as well as shorter term targets of 15% reduction by 2025 and 30% reduction by 2030 'below the gross 2016-2020 annual average'.²⁶ The company has claimed that these targets are consistent with the emissions reduction and temperature goals of the Paris Agreement however this is not accurate.

Science-based efforts to establish carbon pollution reduction targets for Australia that are consistent with the goals of the Paris Agreement recommend a 50% reduction on 2005 emissions levels by 2030, 67% reduction by 2035, and net-zero emissions by 2045 to deliver a 67% chance of remaining below 2 degrees global warming.^{27,28} For a 67% chance to stay within a 1.5°C, a 2030 target of a 74% reduction, with net-zero by 2035 would be required. Even if Woodside's corporate targets were to be taken seriously (which they cannot – see below), they fall well short of what is required.



Carbon pollution reduction targets advertised on Woodside's website²⁹



Carbon pollution increases identified on Woodside website³⁰

Woodside's actual emissions are set to increase significantly

While Woodside has set 'net' emissions reduction targets, the company plans significant growth in its absolute emissions. Woodside's own website indicates that its Burrup Hub expansion projects will result in absolute emissions increasing from just under 10 million tonnes per year to nearly 16 million tonnes per year – around a 66% increase in direct pollution.

Relying on offsets to deliver net reduction while absolute emissions increase

Relying on offsets to meet net emissions reduction goals while Woodside's absolute emissions increase significantly is a very high-risk strategy for Woodside. The company has no credible plan to reduce pollution for the Scarborough to Pluto project other than through offsetting. With increasing demand and limited supply in the future it is by no means certain that carbon offsets will be available at the volumes Woodside will need to meet its goals.

Measuring terrestrial CO₂ and non-CO₂ emissions and removals is subject to uncertainty, meaning offset estimates should be interpreted cautiously. Measurement uncertainty gives rise to risks of inaccurate accounting, which can lead to credits and debits being recorded that do not properly reflect changes in carbon stocks and fluxes. Carbon farming offsets can be affected by fire or extreme weather events, or climate change itself. Price, availability, and physical insecurity of offsets exposes Woodside, its shareholders and investors to significant risk.

Regulatory frameworks are likely to continue to strengthen globally, and responsibility for Scope 3 emissions or absolute reductions may be forced upon Woodside. Finally, exposure to trade sanctions and other costs to access markets may be a significant issue for companies who place too great an emphasis on offsets without any effective action to decarbonise their operations by cutting emissions at source.

No commitment to address Scope 3 pollution

Woodside has made no commitments to address scope 3 emissions resulting from the combustion of the gas it aims to export. This is a concern to many of the company's shareholders and investors including, BlackRock, the company's largest shareholder. At Woodside's 2021 AGM, Blackrock voted against the reappointment of one of the company directors "to hold the company to account" for its failure to set Scope 3 emissions targets.³¹

Woodside's climate goals ignore most of the company's direct pollution in Australia

Perhaps the biggest problem with Woodside's emissions reduction targets is that the company has used a method of describing their targets which avoids any impact on two thirds of the direct emissions that the company is legally responsible for under Australian law.³² Woodside is the legal operator of both the Pluto and North West Shelf LNG facilities on the Burrup Peninsula. As the operator of these facilities, Woodside is the liable party with responsibility for 100% of the carbon pollution from both facilities. The total emissions from these facilities is reported against Woodside in the Australian National Greenhouse and Energy Reporting Scheme (NGERS) and this is reflected at the State level with approvals under the WA Environmental Protection Act that confirm Woodside's responsibility for this pollution.

While Woodside is the legal operator of these facilities, the company shares ownership with other joint venture partners. Woodside has used this fact to abrogate its responsibility for when setting corporate emissions reduction targets that only account for its own 'equity share' of the pollution from these facilities.³³ While many of Woodside's equity share partners have set targets for their own pollution, they do not accept responsibility for their equity portion of Woodside's emissions, as they are not legally responsible for this pollution. This leaves the majority of Woodside's emissions unaccounted for, and not subject to any emissions reduction plans or targets.

Woodside's emissions reduction targets explained

The following table explains what Woodside's emissions reduction targets really mean in practise

	2025	2030	2050
Woodside's stated 'equity share' emissions reduction target	15% net reduction	30% net reduction	net zero emissions
Woodside's equity share target as a % of total emissions Woodside is legally responsible for in Australia	4.7% net reduction (scope 1 and 2 only)	9.5% net reduction (scope 1 and 2 only)	32% net reduction (scope 1 and 2 only)
What will happen to Woodside's absolute direct emissions?	Absolute increase	Absolute increase by 66%	Absolute increase by 66%
What will happen to Woodside's scope 3 emissions?	Absolute increase (no reduction target)	Absolute increase (no reduction target)	Absolute increase (no reduction target)

Woodside's failure to disclose climate risk

Ongoing concerns have been raised by Woodside shareholders and analysts regarding the adequacy and transparency of Woodside's market disclosures on carbon risk. The contemporary benchmark for this kind of disclosure is set out by the Taskforce on Climate Related Financial Disclosure (TCFD). This includes reporting on the potential impacts climate change itself will have on the operations of a company and risks associated with current and future carbon pollution including exposure to carbon prices and policies. Importantly, the TCFD framework also includes reporting on the range of potential impacts that global efforts to tackle climate change (for example through the Paris Agreement) could have on the supply and demand for products that the company produces, and how this may affect profit projections.

