Clean State

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Burrup Hub: Australia's most polluting fossil fuel project

Why Woodside's Burrup Hub developments should not proceed

Summary

The Burrup Hub project is a $50bn Liquified Natural Gas (LNG) mega-project led by Woodside Energy, involving the development of two new giant offshore gas fields and other petroleum resources, including onshore fracking developments for export from the Northwest of Western Australia.

> **"The Burrup Hub would be the most polluting project ever to be developed in Australia, delivering some of the world's dirtiest LNG for up to 50 years. With estimated total emissions of over 6 billion tonnes (gigatons) of carbon pollution across its lifetime, the proposal has profound implications for the global climate across generations."**
>
> **– Piers Verstegen, Director, Conservation Council of Western Australia**

If the Burrup Hub were to proceed, it would:

- **Be the most polluting project ever to be developed in Australia,** producing some of the dirtiest gas in the world and releasing around four times the pollution of the proposed Adani coal mine;
- **Be in direct breach of Australia's commitments on climate change,** undermine international climate goals in the Paris Agreement and directly contravene public commitments on climate change by the companies involved;
- **Require over 50 wells drilled to extract oil and gas from beneath the pristine Scott Reef off the Kimberley coast,** impacting endangered marine life in a globally significant biodiversity hotspot;
- **Risk health impacts for local communities and workers** from exposure to industrial pollution;
- **Cause permanent damage to the world's most extensive collection of Aboriginal rock art,** nominated for World Heritage listing on the Burrup Peninsula (Murujuga);
- **Open up Western Australia to a large scale fracking and onshore gas industry** which would put groundwater, communities and agriculture at risk;
- **Deliver few benefits, while transferring billions of dollars of costs to West Australians.**

Overall, this project has fundamental flaws and dangerous environmental risks that have not and cannot be adequately addressed.

Proponents including Woodside, Shell, BP and Chevron are seeking environmental approvals for this project and planning on making investment decisions during 2020.

However, Woodside's Burrup Hub project is not a fait accompli. Environmental approvals are yet to be granted, decisions to sanction the project are yet to be made, and capital must be raised.

This report sets out the case for why the Burrup Hub should not proceed given the very significant environmental impacts, investment risks, few benefits, and the profound and irreversible consequences for the global climate.

Contents

Overview of the proposal and its proponents

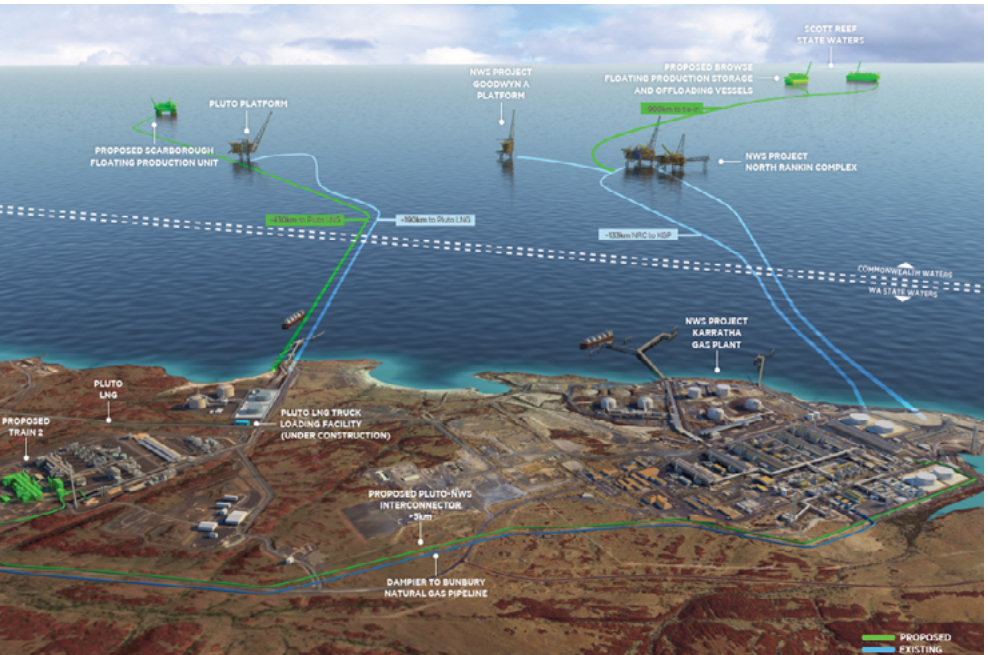
What is the Burrup Hub project?

Woodside's Burrup Hub project involves the development of two giant new gas fields (Browse and Scarborough) and other onshore and offshore gas resources in Western Australia's Northwest. The gas would be piped to two giant existing LNG production and export facilities, Pluto and North West Shelf, located on the Burrup Peninsula in the Pilbara region of Western Australia's Northwest. These facilities would be expanded, extended, and linked to create a massive LNG processing hub. The project involves $AU50bn in capital investment for the development of the gas fields, connector pipes, upgraded processing facilities and other infrastructure.

The companies behind this project

The Burrup Hub project is proposed by some of the world's largest oil and gas companies. Australian company Woodside Energy is the lead proponent of the projects, which involve several different joint ventures and other commercial relationships including with Shell, BP, BHP, Chevron and other partners (Table 1).

Woodside's 25 top shareholders collectively own 22.4% of the company. This list is provided at Appendix 1 of this report.



Woodside

Chevron

bp

Shell

BHP

Ownership of Burrup Hub components

Table 1

Project	% Australian Owned	Operator	Joint Venture Partners
North West Shelf LNG processing facility	33.4%	Woodside	Woodside (16.7%), BHP (16.7%), BP (16.7%), Chevron (16.7%) Shell (16.7%); Mitsubishi (8.3%), Mitsui (8.3%)
Browse Basin gas-field	30.6%	Woodside	Woodside (30.6%), Shell (27%), BP (17.3%), PetroChina (10.7%), Mitsubishi (7.2%), Mitsui (7.2%)
Scarborough gas-field	100%	Woodside	Woodside (75%), BHP (25%)
Pluto LNG processing facility	100%	Woodside (owned & operated)	

Other companies involved with the Burrup Hub

Other gas companies earmarked to supply gas to the project (including fracking and on-shore projects).

Mitsui (previously AWE) and **Beach Energy** (owned by Seven West Holdings)

- Waitsia project, Perth Basin
- Beharra Springs project, Perth Basin

Strike Energy and **Warrego Energy**

- West Erregulla Project, Perth Basin
- Western Gas - Equus project, offshore

"The figures we've calculated for Woodside's Burrup Hub 'vision' are more like our worst nightmare. 6 billion tonnes of greenhouse gas pollution over this project's lifetime is not consistent with the scientific, technological, or moral action required to comply with our international obligations to bring emissions down urgently and completely decarbonize by 2050."

–Chantal Caruso, Clean State policy analyst and spokesperson

Carbon pollution and climate change impacts

If it were to become operational, the Burrup Hub project would be Australia's largest pollution source, when all direct and indirect emissions are accounted for. Due to the very high emissions intensity of the gas produced, and the long lifespan of the proposal, it is inconsistent with maintaining a safe climate and meeting international commitments on climate change.

Australia's most polluting project

When measured in absolute terms, the Burrup Hub project would be Australia's most polluting fossil fuel project ever to be developed, with a total lifetime carbon footprint of over 6 billion tonnes of CO2 (6.218 gigatons).

The project would cause both direct or 'Scope 1' emissions released in Australia from energy use venting CO2, fugitive emissions, flaring and other sources, as well as indirect or 'Scope 3' emissions from burning the gas after it is sold, either in Australia or overseas.

