



**UPDATE #13**

[portkemblahydrogenhub.com.au](http://portkemblahydrogenhub.com.au)

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Learn more about why Port Kembla has been dubbed the “industrial engine room of our economy” in this Hydrogen Hub Update that contains information on;

- Major Energy Projects
- BlueScope announces future decarbonisation pathway
- Blue Economy CRC – Offshore Wind Energy in Australia Report
- Next Future Mobility Day Event
- Hydrogen Hub Showcase Program

# Major Energy Projects

Busy times continue at Port Kembla with many major energy projects being delivered over the next two years. These major energy projects by foundation members of the Port Kembla Hydrogen Hub will generate significant economic outcomes for the region in terms of investment and new job creation. Collectively these projects represent important building blocks for the continued development of a world class hydrogen ecosystem at Port Kembla.




### Investment + Job Outcomes

The Department of Regional NSW has played a key role in attracting **\$550m** in new investment and generating **450** construction and operational jobs over the **next two years** through facilitation of the following major **energy** projects:

- Port Kembla Coregas **hydrogen refuelling station** project will deliver Australia's first zero emissions **heavy road transport trial** by mid 2022
- \$250m AIE **Port Kembla Gas Terminal** project will deliver Australia's first **gas importation** facility by late 2022, with construction already underway
- \$300m EnergyAustralia **Tallawarra B** project will deliver Australia's first net zero emissions **hydrogen and gas fired power station** by late 2023
- Attracted **40 percent** of Australia's proposed 25GW of **offshore wind projects** that if built will deliver **10GW** of renewable electricity

An important milestone has been achieved for the proposed \$1.3bn Port Kembla Power Station project with the announcement on 27 August 2021 that it has been designated Critical State Significant Infrastructure (CSSI) by the NSW Government.

## Govt fast-tracking Port's power station

**EXCLUSIVE**  
**BY GLEN HUMPHRIES**

ANOTHER Port Kembla project backed by billionaire Andrew "Twiggy" Forrest will be fast-tracked by the NSW government.

Through his Squadron Energy company, Mr Forrest is constructing a gas terminal in the port.

Now his subsidiary Australian Industrial Power has plans for a \$1.3 billion hydrogen-gas turbine power station, also to be located in the port.

The state government has declared that project to be Critical State Significant Infrastructure (CSSI), which means it will go through a separate assessment pathway, with final approval resting with Planning Minister Rob Stokes.

The federal government has also chipped in \$30 million for the project.

Mr Stokes said the project was expected to create around 700 construction jobs.

"If approved, the Port Kembla power station will be a critical part of the NSW energy mix as we move to cleaner, greener renewables by firming up supply and keeping energy prices low," Mr Stokes said.

"The NSW government has a secure plan for the transition to renewables and the Port Kembla proposal should be declared CSSI because it will be vital to achieving a low-carbon emissions-based economy."

Energy and Environment Minister Matt Kean said Port Kembla was "the industrial engine room of our economy".

Mr Kean added Australian Industrial Power had committed to using as much as 30 per cent green hydrogen.

"If approved, the dual hydrogen-gas design of this project will create early demand for the green hydrogen needed to decarbonise the state's heavy industries and set them up to succeed in a low-carbon global economy," Mr Kean said.

Australian Industrial Energy will need to prepare an Environmental Impact Statement, which will include community consultation.

If approved, the new power station could be completed by 2024.



**PRIORITY:** The power station planned for Port Kembla is being fast-tracked for planning approval. **Picture:** Anna Warr

The Illawarra Mercury, 27 Aug 2021, Glen Humphries, p3

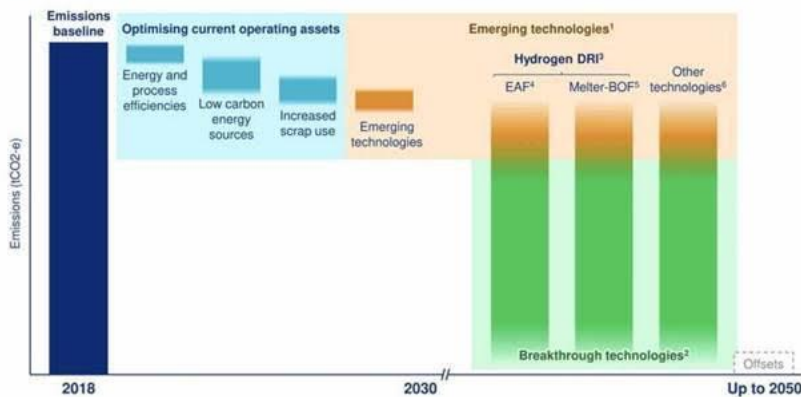
# BlueScope announces future decarbonisation pathway

A major announcement by BlueScope on the 16 August 2021 about its journey towards a 2050 net zero goal will see the company trial the use of green hydrogen at its Port Kembla Steelworks.

Renew Economy - Giles Parkinson 16 August 2021

Bluescope is looking to spend \$150 million over the next five years, and up to \$400 million over the next 10 years, to further its emissions reduction efforts.

## Indicative iron and steelmaking decarbonisation pathway



Major emissions reductions – Hydrogen DRI – dependent on renewable hydrogen supply.

It will build a pilot renewable electrolyser plant at its Port Kembla facilities to produce green hydrogen and explore that technology.

“There is some exciting work on breakthrough green steel technologies, such as injecting (green) hydrogen into blast furnace,” Vassella said.

“The target is dependent on the commerciality of breakthrough technologies, the availability of renewables and hydrogen. The use of green hydrogen options is emerging as an interesting pathway. We see a strong future for steel in a low carbon world.”