In February 2021, the Environmental Defenders Office published a legal opinion³⁴ demonstrating that Woodside is exposed to a number of climate-related risks that have not been specifically and comprehensively disclosed in accordance with industry best practice.

An example of Woodside's climate-related risks is that its carbon-intensive gas projects becoming stranded assets as countries strive to achieve the Paris Agreement's goal of limiting global average temperature increase to 1.5°C or well below 2°C above pre-industrial levels. As detailed in the report, Woodside's 'Burrup Hub' projects are prime candidates for becoming stranded assets during their expected lifetime. (Environmental Defenders Office, 2021)

Woodside is more exposed to climate risks than many of its competitors because it does not have a diversified portfolio of assets, and it has not developed any significant growth or revenue prospects aside from continued expansion of its carbon intensive LNG operations.

Woodside has since updated its climate risk disclosure in the company's latest reporting, however the reports released by the company still fall short of the standard of transparency required for investors and shareholders to make informed investment decisions given the very significant climate related risks that are faced by a company.

Woodside's gamble against the Paris Agreement

Despite public statements claiming that Woodside supports the goals of the Paris Agreement, its planned investments, including the Scarborough to Pluto LNG expansion are not consistent with the global temperature goal of 1.5 degrees global warming established in the Agreement.

Instead, Woodside justifies its market demand assumptions using global energy scenarios that are aligned with 2 or more degrees of warming, such as the IEA Stated Policy Scenario (STEPS) which is aligned with 2.7 degrees of global warming.

According to a briefing note provided to Woodside Shareholders by Market Forces, Woodside's business strategy is consistent with the failure of the Paris Agreement.³⁵ The analysis revealed that Woodside forecasts LNG demand to grow by over 4% each year to 2035, exceeding the International Energy Agency's 2.7°C STEPS scenario. By 2035 Woodside expects LNG demand to be 14% higher than the STEPS demand by 2035 and 40% higher than the Sustainable Development Scenario (SDS) demand forecast.

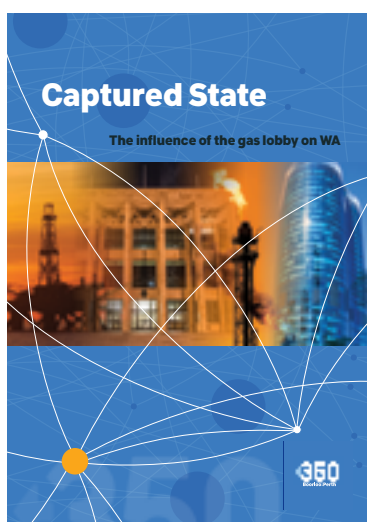
The global Production Gap Report, first launched in 2019, measures the gap between Paris Agreement goals and planned and projected production of fossil fuels.³⁶ The report demonstrates that current fossil fuel production rates far exceed the amount of fossil fuels that can be burned while remaining within the temperature goals of the Agreement and that global fossil fuel production must decline significantly from current levels if global goals are to be met. Woodside's plans to increase production to 70% above 2019 levels by 2028 is triple the rate of growth forecast under the business as usual scenario used in the Production Gap report.³⁷

A separate analysis of Woodside's potential capex on unsanctioned upstream projects to 2030 by the international Carbon Tracker initiative³⁸ found just a fifth of Woodside's capex opportunities had breakeven costs that fit within the IEA's Beyond 2 Degrees Scenario (B2DS). The remaining ~US\$30 billion of potential capex opportunities would be stranded under demand profiles consistent with the Paris Agreement.

Even the Commonwealth Department of Industry, Science, Energy and Resources (DISER) has questioned Woodside's market demand assumptions for the Scarborough to Pluto LNG project.³⁹ In a letter to the offshore oil and gas regulator (NOPSEMA), DISER highlighted that the International Energy Agency had noted "significant uncertainty as to the scale and durability of the demand for imported LNG in developing markets around the world" which Woodside had failed to account for in its Scarborough development plan.

"It is the Department's view that if anything, this uncertainty could suggest a downward influence on LNG demand from emerging Asian markets".
(DISER Climate Change and Innovation Group deputy secretary Jo Evans)

350 Perth's Captured State – The influence of the gas lobby on WA



Woodside's full page advertisement in The West Australian on 11 March 2019

Woodside's advocacy against action on climate change

Woodside principal strategy for managing its carbon risk to date has been influencing governments to ensure no action is taken that would require the company to reduce its pollution. Advocacy and influence by Woodside, including donations to political parties,⁴⁰ lobbying and public campaigning⁴¹ has been a central reason that Western Australia has not adopted science-based targets or effective policies to reduce carbon pollution as required under the Paris Agreement.

Woodside's campaigning against new policy measures by the Western Australian EPA has led to compromised environmental impact assessments for all major projects in the state.⁴² Woodside's toxic effect on climate policy has delayed emissions reduction across the whole economy, held back the creation of thousands of jobs in clean industries, and resulted in far greater carbon pollution than is released from the company's own oil and gas operations.