Table 2[1]

Project	Annual pollution (scope 1 only) Mtpa CO2e-	Annual pollution (Including scope 3) Mtpa CO2e-	Total pollution (over 50 year project life) Mt CO2e-
Browse Basin gas (processed through North West Shelf LNG)	6.8	44.8	1,602 (1.6 gigatons)
Scarborough gas (processed through Pluto LNG facility)	4.3	44	1,347 (1.3 gigatons)
Total Burrup Hub (new gas only) (proposed new gas-fields including Scarborough and Browse)[2]	13	120	5140 (5.1 gigatons)
Total Burrup Hub (all gas including existing reserves)	16.1	139	6086 (6 gigatons)

Burrup Hub compared with other sources of pollution

Over its proposed 50-year lifetime the Burrup Hub project would release over 6 billion tons (gigatons) of carbon pollution, equivalent to 11x Australia's annual emissions.[3]

Each year the Burrup Hub project would result in 139 million tonnes of carbon pollution (including scope 3 emissions), equivalent to:

- over 4x the emissions of the proposed Adani Carmichael coal mine[4]
- 35 of the largest, dirtiest coal-fired power stations[5]
- the entire national emissions of New Zealand, Ireland, Norway and Bolivia[6]
- over a quarter of Australia's entire national emissions[7]

Each year, the direct emissions (scope 1) from the Burrup Hub project generated here in WA (16mtpa) would be equivalent to:

- almost 8x more than the annual emissions reduction delivered by Australia's 2.1 million solar rooftops
- 4 coal fired power stations the size and age of WA's Muja power station
- half the emissions abatement already delivered under the Morrison government's $4.5 bn Emissions Reduction Fund (RET)[8].

Every year the Burrup Hub project is equivalent to the **entire national emissions of New Zealand, Ireland, Norway and Bolivia combined**

Every year until 2070

total climate damage from the Burrup Hub project is equivalent to:

= 35 coal fired power stations

The dirtiest gas in the world

All fossil fuels cause carbon pollution and contribute to climate change, but when measured in tonnes of pollution per unit of energy produced (emissions intensity), some fuel sources and projects are far more polluting than others.

If the Browse Basin development were to proceed, **it would have a carbon intensity of nearly one tonne of CO2 for every tonne of LNG produced** - amounts which are nearly double the Australian average. This makes the Burrup Hub the most carbon-intensive LNG project anywhere in Australia, and one of the highest in the world (Fig 1 & 2).

The Browse pollution trifecta

The reason for the very high emissions from the Browse Basin development is three-fold:

1. Very high CO2 contained in the gas field, which Woodside plans to vent into the atmosphere
2. The considerable amount of energy required to extract the gas from the low-pressure field and pump it 900km to the onshore processing plant
3. Australia's oldest and least efficient LNG facility utilised to process the gas

"The high CO2 in the reservoir is exacerbated by the NWS infrastructure, among the world's oldest and least-efficient LNG projects."
– Wood Mackenzie, October 2019

Woodside's carbon con

In its Public Environmental Review documents, Woodside has claimed that the "GHG performance of Karratha Gas Plant compares well against other LNG facilities".[13] However in order to make this claim, the company has conveniently excluded two major pollution sources that occur even before the gas reaches the processing plant - the venting of 'reservoir CO2', and the energy use required to extract and pump the gas onshore. These pollution sources will add 3.6million tonnes of CO2e- per year (on average) according to other documents released by the company.[14]

Once this additional pollution is factored in, the emissions intensity of LNG produced from the Browse Basin will be almost 1 tonne of CO2 for every tonne of LNG produced. This is significantly higher than any of the international LNG projects in Woodside's own comparisons (Fig 1 & 2). Woodside has also made misleading and contradictory statements about the impacts that carbon pricing or carbon offsetting requirements would have on the Browse Basin and Burrup Hub projects (see section titled 'Carbon Risks' in this report).

The role of gas and LNG in driving global climate change

While there is much focus on coal, gas is a fossil fuel that causes similar levels of carbon pollution when all of its lifecycle emissions are taken into account including the production, processing, transport and combustion.

In 2019, pollution from the production and use of LNG took over from coal as the biggest factor driving the increase in global emissions. [9]

Figure 1: Emissions intensity of Browse Basin LNG compared with other WA LNG projects[15]

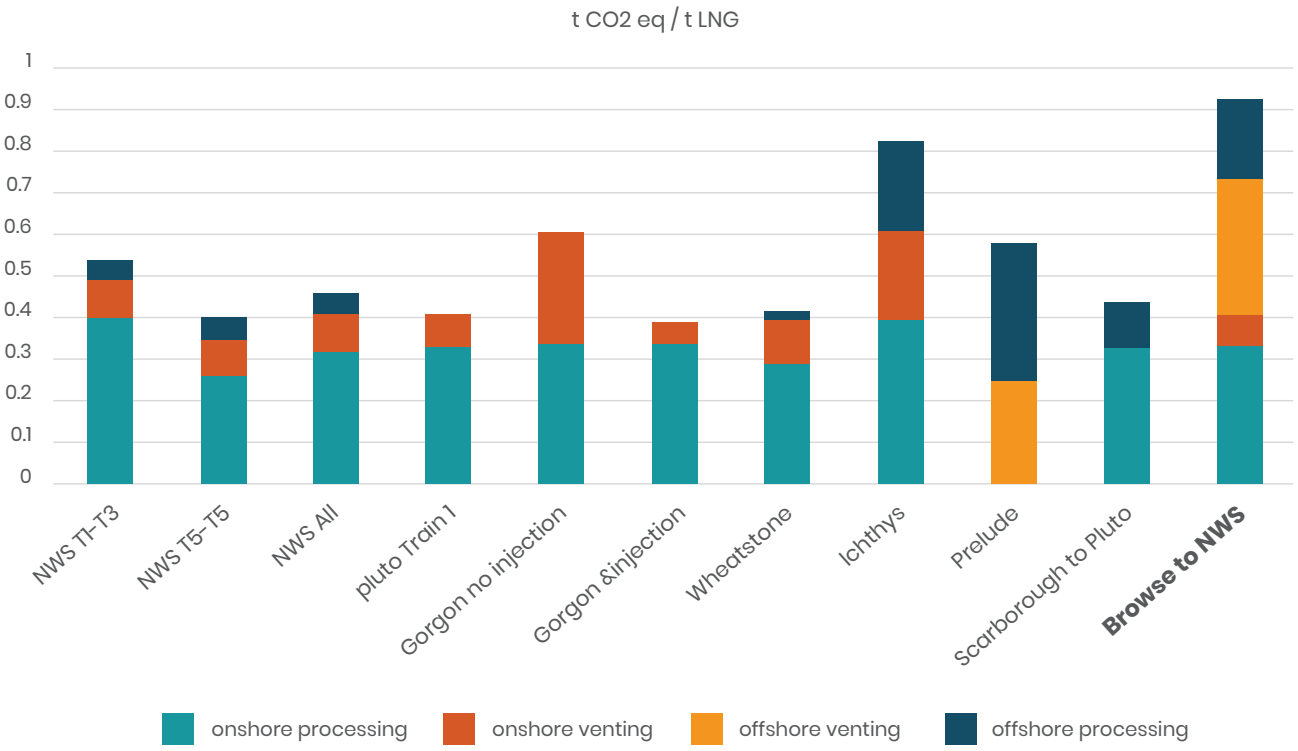
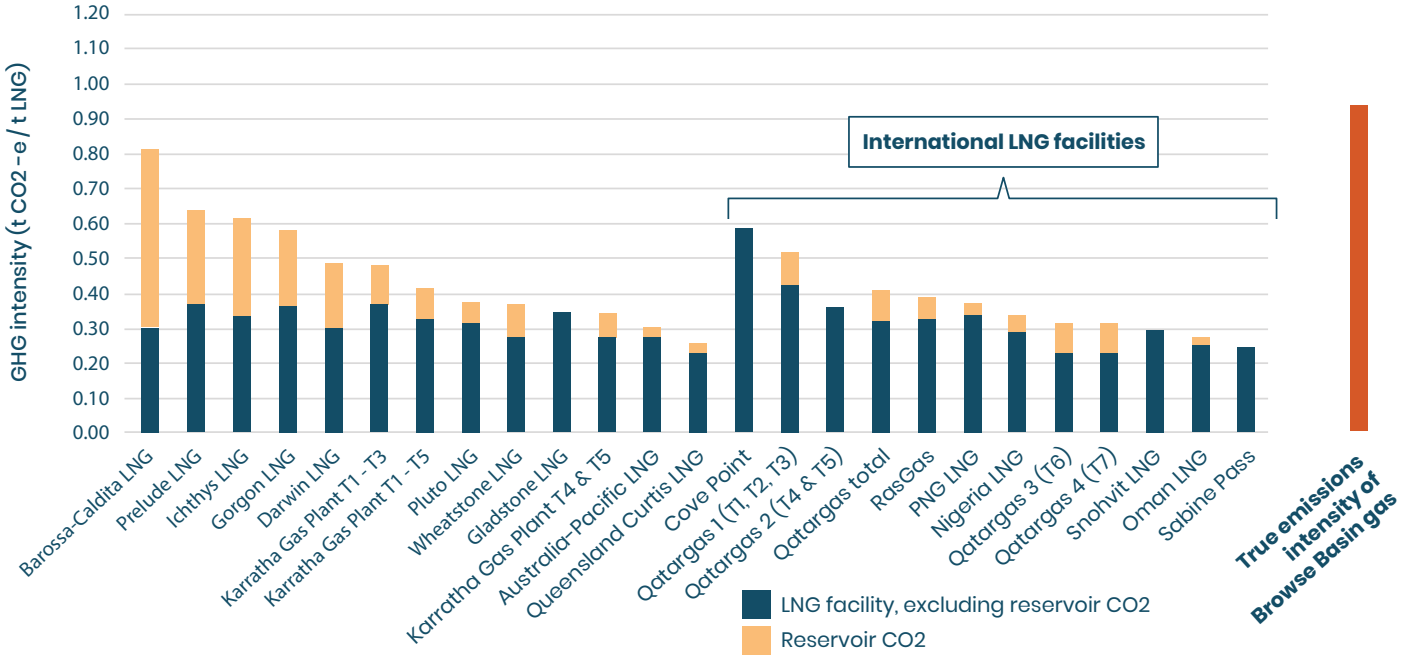


