

Transitioning to Clean Energy for the Mid West

Midwest Major Projects Update Conference

September 2021

PILOT ENERGY LIMITED
ASX:PGY



Compliance Statements



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Competent Persons Statement

This announcement contains information on conventional petroleum resources which is based on and fairly represents information and supporting documentation reviewed by Dr Xingjin Wang, a Petroleum Engineer with over 30 years’ experience and a Master in Petroleum Engineering from the University of New South Wales and a PhD in applied Geology from the University of New South Wales. Dr Wang is an active member of the SPE and PESA and is qualified in accordance with ASX listing rule 5.1. He is a former Director of Pilot Energy Ltd and has consented to the inclusion of this information in the form and context to which it appears.

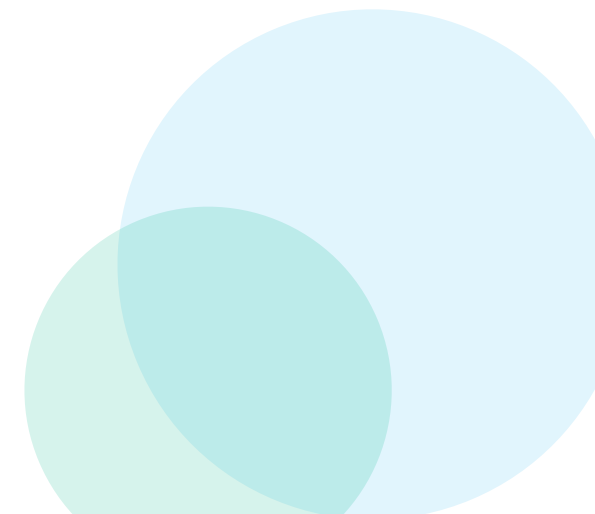
Authorisation

This presentation has been authorized by the Chairman and Managing Director on behalf of the Board of Directors of Pilot Energy Limited

Mid West WSP Feasibility Study Reporting Conditions

Pilot has agreed the following conditions with the ASX in relation to the Mid West WSP feasibility study:

1. The Company must continue to spend funds on its existing and proposed oil and gas projects.
2. The Company must disclose in each quarterly activities report until September 2022, the proportion of expenditure incurred in relation to exploration and evaluation on the oil and gas projects and the Mid West Wind and Solar Project.
3. The Company must disclose as separate line items in each quarterly activities report until September 2022, expenditure incurred in relation to exploration and evaluation on the oil and gas projects and the Mid West Wind and Solar Project.
4. Proceeding beyond the feasibility study stage of the Project (or incurring expenditure in excess of the budgeted feasibility expenditure in relation to the Project) constitutes a change in the nature and scale of the Company’s activities in terms of Listing Rule 11.1 and as such the Company will be required to comply with all of the requirements of Chapters 1 and 2 of the Listing Rules before it proceeds beyond the feasibility study or incurs expenditures in excess of the budgeted feasibility expenditure on the Project.



Pilot Energy – Diversified Energy Company Leading the Transition to Clean Energy

Leveraging existing traditional oil and gas assets along with established infrastructure to develop competitive clean energy projects

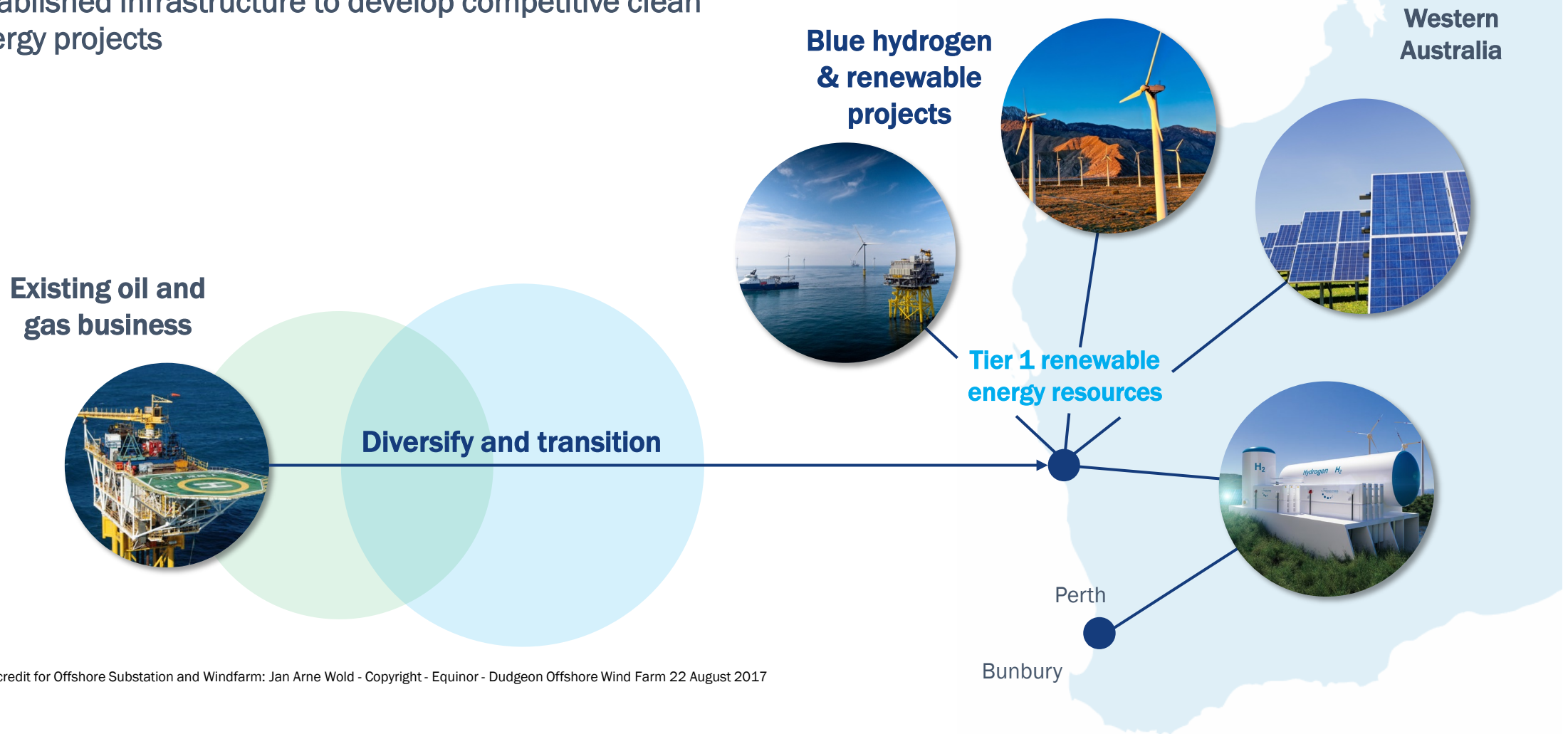


Image credit for Offshore Substation and Windfarm: Jan Arne Wold - Copyright - Equinor - Dudgeon Offshore Wind Farm 22 August 2017

Company Highlights



Material holdings with recognised world-class natural resources (oil & gas, blue hydrogen and renewables) in both Mid West & South West Regions of Western Australia. Existing assets located in the heart of the Mid West renewable resource zone



Ownership of key energy licenses & infrastructure secured with JV alignment in Mid West oil & gas tenures and infrastructure through recently completed acquisitions. Provides carbon capture and storage (CCS) opportunities



Leveraging existing oil & gas assets into potential world-class competitive clean energy projects to deliver offshore wind and onshore wind and solar projects for domestic and export markets as green energy, hydrogen and into mineral beneficiation



Proven and experienced Board and Management team with a strong track record of building and delivering energy and resource projects



Well capitalised to progress the transition to pursue the feasibility of the Mid West and South-West projects, supported by sustaining cashflows from Cliff Head