The report *Captured State – The influence of the gas lobby on WA* documents the toxic effect that Woodside and other oil and gas companies have had on climate change and other policy decisions here in Western Australia and nationally. The report documents how Woodside has influenced the WA government including through political donations timed to coincide with significant government decisions on the company's oil and gas projects, and with meetings with the WA Premier and Minister for the Environment.⁴³

This strategy has been effective for Woodside to date but is now presenting significant risks as investors and shareholders increasingly expect companies like Woodside to have a responsible and credible approach to climate change that goes beyond simply blocking government action. While Woodside's influence may protect it from the impacts of government policy for a time, it strains the social license of the company and does not address the broader risks associated with diminishing markets for carbon intensive energy sources. The result of this can be seen at the 2020 Woodside AGM, where over 50% of shareholders voted for the company to align its business plans with the Paris Agreement,⁴⁴ and almost 20% of shareholders voted for the company to wind down its existing fossil fuel operations and return the capital to shareholders at the 2021 meeting.⁴⁵

6 How Woodside must cut pollution and adapt to a low carbon future

Woodside must abandon its LNG expansion plans

The only way for Woodside and other LNG producers to become aligned with the goals of the Paris Agreement is to cease expansion and begin scaling down production in the coming decade.

So far, Woodside has failed to develop a meaningful transition to renewable hydrogen or other cleaner energy growth opportunities. These options currently remain open for the company, however the investment of \$16 billion in the Scarborough to Pluto development would foreclose this opportunity and lock the company into a high pollution business model that will not be profitable in a low carbon global economy.

In its recent *Net Zero by 2050 Global Energy Roadmap*⁴⁶ the International Energy Agency (IEA) has demonstrated that no new gas fields can proceed, and global LNG demand must fall dramatically over the coming decades for the global energy system to achieve net-zero emissions by 2050 as required under the Paris Agreement.

The IEA analysis has clear implications for Woodside and BHP's Scarborough LNG development and Woodside's Burrup Hub. It shows that:

- No new gas fields can proceed, and some existing gas fields must cease production prematurely.
- Global LNG demand will fall dramatically over the coming decades, with a reduction in demand of 5% per year during the 2030s.
- LNG facilities already in operation or under construction will not be needed as part of the future energy mix.

“There is no need for investment in new fossil fuel supply in our net-zero pathway...Ever cheaper renewable energy technologies give electricity the edge in the race to zero”

This report confirms that that Woodside's Burrup Hub gas expansion projects including the Scarborough to Pluto LNG development would directly undermine the Paris Agreement, and cannot be justified as part of a global energy future where the goal of net-zero emissions by 2050 is achieved.

The \$16 billion Scarborough to Pluto LNG project would become a very expensive stranded asset, and the expansion of the Pluto LNG facility cannot be justified under a global energy scenario that is aligned with the goals of the Paris Agreement.



“No new natural gas fields are needed in the Net Zero Emissions pathway, beyond those already under development. Also not need are many of the liquefied natural gas (LNG) facilities currently under construction or at the planning stage. Between 2020 and 2050, natural gas traded as LNG falls by 60%. During the 2030s global natural gas demand declines by more than 5% per year on average meaning that some fields may close prematurely. The net-zero pathway results in a sharp decline in fossil fuel demand, meaning that the focus for oil and gas producers switches entirely to output – and emissions reductions – from the operation of existing assets. Gas demand declines by 55% and oil declines by 75%”