Figure 2: Emissions intensity of Australian and global LNG projects[16]



"Globally, most of the new natural gas being used isn't displacing coal, it's providing new energy."
– Prof. Rob Jackson,Stanford University School of Earth, Energy & Environmental Sciences[10]

In its most recent reports, the IPCC has made clear that significant near- and long-term reductions in natural gas production and methane emissions are needed urgently to meet the temperature goals established under the Paris Agreement.[11]

A comprehensive analysis of existing and planned LNG infrastructure released in June 2019 by Global Energy Monitor[12] found that when compared with coal, global LNG expansion presents as great, or greater a threat to the global climate. The report calls for a worldwide moratorium on new LNG production.

Empty promises: what the proponents have said about carbon pollution

Several of the companies involved in Woodside's Burrup Hub project have made public pledges to shareholders and investors to reduce total pollution and/or reduce the pollution intensity of the oil and gas they sell.

Woodside: The lead proponent of the Browse Basin and North West Shelf LNG project told shareholders in 2019 that it is committed to reducing its pollution to net zero emissions by 2050.[17]

Shell: Shell announced in 2017 that it intended to cut its carbon footprint by about 20% by 2035 and by about 50% by 2050.[18] According to the company, this includes all the emissions from the life cycle: from production to processing and then to transportation and final use.

BP: BP has committed to becoming a net zero company by 2050 or sooner. This includes: the aim of net zero carbon across BP's oil and gas production (including scope-3 emissions); a 50% cut in the carbon intensity of products sold by 2050 or sooner; and a methane measurement system at all major gas processing sites by 2023 and reducing methane intensity of operations by 50%.[19]

BHP: Best known in WA for iron ore BHP is a partner in both the inefficient North West Shelf LNG plant that will process gas from Browse and the Scarborough gas-fields. In 2019 BHP set goals to decarbonize its operations.[20]

The Burrup hub project is inconsistent with the above commitments and proceeding with this development would demonstrate their climate promises to be meaningless and misleading.

Worse, Woodside has a track record of strongly campaigning against action on climate change in Western Australia, most recently leading a fierce campaign against the state's independent Environmental Protection Authority (EPA) for suggesting LNG projects should reduce and offset carbon pollution.

Woodside has proposed no efforts to reduce or mitigate the massive carbon pollution that would result from the Burrup hub developments, despite a WA Government policy that states projects should contribute to the state's net-zero emissions goal by 2050.

Environment, culture and health impacts

Impact on marine life – Scott Reef

Teeming with unique and endangered marine life off the remote Kimberley coast, Scott Reef is one of the most ecologically significant marine environments in the world.

Oil and gas drilling and production as part of the Browse Basin development would have a devastating effect on this pristine area.

The remote reefs and lagoons covering over 600km2 provide a sanctuary for nesting giant sea turtles, pygmy and blue whales, huge pods of dolphins, dugongs and many other species of endangered marine life.

"This pristine marine region provides nesting, feeding and/or migratory habitat for endangered green sea turtles as well as for loggerheads, flatbacks, hawksbills, leatherback and olive ridley sea turtles – all protected marine species. Whales, dolphins, whale sharks and other marine species are known to rely on Scott Reef."

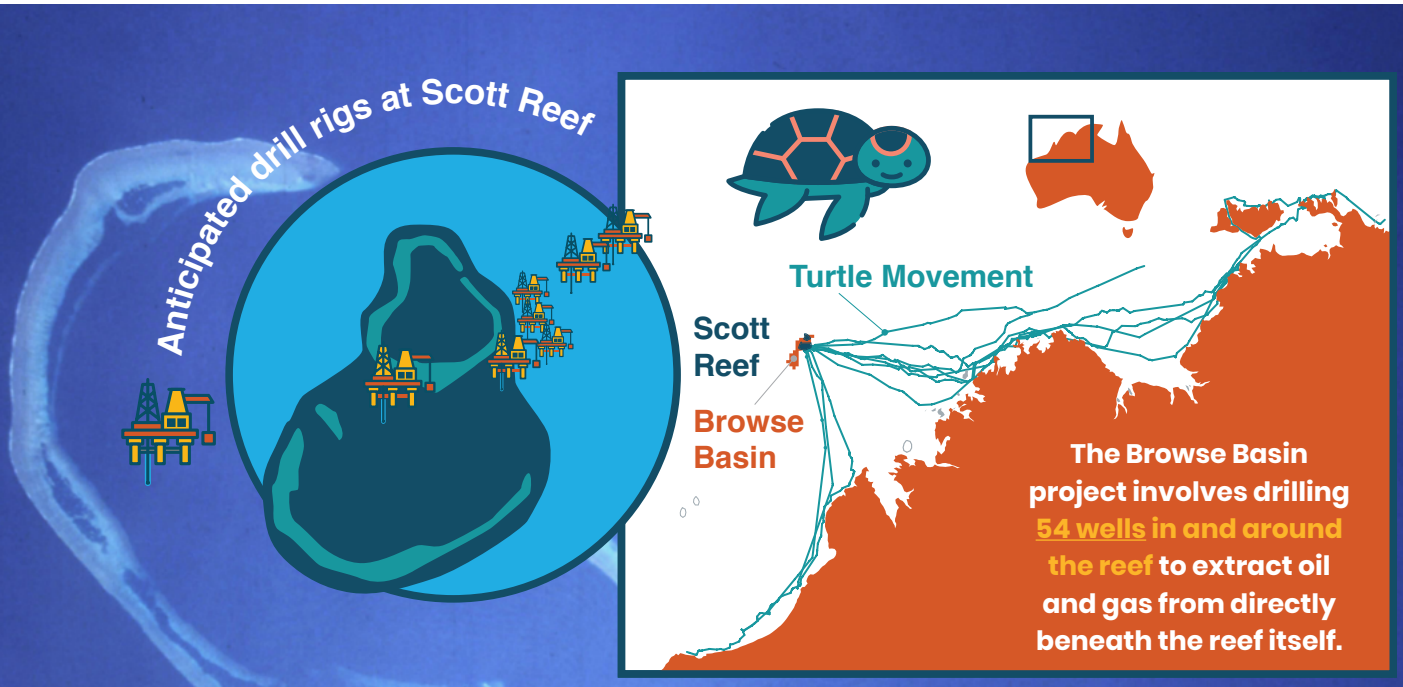
– Teri Shore, Program Director Turtle Island Restoration Network (TIRN), www.SeaTurtles.org

The Browse Basin project involves drilling 54 wells in and around the reef to extract oil and gas from directly beneath the reef itself. Woodside's risk models predict that a mixed gas and oil spill would last 77 days, spreading across the reef, and as far as 800 km from the site, at concentrations lethal to marine life.

Industrial noise, oil spills, toxic water discharge, light pollution and heavy shipping operations all disturb, endanger and kill marine life, threaten breeding and nesting for ancient turtles and other species, and would turn Scott Reef into an industrial landscape where once a pristine ecosystem existed.

