

MANAGING GREENHOUSE GAS EMISSIONS AT PLUTO LNG



Pluto LNG Greenhouse Gas Abatement Program (2021 - 2025)

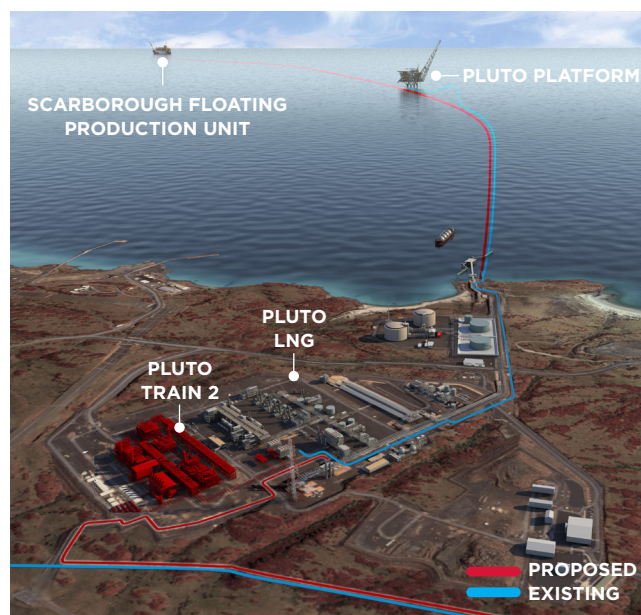
NET ZERO AT PLUTO LNG

Woodside has set new interim and long-term targets to achieve net zero greenhouse gas (GHG) emissions by 2050 at Pluto LNG.

The contemporised Pluto Greenhouse Gas Abatement Program includes an interim target to abate 30% of emissions by 2030 and long-term targets to abate 100% by 2050. The targets are based on the proposed expansion of Pluto LNG and account for emissions associated with a two-train facility.

Woodside is proposing to develop the Scarborough gas resource through new offshore facilities connected by an approximately 430 km pipeline to a proposed expansion of the existing Pluto LNG onshore facility. Expansion includes modifications to the existing Train 1, construction of a second gas processing train (Pluto Train 2) and additional domestic gas infrastructure. Scarborough gas would primarily be processed through Pluto Train 2.

The Scarborough reservoir contains negligible carbon dioxide and the proposed design of Pluto Train 2 adopts the best available proven technology to improve efficiency. Scarborough gas processed through Pluto Train 2 will be one of the lowest carbon LNG sources in Australia.



This image is conceptual only, not to scale. Developments are subject to joint venture approvals, regulatory approval and relevant commercial arrangements.

Pluto LNG Greenhouse Gas Abatement Program (Pluto GGAP)

State and Commonwealth primary environmental approvals for Pluto LNG were granted in 2007, which allowed for the construction of two LNG trains and associated infrastructure. An area for a second train was pre-prepared during the foundation project in 2007-2008.

Under relevant conditions of the existing State environmental approval, Woodside has updated its Pluto GGAP to include the scopes of work related to the expansion of Pluto LNG and to address the Western Australian Government's *Greenhouse Gas Emissions Policy for Major Projects* (State GHG Policy) introduced in August 2019.

The Pluto GGAP is reviewed and updated every five years (as a minimum) and includes an update of emissions from the facility, emissions avoided or offset to date and a summary of Woodside's performance against GHG emission reduction targets.

The purpose of the Pluto GGAP is:

- + To ensure that the plant is designed and operated in a manner that achieves reductions in GHG emissions to as low as reasonably practicable
- + To provide for ongoing GHG emissions reductions over time
- + To ensure that through the use of best practice, the total net GHG emissions and/or GHG emissions per unit of product from the project are minimised
- + To manage GHG emissions in accordance with the *Framework Convention on Climate Change 1992*, and consistent with Australia's United Nations Framework Convention on Climate Change (UNFCCC) commitments under the Paris Agreement (formerly the National Greenhouse Strategy)
- + To demonstrate Woodside's commitment to its Climate Change Policy and alignment to the State GHG Policy.