Pilot at a Glance



ASX Code: PGY

Capital Structure

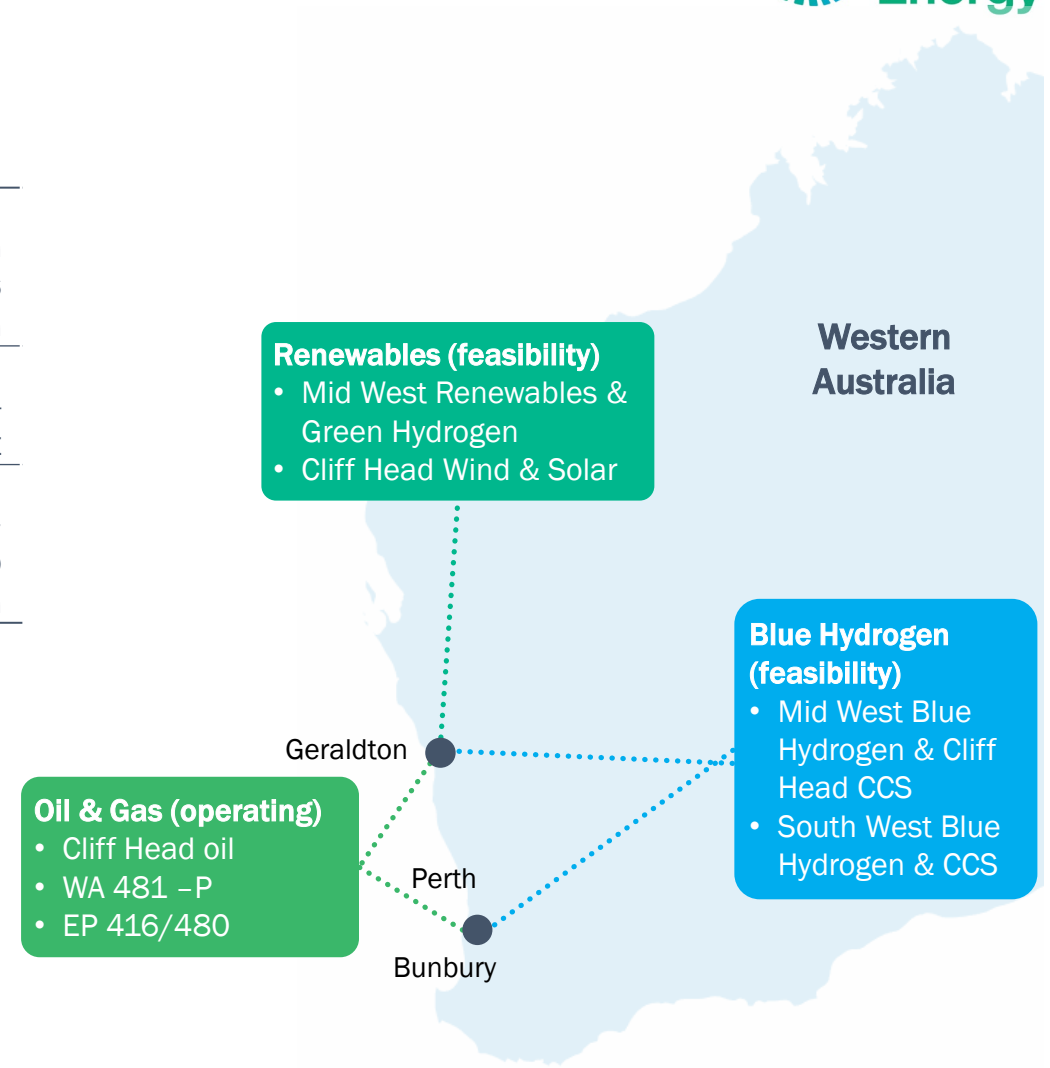
• Issued shares	501.6 million
• PGY share price @ 14 Sept 2021	\$0.06
• Market Capitalisation	~\$30 million

Oil & Gas Reserves & Resources (Existing)

• Proved & Probable Reserves ¹	-
• 2C Contingent Resources ^{1,2}	~3,800,000 BOE

Blue Hydrogen & Renewables Projects (Under feasibility evaluation)

• Wind/Solar Power (MW)	1,300+
• Hydrogen (kg/day)	Up to 250,000
• CCS/CCUS (tonnes per annum)	Up to 1.3 million

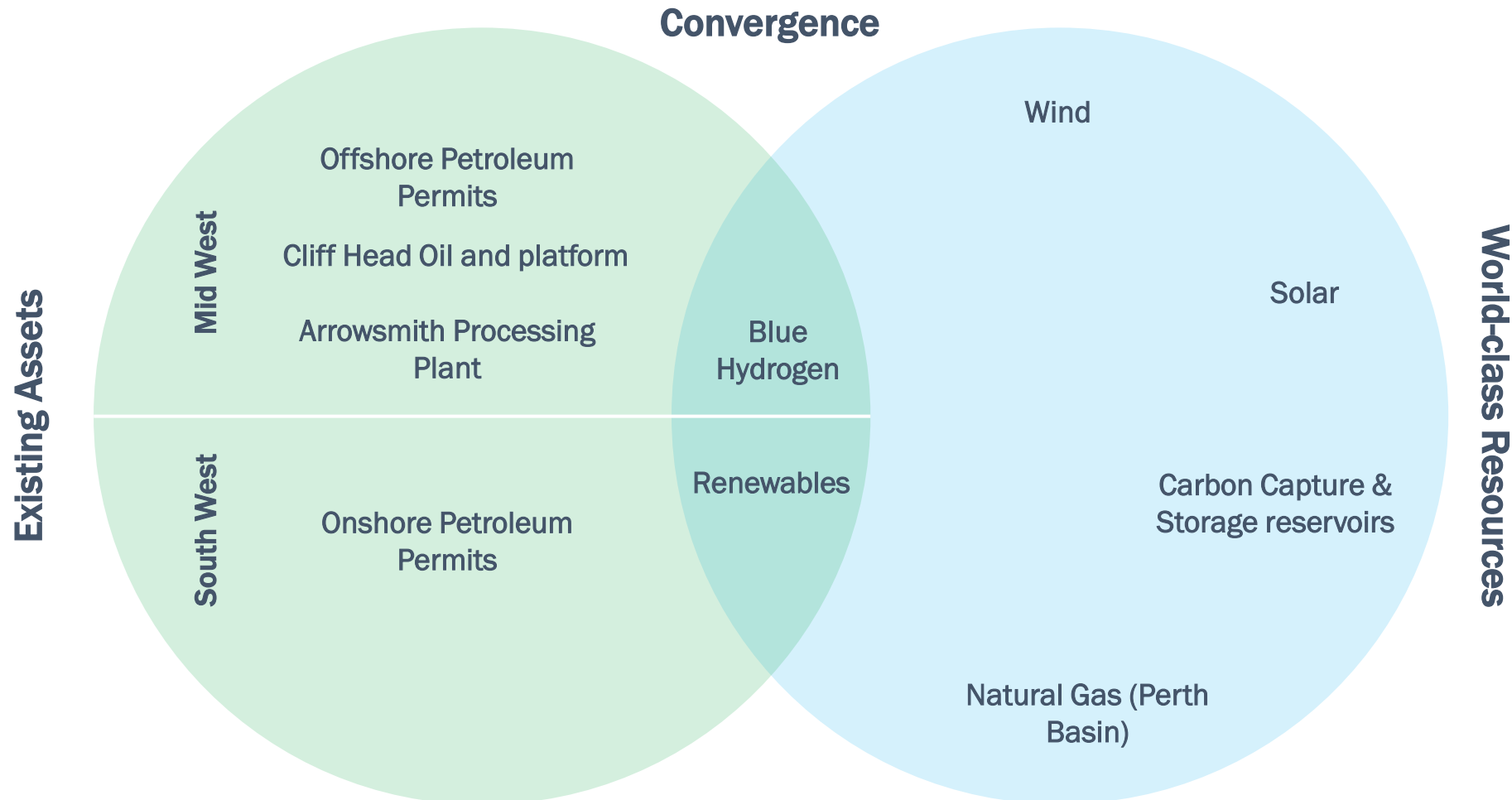


1. Approximately 300,000boe associated with the Cliff Head project remains under review and may be reclassified as reserves subject to the finalisation of new oil offtake arrangements