"Direct and indirect impacts to marine turtles and habitat are generated by construction and operations from dredging, pile driving, drilling, seismic blasting, lighting and flaring, vessel strikes, toxic discharges, trash including plastics, air pollution, water pollution, oil spills, fuel spills and noise."

– Teri Shore, Program Director Turtle Island Restoration Network (TIRN), www.SeaTurtles.org



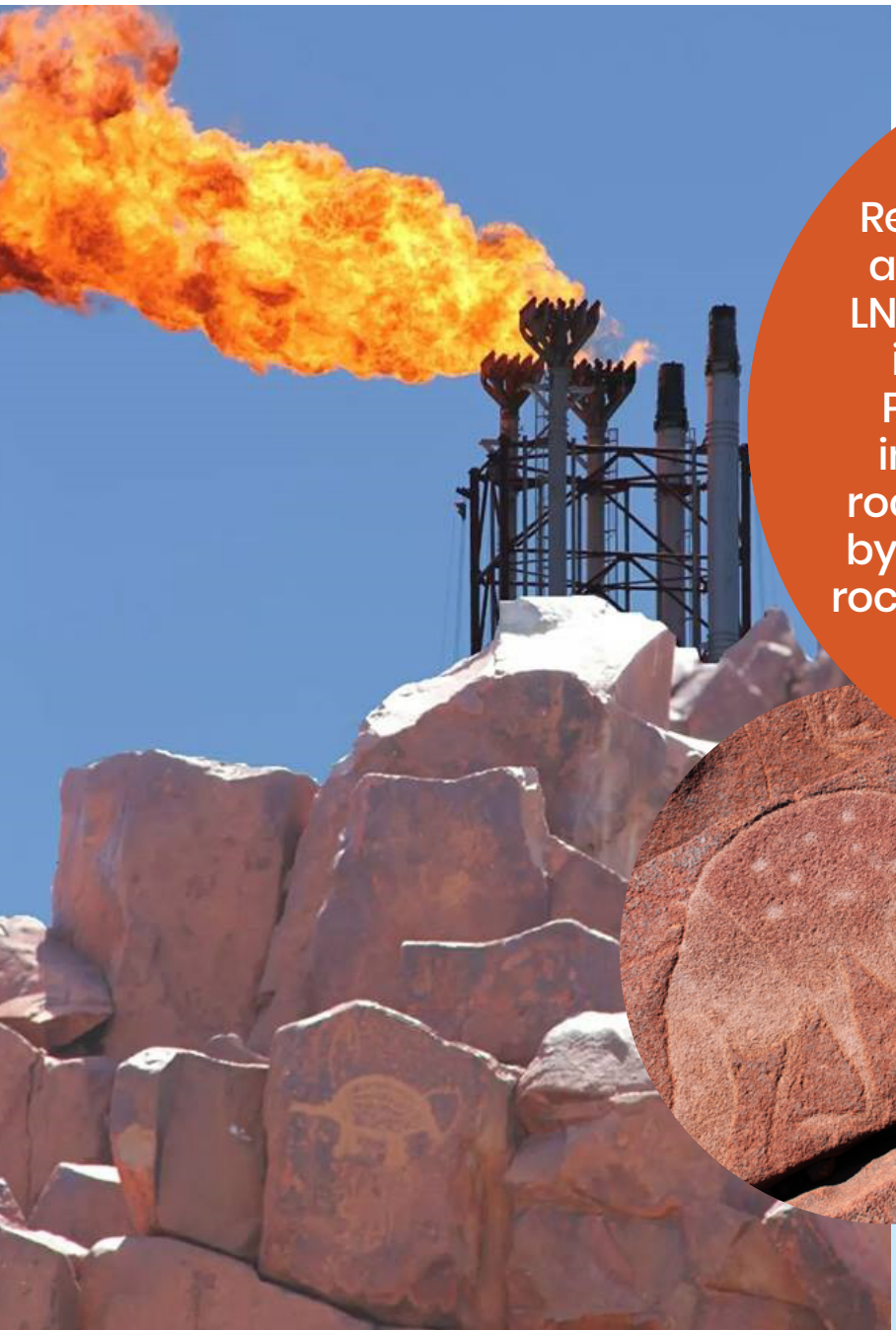
Background aerial image of Scott Reef | Credit: NASA

Impacts on cultural heritage - Murujuga rock art

The Burrup Hub project would also have a devastating impact on a globally significant cultural heritage site that the Australian Government has nominated for World Heritage listing. The North West Shelf and Pluto LNG facilities earmarked to process the new gas are already located within one of the world's oldest and most extensive areas of Aboriginal rock art - Murujuga. Murujuga contains an estimated one million examples of rock carvings dating back at least fifty thousand years, including the first recorded image of a human face.

The impacts of LNG processing on this rock art has led to a Senate Inquiry and has drawn concern from Murujuga Traditional Owners and rock art experts around the world.

> "This rock art is unique in the world. The Burrup Peninsula is the only documented place where the cultural history and spiritual beliefs of humankind for over fifty thousand years remain preserved in art. Industrial pollution from LNG processing is eating away at the surface of the petroglyphs and destroying this irreplaceable treasure."
>
> **– Rock Art Expert Dr John L Black AM FTSE FAIAST FASAP FNSA**



Research has shown that acid gas emissions from LNG processing and linked industry on the Burrup Peninsula have directly increased the acidity of rock surfaces on Murujuga by 1000-fold, dissolving the rock surface and destroying the rock art.

Risks to the health of people and communities

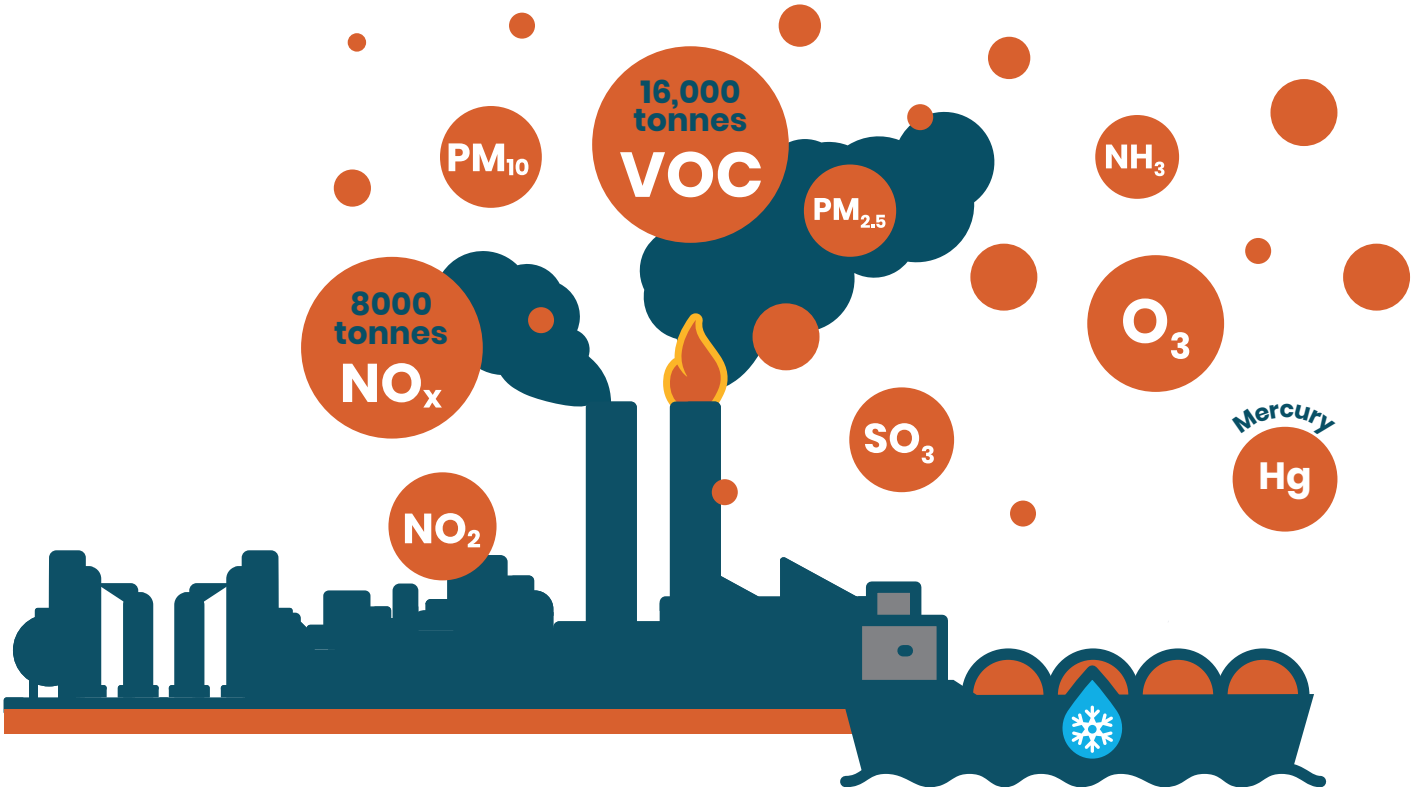
The processing of natural gas to produce LNG is extremely pollution-intensive, releasing emissions that have direct effects for public health and wellbeing for people living near or working at the facilities.