Read the full Pluto GGAP at [woodside.com.au/pluto-LNG](https://www.woodside.com.au/pluto-LNG)

REDUCING GHG EMISSIONS AT PLUTO LNG

Woodside is committed to reducing emissions from its operating facilities to support its emissions reduction targets and aspiration to be net zero in direct emissions by 2050 or sooner.

The Pluto LNG has set interim and long-term targets to reduce net GHG emissions that apply to both the existing Pluto Train 1, and the proposed Pluto Train 2.

Interim GHG emissions targets (2025 and 2030)

Interim direct emissions reduction targets have been set for the period of this Pluto GGAP (2021 – 2025) and beyond to 2030, specifically relating to the existing Train 1 operations and the proposed early operational period of Train 2. These targets include:

- + A **5% GHG intensity improvement**, resulting in a cumulative carbon equivalent reduction of up to 250,000 tonnes CO₂equivalent indicatively over the 2021-2025 period^{1,2}
- + Realise the efficiencies in Train 2 design and **reduce or abate emissions by 30% by 2030** based on the Pluto LNG Facility emissions estimate of 4.1 Mtpa CO₂equivalent³
- + Where sufficient GHG intensity improvements cannot be achieved on-site to reach this target, the shortfall will be **voluntarily offset** to achieve the equivalent carbon reduction from a 5% GHG intensity improvement
- + **Offsetting 100% of reservoir CO₂ emissions** equating to abatement of approximately 2 million tonnes of CO₂equivalent over the 2021-2025 period

Woodside recognises that addressing the Western Australian Government's aspiration to achieve net zero emissions by 2050, as outlined in the State GHG Policy, will require an economy-wide effort in two primary areas:

- + **Direct GHG emissions reductions**
- + **Development of GHG offsets to balance remaining emissions**

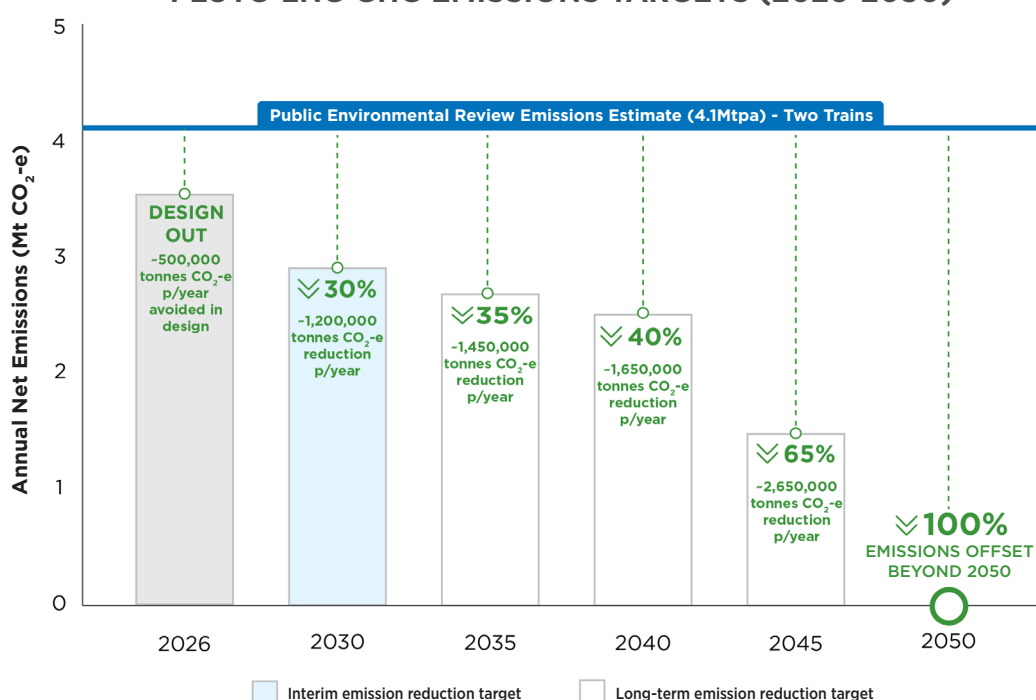
Long-term GHG emissions targets (2035 - 2050)