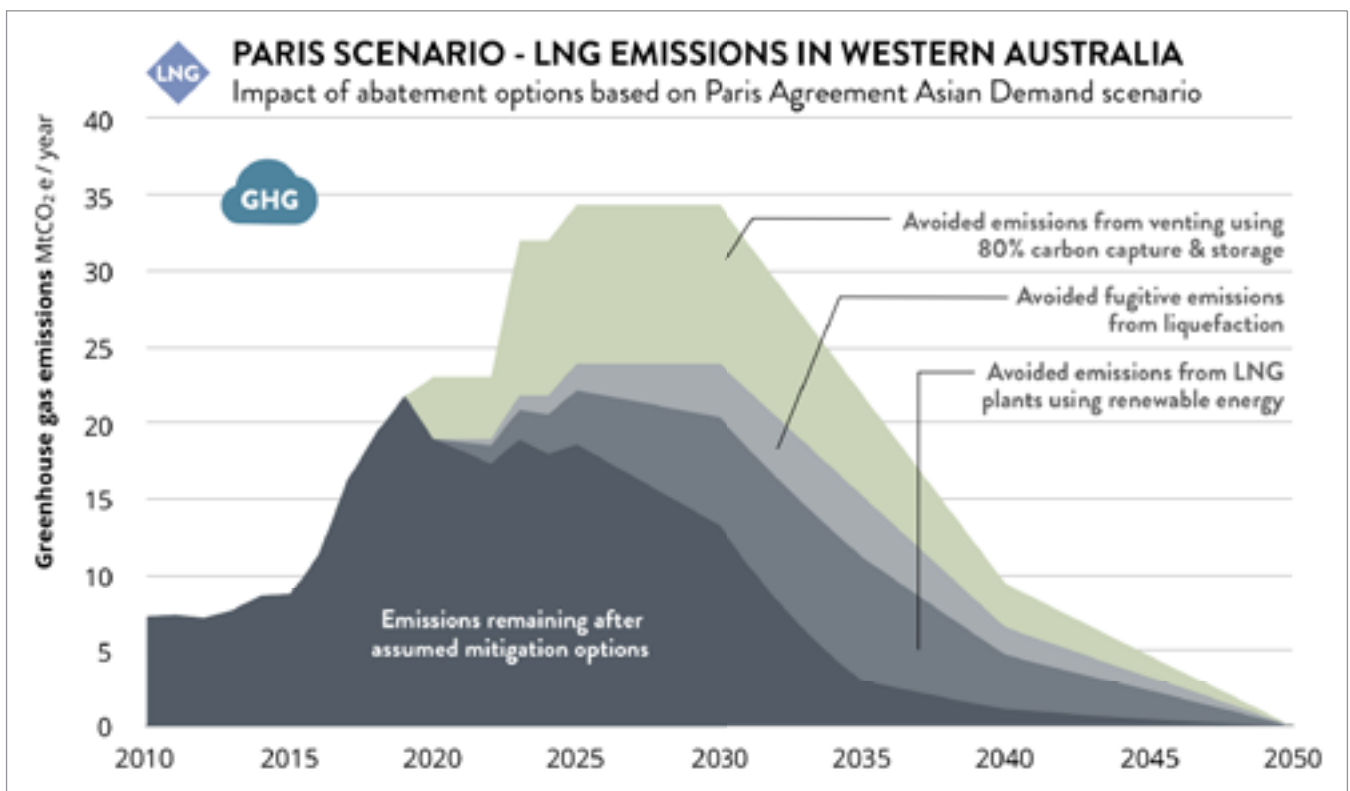
Reducing carbon pollution from Woodside's existing operations

A number of options have been identified to reduce emissions and decarbonise existing LNG operations including Woodside's Pluto and North West Shelf LNG facilities on the Burrup.

These options include including carbon capture and storage (CCS), repowering LNG facilities with renewable energy, controlling fugitive methane leaks, and finally offsetting residual emissions.

The first Paris-aligned Carbon Budget for Western Australia (produced by Climate Analytics for the Conservation Council of WA) outlines decarbonisation pathways for the LNG sector, which would enable the sector to contribute to a goal of net zero pollution by 2050.⁴⁷

The report shows that without a reduction in LNG exports, zero emissions from the LNG sector are not possible in WA by 2050.



Paris-compliant decarbonisation pathway for the WA LNG sector

Offsetting residual carbon pollution from LNG projects

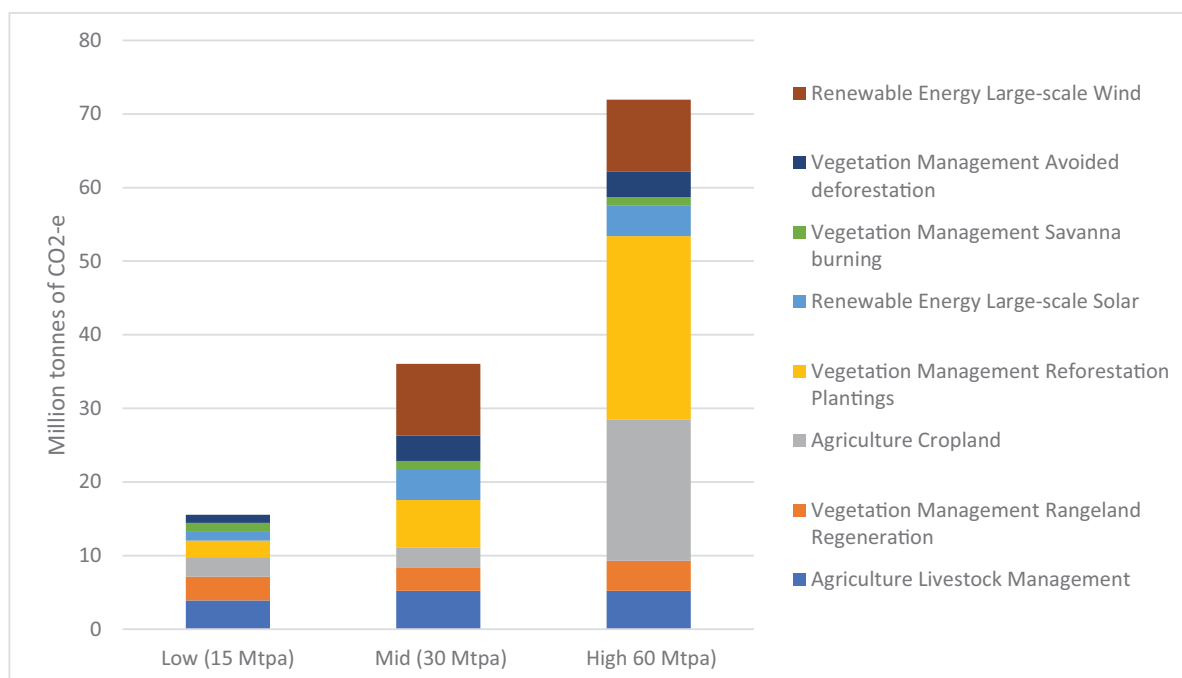
Once reductions in carbon pollution have been achieved through measures such as carbon capture and storage (CCS), reducing methane leaks, and use of renewable energy, there is likely to be residual carbon pollution that is difficult or impossible to avoid. After all available mitigation options are exhausted according to the 'mitigation hierarchy', residual carbon pollution should be offset.