In 2016 -17 the LNG plants Woodside proposes to be utilised for the Burrup Hub project were among the highest industrial point source polluters of harmful air pollutants in Western Australia, releasing 8,000 tonnes of nitrogen dioxide, 97 tonnes sulphur dioxide and 16,000 tonnes of volatile organic compounds (VOC's), as well as PM2.5, ozone, mercury, and other heavy metals. Air pollutants of this type can cause serious health impacts, including heart disease, stroke, lung cancer, asthma and diabetes, even at low levels of exposure.

Woodside has undertaken some ambient air quality monitoring in Karratha and other locations around its LNG processing plants, however, the company has refused to release the full data from this monitoring, and the limited data that has been released is insufficient to provide evidence of public safety.

> "There is no reasonable and practicable way of identifying the frequency and degree of risk people living and working in the Burrup Peninsula experience as a consequence of breathing the air pollution resulting from LNG production. Therefore, the true nature, extent and duration of health burden caused by this pollution is unknown."
>
> **– Dr Sajni Gudka (Ph.D)**[21]

In addition to air pollution, the GHG emissions from the planned Burrup joint venture will contribute significantly to further global heating and increase the frequency of extreme weather events and bushfires such as those currently being experienced in Australia. The health impacts both physical and psychological from such events are profound and long-lasting.



Risks from fracking to supply gas to Burrup Hub

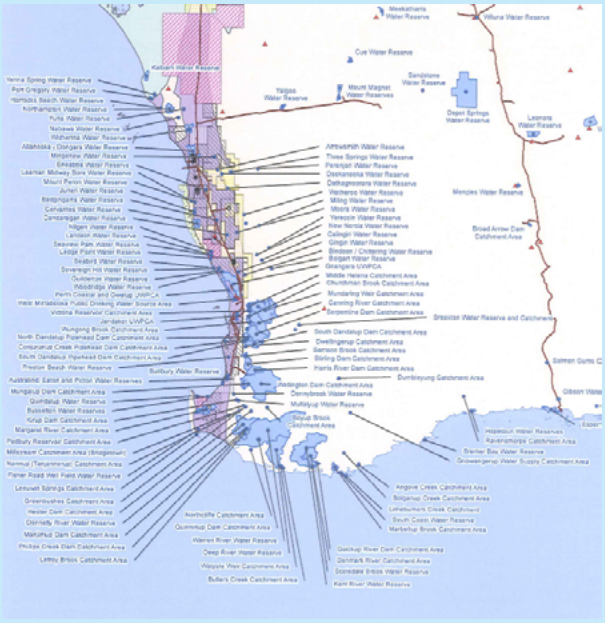
A significant portion of the gas that would be required to supply the Burrup Hub project over its proposed 50 year lifetime has not been identified by Woodside in its environmental assessment documents, however it is clear that even if the large Browse Basin and Scarborough gas fields are successfully developed they will not sufficient to supply the demand for gas that will be created by this project. This raises serious questions about where this additional gas would be sourced from and and what the impacts of extracting this gas would be.

> The Burrup Hub could process more gas than the entire volume extracted from the North West Shelf since 1984.
>
> **– Woodside Petroleum [22]**

Recently it has been revealed that Woodside plans to source additional gas for the Burrup Hub from onshore gas fracking, and has been negotiating with several companies to provide this gas including seven West Media owned Beach Energy[23] (see list of identified companies and projects under 'overview' section of this report).

To date, fracking projects have struggled to make their projects viable due to high production cost, limited demand for gas on the WA domestic gas market, and the McGowan Government's fracking moratorium which is now in the process of being lifted. The areas targeted for fracking under the McGowan Government's new fracking policy include vast areas of the Midwest wildflower country, thousands of hectares of the state's most productive farmland, and vast areas across the Kimberley where Traditional Owners have strongly opposed fracking on Aboriginal lands.

The Burrup Hub project will pave the way for a substantial fracking industry to become established in WA in order to supply gas for export markets.



Fracking leases and drinking water resources
Source https://www.dmp.wa.gov.au/Documents/Petroleum/PD-CI-POD-115D.pdf

Gas fracking presents very significant threats to the environment that are different from conventional offshore gas extraction. These include health impacts resulting from air and water pollution, damage to groundwater aquifers, contamination of ground and surface water, elevated emissions of powerful greenhouse gasses, biodiversity loss and habitat damage, and large-scale industrialisation of rural and natural landscapes.

Supplying gas at the scale required for the Burrup Hub could require thousands of fracking wells. These wells would be drilled through groundwater aquifers including the Yarragadee aquifer which provides much of Perth's drinking water.

Initially, fracking projects that are located close to existing gas pipelines in the Perth Basin are being targeted to supply the Burrup Hub, however with additional gas demand, new pipelines could open up the vast Canning Basin in the Kimberley to supply gas to this project.

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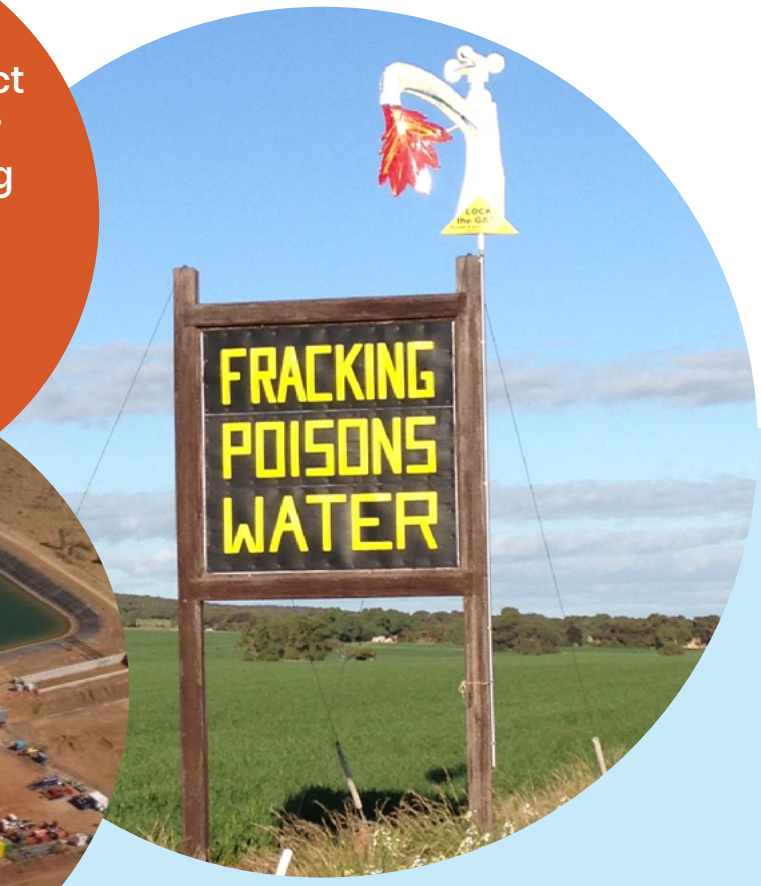
Buru Energy Kimberley



Geraldton Fracking sign

Farmers Rod and Annette Copeland

Few benefits for West Australians

While the Burrup Hub and Browse Basin projects are claimed to have considerable benefits for Western Australia the reality is that the LNG industry has not lived up to these claims in the past and is unlikely to in the future.

