

# Proposed H2Perth project

Kwinana, Western Australia

## Project overview

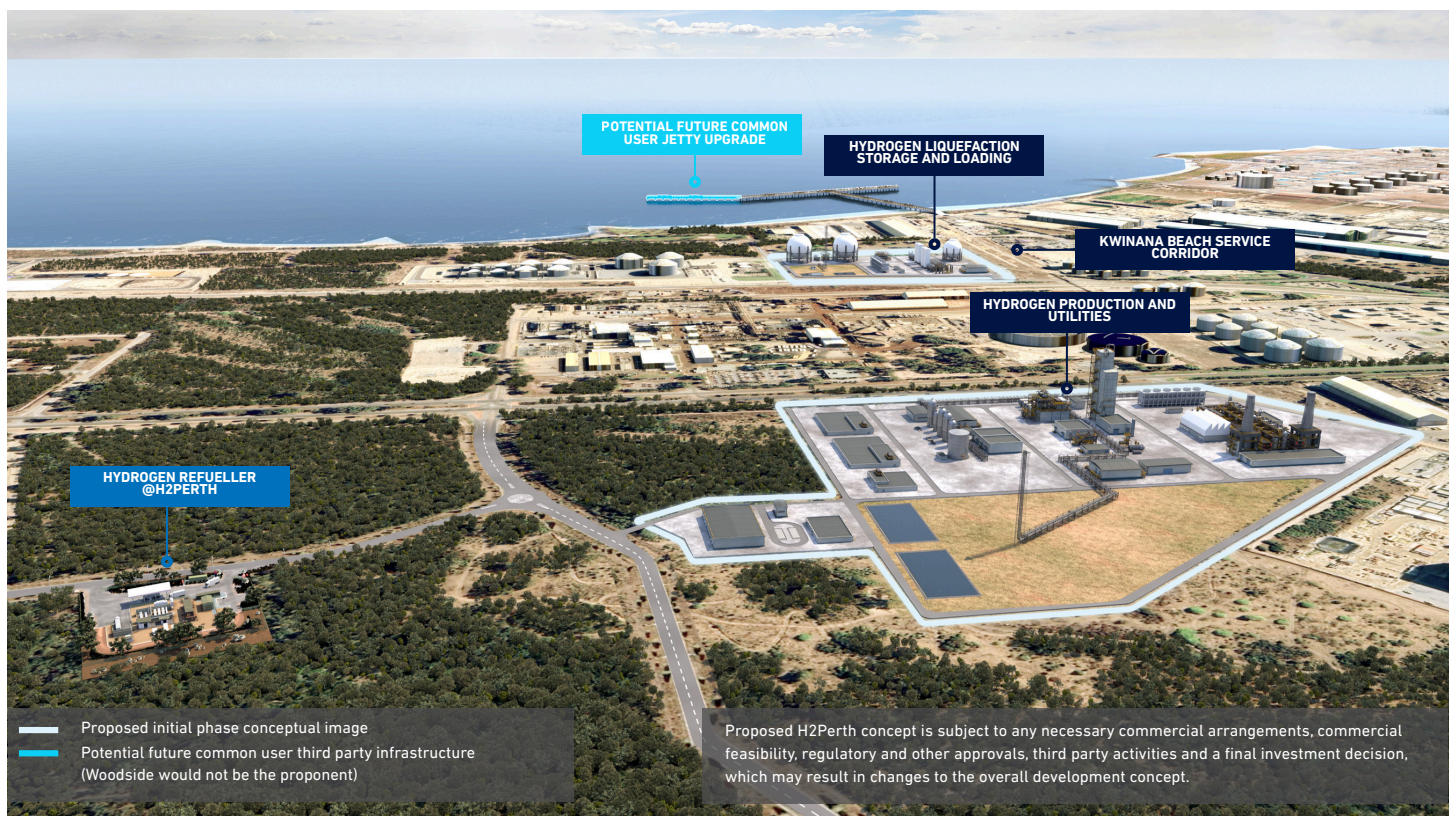
Woodside Energy (Woodside) is a global energy company founded in Australia. Our strategy is to thrive through the energy transition by developing a low cost, lower-carbon,<sup>1</sup> profitable, resilient and diversified portfolio.<sup>2</sup> Our three strategic pillars - oil, gas, and new energy - each have an important role to play in our future.

As part of our new energy portfolio we are proposing the development of H2Perth, a commercial-scale liquid hydrogen production facility. Woodside had previously proposed an ammonia and hydrogen ammonia facility, but have revised our concept, based on market feedback, to liquid hydrogen only.