The company said that achieving the 2050 net zero goal is dependent on several enablers, including the commerciality of emerging and breakthrough technologies, the availability of affordable and reliable renewable energy and hydrogen, raw materials and “appropriate public policy settings.”

# Blue Economy CRC – Offshore Wind Energy in Australia Report

The Offshore Wind Energy in Australia – Final Project Report (July 2021) provides a comprehensive review of the opportunities, technologies and potential economic impact this new energy sector can provide. Advancements in offshore wind tower technology now mean floating structures tethered by cables to the sea floor can be deployed in relatively deep water areas such as off the coast of Port Kembla.

One standout in the Report is that Port Kembla has attracted 40 percent of the planned 25GW of offshore wind projects in Australia with the 10GW total split between grid supply and large scale hydrogen production. Plans to develop a portfolio of wind farms off the NSW Coast by Oceanex including the proposed Illawarra Offshore Wind Farm were covered previously in Updates #7 and #9.

# Next Future Mobility Day Event

Plans are underway for the next Future Mobility Day event. Obviously with ongoing COVID restrictions we will have to shift to a virtual event.

Following the success of the June Future Mobility Day, the focus will continue to be on Stage 2 of the Heavy Road Transport Trial. There will also be presentations on proposed Trials for other heavy vehicle types. Port Kembla is clearly emerging as a superior location for any hydrogen technology demonstration project.

Details of Future Mobility Day #3 to follow shortly.

## FUTURE MOBILITY DAY #2

The second Future Mobility Day event hosted by the Port Kembla Hydrogen Hub was held on the 10 June 2021 with representatives from across industry, government, business and research organisations in attendance.

With Stage 1 of the Heavy Road Transport Trial to be operational by mid 2022, the focus of the Future Mobility Day event was on Stage 2. Major fleet operators heard about the advantages of hydrogen fuel cell technology and its key enabling role in helping to transition heavy vehicle fleets to a zero emissions future.

The Port Kembla Hydrogen Refuelling Station has a 400kg/day capacity. This capacity provides an opportunity for fleet operators to participate in Stage 2 of the Trial through the deployment of an additional eight heavy vehicles. These additional vehicles will complement the two Coregas prime movers that have been ordered in Stage 1. Importantly, the Stage 2 vehicles will provide greater variation in operating conditions and metrics for the Trial.



With a high level of interest in zero emission heavy vehicles, [McKinsey](#) has recently released a report that assesses what they define as the four true competing zero emission technologies.

These four zero technologies were evaluated against key Emission and Total Cost of Ownership metrics with the results shown in the table below:

Variations across categories		■	■	■	■
	Bio/synfuel	Hydrogen internal combustion engines (H2-ICE)	Hydrogen (H2) fuel cell	Battery electric	
<b>Emissions</b>					
CO <sub>2</sub> intensity	CO <sub>2</sub> intensity depends on source of biomass/carbon	Zero/minimal CO <sub>2</sub> if using green/blue H <sub>2</sub>	Zero/minimal CO <sub>2</sub> if using green/blue H <sub>2</sub>	CO <sub>2</sub> intensity depends on grid mix; zero CO <sub>2</sub> if using renewable power	
Air quality	NO <sub>x</sub> and particulate-matter emissions similar to diesel	No significant NO <sub>x</sub> emissions with SCR <sup>2</sup> aftertreatment	Zero emissions	Zero emissions	
<b>Total cost of ownership</b>					
Efficiency (well-to-wheel)	~20%	~30% for renewable H <sub>2</sub> production	~35% for renewable H <sub>2</sub> production	75–85%+ depending on transmission and charging losses	
Powertrain capital expenditure	Same as today's combustion engines	H <sub>2</sub> engine with similar capex as diesel ICE, but H <sub>2</sub> tank required	High capex for fuel cells and batteries, but more scalable than BEV <sup>3</sup>	High capex if large batteries required (medium for smaller/lighter segments)	
Constraints (space/payload)	Same size and weight as today's combustion engines	Engine with same size as today, but H <sub>2</sub> tank needed	More space needed than combustion engine for fuel cell and H <sub>2</sub> tank	Higher weight than combustion engine; payload constraints subject to use case	
Uptime/refueling	<15 minutes, depending on tank size	<15–30 minutes, depending on tank size	<15–30 minutes, depending on tank size	3+ hours, depending on ability for fast charging	
Infrastructure costs	Can use existing infrastructure	H <sub>2</sub> distribution and refueling infrastructure required	H <sub>2</sub> distribution and refueling infrastructure required	Charging infrastructure and grid upgrades required	

<sup>1</sup>Nitrogen oxides.  
<sup>2</sup>Selective catalytic reduction.  
<sup>3</sup>Battery electric vehicle.

# Port Kembla Hydrogen Hub Showcase events – suspended until 2022

Due to ongoing COVID restrictions, the decision has been made to suspend the quarterly Hydrogen Hub Showcase program until 2022.

Big thanks to our partner organisations including Invest Wollongong (partnership between Department of Regional NSW, Wollongong City Council and University of Wollongong), Inside Industry, BlueScope, Coregas and EnergyAustralia in making these events happen and look forward to resuming the program next year.

## Hydrogen Hub Showcase

The purpose of the **Hydrogen Hub Showcase** events is to raise awareness among **key stakeholder groups** of the **\$12.5bn pipeline of major energy projects** and existing assets that are supporting the development of the **Port Kembla Hydrogen Hub ecosystem**.

Showcase **delegates** have represented the following organisations:

- CSIRO
- Office of the NSW Chief Scientist and Engineer (OCSE)
- NSW Govt Hydrogen and Clean Energy team (DPIE)
- NSW Govt Emissions Reduction team (DPIE)
- TransGrid

Showcase events have been held on:

- Monday 28 March 2021
- Monday 21 June 2021



Regards

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