Few jobs from WA's smallest employer

It may come as a surprise to learn the petroleum industry is the smallest employer in Western Australia of any sector.[24] (Fig 3) This is partly because the industry has been allowed to source a high proportion of its labour from offshore. With the LNG plants as part of this project already built, the bulk of the work generated by the Browse Basin and Burrup Hub will be offshore, and the vast bulk of the engineering will likely be shipped in from overseas.

The two giant offshore facilities for Ichthys LNG were entirely built in Korea as was Shell's Prelude floating LNG facility. Onshore LNG plants are built mainly overseas as modules that are assembled on site.

Woodside currently employs around 3500 people, and it is estimated over 4000 will be employed over the peak construction period of the Burrup Hub project. This compares to almost 2000 Western Australians currently employed in WA's renewable energy industry,[25] 8400 currently employed by McDonalds, or over 135,000 in the healthcare industry.[26]

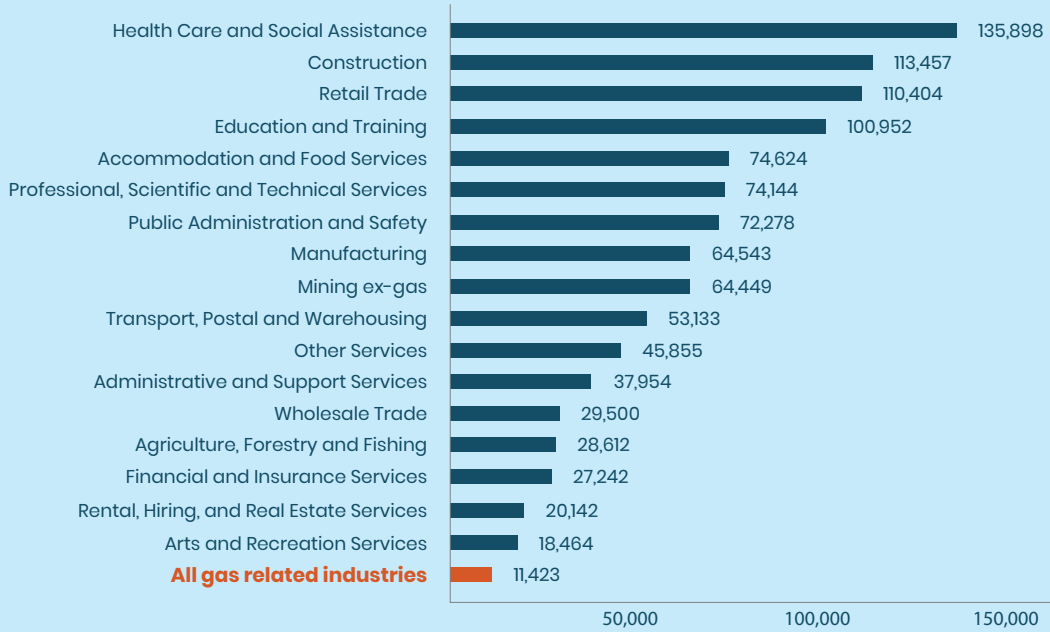
WA Premier Mark McGowan has also refused to disclose to Parliament the details of agreements with Woodside to deliver local benefits, local content or royalties from the Burrup hub projects, drawing strong criticism from the WA Opposition, the Greens and National Party. [27]

The Reserve Bank of Australia has confirmed that the benefits of future LNG development in Australia, including the Browse Basin and Burrup Hub are likely to be modest, saying:

> **"the effect on Australian living standards will be less noticeable given the low employment intensity of LNG production, the high level of foreign ownership of the LNG industry and, in the near term, the use of deductions on taxation payments."**
>
> **– Reserve Bank of Australia[28]**

Source: The Australia Institute

Figure 3: WA employment by industry



Meanwhile, a new study published in January 2020 has shown that the solar PV, battery storage, and wind power sectors will serve as the major job-creating technologies by 2050, with renewable energy responsible for 80% of future job opportunities, up from 28% of energy jobs in 2015. Conversely, the fossil fuel and nuclear industries are expected to see their share of energy jobs fall from a 70% share to only 3% over the same forecast period.[29]

Little royalties or tax, while profits and jobs flow overseas

Most LNG projects in WA have paid no royalties to date for the gas they are exporting and contribute very little tax when compared with the enormous profits they have been reporting to shareholders.

Figures from the Australian Taxation Office[30] show that in the 2017-18 financial year the 12 companies involved in WA's 5 LNG facilities made an income of over $62.9 billion in 2017/18 but paid just $1.54 billion in tax - an effective income tax rate of 2.54%.

Chevron and Shell, who are responsible for 70% of WA's LNG pollution and are both foreign-owned, paid no tax on $9.775 billion income. Specifically;

- Chevron made $5.27 billion in revenue in 2017/18 but paid no tax. Chevron made $15.77 billion in the five years to 2017/18 and paid zero tax.[31]
- Shell made $4.57 billion in 2017/18 and paid no tax. Shell reported $47.5 billion between 2013-2016, and paid only $1.1 billion in corporate tax for those three years, equivalent to a 2% tax rate.[32]

Woodside paid just $492.7 million tax on an income of $10.3 billion, an effective income tax rate of 4.8%.

Woodside paid just $492.7 million tax on an income of $10.3 billion, an effective income tax rate of 4.8%.

Western Australia does not need the gas

While the vast majority of the gas produced by the Browse Basin and Burrup Hub project will be exported as LNG, it will also supply gas (15% of LNG produced) to the WA domestic market under the Domestic Gas (domgas) Reservation Policy.

It is however questionable as to whether the WA domestic market needs LNG produced by the Browse Basin and Burrup Hub because:

- WA has sufficient alternative gas supplied from other LNG projects with requirements to supply domgas, including the Chevron Wheatstone and Gorgon LNG projects;
- Demand growth for domestic gas in WA is projected to be low; and
- There are significant opportunities to transition WA manufacturing, minerals processing and other industries to cheaper renewable energy.

The Australian Energy Market Operator (AEMO) has projected Western Australian domestic gas demand to grow at an annual rate of just 1.5% over the next decade.[33] However, this growth projection is likely to be an overestimate. The AEMO projection assumes demand growth from mineral processing, manufacturing and other industries including lithium and battery metals; however, new and existing

industries are increasingly likely to utilise renewable energy solutions which are already cost-competitive with gas and are reducing in cost all the time.

> "Renewable energy is affordable and reliable now. Many businesses are already paying 20 to 50% less for electricity by switching to renewables, and renewable energy could be 30 to 50% cheaper in just 10 years. With Australia's unparalleled resources in solar and wind energy, we could electrify all industrial processes."
>
> **– Beyond Zero Emissions, Electrifying Industry, 2018[34]**

While gas has been described as a 'transition fuel', it is unlikely that this will lead to significant increases in demand for gas. The use of gas generators as a backup energy provider for intermittent renewable generation will mean that gas-fired power stations will sit idle for much of the time. Battery technology is increasingly able to provide this service in a more efficient and affordable way.

More importantly, Western Australia has access to the world's best renewable energy resources. Development of these energy sources, coupled with the electrification of industrial operations has the potential to support a clean manufacturing and industry boom here in WA without the need for gas.

> "Australia has the potential to become an energy superpower in the low carbon world economy, but it needs to shake off the shackles of those with ideological or vested interest in the old ways of supplying energy. Western Australia can benefit from its own vast and diverse renewable energy, mineral, land and marine resources and play a vital role contributing to the national and global transition to a zero carbon energy future,"
>
> **– Professor Ross Garnaut**

West Australians would be left with a $17.6 billion pollution bill

Western Australia has a carbon pollution reduction target of net zero emissions by 2050, consistent with its obligations under the Paris Agreement and global efforts to limit temperature rise to 1.5 degrees celsius.

Setting aside the more than 5 billion tonnes of 'scope 3' carbon pollution that the Burrup Hub project will emit over its lifetime when the LNG is burnt overseas, Clean State has estimated the project will also generate over 700 million tons of 'scope 1' carbon pollution over its lifetime here in Western Australia.[35] This is equal to the emissions of 177 new coal-fired power stations burning for a year.

Woodside has not committed to any significant abatement measures or carbon offsetting to deal with this massive volume of carbon pollution,[36] which will have the effect of transferring the cost of reducing these emissions to other parts of the WA economy. For every tonne of CO2 that the Burrup Hub project directly emits, Western Australians will have to pick up the bill to find an equivalent emissions reduction or offset somewhere else in WA.

