



PROVARIS ENERGY

# AGM Presentation

24 November 2022

[www.provaris.energy](http://www.provaris.energy)

# Important Notice & Disclaimer

This presentation and these materials (together the "Presentation") have been prepared by Provaris Energy Ltd ACN 109 213 470 (ASX:PV1) ("Provaris") as a summary of Provaris' operations and results for the purposes of a presentation to existing or potential investors in Provaris. By participating in this Presentation or reviewing or retaining these materials, you acknowledge and represent that you have read, understood and accepted the terms of this Important Notice and Disclaimer.

This Presentation should be read in conjunction with Provaris' 31 December 2021 Half Year Report lodged with the Australian Securities Exchange ("ASX") on 28 February 2021 and other periodic and continuous disclosure announcements that have been lodged by Provaris with the ASX.

This Presentation may contain forward looking statements concerning projected costs, approval timelines, construction timelines, earnings, revenue, growth, outlook or other matters ("Projections"). Any such Projections are based on assumptions which may differ materially from the actual circumstances which may arise and actual results may vary materially from Projections. You should not place undue reliance on any Projections, which are based only on current expectations and the information available to Provaris. The expectations reflected in such Projections are currently considered by Provaris to be reasonable, but they may be affected by a range of variables that could cause actual results or trends to differ materially, including but not limited to: price and currency fluctuations, the ability to obtain reliable hydrogen supply, the ability to locate markets for hydrogen, fluctuations in renewable energy and hydrogen prices, project site latent conditions, approvals and cost estimates, development progress, operating results, legislative, fiscal and regulatory developments, and economic and financial markets conditions, including availability of financing.

Provaris undertakes no obligation to update any Projections for events or circumstances that occur subsequent to the date of this Presentation or to keep current any of the information provided, except to the extent required by law.

This Presentation is not a disclosure document, is for information purposes only, should not be used as the basis for making investment decisions or other decisions in relation to Provaris or its securities, and does not constitute an offer to issue, or arrange to issue, securities or other financial products. This Presentation has been prepared without taking into account the investment objectives, financial situation or particular needs of any particular person. You should consult your own advisors as to legal, tax, financial and related matters and conduct your own investigations, enquiries and analysis concerning any transaction or investment or other decision in relation to Provaris.

This Presentation, including opinions set out in it, is based on information compiled or prepared by Provaris from sources believed to be reliable, although such information has not been verified in all instances. Provaris has no obligation to tell recipients if it becomes aware of any inaccuracy in or omission from the information in this Presentation. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions or conclusions contained in this Presentation. To the maximum extent permitted by law, none of Provaris, its directors, employees, advisors or agents, nor any other person, accepts any liability, including without limitation any liability arising out of fault or negligence, for any loss arising from the use of the information contained in this Presentation. In particular, no representation or warranty, express or implied, is given as to the accuracy, completeness, likelihood of achievement or reasonableness of any forecasts, Projections or prospects referred to in this Presentation.

No distribution in United States or other jurisdictions outside Australia.

This Presentation does not constitute an offer or recommendation to purchase or sell any securities in any jurisdiction, nor an invitation to apply for such securities in any jurisdiction, and will not form part of any contract for the acquisition of securities in Provaris. This Presentation does not constitute an offer to sell, or a solicitation of an offer to buy, securities in the United States. Any securities described in this Presentation have not been, and will not be, registered under the US Securities Act of 1933, as amended ("Securities Act") or the securities laws of any state or other jurisdiction of the United States and may not be offered or sold in the United States except in transactions exempt from, or not subject to, registration under the Securities Act and applicable US state securities laws. This Presentation may not be released to US wire services or distributed in the United States.

The distribution of this Presentation in other jurisdictions outside Australia may also be restricted by law and any such restrictions should be observed. Any failure to comply with such restrictions may constitute a violation of applicable securities laws. By accepting this Presentation you represent and warrant that you are entitled to receive such Presentation in accordance with applicable laws.

## Non-IFRS Financial Information

This Presentation may use non-IFRS financial information. Non-IFRS measures have not been subject to audit or review. Certain of these measures may not be comparable to similarly titled measures of other companies and should not be construed as an alternative to other financial measures determined in accordance with Australian accounting standards.