It should be noted that there is a limited global and local supply of offsets. Offsets carry significant risks, uncertainty and impermanence and should only be regarded as a solution of last resort, rather than a primary strategy for management carbon risk as Woodside is currently proposing.

Offsetting carbon pollution should never be used as a measure to facilitate new polluting developments, or as an excuse to avoid measures that would lead to direct reductions in emissions at source.

A study by Reputex Energy, commissioned by the Conservation Council of Western Australia in November 2018, examined the cost and availability of offsets for the LNG sector in Western Australia. This study showed that significant abatement options were available here in WA at costs well under \$100 per ton, including through investment in renewable energy, carbon farming and avoided deforestation.⁴⁸

Figure 8: Supply of GHG abatement offsets from Western Australia to meet demand reference levels.



Source: Reputex Energy 2018.

Potential availability of offsets at different demand levels in Western Australia

OFFSETTING EMISSIONS FROM LIQUIFIED NATURAL GAS PROJECTS IN WESTERN AUSTRALIA

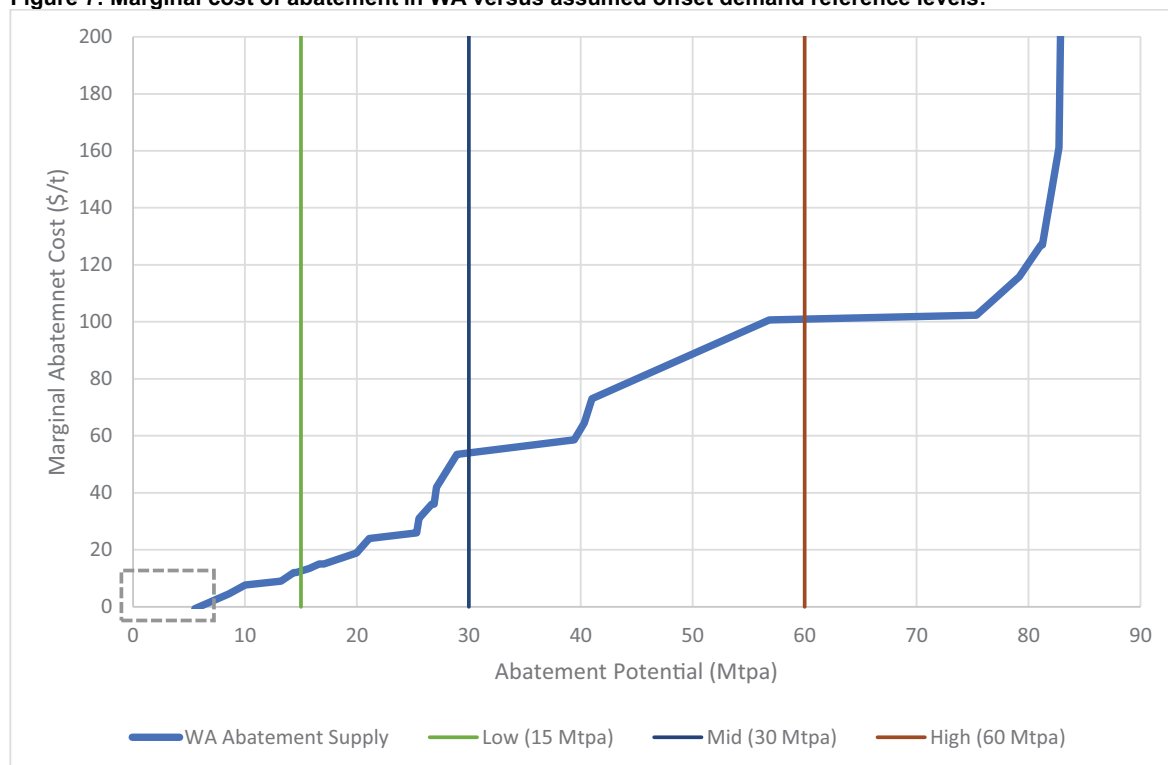
For the Conservation Council of Western Australia (CCWA)

November 2018



The Reputex study showed that if new methods were developed for carbon farming and other offset methods in WA, up to 60 million tons per year would potentially be available at a cost of less than \$AU100 per ton.

Figure 7: Marginal cost of abatement in WA versus assumed offset demand reference levels.



Source: Reputex Energy 2018.

Marginal cost of abatement for offsets in WA at reference demand levels

Jobs and other benefits from decarbonising LNG operations in WA

There is very considerable potential to deliver jobs and other economic benefits for Western Australians through requirements to control and offset carbon pollution from WA's biggest polluters in the LNG sector. Such measures can provide exciting opportunities for WA families and businesses across the state, particularly those located in regional areas.