> "The Premier is stating that the policy is by 2050 there will be zero net emissions, but he cannot have that if he allows these projects to emit the amount of CO2 that they are expected to emit. He might give them an exemption, but if he does that and he meets his policy requirements, other projects will have to pick up the load and compensate for them. If these projects go ahead, they will make a huge contribution to the total volume of CO2 and other greenhouse gas emissions in Western Australia."
>
> **– ex WA Liberal Premier Mike Nahan[37]**

The cost of the enormous pollution bill that would be passed on by Woodside to Western Australians can be calculated using an indicative carbon price. **At a carbon price of $25 per tonne of carbon, the Browse Basin project would transfer a cost of $17.6 billion to the West Australian people over the life of the project.**

West Australians reject the Browse Basin and Burrup Hub

Given the major concerns and the very limited benefits from the Browse Basin and Burrup Hub project, it is not surprising that research conducted by Patterson Research Group and Thinkfield Research[38] shows the proposal is not supported by the majority of the West Australian community.

The research, conducted in September 2019 (with a sample size of 925), found that:

- Nearly two thirds (64%) of people surveyed strongly support phasing out gas and replacing it with renewable energy in WA, with only 14% disagreeing with this proposition.
- A clear majority (nearly 60%) of West Australians support a ban on new gas developments.
- Of those who expressed a view about the Browse Basin LNG development, a clear majority (65%) oppose the project. Just 23% of respondents believe it should go ahead, and even when jobs and other benefits are considered, the level of support for the Browse Basin project does not increase significantly.
- Western Australians (80%) overwhelmingly support requirements for WA's biggest polluters to offset their climate damage through job-creating projects like tree planting, carbon farming and renewable energy. Woodside has not committed to providing carbon pollution offsets as part of the Burrup Hub and Browse Basin projects.
- Almost three quarters (73%) of respondents believe that the State Government should follow the advice of the EPA on controlling carbon pollution from WA's biggest polluters in the LNG industry. Just 11% disagree with this.
- If the Browse Basin and Burrup Hub projects were to proceed and the state is to meet its carbon pollution reduction goals, then other sectors of the economy would have to cut emissions to make up for the pollution released by these projects. Less than a quarter (23%) of respondents believe that it is acceptable for the broader community to bear the costs of reducing pollution from WA's LNG industry.

This research suggests that Woodside does not enjoy a strong social license to proceed with these developments in Western Australians, with a clear majority opposing the projects and supporting a phase-out of LNG production in the state.

A clear majority of West Australians support a ban on new gas developments.

Risk to investors and shareholders

Capital investment of up to $AU50bn is required for the Burrup hub project to proceed. However, the climate and environmental impacts of the projects, as well as the softening global demand for LNG as import countries implement their Paris Agreement plans make these projects risky from an investment perspective. There is a significant likelihood that the project becomes an expensive stranded asset as the world shifts towards cheap renewable energy and away from highly polluting energy sources like the LNG that would be produced by the Burrup Hub project.

Carbon risks

To date, Woodside has failed to disclose carbon risks associated with the Burrup Hub project and have withheld clear, accurate information about the carbon pollution that would result from the proposal. Public statements from the company about the impact of future carbon pricing and climate change policies on the project have been contradictory, suggesting a high degree of uncertainty.

On the one hand, Woodside has claimed that the Browse Basin and Burrup Hub project is robust at a carbon price of $40 per tonne. However, Woodside's CEO has also attacked proposals by the WA Environmental Protection Authority (EPA) to require offsetting of carbon pollution at a much lower cost per tonne, claiming this would make the project unviable and risk 'billions of dollars investment into Western Australia'.

Any statements made by Woodside about carbon risk of this project should be treated with extreme caution and investors should be wary of any project which has not fully disclosed carbon risks.

The WA State Government has announced a policy that major projects must develop Greenhouse Gas Management Plans' that details their contribution towards achieving the State's aspiration of net zero emissions by 2050.

The McGowan Government is committed to working with all sectors of the Western Australian economy towards achieving net zero greenhouse gas emissions by 2050.[39]

–WA Government Greenhouse Gas Emissions Policy

Despite this, Woodside has proposed no significant mitigation efforts or commitments to reduce pollution from the Browse Basin and Burrup Hub projects in its environmental assessment documents. It is unlikely that this project would be approved with no conditions to reduce pollution. Even if such approval were given now, future requirements to reduce pollution and/or carbon pricing arrangements are almost certain to be imposed in the future as Australia moves to a more proactive position on climate change.

Global demand for LNG

It is also unlikely that global demand for LNG will remain stable for the life of this project, or event for the near term. With the price of renewable energy declining fast, the current glut of gas globally and governments implementing climate change policies consistent with the Paris Agreement, the demand for LNG is likely to reduce within the timeframe of the project significantly.

> "Global implementation of the Paris Agreement means that growth in the use of natural gas cannot continue. Scenarios vary, however a common denominator is that in the next decade natural gas demand would have to peak and begin to decline, and in central case estimates fairly rapidly." **– Climate Analytics, 2019,**[40]

Global Energy Monitor has identified up to $US1.3 trillion in global investment in new LNG infrastructure is at risk globally due to existing and planned LNG infrastructure becoming stranded assets as investor support and demand wanes for the next wave of oil and gas projects in Australia[41] and as climate action and cheap renewable energy are likely to make LNG uncompetitive in the medium term.[42]

Fossil fuels are the 'new tobacco'

> **"We are not the cigarette industry and do not want to be viewed as such. And that is a very real risk if we do not take action now. With new employees coming into the industry, do they want to be part of an industry that at the moment is getting a bit of a black eye to be quite frank with you and I think unfairly. [Climate change] has certainly come onto my risk register as the largest thing that we need to be thinking about as a company. So five years ago climate change was not the biggest issue that we were dealing with. Today it's by far the biggest issue."**
>
> **– Peter Coleman, Woodside Chief Executive. January 14, 2020**

Banks, Investors and Insurers are also recognizing the risk of supporting projects that pose a threat to the climate. Six global development banks have committed to ending funding for fossil fuel extraction,[43] and Sweden's central bank has recently sold bonds from Alberta, Western Australia and Queensland due to greenhouse gas emissions being too high.[44]

The world has reached a tipping point, with the global weighted average cost of new renewables now within the cost range of fossil-fuels and still falling.[45] Fossil fuel companies are dropping out of the top ten most valuable companies. Once a market leader, the fossil fuel sector has been a poor investment for a decade.

Former hedge fund manager and Host of CNBC's Mad Money has said oil stocks are 'in the death knell phase' comparing them to tobacco.

> **"I'm done with fossil fuels … they're just done. We're starting to see divestment all over the world," Cramer said. "You're seeing divestiture by a lot of different funds. It's going to be a parade. It's going to be a parade that says, 'Look, these are tobacco and we're not going to own them.'"**
>
> **– Jim Cramer Jan 31, 2020[46]**

In fact, the non-renewable energy sector finished dead last among industries in the Standard & Poor's 500 in 2018, in the wake of years of underperformance. In 1980, seven of the top 10-ranked companies in the Standard & Poor's index were oil and gas companies. Today, there are none. In 1980, energy companies comprised 28% of the S&P 500. Today, it is closer to 4%. According to the Institute for Energy Economics and Financial Analysis, "the outlook for oil and gas companies is weak, at best.[47]

With the economics for renewables changing so rapidly the real risk to WA's fossil-fuel-based export market is the pace at which other countries and sectors innovate and electrify away from climate damaging projects.

Reputational, litigation and direct action risks

Associating with this project could bring significant reputational and financial risk to other companies and contractors working on the project, and to finance institutions, banks and other trading partners. Given the size and scale of the pollution and other environmental impacts that would result from this project, it is an obvious target for protest, advocacy and climate litigation in the future.

> **"It is only a matter of time before the courts are forced to step in and hold government accountable as they have done with Big Tobacco and Big Pharma".**
>
> **– Tasmanian barrister and former Liberal staffer Greg Barns.[48]**

There is a rising global trend in climate litigation against governments and corporations for failing to take action on climate change or for approving climate-damaging projects. Recent examples include that the UK government is being sued for approving Europe's biggest gas fired power station,[49] and the landmark 'Urgenda' case saw the Dutch supreme court uphold a class action against the Dutch government for failure to act on climate change.[50]

Meanwhile protests about Woodside and Chevron and the Browse Basin and Burrup Hub projects are 'just getting started' according to mining industry reports.[51] The companies involved have already been targeted by protest action and Western Australia's peak conservation organisation has signalled the potential for legal challenges to the project's approvals.

