Pilot Energy Limited

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Announcement to ASX ASX: PGY

7 September 2022

GOOD OIL & GAS ENERGY CONFERENCE PRESENTATION

Pilot Energy Limited (**ASX:PGY**) (**Pilot** or the **Company**) is pleased to advise that Mr Brad Lingo (Executive Chair) is presenting at the Good Oil and Gas Energy Conference in Perth today.

A copy of the presentation is attached to this announcement and the video referred to in the presentation can be found on the Company website.

ENDS

This announcement has been authorised for release to ASX by the Chairman, Brad Lingo and Managing Director, Tony Strasser.

Enquiries

Cate Friedlander, Company Secretary, email: cfriedlander@pilotenergy.com.au

About Pilot: Pilot is currently a junior oil and gas exploration and production company that is pursuing the diversification and transition to the development of carbon management projects, hydrogen and integrated renewable energy by leveraging its existing oil and gas tenements and infrastructure to cornerstone these developments.

Pilot holds a 21.25% interest in the Cliff Head Oil field and Cliff Head Infrastructure, material working interests in WA-481-P and EP416/480 exploration permits, located offshore and onshore Western Australia, which form foundation assets for the potential development of clean energy projects in Western Australia.



Delivering the Mid West Clean Energy Project

Through Cliff Head Carbon Capture & Storage

Good Oil Conference Presentation 7 September 2022

PILOT ENERGY LIMITED ASX:PGY



Compliance statements



Disclaimer

This investor presentation has been prepared by Pilot Energy Limited ABN 86 115 229 984 (Pilot or the Company). Any material used in this presentation is only an overview and summary of certain data selected by the management of Pilot. The presentation does not purport to contain all the information which would be required in a disclosure document prepared in accordance with the requirements of the Corporations Act and should not be used in isolation as a basis to invest in Pilot. Pilot Recipients of this presentation must make their own independent investigations, consideration and evaluation of Pilot. Pilot recommends that potential investors consult their professional advisor/s as an investment in Pilot is considered to be speculative in nature.

This presentation contains "forward looking statements" concerning the financial condition, results of operations and business of Pilot. All statements other than statements of fact or aspirational statements, are or may be deemed to be "forward looking statements". Often, but not always, forward looking statements can generally be identified by the use of forward looking words such as "may", "will", "expect", "intend", "plan", "estimate", "anticipate", "continue", "outlook", and "guidance", or other similar words & may include, without limitation, statements regarding plans, strategies and objectives of management, future or anticipated production or construction commencement dates and expected costs, resources or reserves, exploration results or production outputs.

Assumptions and Forward Looking Statements

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Statements in this presentation are made only as of the date of this presentation unless otherwise stated & the information in this presentation remains subject to change without notice. Reliance should not be placed on information or opinions contained in this presentation. To the maximum extent permitted by law, Pilot disclaims any responsibility to inform any recipient of this presentation on any matter that subsequently comes to its notice which may affect any of the information contained in this document and presentation and undertakes no obligation to provide any additional or updated information whether as a result of new information, future events or results or otherwise.

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Competent Persons Statement

This announcement contains information on conventional petroleum and carbon storage 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.



Key messages



- Pilot is *focussed on transitioning* existing oil & gas operations into clean, low cost energy production & supply
- Carbon capture & storage (CCS) is *proven, safe and effective* means of permanent reduction in GHG emissions
- Cliff Head Oil Field is highly suitable for *low cost, low risk conversion* into significant CCS operation
- Cliff Head CCS aims to provide over a 1mmtpa of *permanent CO2 storage* continuing through 2050
- *CCS is key enabler* to delivering lowest cost clean Blue Hydrogen
- Blue Hydrogen is and will be *significantly cheaper than Green* for the foreseeable future
- Integrated Blue/Green Hydrogen production generates *significant efficiencies and material cost savings*
- Ability to provide CCS to Clean Hydrogen *ideal for producing Clean Ammonia-for-export* into APAC region
- Pilot's Mid West operations are *ideal location for integrated development* of CCS, Blue Hydrogen and Clean Ammonia
- Mid West Clean Energy Project aims to *produce lowest cost clean energy* from CCS through to Clean Ammonia

Vision



Transform existing assets and infrastructure delivering an integrated cost competitive clean energy solution