H2Perth aims to make liquid hydrogen available initially for export, while creating employment and local content opportunities, as well as providing an opportunity to establish a new strategic export industry for Western Australia.

H2Perth is proposed to be built on ~80 hectares (ha) of vacant industrial land in the Rockingham Industry Zone (RIZ), just south of Perth and near to our Hydrogen Refueller @H2Perth project.

The facility would be located on the traditional lands of the Noongar people, specifically the dialectical groups of the Binjareb/Pinjarup, Wilman and Ganeang in the Gnaala Karla Booja (GKB) determination areas of Noongar Nation.



## Intending to have net zero Scope 1 and 2 greenhouse gas emissions from the start of operations

Hydrogen can be produced through a variety of different methods, and although hydrogen does not emit carbon when it is used, some methods of making hydrogen do generate emissions.

At H2Perth, Woodside is proposing to produce hydrogen using natural gas reforming. This is a process where natural gas, is converted to hydrogen. Carbon dioxide (CO<sub>2</sub>) is also produced as part of the natural gas reforming process, however technologies such as Carbon Capture and Storage (CCS), where the CO<sub>2</sub> is captured and transported underground for safe and permanent storage, can assist in managing this.

Woodside intends H2Perth to achieve net zero Scope 1 and 2 greenhouse gas emissions from the start of operations. Woodside proposes to achieve this through the application of CCS and offsetting the remainder with carbon credits.

1. Woodside uses this term to describe the characteristic of having lower levels of associated potential GHG emissions when compared to historical and/or current conventions or analogues, for example relating to an otherwise similar resource, process, production facility, product or service, or activity.

2. For Woodside, a lower carbon portfolio is one from which the net equity scope 1 and 2 greenhouse gas emissions, which includes the use of offsets, are being reduced towards targets, and into which new energy products and lower carbon services are planned to be introduced as a complement to existing and new investments in oil and gas. Our Climate Policy sets out the principles that we believe will assist us achieve this aim.

Project snapshot

Proposed Activity	Production and storage of liquid hydrogen for export.
Proposed Location	The facility would be built within an area of up to approximately 80 ha of vacant industrial land in the RIZ, which is located in the City of Rockingham and Kwinana.
Proposed method	Reforming utilising natural gas to produce hydrogen.
Estimated production	Initial production of up to approximately 100 tonnes per day of liquid hydrogen.
Project status	Woodside is maturing the technical design of H2Perth.
Carbon management	Intent is for H2Perth to be net zero Scope 1 and 2 greenhouse gas emissions from the start of operations, through the application of CCS and the use of carbon credits as offsets.

What is hydrogen and what can it be used for?

Hydrogen is the simplest element in the universe. It is abundant, versatile, and can act as an energy carrier, storing and transporting energy in a usable form from one place to another. It can be used for:

**Heavy duty transport:** Liquid hydrogen is a potential substitute for diesel in trucking fleets, utilising fuel cells that need liquid hydrogen for fuel.

**Shipping and aviation fuels:** Hydrogen is a potential substitute for shipping and aviation fuel.

**Power generation:** Hydrogen can be blended into the fuel used for existing coal or gas-fired power generation to reduce greenhouse gas emissions from existing power generation assets.

**Industrials and chemicals:** Hydrogen is used as industrial and chemical feedstocks and are primarily manufactured from fossil fuels without carbon management. This creates an opportunity for the same products to be manufactured, but with lower-carbon<sup>1</sup> through the application of CCS and the use of carbon credits as offsets.

Project approvals

H2Perth is proposed to be located in the RIZ, and is subject to existing primary State and Commonwealth environmental approval requirements under the Environmental Protection Act 1986 and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC 2010/5337), respectively.

Woodside is engaging with both State and Commonwealth regulators so that the appropriate primary approval mechanisms are applied to the proposed development. In addition to these primary environmental approval requirements, Woodside also plans to refer the project to the City of Rockingham and City of Kwinana under the Planning and Development Act 2005 (WA), and to submit a Works Approval to the Department of Water and Environmental Regulation (DWER) under Part V of the Environmental Protection Act 1986 (EP Act). Following the completion of construction, Woodside will seek to licence H2Perth under Part V of the EP Act. These will be available for public comment via usual public comment processes.

Environmental assessment

Environmental approvals were commenced for the project for the previous ammonia concept, with State and Commonwealth environmental referral documents submitted in 2023. The Commonwealth referral decision was set as 'Not a Controlled Action'. The Western Australian (WA) Environmental Protection Authority (EPA), set the level of assessment as 'Assess – Additional Assessment Information (public review)'.