> **"We're scrutinising the nature of the approvals that have been given already ... we are already very concerned that they're not properly taking into consideration climate change and carbon risk. Certainly we'll be seeking opportunities to challenge those in the courts..."**
>
> **– Piers Verstegen, Director Conservation Council of WA[52]**

Environmental approvals

Environmental approvals for this project are highly complex and cannot be taken for granted. Approvals are required for at least seven different project elements from the State and Commonwealth Governments, each component requiring multiple assessment and approval decisions. The potential for delay and added cost are significant.

The separation of the project into several separate elements has resulted in a failure to address the overall cumulative environmental impacts and risks, obscuring critical information from government and other stakeholders including the public, investors, and shareholders. This approach increases the level of risk surrounding the project, including the risk of future litigation.

Recent LNG projects operating in sensitive environments such as the Chevron Barrow Island LNG project have been delayed significantly and suffered very high cost overruns due to environmental compliance requirements and technical difficulties. Investors can assume that the same would occur for the Browse Basin and other developments as part of the Burrup Hub project.

In 2013 it was estimated that the Chevron Gorgon project resulted in a 46% cost blowout to $US54 billion. In 2017, Chevron's departing head told Wall Street the $US17 billion cost blowout at Chevron's Gorgon LNG project taught the US oil major it needed to do more homework before starting mega-projects.

> **"We have to verify every single aspect of these projects in advance, because we're on the hook for them, regardless of the kind of contract that we sign."**
>
> **– Chevron chief executive John Watson[53]**

Browse Basin has a history of costly and contentious failure

The giant Browse Basin gas field off the remote Kimberley coast has always been a contentious, complex, and technically challenging proposition. The high costs of developing the remote offshore fields, the multiple corporate ownership structure, and serious and intractable environmental concerns, including very high carbon intensity have scuttled several previous attempts at developing the resource.

In 2012, Woodside proposed to construct an LNG production facility in Scott Reef itself, however this was met with strong opposition from environmental groups and was not progressed further. Woodside's

next attempt, a giant greenfields LNG project at James Price Point on the pristine Kimberley coast sparked one of the biggest environmental battles in Australia's history. Against the background of fierce opposition from environmental groups and Traditional Owners, the proposal was eventually stopped in the courts when the environmental approval was found to be unlawful, and in boardrooms where the ongoing delays and opposition to the project made it unviable on commercial grounds.

> "We invested about 4.5 million man hours and had hundreds of Woodsiders who dedicated years trying to come up with a way to make this land-based development commercially viable... When the final number came in at more than $80 billion, it was obvious these efforts were in vain."
> **–Woodside vice-president Roger Martin**[54]

The current attempt to bring Browse online, pumping the gas 900km to shore as part of the Burrup Hub development is shaping up to be just as technically and environmentally challenging as previous attempts to develop the resource. While some preliminary approvals have already been granted, the true extent of the environmental and climate impacts of the development and the associated costs and technical challenges of developing the resource is poorly understood.

James Price Point, Kimberley, WA | Credit: Jill Swanson/ACF

Conclusion

The $AU50bn Burrup Hub and Browse Basin mega-project is one of the most polluting and environmentally risky projects ever to be proposed in Australia. At a time when the world is seeking to transition to clean energy sources rapidly, this project would be a huge step backwards in global efforts to tackle climate change. Investment in this project is not consistent with action needed to prevent dangerous global warming and will only contribute to a global failure to meet the goals of the Paris Agreement.

The project also carries significant other environmental risks including damage to one of Australia's most unique and biodiverse marine ecosystems, irreversible impacts on cultural values that are proposed for World Heritage listing, and risks to the health of communities.

The project would deliver few benefits for West Australians and presents significant reputational and investment risks for investors and proponents. Woodside does not have a strong social license to proceed with the project, with the majority of Western Australians wanting to see gas production phased out and replaced by renewable energy.

The Burrup Hub project is not a fait accompli. Complex environmental assessment processes are still underway, and approvals are yet to be granted for the most significant and contentious aspects of the project. Decisions to sanction the project are still required from a number of corporate partners, and capital must be raised before the projects can proceed. Joint venture partners and investors can exercise options to divest or withhold investment in the projects.

Given the very significant environmental risks, investment risks, few benefits, and the profound and irreversible consequences for the global climate, the Burrup Hub mega project should not proceed.

WA's LNG industry must also demonstrate how its 5 existing facilities, which our previous 'Runaway Train' report found to emit 32mtpa of direct emissions in WA every year, will be fully decarbonized or phased out by 2050.

Environmental approvals should not be issued for the project, and investors and banks should avoid exposure to the proposals. Oil and gas companies should instead pursue opportunities to develop alternative low carbon energy sources rather than locking themselves into a risky, unpopular and highly polluting future with the Browse and Burrup Hub proposals.

Appendix 1

Top 25 Shareholders of Woodside Energy[55]

Ownership	Name	Shares	Current Value	Change %	Portfolio %
6.09%	BlackRock, Inc.	57,411,725	$1.9b	0%	0.04%
6.02%	The Vanguard Group, Inc.	56,772,669	$1.9b	6.02%	0.04%
1.39%	Norges Bank Investment Management	13,056,529	$433.2m	0%	0.04%
0.97%	Legg Mason, Inc.	9,152,100	$303.7m	-1.40%	2.27%
0.85%	First Sentier Investors (Australia) IM Ltd	7,998,328	$265.4m	0%	0.50%
0.69%	Dimensional Fund Advisors LP.	6,543,516	$217.1m	-0.07%	0.03%
0.64%	Eastspring Investments (Singapore) Limited	6,051,339	$200.8m	23.89%	0.39%
0.62%	Commonwealth Superannuation Corporation	5,843,471	$193.9m	0%	2.86%
0.58%	Invesco Ltd.	5,481,874	$181.9m	-0.12%	0.03%
0.53%	State Street Global Advisors, Inc.	5,006,329	$166.1m	-1.53%	0.01%
0.51%	Link Market Services Limited, Asset Management Arm	4,803,115	$159.4m	0%	75.83%
0.46%	Australian Foundation Investment Company Limited	4,360,000	$144.7m	0%	1.85%
0.37%	Geode Capital Management, LLC	3,520,051	$116.8m	-5.74%	0.02%
0.35%	Orbis Investment Management Limited	3,340,836	$110.8m	0%	0.27%
0.31%	AMP Capital Investors Limited	2,884,675	$95.7m	0%	0.26%
0.28%	Schroder Investment Management (Singapore) Ltd	2,646,456	$87.8m	0%	0.35%
0.21%	Teachers Insurance and Annuity Association of America - College Retirement Equities Fund	2,017,159	$66.9m	-1.81%	0.01%
0.20%	Standard Life Aberdeen plc	1,908,450	$63.3m	-1.17%	0.02%
0.20%	Australian United Investment Company Limited	1,900,000	$63.0m	0%	4.98%
0.20%	Deutsche Asset & Wealth Management	1,895,953	$62.9m	1.03%	0.02%
0.20%	UBS Asset Management	1,880,753	$62.4m	11.34%	0.01%
0.19%	Charles Schwab Investment Management, Inc.	1,786,345	$59.3m	-0.64%	0.01%
0.19%	Netwealth Investments Ltd.	1,749,071	$58.0m	0%	1.62%
0.18%	J.P. Morgan Asset Management, Inc.	1,735,912	$57.6m	-0.38%	0.01%
0.18%	Argo Investments Limited	1,700,873	$56.4m	0%	0.96%

Endnotes

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14 Proposed Browse to North West Shelf EIS / ERD

15 CCWA calculations from publicly available data releases as part of the Environmental Impact Assessment process.

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The Conservation Council of WA is proud to present this report as the state's foremost non-profit, nongovernment conservation organization, representing almost 150,000 supporters and 105 member groups.

CCWA has been an advocate for conservation and a sustainable Western Australia for more than 50 years, working directly with the government, media, industry, community groups, and political parties to promote a more sustainable WA and to protect our natural environment.

Clean State advocates for action on climate change in Western Australia. Clean State promotes solutions to address WA's biggest polluters in ways that create thousands of jobs and exciting opportunities for communities and businesses across the state.

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.

Clean State

Get involved

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