*\$ refers to Australian Dollars unless otherwise indicated.*

***This presentation was authorized for release by the CEO on 24 November 2022***



# Board & Management

Australian listed company (ASX.PV1) with staff in Sydney, Perth, Oslo and Calgary providing global expertise across energy, infrastructure, utilities, ship newbuilds, operations, and capital markets



**Martin Carolan**

Managing Director &  
Chief Executive Officer  
*Commercial & Capital Markets*

SYDNEY



**Garry Triglavcanin**

Executive Director & Chief  
Development Officer  
*Engineer, LNG, Project Development*

PERTH



**Greg Martin**

Chairman  
*Business Leader, Energy, Infrastructure,  
Governance*

SYDNEY



**Andrew Pickering**

Non-executive Director  
*Shipping, Newbuilds, Tankers, LNG*

SYDNEY



**David Palmer**

Non-executive Director  
*Shipping, Commercial, Financing*

LONDON



**Norman Marshall**

Commercial Manager  
*Legal, Commercial, Project Finance*

PERTH



**Per Roed**

Chief Technical Officer  
*Newbuilds, Tankers, LNG, Ports,  
Operations*

OSLO



**Herman Hildan**

Strategic Advisor – Provaris Norway AS  
*Investment Banking, Shipping, Capital  
Markets, Advisory Services*

OSLO



**Mats Fagerberg**

Business Development - Europe  
*Commercial, LNG, Infrastructure,  
Shipbroking*

LISBON



**Dave Stenning**

GH2 Carrier Development  
*Ship Design, Class Approvals,  
Commercial*

CALGARY



**John Fitzpatrick**

Naval Architect & Inventor  
*Ship Design, Class Approvals*

CALGARY



**Emma Connor**

Chief Financial Officer  
*Accounting, Finance*

PERTH



**Lindsay Whiting**

Tiwi H2 Facilitation Manager  
*Major Projects, Port Operations,*

DARWIN



# Successful transition into an integrated hydrogen company

Australian public company, Provaris Energy (ASX.PV1) – Perth, Sydney, Oslo, Calgary

2016 to 2020

**2016-2019:** Developed FEED level design to commercialize Compressed Natural Gas (CNG) marine supply chain

**2019:** Strategy and value chain position redefined to address transition to green hydrogen

**2020:** Launch of Compressed Hydrogen shipping concepts, patent lodgment, and Class engineering and approvals program with ABS

2021

**Engineering and commercialization programs established...**

- **AiP on two GH2 Carriers** and Scoping Study to define economic case for compression
- **MOU for our first midstream project** in Australia – 8GW HyEnergy Project
- **Announced Tiwi H2 export project:** 2.8GW solar farm, electrolysis, desalination, compression and export of 100ktpa (ownership of molecules)

2022

**Scaling up commercialization opportunities...**

- **Established Provaris Norway AS** to service European opportunities
- **Delivered Tiwi H2 Design Concept Study** and running a partner process
- **MOU with Total Eren** for co-operation on commercialisation of compressed H2 solutions
- **Approval for Construction** for the H2Neo carrier > December 2022
- **Establishing access to European market** for mid-stream opportunities
- **Maintain a healthy cash balance, with \$9.3M** (31 October 2022)





# 2022 milestones de-risking the path to commercialisation

2016 to 2020	2021	2022
<p>2016-2019: Developed FEED level design to commercialise Compressed Natural Gas (CNG) marine ready chain</p> <p>2019: Strategic and value chain position established to deliver transition to green hydrogen</p> <p>2020: Launch of Compressed Hydrogen shipping contracts, signed shipyard and Class engineering and approval progress with ABS</p>	<p>Engineering and commercialisation progress established:</p> <ul style="list-style-type: none"> <li>• AIP on two GHD Contracts and Feeding Back to further optimise cost for commercialisation</li> <li>• NZO for our first midstream project in Australia - 100% full-scale project</li> <li>• Approved Third H2 Export Concept Study including a permit process</li> <li>• J2020 cost from shipyard, Class engineering and approval progress with ABS</li> </ul>	<p>Building on commercialisation opportunities:</p> <ul style="list-style-type: none"> <li>• Established Provaris Norway AS to service European opportunities</li> <li>• Delivered Third H2 Design Concept Study including a permit process</li> <li>• NZO with Total Eren for co-operation on commercialization of a compressed H2 supply chain</li> <li>• Approved for Construction for the H2Neo Class - December 2022</li> <li>• Establishing access to European market for midstream opportunities</li> </ul>

