

# **PROPOSED HYDROGEN PRODUCTION, DISTRIBUTION, AND EXPORT FACILITY WITHIN THE PORT BOTANY AND KURNELL PRECINCTS, NSW, AUSTRALIA**

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This poster presentation considers a proposed hydrogen production, distribution, and export facility within the Port of Botany, and Kurnell precincts in NSW, Australia.

It will evaluate the production, distribution, and export of hydrogen in the form of ammonia; dimethyl ether [DME]; methanol; and/or liquid organic hydrogen carriers [LOHC], thereby transforming existing under-utilized infrastructure that may be combined for another use.

This may be achieved through proposed modifications to existing water treatment infrastructure at the Sydney Desalination plant, and land within the former Ampol lubricating oil refinery precinct, by employing renewable energy generated at the Woodlawn Capital Renewable Energy wind farm that might be converted into hydrogen, and/or other energy carriers within the former refinery precinct.

Correspondingly, this research considers the deployment of a fleet of hydrogen vehicles as part of a metropolitan hydrogen network, the: processing; freight; and conversion of municipal waste into bioenergy; and the adoption of a circular economy methodology to the local hydrogen industry.

In doing so the author will evaluate how existing liquid fuels infrastructure might be accessed thereby responding to the opportunity, but also how existing petroleum, and waste disposal industries might be transformed through the production of molecules, rather than electrons.

Finally, this presentation considers the proposed export of the energy carrier from existing facilities in New South Wales thereby drawing inspiration from the:

Energy Park Mainz facility, Mainz, Germany; the George Olah Renewable Methanol plant, Svartsengi, Iceland; the H2Ocean project, European Union; Porsche / Siemens Energy - Haru Oni, Chile; the Raffinerie Heide conversion project, Schleswig-Holstein, Germany; the RH2INE Initiative, Zuid Holland, the Netherlands; and the Chiyoda Corporation SPERA project Sungai Liang Industrial Park, Brunei Darussalam.



Figure 1. Sydney Desalination plant, and former Caltex Kurnell oil refinery, Joseph Banks Drive, Kurnell [Sydney Desalination Plant, 2018]

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