Due to the change to a liquid hydrogen concept, Woodside has proposed to seek approval from the EPA under section 43A of the EP Act to amend the proposal during the assessment phase. Woodside is proposing to submit the section 43A application to the EPA for assessment. Following approval of the section 43A application, the referral supporting information document for the liquid hydrogen scope would be submitted to the EPA for assessment.

Woodside Energy recognises Aboriginal and Torres Strait Islander peoples as Australia's First Peoples. We acknowledge their connection to land, waters and the environment and pay our respects to ancestors and Elders, past and present. We extend this recognition and respect to First Nations peoples and communities around the world.

## Environmental and social considerations

A number of environmental and social studies were completed in 2023 for the previous ammonia concept. Woodside is commissioning new studies to support the environmental approvals documents for the liquid hydrogen concept.

The table below provides an overview of the studies expected to help establish environmental baselines, identify environmental and social sensitivities, help guide the concept designs and operational planning for H2Perth, as well as inform mitigation strategies.

Potential impact/risk	Study progress	Mitigation measures
Greenhouse gas emissions from construction and operations	Project is developing a Greenhouse Gas Management Plan.	Intent for H2Perth to achieve net zero Scope 1 and 2 greenhouse gas emissions from start of operations via application of CCS and carbon credits as offsets.
Water consumption	Water consumption volumes for liquid hydrogen production including cooling water being updated.	Water needs for facility processing and cooling water proposed to be met through existing wastewater network near project site.
Water discharge	Modelling of the proposed discharge of effluent to the Sepia Depression Ocean Outlet Landline (SDOOL) being undertaken to confirm current conditions specified in Ministerial Statement 665 would continue to be met.	Woodside plans to monitor wastewater discharge quality at H2Perth site on the pipeline tie-in into SDOOL during commissioning and operations.
Flora, vegetation, and fauna, potential for losses and fragmentation due to land clearing.	Woodside commissioned detailed flora, vegetation and fauna studies (including a black cockatoo assessment) undertaken in 2021, 2023 and 2024.	The landowner, DevelopmentWA, has approvals in place for the development and clearing of land in the Rockingham Industrial Zone Strategic Environmental Assessment (RIZ SEA). <sup>4</sup> The majority of clearing proposed falls within the RIZ SEA.
Cultural heritage including ethnobotanical values	Initial cultural heritage surveys were conducted in 2022. Further, archaeological and ethnographic surveys were conducted in 2023. Desktop searches recorded no registered sites or other heritage places located within the development envelope. The surveys did not identify any isolated artefacts. Ethnobotanical values were recorded, in particular the cultural significance of Tuart and Balga trees.	Woodside recognises the importance of protecting the ethnobotanical values within the H2Perth development envelope and intends to actively engage GKBAC throughout the process and during ground disturbance works.  Woodside plans to work with GKBAC to develop and implement a CHMP to support the cultural management of the area. The CHMP would also address any recommendations from cultural heritage studies completed.
Air emissions from the construction and operation of the project have the potential to impact ambient air quality in the surrounding area.	Air dispersion modelling assessment being undertaken.	Adoption of best available techniques to minimise air pollutants (i.e. low NOx burners).

4. EPBC Act referral 2010/5337 and Ministerial Statement 863.



Potential impact/risk	Study progress	Mitigation measures
Surface and groundwater impacting local water catchment of Cockburn Sound.	Assessment of stormwater infiltration being undertaken.	Stormwater management plan for construction and operations to minimise impacts on local catchments.
Construction and operation noise impacting sensitive receptors.	Noise modelling assessment being undertaken.	Adoption of low noise design and mitigation where required.
Landscape and visual.	Based on location and distance from sensitive receptors visual impacts not expected.	Implementation of mitigations measures, where required.
Traffic from construction and operation vehicles.	Traffic impact assessment being undertaken.	Construction traffic management plan to mitigate peak traffic impacts.

Woodside will continue to engage with stakeholders as the project concept matures and mitigation strategies are developed.

## Health and safety

Woodside is committed to protecting the health and safety of our workforce and host communities. We have more than 35 years of experience developing and operating large scale industrial facilities and supplying energy to customers safely and reliably, which we intend to leverage as we pursue new energy opportunities such as H2Perth.

Woodside has an established framework for managing the process safety and occupational health and safety of all projects across the lifecycle, ensuring that safety is incorporated into the design with the aim of preventing future major incidents.

Woodside intends to apply this approach for the proposed H2Perth, with detailed Health, Safety and Environment Management Plans to be developed for construction, commissioning and operations phases. H2Perth would also be subject to stringent conditions, including any audits and assessments as required under safety and environmental regulations.



For further information or request to be consulted by Woodside on this activity please see contact details below:  
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