Reputex provides estimates for employment in different activities that could mitigate and offset carbon pollution from LNG developments here in Western Australia, ranging from up to 12 jobs per million dollars of investment in carbon farming to 5 jobs per million dollars invested in renewable energy projects.⁴⁹

These industries are very labor intensive compared with the capital-intensive LNG industry which delivers less than 0.1 jobs per \$1 million invested according to the Australian Bureau of Statistics.

The actual job creation potential is also affected by the potential supply of each project type. Reputex found that land-sector projects, such as forest management, are labor intensive and have a high total employment potential, with 5 out of 6 jobs ultimately expected to be created in the land sector. The study found that employment and regional development benefits are spread across the state, particularly in non-urban, regional areas that have in the past been overlooked and/or where job creation is traditionally in decline.

In addition to job creation, projects such as carbon farming can deliver very considerable benefits for biodiversity, land and soil conservation, and contribute to the sustainability of farming systems and regional economies.

Table 5: Job creation per million dollars of investment.

Project	Jobs/\$M	Capital to labor spend ratio (\$/person-yr)	Job Mix			Primary Investment Region
			Low skilled	Skilled	Professional	
Savanna Burning	12	90,000	5	4	4	Kimberley
Reforestation Plantings	10	100,000	3	2	5	Southern Rangelands
Rangeland Regeneration	9	120,000	3	4	3	Southern Rangelands
Renewable Energy	5	190,000	1	3	2	South West

Sourced from data provided by project developers. Multipliers consider direct job creation only.



Woodside can easily afford to decarbonise existing operations

Both independent analysis and Woodside's own corporate reporting demonstrates that the company can easily afford to avoid, mitigate and offset all of its carbon pollution from its existing operations. Woodside's avoidance of such obligations amounts to protection of its own profits at the expense of the global climate and Western Australian communities.

In 2019 The Australia Institute released an analysis indicating that offsetting the entire emissions from Woodside's Pluto LNG project could be offset at a cost of less than 2% of the profit generated by the facility.

Woodside could right now completely offset all carbon emissions from its North West Shelf and Pluto operations in Western Australia for 1.1-1.5 per cent of those projects' gross profits (The Australia Institute)⁵⁰

Despite this, Woodside has a history of successfully campaigning against requirements to control and offset emissions in Western Australia, based on claims about the economic impact this would have on individual gas projects as well as the WA economy and jobs. This is despite the gas industry being WA's smallest employer by sector and contributing very little in the way of taxes or royalties. In 2018, for example, Woodside CEO Peter Coleman was quoted in The West Australian newspaper saying that the EPA's proposed requirements to offset carbon pollution from its LNG projects would 'cost Western Australia billions in investment'.

However, Woodside presents a very different picture to its shareholders and investors. Unlike Western Australia's daily newspaper, the rules of the Australian Stock Exchange prevent companies like Woodside from providing misleading information to the market about their projects.

In recent months Woodside has disclosed to the market that the Scarborough project, as part of the Burrup Hub development remains profitable at a carbon price of up to \$US80 per tonne.⁵¹ This means that Woodside can afford to pay this price for avoiding, reducing, and offsetting emissions without affecting the viability of the projects.

Options to mitigate carbon pollution from LNG facilities range from around \$80 to over \$100 per tonne for technology like carbon capture and storage, to less than \$2 per tonne (or even negative cost) for energy efficiency and avoided methane leakage. At current prices, offsetting of residual emissions would cost around \$18-20 per tonne if the offsets were generated here in Western Australia or would be available at a much lower cost if overseas offsets were allowed.

When discussing the Browse Basin LNG development, widely considered to be more marginal than the Scarborough Project, Woodside CEO Peter Coleman said that Carbon Capture and Storage (CCS) would be used to reduce pollution from the development at a breakeven cost "just north" of \$100 a tonne.

"It doesn't affect the economics in a material way. I'd hate to say that to a regulator. But it's very important and I think the project is robust enough to handle it,"

Peter Coleman, Woodside CEO March 2020.

7 Conclusion and recommendations

The processing of Scarborough and other new gas in the Pluto LNG facility will result in the release of over 1.69 billion tons of additional direct and indirect carbon pollution. Annual direct and indirect emissions will be equal to 15 coal fired power stations, and total lifetime pollution will be greater than the proposed Adani coal mine. Direct emissions from the project will represent around 5% of Western Australia's total, and this will be the major factor determining whether total annual pollution in WA continues to rise or begins to stabilise as required under the Paris Agreement.

In addition, the Murujuga rock art (currently nominated for World Heritage listing) will be exposed to increased acid gas emissions at a higher intensity and for an extended duration with potentially severe consequences for the Aboriginal heritage site.

Neither the carbon pollution from the development, nor the impacts on Murujuga rock art from the Scarborough to Pluto development have been subject to public assessment by the EPA as required under the Environmental Protection Act (WA). Approvals that have been provided are now facing a legal challenge in the WA Supreme Court.