2. Refer to PGY ASX announcement 23 April 2021 titled "Resources Update" and refer to Independent Technical Specialist Report Pilot Energy Ltd - Australian Exploration Assets January 2021 (28 May 2021 General meeting Notice of Meeting: Independent Expert Report

Strategy and Opportunity

Existing infrastructure, abundant renewable and gas resources and ability to provide carbon management are Pilot's key enablers for the production of competitive clean energy and hydrogen



The Energy Transition is Accelerating – Recent Events



Solar power in Australia outstrips coal-fired electricity for first time

For a fleeting moment on the weekend more than half the nation's electricity generation came from solar power, but experts say Australia is still a long way from peak renewable energy

ARENA to target low emission programs in the Australia Federal Budget with hydrogen included

By George Heynes on Aug 06, 2021 | [Translate](#)

NEWS

New regulations have been introduced today (August 6) that will allow the Australia Renewable Energy Agency (ARENA) to deliver the targeted programs outlined in the 2020-21 Federal Budget with an emphasis on hydrogen.

To support this aim, the Australian Government has provided ARENA A\$192.5m to deliver the outlined programs which includes clean hydrogen and investigating energy efficiency and emissions reduction in energy-intensive industries.

WA ideal for large-scale green hydrogen: BP

BP has found WA's mid-west would be ideal for large-scale green hydrogen or ammonia production, while Origin and Mitsui OSK will cooperate to examine shipping options for the fuel.

Forrest says green hydrogen market could be worth \$16 trillion by 2050

Giles Parkinson 18 August 2021 61

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Tomago, Australia's largest aluminium smelter, vows to switch to renewable energy by 2029

The move by the country's biggest power consumer could signal the end for AGL's Bayswater power station

Peter Coleman to chair hydrogen play



Angela Macdonald-Smith
Senior resources writer

Aug 14, 2021 - 3:00am

Former Woodside Petroleum boss Peter Coleman has been named as the new chairman of clean hydrogen play Infinite Blue Energy in what is thought to be his first corporate role in Australia since departing the oil and gas major in early June.

Two new hydrogen platforms launch to couple industry with customers

Two hydrogen platforms have launched in Australia to connect hydrogen producers with consumers, ultimately trying to catalyse projects and the industry more broadly. The first, NERA's HyCapability, maps hydrogen capability across Australia, while the other focuses on New South Wales and the developments of its hydrogen hubs.

AUGUST 24, 2021 BELLA PEACOCK

The West Australian

The Geraldton Guardian | Mid West | Regional WA

Richard Mann appointed specialist officer to help get Oakajee hydrogen hub off the ground

Phoebe Pin | Geraldton Guardian
Mon, 2 August 2021 8:00AM



[Hydrogen](#) [ENB Magazine](#) [Audio and Video](#) [Twitter](#)

FUTURE OF ENERGY OPERATIONS MARKETS INSIGHT & STRATEGY

Rio and Sumitomo partnering on hydrogen project

RIO Tinto and Sumitomo Corporation will jointly study the construction of a hydrogen pilot plant at Rio's Yarwun alumina refinery in Gladstone.

Western Australia to support hydrogen blending into gas network with \$2m fund

By George Heynes on Aug 18, 2021 | [Translate](#)

NEWS

Hydrogen blends could soon be entering the Western Australian (WA) gas network with ATCO having been awarded A\$2m (\$1.45m) by the WA's Renewable Hydrogen Fund.

Revealed today (August 18), the funding will support one of Australia's largest blending projects, with around 2,500 connections, and will see renewable hydrogen blended into discrete sections of the WA gas distribution network.

Pilot Energy's Development Plan



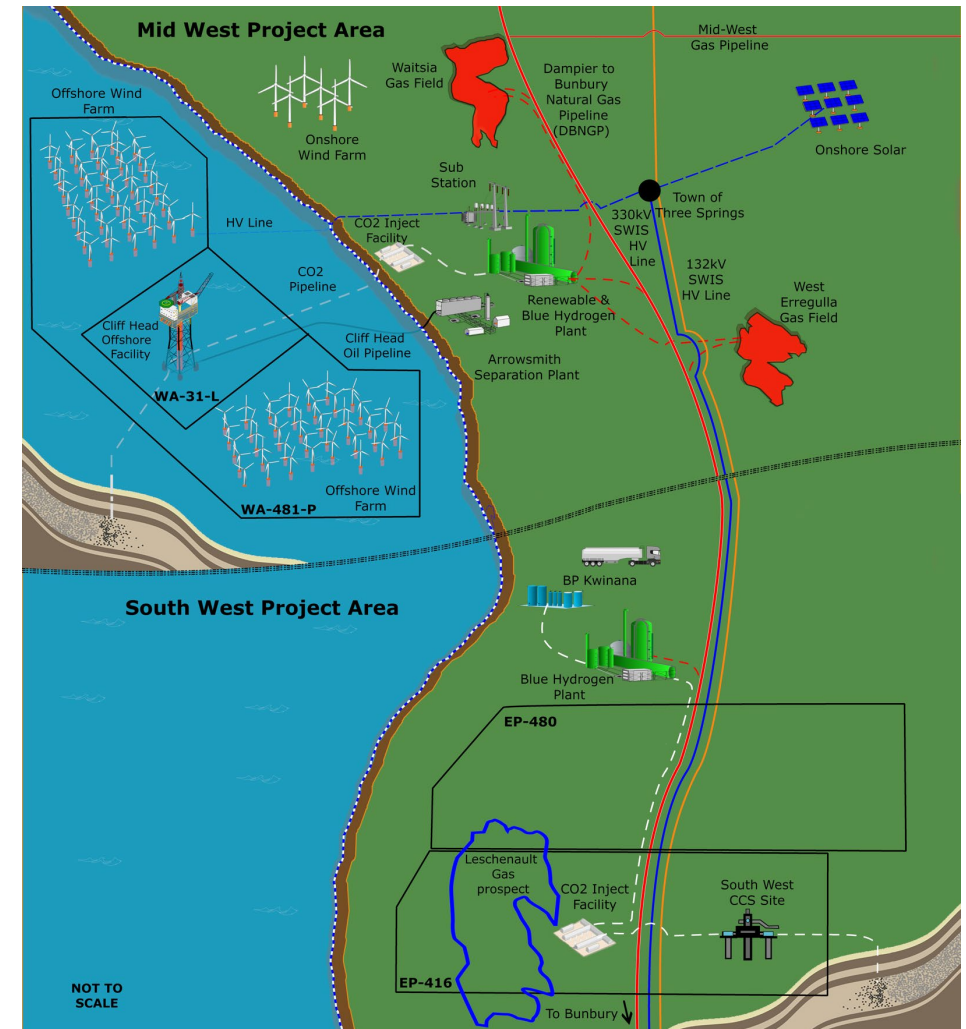
Pilot has a clear clean energy development plan and has commenced feasibility studies

Global expertise secured to conduct preliminary feasibility studies



Based on feasibility results, Pilot will leverage existing assets to develop world class clean energy projects in Mid West and South West regions

Key commercial and financial partners will be introduced over time to maximise value for Pilot shareholders



Note: map depicts Pilot's projects and facilities together with infrastructure that Pilot proposes to develop subject to the results of the feasibility studies may include, as shown above, a CO2 pipeline and injection facility, blue hydrogen plants, CCS sites, offshore and onshore wind, solar, renewable hydrogen plant, substation, transmission lines and hydrogen pipelines

Necessary Steps in Making the Transition to Clean Energy

To make the transition to focussing on clean energy Pilot has specific ASX undertakings*

In relation to the Mid West Wind & Solar Project, while undertaking the feasibility study Pilot is required to:

- Continue to spend funds on its existing and proposed oil and gas projects;
- Report Quarterly separate line items and proportion of expenditure incurred in Oil and Gas and the Mid West Wind and Solar Projects; and
- Re-comply with Chapters 1 and 2 of the ASX Listing Rules before it proceeds beyond the feasibility study.