Mid West Clean Energy Project



Staged development of blue hydrogen and ammonia production starting with CCS



Stage 1 – Carbon Capture & Storage Timing: ~2025

- Conversion of Cliff Head Offshore oil field to CCS
- Permanent CO₂ storage in depleted offshore oil field
- Up to 1.1 million tpa CO₂ injection from 2025
- Targeting continuous CO₂ injection through 2050
- \$50 60 million net cash flow by 2029

Stage 2 - Blue H2 Production Timing: 2025 - 2027

- Blue H2 Production facility utilizing Cliff Head CCS
- Initial Blue H2 production of ~43,000 tpa
- Expand Blue H2 production to 85,000 tpa
- Targeting H2 sales @ A\$5/kg at LCOH of ~A\$2/kg
- Revenue potential of ~ \$215 million

Stage 3 H2 Expansion to Export Ammonia Timing: 2027 - 2030

- Integrate ~250MW renewables to produce ~18,000 tpa Green H2
- Combined Blue/Green H2 to feed Clean Ammonia plant
- Targeting Clean Ammonia-for export of ~345,000 tpa
- Revenue potential of ~ \$244 million
- Targeting Clean Ammonia LCOA of A\$400/tonne
- Expand Clean Ammonia production up to 1 million tpa

Cliff Head CCS – Project Overview



Key enabler of low cost clean hydrogen and ammonia production for the Mid West Clean Energy Project

- Stage I of the Mid West Clean Energy Project is the development of a carbon capture and storage project located on the Mid West Coast located 270km north of Perth
- Project will include onshore carbon capture/aggregation facilities and offshore CO2 injection facilities providing permanent CO2 storage
- Brownfield development leveraging Pilot's existing Cliff Head Oil Field
 onshore/offshore facilities
- Focused on delivering an initial project that can deliver a CCS injection price of less than A\$20/tonne of CO2
- Substantial opportunity providing the foundation for development of clean hydrogen and ammonia production

Key Metrics				
CCS Storage Capacity (mt) ¹	6.4 (2C), 15.8 (3C)			
Throughput (Mtpa)	0.55 - 1.1			
No. of CO_2 injection wells	5-8			

1. 2C resource estimates in accordance with the SPE SRMS Guidelines for estimating CO2 storage resources

INVESTMENT HIGHLIGHTS

- Ready end-of-life offshore reservoir in WA Mid West with Commonwealth regulatory pathway to CCS
- Proximity to ready accessible market with up to ~1.0 million tpa of easy-to-capture CO2 emissions sources identified within 40km of Cliff Head CCS
- Minimal risk and capex requirements due to straightforward adaptive re-use of existing plant, pipelines, wells, platform and reservoir for CCS
- Organically funded via increased end-of-life oil production required for reservoir preparation
- Near-term term delivery with anticipated CCS startup by 2025/26

Why CCS?



CCS essential to meeting GHG reduction targets and key enabler of lowest cost Clean Hydrogen and Ammonia

- Proven technology 40 mmtpa now operating
- Safe CO2 has been safely and reliably transported since 1972 with zero fatalities over its 50-year history
- **Permanent** CO2 stored in appropriately selected and managed geological reservoirs is 99% likely to remain there for over 1,000 years
- **Commercial** Used at an industrial scale use for over 50-years
- Necessary IPCC found that it would be 138% more expensive to reach global climate goals without the deployment of CCS.
- Key enabler of low cost Low Carbon Hydrogen & Ammonia will accelerate build-out of hydrogen infrastructure required to reach net-zero
- Essential for difficult industries CCS only option for decarbonising several non-energy sectors fundamental to modern society, such as cement, steel, chemical, and fertiliser production.



MYTH CCS is unproven.	MYTH CCS is unsafe.		MYTH CCS is too expensive.		
FACT CCS technology has been in use for more than 50 years, and around 300 million tonnes of CO_2 have already been successfully captured and injected underground.	FACT The capture, transport, and storage of CO_2 is well regulated and empirically proven to be safe.		FACT The cost of CCS is quickly declining as the breadth of deployment increases and additional policy and financial incentives are made available.		
MYTH CCS only prolongs the life of fossil fuel industries and delays the world from reaching global climate goals. FACT CCS is a necessary tool for reducing the emissions of fossil fuels already in use and putting the world on a path to net-zero.		MYTH There is not enough space to safely store all the CO ₂ captured by CCS projects. FACT The world has more than enough capacity for CO ₂ .			
MythBusters-Flyer FINAL-5.pdf (globalccsinstitute.com)					