## Q1 2022

Received WA Govt. funding for HyEnergy Export study (200t kpa)

Commenced Design Concept Study for Tiwi H2 (2.8 GW, 100t kpa)

Commenced FEED level design package for Class & Shipyard

## Q2 2022

Study initiated for EU supply chain with H2 developer & port and pipeline operator for market access

Technical partnership with Northern Marine to support Class & Newbuild

## Q3 2022

Established Provaris Norway AS to service European opportunities

Completed Concept Design for Tiwi H2 (2.8 GW, 100t kpa)

Completion of H2Neo FEED design & HAZID for Class review

Commenced discussion with shipyard on constructability, schedule and cost

MOU with Total Eren to co-operate on commercialization of a compressed H2 supply chain

> In-depth technical verification

> Opportunities underway for Asia and Europe

> Assistance with shipyard & financing

## Q4 2022

Developing a pipeline of EU opportunities – Norway as supply hub

Asia marketing road-show identifies interest in a compressed H2 supply chain – Australia as supply hub, with other regional supply hubs emerging.

Tiwi H2 commenced Early Works & Detailed Design and commencement of EIS submission

H2Neo 'Class Approval for Construction' – expected shortly in December 2022

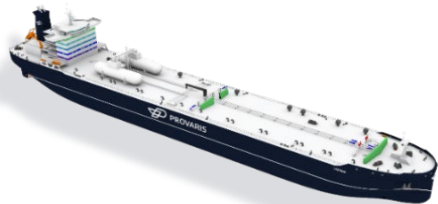
Completion HyEnergy Export Study – soon to be published by the WA Govt.



# Business model creating value for shareholders across the hydrogen value chain with multiple revenue streams

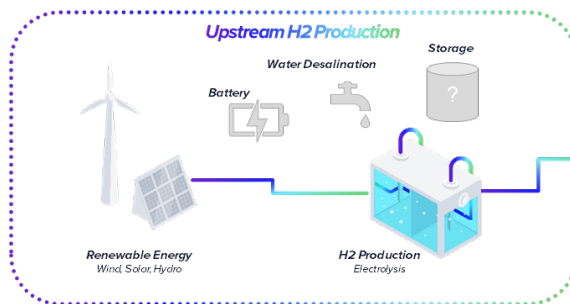
Core insights, knowhow and hydrogen development skills gained through project development activity

## 1 H2 Shipping IP & Knowhow



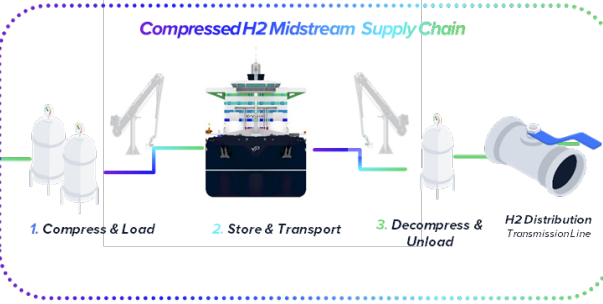
- Significant experience in gas / compression, and bulk scale shipping solutions for oils, chemicals, and natural gas
- Proprietary GH2 Carrier & Storage with IP patents
- **Class approvals in 2022 and first operations 2026**
- Integrated techno-economic models developed for compression, terminal and shipping
- Developing floating storage solutions increases optionality for commercialization pathways
- **Only developer of compressed H2 shipping at scale**

## 2 H2 Production for Export



- **Origination of integrated h2 export projects** for regional export markets using compression
- **2.8 GW Tiwi H2 export project** (Tiwi Islands, Northern Territory, 100% Provaris)
- **Upside from exposure to the commodity and asset creation**
- **Partners introduced at the right time to maximise equity value to Provaris**

## 3 H2 Marine Transport Services



- **Collaboration with advanced H2 development projects** suitable for compression
- **Stable long-term fixed-cash flow contracts**
- **MOU with 8GW HyEnergy Project**, Western Australia
- **MOU partnership with Total Eren**, developer of H2 export across Asia and EU markets
- **Advancing multiple opportunities in Europe**



Technical & Commercial partnerships established...