Pilot has accounted for this in its forward Mid West Renewables Project plans post-feasibility.

Undertakings do not apply to Pilot's blue hydrogen or carbon management projects.

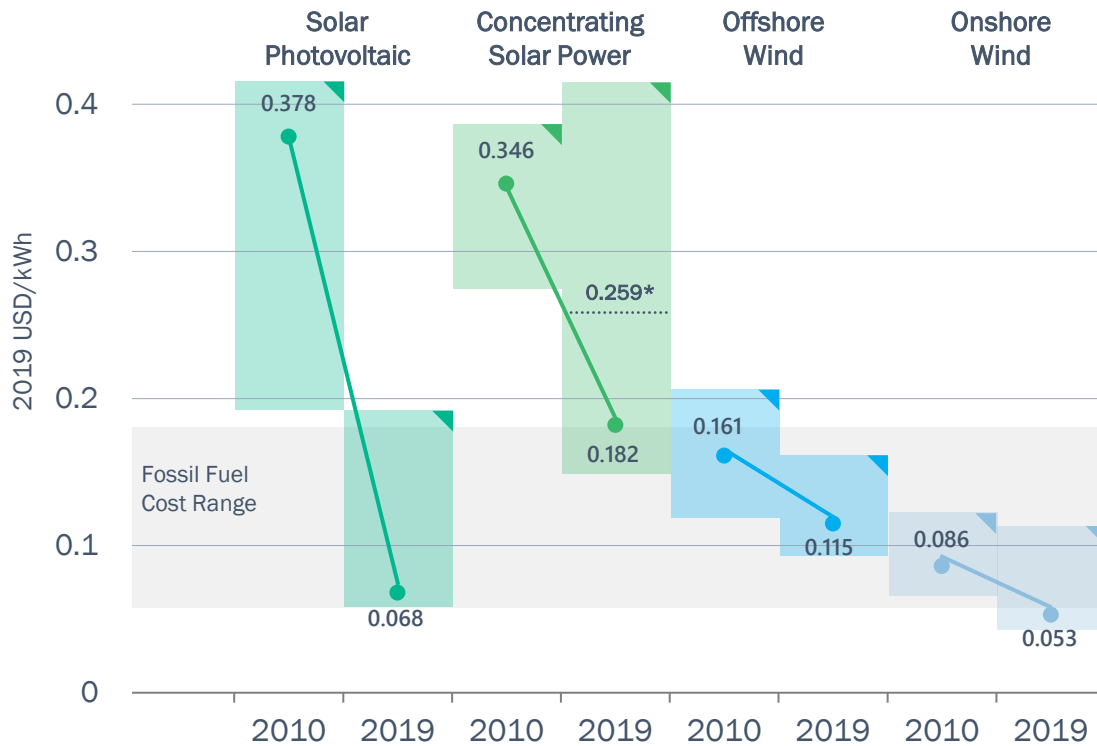


Brand Highway Railway Crossing

The Case for Renewables

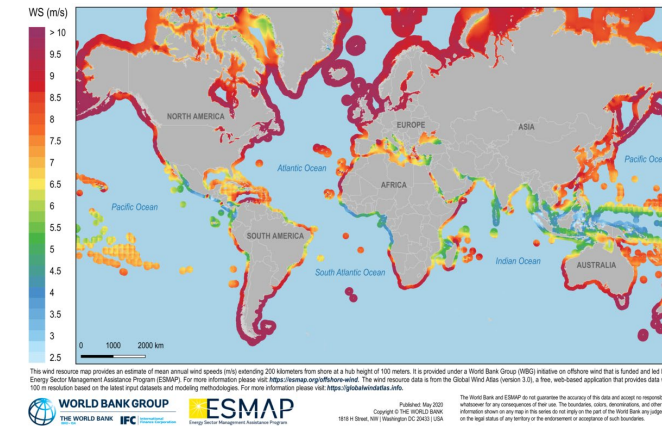
Technology has dramatically reduced solar & wind power costs in last decade below fossil fuel alternatives

Global weighted average levelized cost of electricity from utility-scale renewable power generation technologies, 2010 and 2019

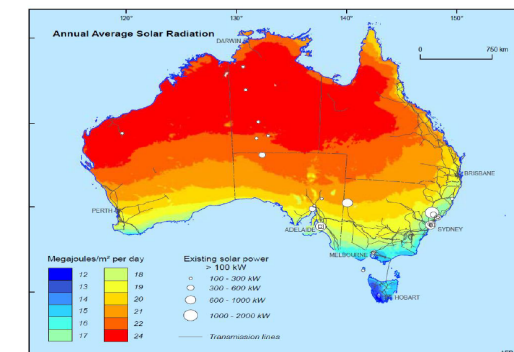


* Note for CSP, the dashed bar in 2019 shows the weighted average value including projects in Israel
Source: IRENA – “Renewable Power Generation Costs in 2019”, June 2020 Report

Mid West Region - one of the world's best renewable energy jurisdictions



Australia's Renewable Resources: Solar



Map of Australia showing the annual average solar radiation and areas of existing solar power greater than 100 kW and up to 2000 Kw.
Source: Geoscience Australia and ABARE (2010) *Australian Energy Resource Assessment*.

Mid West Renewable Resource Zone – All the Right Stuff

Premium Renewable Resource Precinct



Renewable resources – Coastal Mid West is one of Australia’s highest rated renewable energy resource regions for both wind & solar as assessed by Geoscience Australia

Government strategic focus – WA Government committed to developing the Mid West major industrial area and renewable resource zone into a global renewable energy and hydrogen hub

Renewable energy demand – Mid West renewables resource and hydrogen resource potential attracting interest of major international and local companies pursuing renewable energy projects. Pilot uniquely placed with existing assets and infrastructure

Established Infrastructure



Grid connected – Served by Western Power’s South West Integrated System 330 kV transmission lines

Pipeline connected – Access to DBNGP & Parmelia Gas Pipelines provide potential pathways to market for hydrogen

Ports, road & rail – Mid West region endowed with established infrastructure

Clear Hydrogen Development Pathway



Blue hydrogen – Combination of existing Perth Basin gas supplies, low cost renewable energy and existing suitable CCS/CCUS assets can support first-mover, lowest cost blue hydrogen supply chain