Recommendations for the WA Government and Minister for the Environment; Climate Action

Woodside is pushing for further approvals from the State Government, including for a Greenhouse Gas Abatement Program and approvals for dredging, dumping and constructing a giant gas pipeline in the Dampier Archipelago - the richest area of marine biodiversity known in Western Australia.

The outcome of these decisions will determine whether the state's most polluting new gas project is able to proceed without environmental assessment, whether WA's carbon emissions continue rising, and whether 1.6 billion tons of carbon pollution will be released into the global atmosphere, directly undermining global efforts under the Paris Agreement.

The following specific recommendations are made for the WA Government and Minister for the Environment:

1) The Scarborough to Pluto Development is not environmentally acceptable because it directly undermines global action on climate change and causes irreversible damage to World Heritage.

Given the inevitable impacts of the development including over 1.6 billion tons of carbon pollution, irreversible damage to the Murujuga rock art, and impacts on the marine environment, the Scarborough to Pluto development cannot be made environmentally acceptable and should not be given further approvals to proceed.

2) Full public environmental impact assessment for the development must be undertaken

It is not acceptable for any government to allow Australia's most polluting fossil fuel project to proceed without full public environmental impact assessment.

Given that the legal basis for the environmental approvals is being reviewed by the WA Supreme Court, providing further approvals for the development before these issues are resolved exposes the state of Western Australia, its people and environment to significant and unnecessary risk. It is strongly recommended that no decision is made regarding further approvals for the project until these legal issues are resolved.

3) The Ministerial Statement for the Pluto LNG facility must be reviewed and updated

The Ministerial Statement governing the Pluto LNG facility does not reflect current science or policy objectives on climate change and does not address impacts to Aboriginal Heritage. It is recommended that the Minister exercise powers under the Environmental Protection Act 1986 to initiate a public review of the Ministerial Statement and conditions. This is necessary to ensure that the state and its environment are not exposed to unacceptable and unassessed risk, and that conditions to manage these risks are contemporary and enforceable. Such a review should be undertaken prior to any further approvals being issued.

4) Western Australia's carbon pollution must not increase

Conditions must be put in place to ensure the project at a minimum does not result in any net increase in Western Australia's carbon pollution. This can be achieved by requiring Woodside to achieve net zero emissions for the life of the project. This would not make the project acceptable or consistent with the Paris Agreement as it would still result in around 1.5 billion tons of carbon pollution from the combustion of the exported gas.

According to independent analysis and Woodside's own market disclosures, such conditions would be affordable for Woodside. Such conditions would bring considerable benefits to Western Australia including significant employment and investment in land restoration, carbon farming, renewable energy, and other clean technologies.

5) Any further decisions must include public consultation

No further decisions on the Scarborough to Pluto LNG development should occur without full public consultation.

Recommendations for shareholders and investors

While the WA government and Minister for the Environment; Climate Change can influence the outcome of this development in a number of important ways, the ultimate decision on whether it proceeds is likely to rest with shareholders and investors.

Woodside's largest shareholders include Blackrock investments, industry superannuation funds and others who have made commitments to ensure their portfolios are aligned with the Paris Agreement. Similarly, project partner BHP has made commitments to action on climate change and the Paris Agreement.

Continuing to invest in, and support Woodside while it proceeds with the Scarborough to Pluto development

is not consistent with those policies and commitments. Furthermore, Woodside's approach to carbon risk and climate change presents significant undisclosed risks to shareholders and investors.

- 1) It is recommended that shareholders and investors decline to invest in the Scarborough to Pluto LNG development and do not support Woodside in sanctioning the development, given the very significant carbon risks, the lack of environmental assessment, the uncertainty around global LNG markets, and Woodside's inadequate approach to climate change.**
- 2) Shareholders and investors are urged to proactively engage with Woodside to manage their exposure to the significant risks associated with this development.**