Global CCS Facilities In Operation

Cliff Head CCS is a Global Top 10 CO₂ Injection Capacity Project

Carbon Dioxide Capture Capacity in million metric tons per year, 2021



Cliff Head CCS – Project Development Pathway



Clear staged process to develop Cliff Head CCS

	Storage Reservoir Preparation	Facility Conversion	CO2 Injection Operations
Expected Outcomes	 Prepare Cliff Head Oil Field reservoir for CO2 injection Creation of at least ~6 million tonnes of CO2 storage capacity within WA-31L Increased oil production 	 Conversion of all offshore and onshore facilities to commence CCS injection Prepare Cliff Head wells and infrastructure for CO2 injection Install onshore CO2 receiving facilities 	 Continuous CCS operations Commence supercritical CO2 injection at a rate of at least 550,000 tpa for at least 15-years
Permitting Requirements	Existing production license	GHG Declaration, CO2 injection license & FDP	GHG Declaration, CO2 injection license & FDP
Indicative Work Activities	 Increase fluids production Install additional rental oil/water separation units Install additional power unit on Cliff Head Platform Re-commission onshore water disposal well 	 Workovers 3 existing water injection wells and 2 production wells Externally reinforce existing pipelines for CO2 operation Construct onshore CO2 receiving facilities No further drilling required to accommodate 550,000 tpa injection rate and 6Mt of CO2 storage 	 Transport supercritical CO2 to CHA via existing onshore/offshore 10" pipelines Inject supercritical CO2 into reservoir through 5 existing wells Deepen two existing wells + drill 1 new well to increase storage capacity to up to 16Mt and injection rate to at least 1.1 mmtpa
Timing	CY Q1 2023	Late CY 2024-2025	CY 2026
Duration	36-48 months	6-12 months	20+ years

Cliff Head CCS Social Impact





Sources

1. Source: The FLR Carbon Storage Calculator applies data from the Global Removals Database developed by Winrock International under funding from the International Union for Conservation of Nature (IUCN), later published in Bernal et al. "Global Carbon Dioxide Removal Rates from Forest Landscape Restoration Activities." Carbon Balance and Management, vol. 13, no. 1, 2018, doi:10.1186/s13021-018-0110-8

2. Source: average 1,600 trees per hectare (NHS Forest)

Stage II – Blue Hydrogen



Cliff Head CCS will enable cost competitive industrial scale blue hydrogen production

Blue hydrogen production with direct/integrated Cliff Head CCS

- Feasibility studies indicate production capacity of 43,000 tpa of blue hydrogen
- Avoid 445,000 tpa of CO2 emissions² through 98% of CO2 capture using established technologies

Proven and well established, scalable technologies

- Blue hydrogen production has been in commercial operation since 1982
- 98% of current hydrogen production utilises steam reformation (SMR) technology³ which has been in commercial use for over 100-years

Cost competitive clean hydrogen

- Blue hydrogen expected to be the lowest-cost clean production option in majority of locations¹
- A\$6.00/kg hydrogen is cost competitive with petrol/diesel for transport at A\$1.70/litre

Near-term delivery to facilitate clean hydrogen and ammonia production

• Facilitates, accelerates transition to green hydrogen using Mid West Renewables

Sources

3. Global CCS Institute 2021



Levelized cost of hydrogen (LCOH) in the range of A\$1.85 to A\$2.13 leveraging the Cliff Head CCS



Sources: SP Global, Cost, logistics offer "blue" hydrogen market advantages over "green" alternative 19 March 2020 and Pilot Feasibility Study ASX release 28 March 2022

^{1.} Global CCS Institute Blue Hydrogen Report April 2021. Figure 6 (RHS of slide) taken from the same report.

CE Delft Feasibility Study into blue hydrogen July 2018 estimates that blue hydrogen production with 95% direct/integrated carbon capture and storage will produce 0.64/kg of CO2 process emissions per kg of hydrogen produced resulting in total annual CO2 process emissions of ~25.6 kTonnes of CO2

Why Blue Hydrogen?