# Accelerating pace and scale of the global transition to hydrogen has never been more evident

Increasing awareness of Compressed H2 has grown the pipeline of regional opportunities in Europe & Asia

## Qualification & Scoping Studies for Compressed H2 into Europe

Morocco > Netherlands (70 - 200,000 tpa)  
Norway > Germany & Netherlands (20 - 100,000 tpa)  
Spain > Netherlands (50,000 tpa)  
Scotland > Netherlands (50 - 100,000 tpa)  
Europe/North Africa > Israel (70,000 - 400,000 tpa)

*Valuable support provided by the Australian Government, including through DFAT and Austrade, for international engagement and outreach with policy makers, potential commercial partners and investors*

## Advancing Projects to Feasibility for Asia

Tiwi H2, Australia > Singapore  
up to 100,000 tpa

HyEnergy, Australia > Singapore  
200,000 tpa

2.8 GW Tiwi H2,  
Tiwi Islands, NT

HyEnergy<sup>®</sup>  
HYDROGEN ENERGY  
8 GW HyEnergy  
Gascoyne, WA

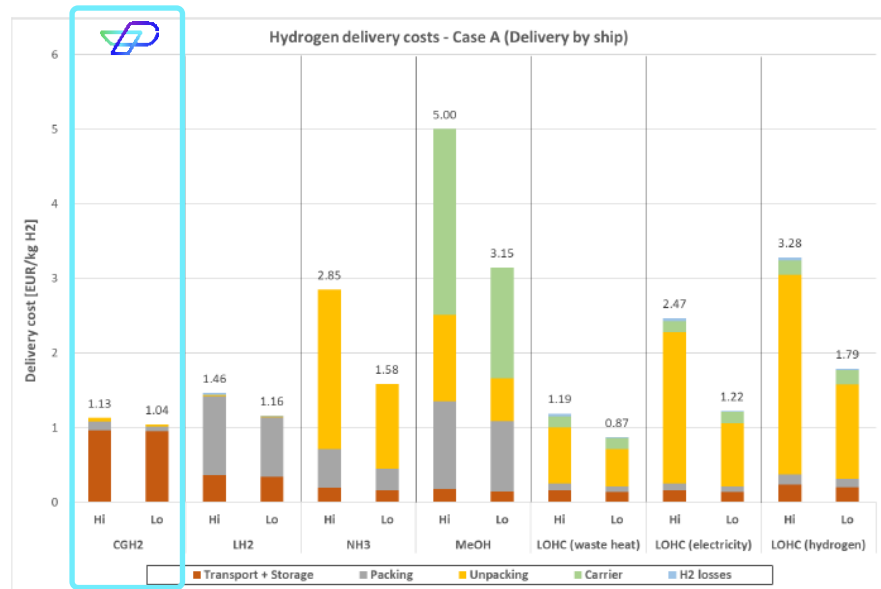
H2 Supply Regions Under Review

H2 Demand Hubs Under Review

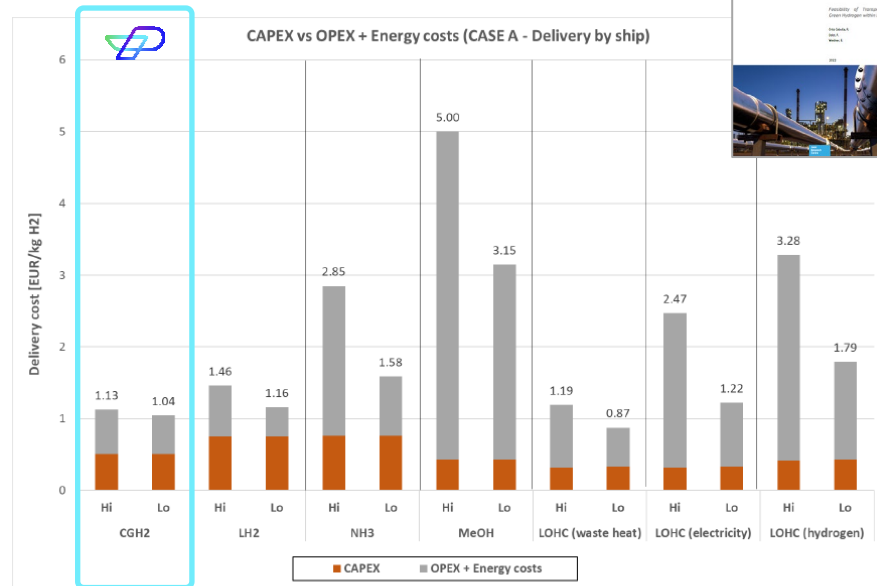
Announced Compressed Hydrogen Project

# Independent research in Europe supports the cost advantage and efficiency of Compressed H2 over regional distance

(1Mtpa continuous delivery over a 2,500km shipping)



Source: JRC analysis



Source: JRC analysis

"In the case of compressed hydrogen delivered by ship, it can be seen that the final cost is dominated by the transport costs. Due to its lower density, transport of compressed hydrogen requires a bigger and more expensive fleet than any other packaging mode. However, the packing and unpacking costs (i.e. compression costs) are low enough to compensate for the higher transport costs. **This makes compressed hydrogen by ship an attractive option, for Case A, with a delivery distance of 2,500 km**" Source: JRC, 2022