Following the assessment of current technology under development, identified efficiency improvement opportunities, forecast offset availability and identified gas reserves, Woodside's long-term emissions reduction targets for Pluto LNG (based on two LNG trains) are to:

- + Reduce or abate emissions by **35% by 2035**
- + Reduce or abate emissions by **40% by 2040**
- + Reduce or abate emissions by **65% by 2045**
- + Reduce or abate emissions by **100% by 2050**

These long-term emission targets would result in 100% abatement of direct Scope 1 GHG emissions from Pluto LNG by 2050, as shown below. These targets will be reviewed and updated (as appropriate) as part of the five-yearly review and update of the Pluto GGAP.

PLUTO LNG GHG EMISSIONS TARGETS (2026-2050)



1. Determined as a 5% improvement in the average GHG intensity from the previous 5 year period (i.e. 2016 – 2020) using National Greenhouse and Energy Reporting methodology

2. Dependent on production volume and gas composition.

3. Pluto LNG Development Public Environmental Review (2006) emissions estimate of 4.1 Mtpa CO₂-e for two LNG trains.

HOW WE'RE GETTING THERE

Woodside will integrate a number of measures to reduce greenhouse gas emissions at Pluto LNG by adopting technology considered to be best practice for LNG developments in Australia, implementing operational improvements and offsetting all reservoir carbon dioxide.

AVOID

- + Design out current and future GHG emissions to as low as reasonably practical through the adoption of best-practice technologies during the engineering and design phases.
- + Pluto Train 2 has adopted aero-derivative gas turbines for liquefaction, providing higher thermal efficiency and the lowest GHG emissions of the four alternatives considered.
- + Emissions reduction initiatives through the design phase have resulted in a reduction of approximately 1,000 kt CO₂-e per year of GHG emissions from Train 1 and a further 560 kt CO₂-e per year from Train 2, when compared to a 'business as usual' design case.

REDUCE & MITIGATE

- + Adopt a continuous improvement approach and utilise future improvements in technology and energy efficiency for the life of Pluto LNG.
- + Our interim 5% GHG intensity improvement target for the 2021-2025 period will result in a cumulative carbon equivalent reduction of up to 250 kt CO₂-e¹ indicatively over the five years.
- + Based on learnings from the operation of Pluto Train 1, similar improvements are expected to be identified and implemented in the early years of Pluto Train 2 operation to further reduce GHG emissions.

1. Dependent on production volume and gas composition

OFFSET

- + Woodside will acquire and retire eligible offset units (including Australian Carbon Credit Units) and additional voluntary offsets beyond Pluto reservoir CO₂ emissions.
- + We have invested more than A\$100 million across Australia through native tree planting over the past 10 years.
- + Woodside has also acquired and retired 1.69 million eligible offset units from international renewable energy projects, for the purpose of offsetting Pluto reservoir emissions.
- + We ensure offset methods qualify under accepted mechanisms and protocols for verifying and accounting for offsets, and that any credits secured internationally meet the eligibility criteria for offsets set out in the *Climate Active Carbon Neutral Standard for Organisations*.

Monitoring and Reporting on GHG emissions

Woodside supports transparent reporting of GHG emissions and seeks to participate in voluntary reporting schemes that align with business objectives.

Woodside reports GHG performance as part of the:

- + Taskforce for Climate-related Financial Disclosure, through our Annual Report
- + Corporate Sustainability Assessment
- + International Association of Oil and Gas Producers Environmental Indicators

- + Annual Sustainable Development Report, available at woodside.com.au
- + Pluto LNG Annual Compliance Report, provided to the Department of Water and Environmental Regulation and available at woodside.com.au.

For more information on the Pluto GGAP, Pluto Train 2 and Woodside's approach to supporting net zero, visit woodside.com.au.

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