Blue hydrogen is both clean and will be cheaper for the foreseeable future



Equinor: 'Blue hydrogen will be cheaper than green for the next two decades — from Norway, at least'

'Customers don't care if it's green or blue', senior executive tells conference as Norwegian oil giant plans to export 2GW of blue H2 to the EU

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Oil & Gas | Energy | Markets

WA now has 'lowest gas prices in developed world'



Sean Smith | The West Australian Fri, 2 September 2022 4:44PM | +

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Blue hydrogen

🖾 Sean Smith

Made from natural gas with carbon capture and storage — will be cheaper to produce in Norway for another two decades before being undercut by green hydrogen produced with renewable energy, according to a senior executive at Equinor.

Session 3: Hydrogen and CCS – building new value chains for net zero



Mid West Renewables provides growth platform



Large cost-competitive renewable energy resources identified in the vicinity of the Mid West Clean Energy Project

- Over 18 GW of renewable resource potential in the area identified from feasibility studies
- · Renewable resources include onshore wind, offshore wind and solar
- Identified onshore wind and solar projects have competitive LCOE compared to prevalent energy generation options (CSIRO 2021 GenCost Report results)
- Feasibility studies have identified suitable locations for further investigation and development
- Renewable energy development to deliver power supply integrates into Mid West Clean Energy project and provides runway for significant expansion

Mid West Renewable Energy Projects Feasibility Study Results on a LCOE Comparison to CSIRO 2021 GenCost Report



Mid West Clean Energy Project Total Identified Renewable Energy Technical Resource Potential-By Type (MW)



Enabling technology



Unique opportunity to integrate CCS, hydrogen, ammonia and renewables using proprietary 8 Rivers technology



CCS and Mid West Renewables can be integrated through 8 Rivers technology to deliver clean cost-competitive power, hydrogen and ammonia

8 Rivers ⁸RH₂ technology

- Proven technology which is currently deployed at scale
- High hydrogen production efficiency while requiring minimal capital costs compared to over conventional power cycles
- Minimal water consumption

A unique opportunity

- Blue Hydrogen only possible with Cliff Head CCS
- Integration with Mid West Renewables (see next slide) with 8 Rivers Technology delivers operational and cost synergies across both Blue and Green Hydrogen production
- Delivers compelling hydrogen solution
 with clear cost advantage

Stage III – Clean Ammonia Production



Ammonia from blue hydrogen is both a low cost and clean energy source and supply vector for hydrogen

Clean ammonia emerging as a cost competitive LNG replacement

Established market and supply chain

- Essential global commodity
- One of the most demanded industrial chemicals
- Well established, large-scale production and supply chain

Excellent solution for transport and supply of hydrogen

- Excellent "vector" for transport/supply of H2
- Lowest cost form of hydrogen transport and supply
- Easily stored in simple, inexpensive pressure vessels
- Transportation and distribution simpler and cheaper than H2 delivery

Clean CO2-free energy source

- Proven CO2-free fuel
- Either blue or green H2 can be used produce clean ammonia
- Can significantly reduce CO2 emissions for power generation
- APAC power companies already seeking large clean ammonia supplies to displace coal

Levelized cost of ammonia (LCOA) in the range of A\$370 to A\$400 per tonne, leveraging CCS and renewables



LCOA (AUD/tonne)

Mid West Clean Energy Project – bringing it all together





Stage II Blue Hydrogen

- Hydrogen production integrated with Cliff Head CCS utilising 8 Rivers ⁸RH₂ technology
- Ability to accept CO₂ rich raw gas with ≥97% direct carbon capture of CO2 already at pipeline pressure
- $\sim 25-85$ TJ/d natural gas demand identified
- Expected hydrogen production of 43,000– 85,000 tpa

Stage III Clean Ammonia

- Expansion of hydrogen production to 60,000– 195,000 tpa
- Production of 345,000 1.1 million tpa of cost competitive clean ammonia for export
- Powered by 250–700 MW of integrated renewable energy generation

Cliff Head CCS Project Video





Key next steps



Over the next 12-months Pilot (as operator) together with JV Partner Triangle Energy will be focused on the activities to deliver the Cliff Head CCS Project



Corporate

- Analyse & implement feasibility studies
- Engagement with prospective project partners

Project implementation

- Permitting
- Site Acquisition
- Commercial Offtake



- Pre-FEED for CCS and Blue Hydrogen; and
- Begin prospective EPCM Contractor engagement



Next 12-months aimed at securing all necessary regulatory approvals, securing commercial off-take arrangements and completing a full bankable feasibility study and FEED to enable final investment decision (FID) for the Cliff Head CCS Project.



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