A young protestor stands outside Woodside's corporate office on 15 April 2021

End Notes

- 1 Clean State, *Burrup Hub: Australia's most pollution fossil fuel project*, February 2020, p.6. (https://d3n8a8pro7vhmx.cloudfront.net/ccwa/pages/11680/attachments/original/1586154175/CCWA_Clean-State_Burrup-Hub_Report_WEB-READER.pdf?1586154175) (Clean State 1)
- 2 <https://www.woodside.com.au/what-we-do/australian-growth-projects>
- 3 <https://www.industry.gov.au/sites/default/files/2020-05/nga-state-and-territory-greenhouse-gas-inventories-2018.pdf>
- 4 <https://www.wa.gov.au/service/environment/environment-information-services/western-australian-climate-change-policy>
- 5 from 1.9 million tons to 4.4 million tonnes per year, inclusive of 0.5 million tonnes per year estimated reservoir gas emissions from the Scarborough field
- 6 230% increase, or 40 million tonnes compared to 133 million tonnes total lifetime direct emissions
- 7 436 million tonnes compared to 1.55 billion tonnes
- 8 https://www.cleanstate.org.au/burrup-hub_report
- 9 Impact of Burrup Hub on Western Australia's Paris Agreement Carbon Budget <https://climateanalytics.org/publications/2020/impact-of-burrup-hub-on-western-australias-paris-agreement-carbon-budget/>
- 10 <http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/electricity-sector-emissions-and-generation-data/electricity-sector-emissions-and-generation-data-2019-20>
- 11 Total direct and scope 3 emissions from the Adani mine, assuming mine life of 50 years and 10 million tonnes of coal produced per year <https://www.bravus.com.au/carmichael-mine/>
- 12 Statement no. 757, para 12-2.
- 13 <https://www.theguardian.com/environment/2018/nov/23/woodside-applies-to-build-big-polluting-lng-plant-with-no-emissions-plan>
- 14 <https://www.theguardian.com/environment/2018/nov/23/woodside-applies-to-build-big-polluting-lng-plant-with-no-emissions-plan>
- 15 Black, J, et al., *Theoretical effects of industrial emissions on colour change at rock art sites on Burrup Peninsula, Western Australia*, Journal of Archaeological Science: Reports, 12:457-462, 1 March 2017; Dorn, R Anthropogenic Interactions with Rock Varnish (2020); Submission from Friends of Australian Rock Art Inc. (FARA), Senate Inquiry into the destruction of 46,000 year old caves at the Juukan Gorge in the Pilbara region of Western Australia Joint Standing Committee on Northern Australia https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Northern_Australia/CavesatJuukanGorge/Submissions?main_0_content_1_RadGrid1ChangePage=8_20
- 16 https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Northern_Australia/CavesatJuukanGorge/Submissions?main_0_content_1_RadGrid1ChangePage=8_20
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- 18 Woodside Energy Ltd., *Scarborough Offshore Project Proposal*, June 2019, p.222,
- 19 <https://parks.dpaw.wa.gov.au/park/dampier-archipelago>
- 20 Scarborough nearshore component technical review supplementary submission to the WA Appeals Convener, 2020
- 21 Parliament of Australia, Protection of Aboriginal rock art of the Burrup Peninsula, https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/BurrupPeninsula
- 22 https://www.ccwa.org.au/conservation_council_launches_legal_challenge
- 23 <https://www.woodside.com.au/what-we-do/australian-growth-projects>
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- 25 <https://www.woodside.com.au/sustainability/climate-change>
- 26 <https://www.woodside.com.au/sustainability/climate-change>
- 27 Climate Targets Panel, Australia's Paris Agreement Pathway: Updating the Climate Change Authority's 2014 Emissions Reduction Targets, January 2021. (<https://www.climatecollege.unimelb.edu.au/files/site1/docs/%5Bmi7%3Aui7uid%5D/ClimateTargetsPanelReport.pdf>) (Climate Targets Panel)

- 28 Climate Targets Panel
- 29 <https://www.woodside.com.au/sustainability/climate-change>
- 30 <https://www.woodside.com.au/sustainability/environment/burup-hub-greenhouse-gas-emissions>
- 31 <https://www.blackrock.com/corporate/literature/press-release/blk-vote-bulletin-woodside-petroleum-apr-2021.pdf>
- 32 National Greenhouse and Energy Reporting Act 2007, Environmental Protection Act (WA) 1986
- 33 Footnote 2, <https://www.woodside.com.au/sustainability/climate-change>
- 34 <https://www.edo.org.au/2021/02/17/legal-analysis-shows-woodside-lagging-on-climate-related-risk-disclosure/>
- 35 <https://www.marketforces.org.au/wp-content/uploads/2021/03/WPL-STO-OSH-Investor-Briefing-2020.pdf>
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- 40 <https://transparency.aec.gov.au/AnnualDonor>
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- 42 See for example <https://www.smh.com.au/national/going-carbon-neutral-would-barely-touch-woodside-s-huge-pilbara-profits-thinktank-20190321-p51697.html>
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- 44 <https://www.theguardian.com/environment/2020/may/01/investors-call-on-australias-largest-oil-and-gas-company-to-set-greenhouse-targets>
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- 47 <https://d3n8a8pro7vhmx.cloudfront.net/ccwa/pages/11568/attachments/original/1576570489/report-carbonbudgetforwa-climateanalytics-2019-web.pdf?1576570489>
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- 49 RepuTex, *Offsetting Emissions from Liquefied Natural Gas Projects in Western Australia*, Nov 2018. (https://www.reputex.com/wp-content/uploads/2018/11/REPUTEX-REPORT_Cost-and-availability-of-offsetting-LNG-emissions-in-Western-Australia_1118.pdf)
- 50 <https://www.smh.com.au/national/going-carbon-neutral-would-barely-touch-woodside-s-huge-pilbara-profits-thinktank-20190321-p51697.html> This calculation assumed a carbon price of \$13.87 per ton and emissions of 1.8 million tons per year from the Pluto LNG facility. An expanded Pluto facility would produce more emissions and more profit, however the proportion of profit required to pay for full offsetting of the Scarborough to Pluto LNG project is not expected to be more than 5%
- 51 [Asset Value Review and Other Items, ASX Announcement 14 July 2020 ; Woodside 2019 CDP Report](#)

“There is no need for investment in new fossil fuel supply in our net-zero pathway... Ever cheaper renewable energy technologies give electricity the edge in the race to zero”

International energy Agency (IEA) *Net Zero by 2050 Global Energy Roadmap*
Flagship Report - May 2021

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