# Compressed H2 delivers Europe an 'early mover' carrier to meet H2 import demand

## EU continue to accelerate funding for H2 supply

- **€95 billion Horizon Europe R&D Innovation Fund until 2027 to tackle climate change, with €12 billion allocated to 2023 applications**
- **€3 billion hydrogen bank developed to build out H2 markets**
- **€3 billion IPCEI Hy2Use to support construction of electrolyzers & transport infrastructure**



## REPowerEU ambition of 10mtpa H2 production and 10mtpa H2 import by 2030

- **Delivery of H2 in liquid or chemical form being recognized as more costly and challenging to deliver in the timescale required.**
- **Significant regional supply within 2,000 nautical miles of a 10mtpa market.**
- **Provaris is seeking to establish EU market access to industrial users accessing the H2 backbone**
  - Joint-study nearing completion to develop 'end to end' supply chain using compressed H2.
  - Outreach continues with multiple port, pipeline and end-user markets to increase awareness of compressed H2 to be considered mainstream alternative for import
- **Establishment of Provaris Norway AS and local team to service European opportunities:**
  - Close to 50 per cent of the EU hydropower reservoir capacity is in Norway
  - Norway demonstrating an increasing interest in both a coastal trade export to major EU markets for energy
  - Norway's H2 production costs to be very competitive given costs of grid hydro power and high utilization of electrolyzers
  - Supportive Norwegian government for hydrogen production, local consumption, and export of clean energy