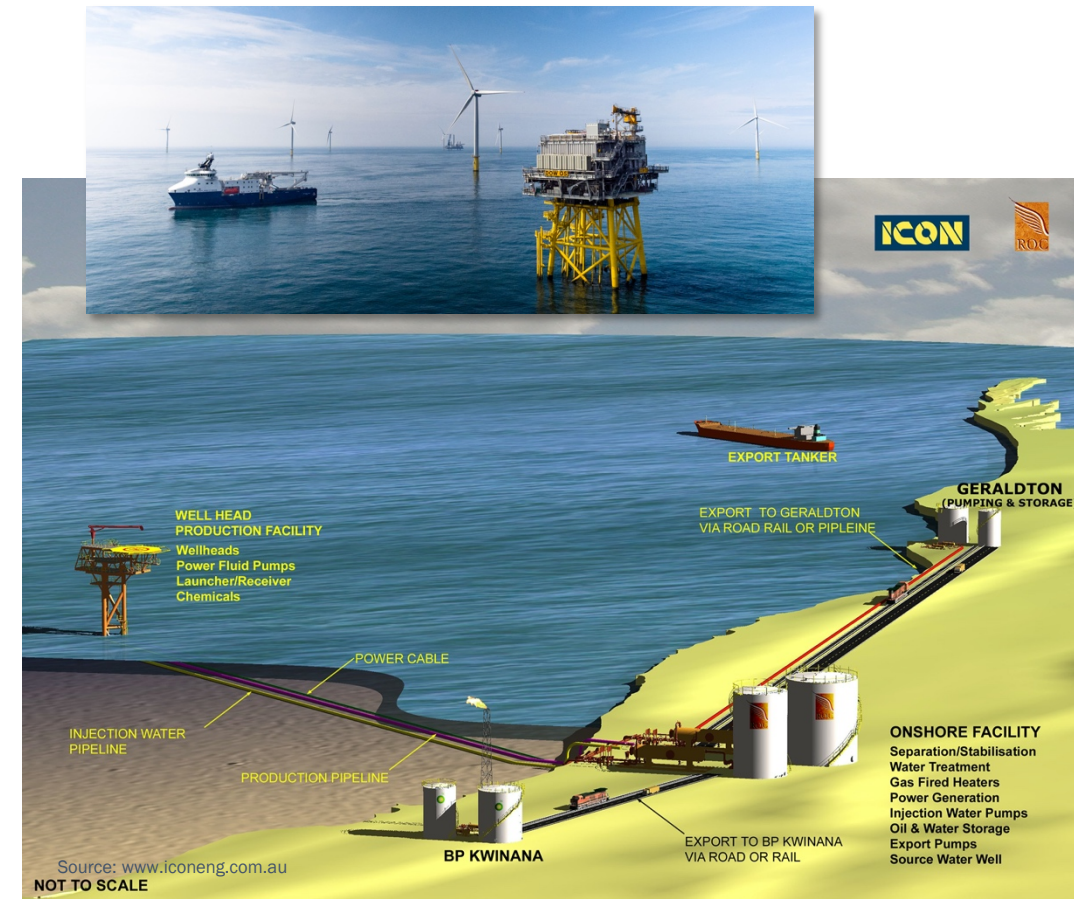
Green hydrogen – Abundant low cost renewable energy & abundant H₂O in combination with blue hydrogen provides foundation for development of competitive & clean hydrogen supply chain

Green iron & steel – Combine low cost blue/green hydrogen supply with World-class Mid West magnetite iron production provides opportunity for globally cost-competitive green iron & steel

Integrating Infrastructure, Renewables and Carbon Management to Deliver Competitive Clean Energy

Mid-West Region has multiple potential offshore wind development sites

- Cliff Head facilities provide potential anchor point for offshore wind farm
- Cliff Head Oil Field/Infrastructure provides unique position
- Only offshore oil & gas infrastructure along the Mid West Region coastline
- Opportunity to simplify/streamline feasibility/development
- Maximize use of existing infrastructure, easements, operations, studies & data
- Combining offshore wind & existing operations creates potential new value
- Potential to share/reduce costs and defer abandonment liabilities
- Cliff Head reservoir also provides ideal asset to provide carbon management
- Delivering lowest cost clean hydrogen depends on providing CCS



Multiple Commercialisation Pathways

Mid West Renewables Project

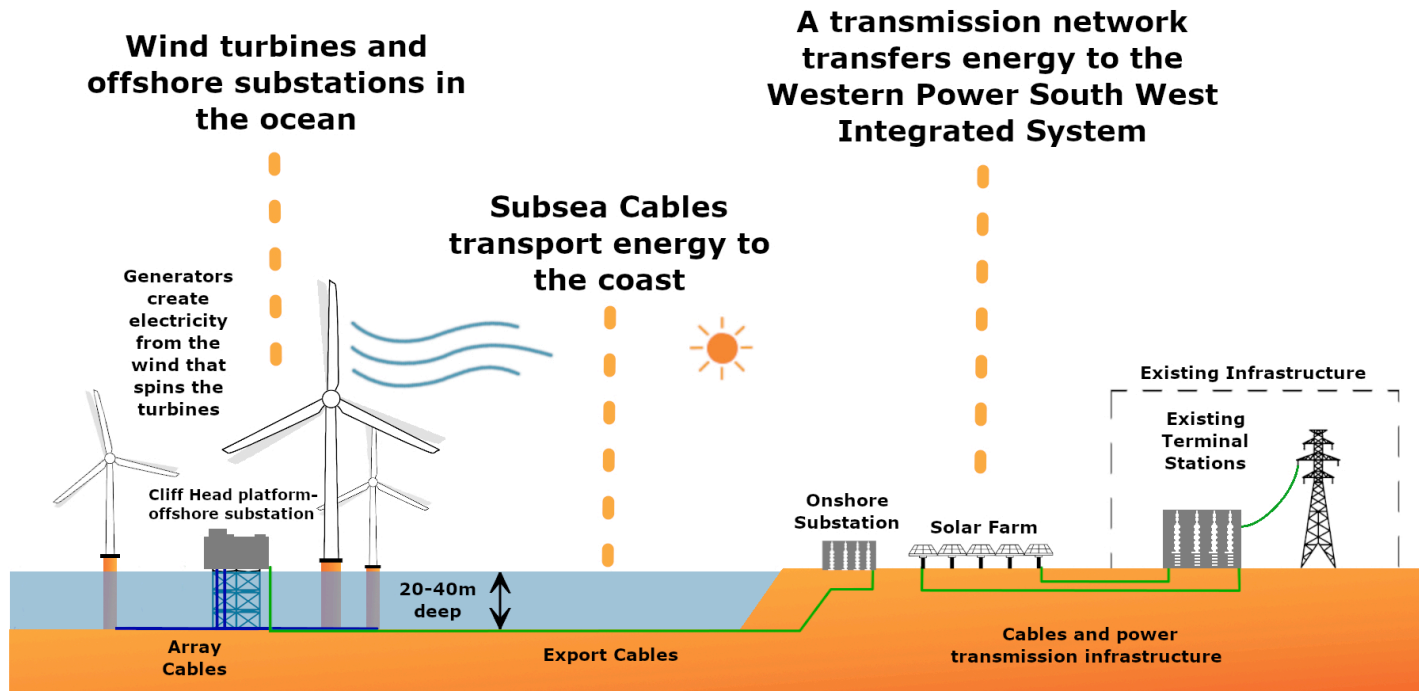
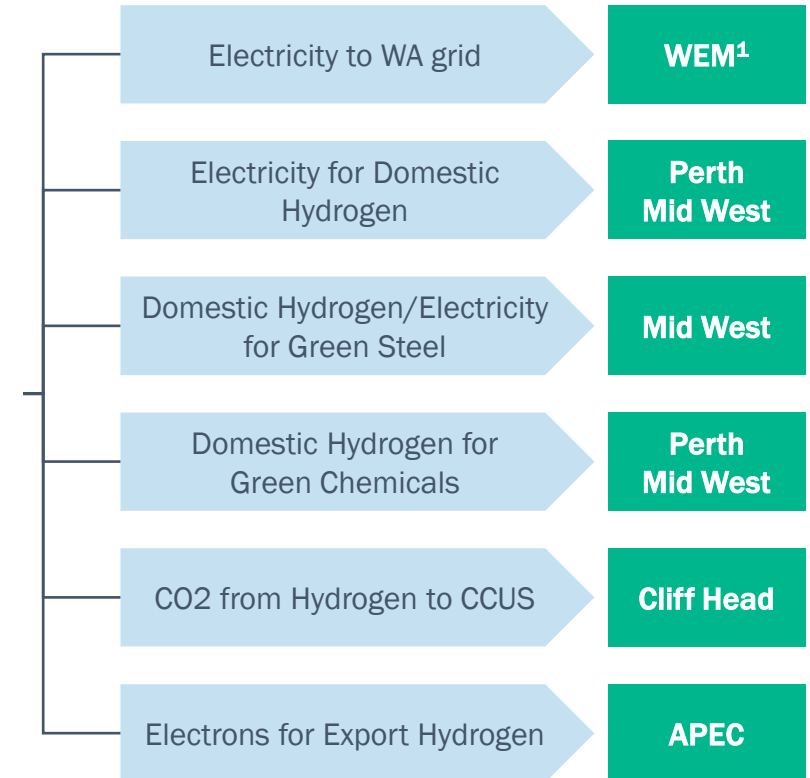


Diagram not to scale



Pilot holds 21.25% interest in the Cliff Head platform² – provides optionality for future offshore substation

1. <https://aemo.com.au/en/energy-systems/electricity/wholesale-electricity-market-wem>: The Wholesale Electricity Market (WEM) supplies electricity to the south-west of Western Australia via the South West Interconnected System (SWIS)

2. Pilot owns (via its 100% subsidiary Royal Energy P/L) a 50% interest in Triangle Energy (Operations) Pty Ltd, which is the operator of the Cliff Head joint venture. Triangle Energy (Operations) Pty Ltd holds a 42.5% registered interest in the Cliff Head project tenements and infrastructure, therefore providing Pilot with an effective 21.25% interest.

