

Ord Hydrogen Feasibility Study – Fact Sheet / Community Update

Introduction

Pacific Hydro received support from the Western Australian Government to explore whether it is possible to build a renewable hydrogen plant near Kununurra, using energy from The Ord Hydro Power Plant.

In 2020, Pacific Hydro carried out a feasibility study to understand technologies, supply chains and potential markets, water sources and waste management options, approval requirements and other technical elements. The purpose of the study was to determine if it would be practical to move ahead with a project.

This month, the government published a report to share some of the key findings of the study. It is important to note that the purpose of this report is to share knowledge to assist the development of WA's hydrogen industry.

Pacific Hydro has begun exploring partnerships with transportation companies and potential purchasers both locally and internationally, but there is much more work to be done before The Ord Hydrogen project can proceed.

We are now moving into the development and approvals stage. Environmental assessments are expected to begin in mid-2021 and we hope to begin face-to-face engagement with Traditional Owners and the community as travel restrictions ease.

Key findings

- It is technically feasible to produce renewable hydrogen or ammonia using power from The Ord Hydro Power Plant.
- Hydrogen or ammonia could be produced for local consumption or export.
- Bore water is the preferred water source but further testing is needed to determine if this is practical.
- The major hurdle to viability is the difficulty transporting hydrogen and the long distance from Kununurra to potential customers.
- It would cost significantly more to include an ammonia production facility.

Water

A 15.5MW hydrogen plant would use about 340,000 litres of water per day – that's about the same as filling an Olympic sized swimming pool each week. If ammonia is produced, the plant would need about 436,000 litres of water per day.

Bore water is the preferred option but further testing is needed to determine whether bore water can be used. If bores cannot meet demand other options would be investigated, including access to reticulated water.

Cooling water accounts for 75 per cent of water demand. Water reduction, reuse and conservation processes would be used to reduce demand.

We will continue to consult with the Water Corporation and DWER in relation to water access and disposal.

Infrastructure

The preferred site for the plant is the former quarry on Crossing Falls Road, about 10km south of Kununurra. The plant would be set back from Crossing Falls Road and neighbouring properties while allowing adequate space for safety considerations and truck parking.

Infrastructure likely to be needed on the site includes:

- Administration and stores buildings
- A water treatment building and cooling towers
- An electrolyser plant
- Two evaporation ponds
- A sub-station containing transformers, switchgear, control panels and an emergency backup generator
- A fire water storage tank
- Suitable lighting for operators and drivers to navigate the site at night

If ammonia is produced, additional infrastructure needed would include:

- An ammonia synthesiser structure
- An ammonia loading station
- A flare for ammonia releases

Transport

Hydrogen stores approximately three times more energy per kilogram than conventional fuels but has very low density – meaning it takes up a lot of space and is expensive to transport over long distances. For the purpose of this study the hydrogen would be compressed and loaded into tube trailers for transport locally or to nearby ports.

Liquid ammonia is less expensive and easier to transport than hydrogen gas.

Further investigation into transport options is required based on available markets.

Environmental impacts

The next stage of the project will include detailed environmental studies to inform regulatory approvals. These will include:

- Flora and fauna survey
- Cultural heritage survey
- Surface water and flood risk assessment
- Traffic impact assessment

- Noise impact assessment; and
- Landscape and visual impact assessment.

We are committed to engaging with community members as part of the development planning permit application and other approvals.

Jobs and other opportunities

It is estimated that the plant will provide 12 - 18 full-time jobs during operation.

If it goes ahead, Pacific Hydro will engage a head contractor to design and build the plant.

There are likely to be opportunities for local sub-contractors in construction, including construction of roads, buildings, foundations, power supply connections and evaporation ponds.

There may also be opportunities in transportation, with key materials likely to come from overseas, via sea and road transport from Darwin or Wyndham ports.

Hydrogen vs ammonia

Hydrogen is produced by using electrolysis to split water into hydrogen and oxygen. Hydrogen is a flexible, safe, transportable, and storable fuel. It can be used to power vehicles and create heat and electricity.

Ammonia is produced by combining nitrogen with hydrogen. Ammonia can be used as an industrial chemical (fertiliser) feedstock, or as a fuel.

It would cost significantly more to produce ammonia at the site. The technology to produce green ammonia is improving but it is still expensive to produce on a small scale.

Timeline