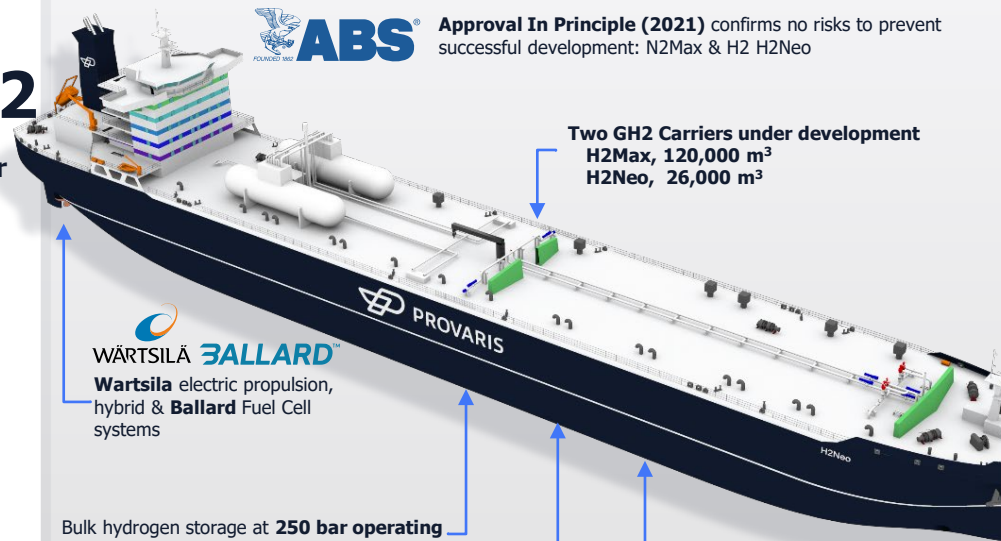
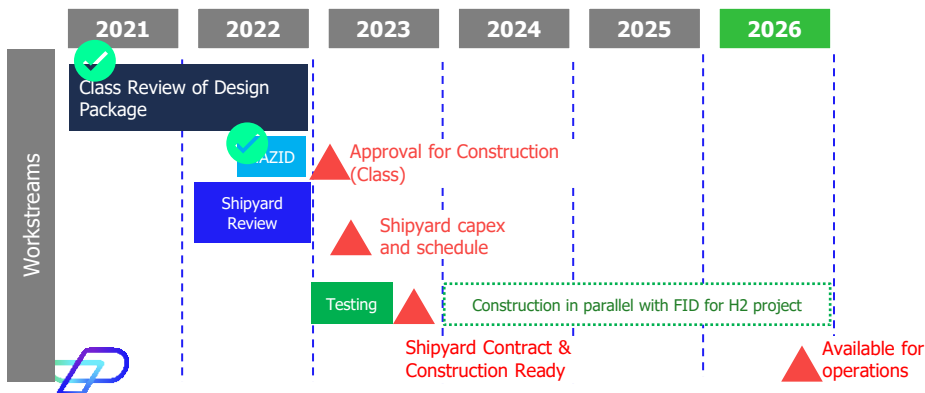
PROVARIS ENERGY LTD.

[www.provaris.energy](http://www.provaris.energy)

# Class Approvals on track for de-risking milestones in 2022

## Roadmap to low emission shipping through green fuels for power generation, including Fuel Cell and Hybrid integration

- Standard MR tanker hull form with a proprietary design for integrated tanks to store hydrogen at 250 bar pressure
- **Advanced development program in 2022**
  - > H2Neo Engineering design package, including risk and safety studies
  - > Material testing of welds for structural steel and liner materials in a hydrogen environment.
- Technical Partnership with Northern Marine to assist with construction, safety management systems and operational requirements for fleets.
- **Approval for Construction (Class) – confirmation imminent to support out timeline for operations in 2026.**



**Approval In Principle (2021)** confirms no risks to prevent successful development: N2Max & H2 H2Neo

Two GH2 Carriers under development  
H2Max, 120,000 m<sup>3</sup>  
H2Neo, 26,000 m<sup>3</sup>

**WÄRTSILÄ BALLARD™**  
Wartsila electric propulsion, hybrid & Ballard Fuel Cell systems

Bulk hydrogen storage at **250 bar operating pressure & ambient temp.**

Proprietary IP with **US Patent filed** on tank design

Maneuvering capability tailored to operating requirements, including **offshore loading**

**Northern Marine**  
Technical Partner

**CLARKSON'S**  
Ship Broker

**Integration with fixed jetty solutions** for both near and off-shore applications, accounting for storage, water depths, metocean, and geotechnical conditions (Illustrations are for Jurong Island, Singapore)



# Tiwi H2 strategically located to export markets in SE-Asia

- > Project announced October 2021 and completion of Scoping Study.
- > 100% Provaris Energy as developer
- > Concept Design Study (August 2022) confirms feasibility for an integrated compressed hydrogen production for 100,000 tpa export project
- > USD 4.5-5.2B project capex including fleet of H2Neo Carriers to support efficient and modular approach across two stage development
- > **Major Project Status awarded by Northern Territory** government and support from Australian Federal Agencies (Austrade)
- > Strong ESG credentials for project financing and government funding (examples include. CEFC, ARENA, NAIF)