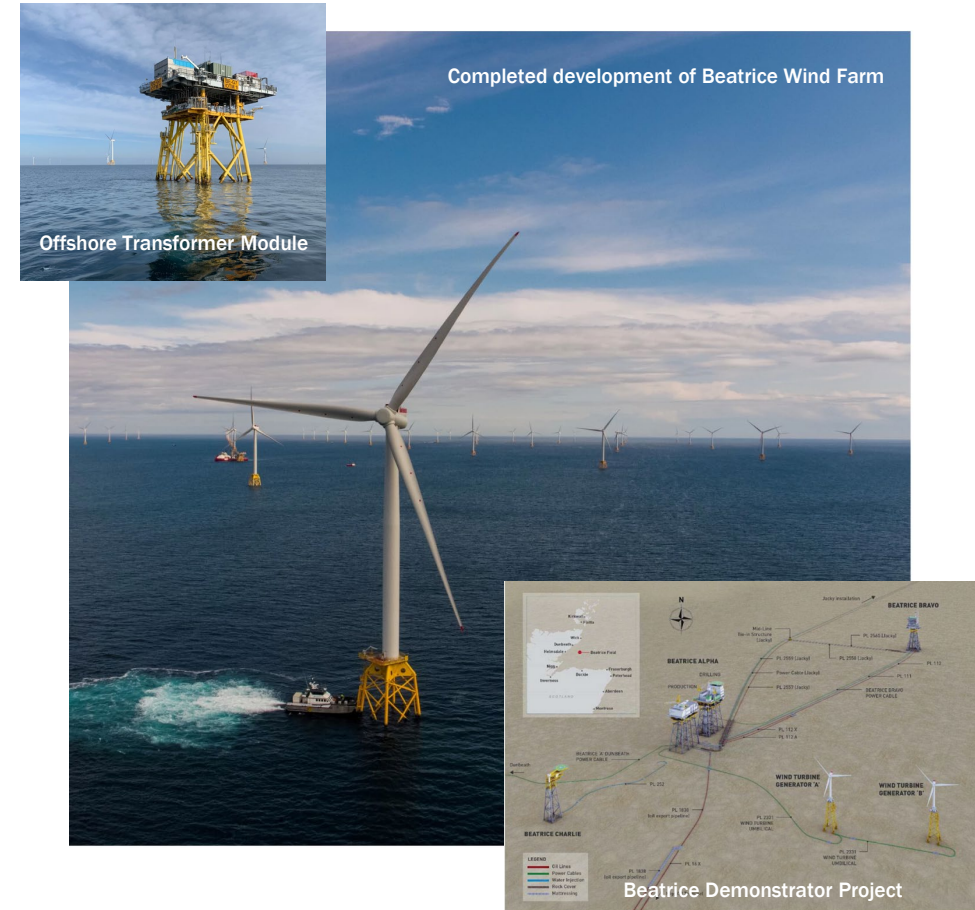
The Beatrice Offshore Wind Farm

A case study for Cliff Head Wind Project

From offshore wind farm demonstrator project to Scotland's largest operational wind farm

- 1980 - Beatrice Oil Field started production producing about 8,000 BOPD
Located 13 km offshore in x metre water depth
- 2007 - to assess feasibility of building commercial scale wind farm two 5MW “demonstrator” wind turbines installed linked back to Beatrice Alpha Platform
- Wind turbines provided all power requirements for the oil field and also connected to onshore grid via subsea power cable providing for power export
- 2009 - deployment and operation of demonstrator wind turbines was successful and development began on new commercial scale Beatrice wind farm
- 2012 - applications for development approval submitted for full scale wind farm development submitted
- 2014 - UK Government development approvals received
- 2016 - financial close achieved and construction begins for installation of 84 Siemens Gamesa wind turbines
- 2018 – first power exported to National Grid
- 2019 – 588 MW wind farm construction completed

www.beatricewind.com



Cliff Head Offshore Wind “Demonstrator” Project

Following completion of feasibility studies development concept for Cliff Head Oil Field demonstrator wind farm project

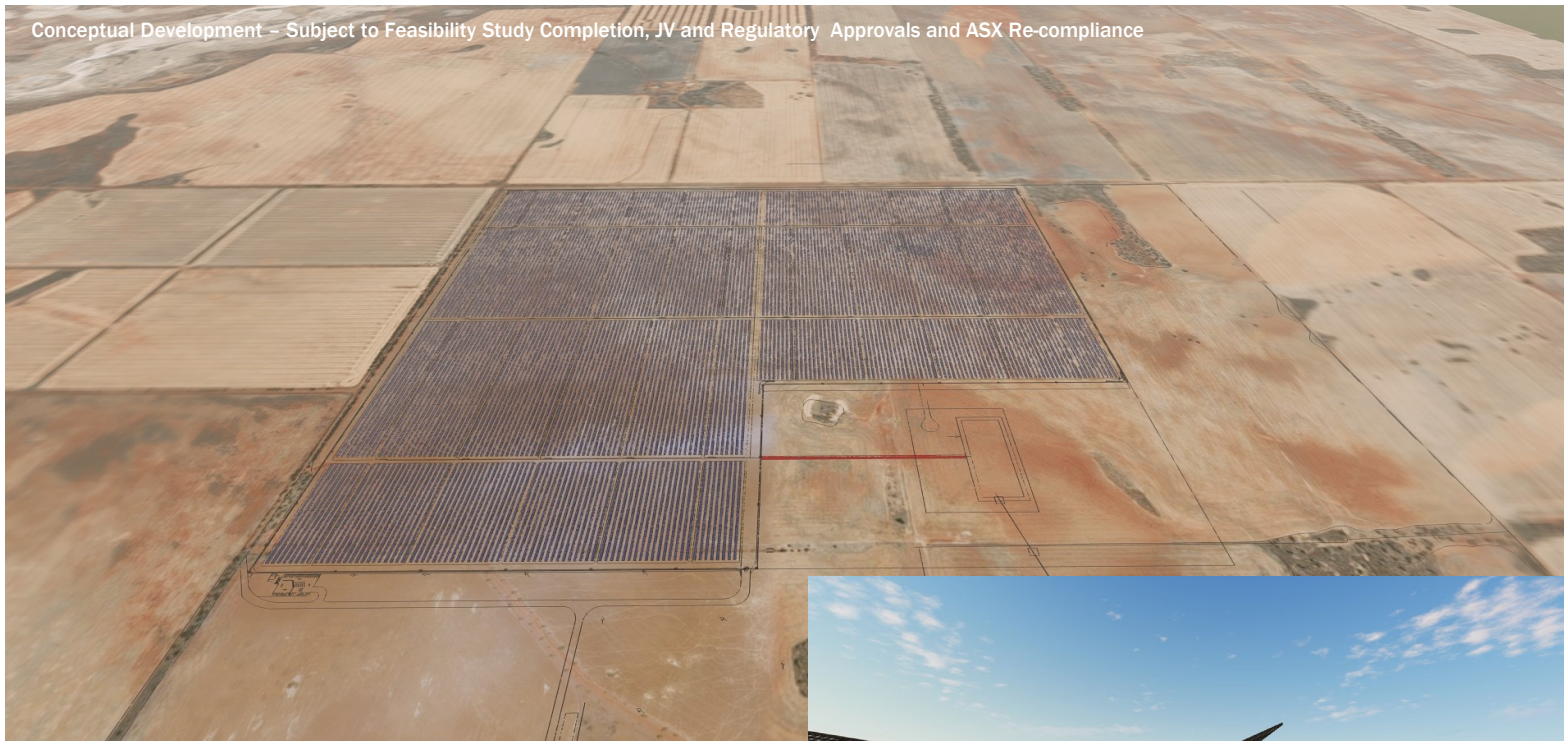
- Conceptual “demonstrator” wind farm development at Cliff Head Oil Field
- Based on successful Beatrice Demonstrator Wind Farm development
- Cliff Head A Platform located ~14 km offshore in 16 metre water depth
- Connect 3-6 wind turbines back to Cliff Head A Platform generating up to 60 MW
- Wind turbines installation in WA State Waters approximately 10-15 metre water depth
- Utilize patented gravity base structures development by Perth-based marine design & construction firm
- Conceptual development is subject to:
 - Feasibility study completion,
 - Joint venture and regulatory approvals and
 - ASX re-compliance*



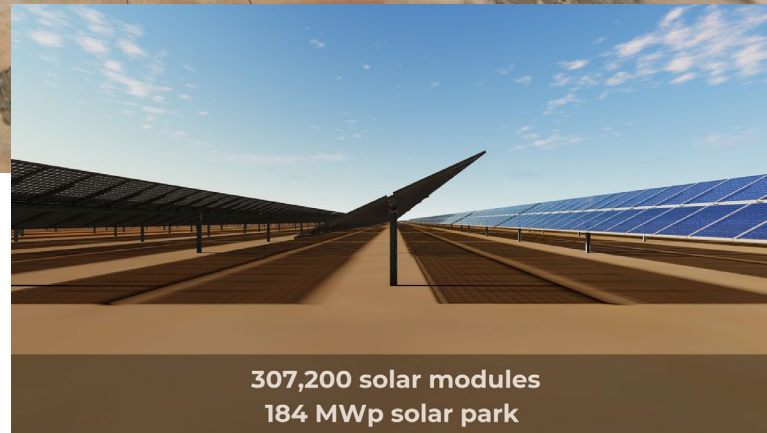
Mid West Solar Project – Bringing Wind & Solar together



Onshore operational footprint also provides opportunity for integrated wind and solar development



Conceptual Development – Subject to Feasibility Study Completion, JV and Regulatory Approvals and ASX Re-compliance



307,200 solar modules
184 MWp solar park

Onshore solar as a key component of the Mid West Integrated Renewables Project

- Mid West Region also has rich World-class solar resource
- PV solar is now becoming one of the lowest cost renewable energy sources
- Complementary diurnal nature of offshore wind and onshore solar
- Combining both renewable resources aims to deliver lowest cost clean energy
- Subject to feasibility study results, onshore solar could be executed in next 24-36 months
- Conceptual solar development project is subject to:
 - Feasibility study completion
 - Joint venture and regulatory approvals and
 - ASX re-compliance*

Mid West Wind and Solar Feasibility Study



Preliminary feasibility study objective: Genesis and Technip Energies, Lautec and Green Fuel Development engaged to assess the feasibility of developing and commercialising the Mid West region’s world class renewable energy resources and the associated production and sale of green hydrogen

Offshore Wind survey: Fixed LiDAR¹ survey to provide initial data on the wind resource adjacent to the Cliff Head platform and adds significant value to the planning process of future metocean survey campaigns

Objective: Assess commercial feasibility, markets and identify project development concepts to progress into FEED stakeholder engagement and partnering.



Mid West Wind & Solar Feasibility

- Technical Studies
- Market/commercialisation
- Report

Offshore wind survey

	Q1 FY22	Q2 FY22	Q3 FY22	Q4 FY22
Technical Studies	Active	Active	Completed	Completed
Market/commercialisation	Completed	Active	Completed	Completed
Report	Completed	Active	Completed	Completed
Offshore wind survey	Completed	Active	Active	Active

1. Light detection and ranging (LiDAR) technology is alternative option to a Met mast for surveying wind resources. <https://www.windpowerengineering.com/unlocking-the-potential-of-offshore-wind-with-lidar-technology/>.

A Clear Pathway to Low Cost Hydrogen

Mid West Hydrogen & South West Hydrogen Projects are uniquely positioned for both blue and green hydrogen



Low-cost industrial scale renewable energy – wind & solar



Readily available natural gas feedstock for blue hydrogen leveraging existing infrastructure and Perth Basin gas discoveries. Hydrogen produced with natural gas utilising low-cost conventional SMR/ATR technology with full CCS



Existing readily accessible, established CCS/CCUS site at Cliff Head. Preliminary estimates indicate 500,000tpa capacity and highly attractive \$16/tonne CO₂ storage cost

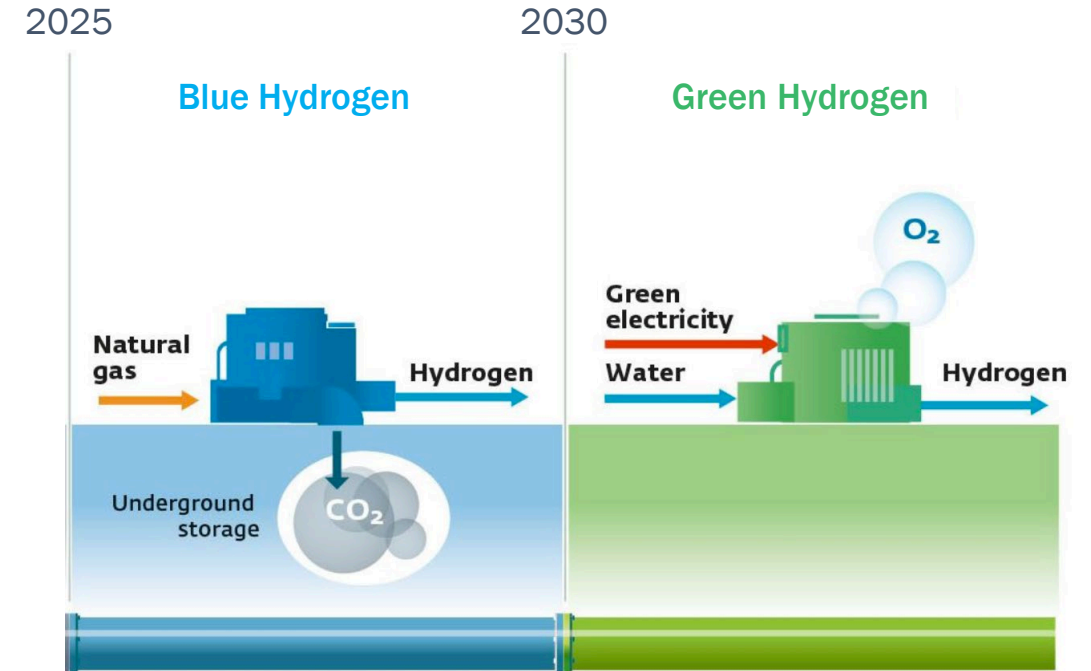


South West Hub CCS Project under-appraisal for sequestration of 800,000+ tpa of CO₂ within PGY petroleum tenures¹



Existing Commonwealth regulatory framework allowing CCUS/CCS in offshore Commonwealth waters – Cliff Head.

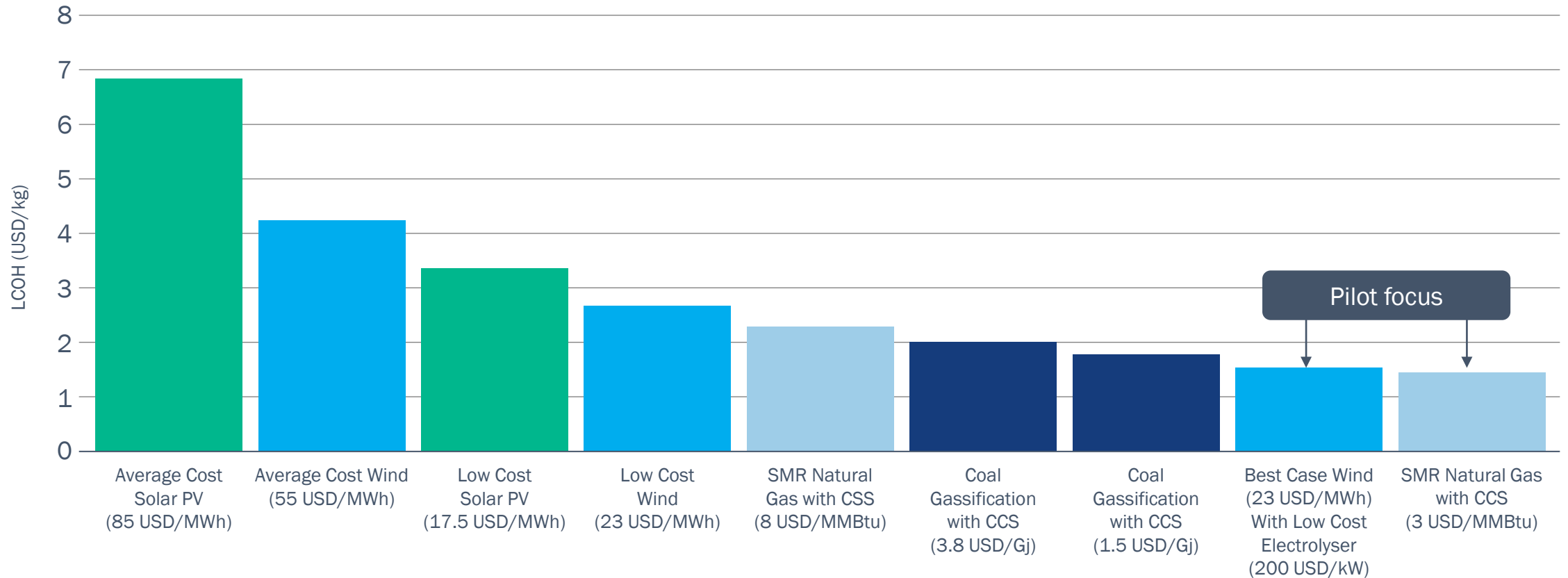
1. Dynamic Modelling of CO₂ Sequestration in the Harvey Area. A report by ODIN Reservoir Consultants for DMIRS 2018/7



Source: Gasunie - "Indications of Hydrogen"

The Case for Low Cost Hydrogen

Costs of Producing Hydrogen from Renewables and Fossil Fuels Today (Levelized Cost of Hydrogen)



https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Sep/IRENA_Hydrogen_2019.pdf

Blue Hydrogen and CCS Feasibility Study

Internationally recognised consultants engaged



Mid West Blu Hydrogen & CCS feasibility study: Genesis and Technip Energies, and RISC engaged to assess the feasibility of developing and commercialising the Mid West Blue Hydrogen project which includes a carbon management service and the associated production and sale of blue hydrogen.

Blue H2 and CO2 technology study: 8 Rivers Capital engaged for zero carbon power generation and fossil based hydrogen production system. Near term preliminary feasibility program proposed to assess technology and integration into a future renewable hydrogen production project.

South West project Blue Hydrogen & CCS feasibility study: Feasibility assessment of the South West Hub CCS project.

Objective: Assess commercial feasibility, markets and identify project development concepts to progress into FEED stakeholder engagement and partnering.



Mid West Blue Hydrogen & CCS

- Technical Studies
- Market/commercialisation
- Report

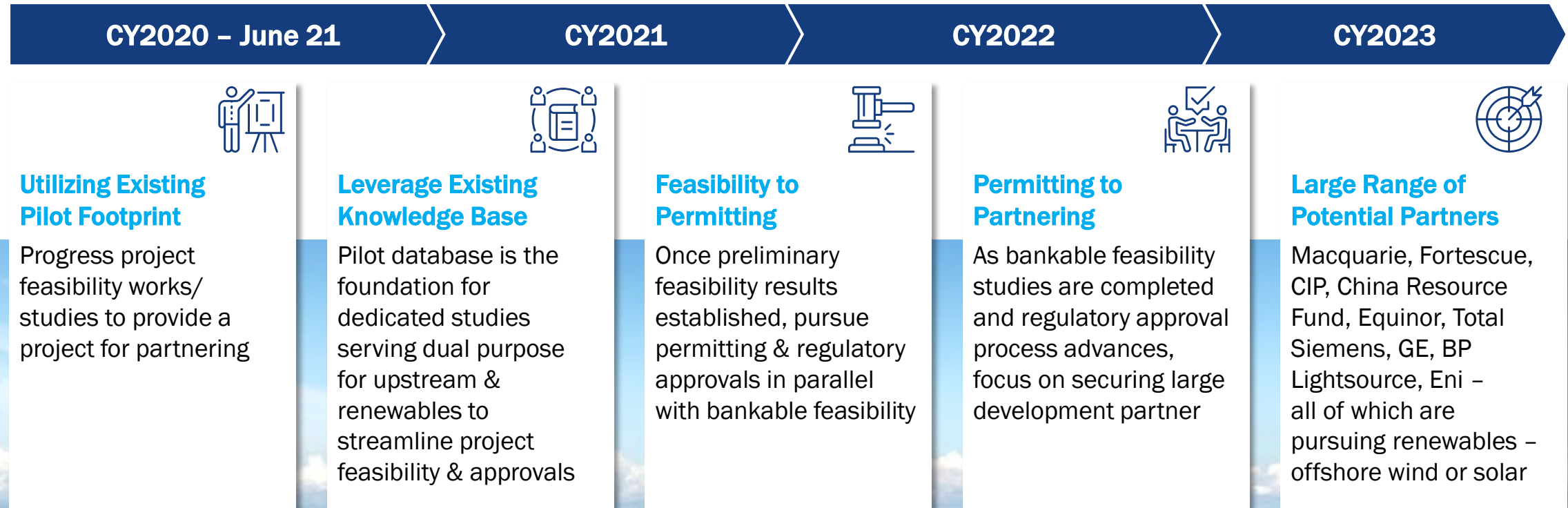
South West Blue Hydrogen & CCS

- Technical Studies & injection test planning
- Regulatory, environment & stakeholders
- Market/commercialisation

Blue H2 and CO2 technology study

	Q1 FY22	Q2 FY22	Q3 FY22	Q4 FY22
Mid West Blue Hydrogen & CCS - Technical Studies	Active	Active		
Mid West Blue Hydrogen & CCS - Market/commercialisation		Active		
Mid West Blue Hydrogen & CCS - Report		Active		
South West Blue Hydrogen & CCS - Technical Studies & injection test planning			Active	Active
South West Blue Hydrogen & CCS - Regulatory, environment & stakeholders			Active	Active
South West Blue Hydrogen & CCS - Market/commercialisation				Active
Blue H2 and CO2 technology study	Active	Active		

Energy Transition Development Strategy



Pilot's Competitive Advantage



Material holdings with recognised world-class natural resources (oil & gas, blue hydrogen and renewables)



Ownership in key energy licenses & infrastructure



Leveraging existing oil & gas assets into potential world-class competitive clean energy projects



Proven and experienced Board and Management team



Well capitalised to progress the transition

Contact Details

Pilot Energy Limited
Level 1, 85 Elizabeth Street
Paddington, NSW 2021

www.pilotenergy.com.au

Midwest Major Projects Update Conference



Brad Lingo
Chairman
blingo@pilotenergy.com.au

Tony Strasser
Managing Director
tstrasser@pilotenergy.com.au

Nick Watson
Head of Renewables & Commercial
nwatson@pilotenergy.com.au