**2.8 GW**  
**Solar Generation**

**up to 100,000 tpa**  
**Green Hydrogen**

**2027**  
**Target first export**

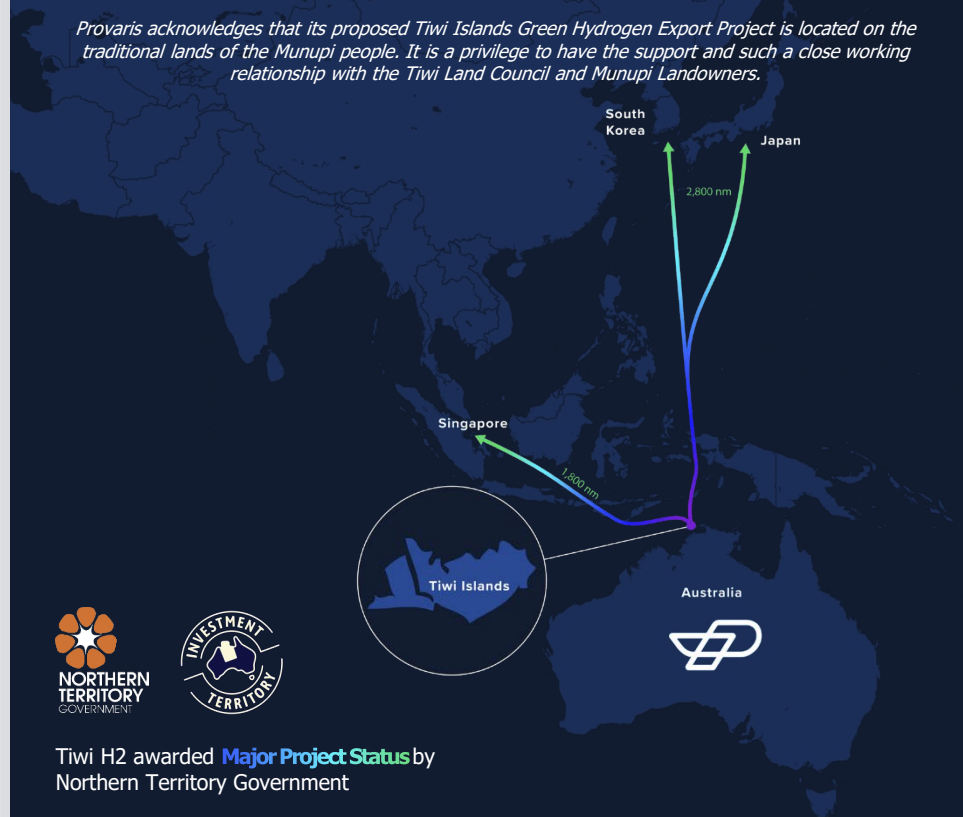
**~900,000 tpa**  
**CO2 Emissions Avoided**



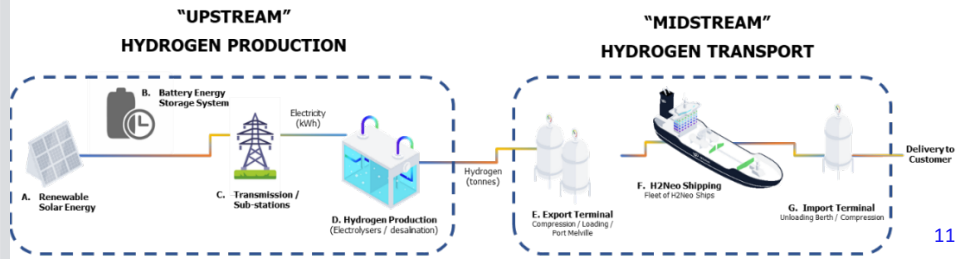
PROVARIS ENERGY LTD.

www.provaris.energy

*Provaris acknowledges that its proposed Tiwi Islands Green Hydrogen Export Project is located on the traditional lands of the Munupi people. It is a privilege to have the support and such a close working relationship with the Tiwi Land Council and Munupi Landowners.*



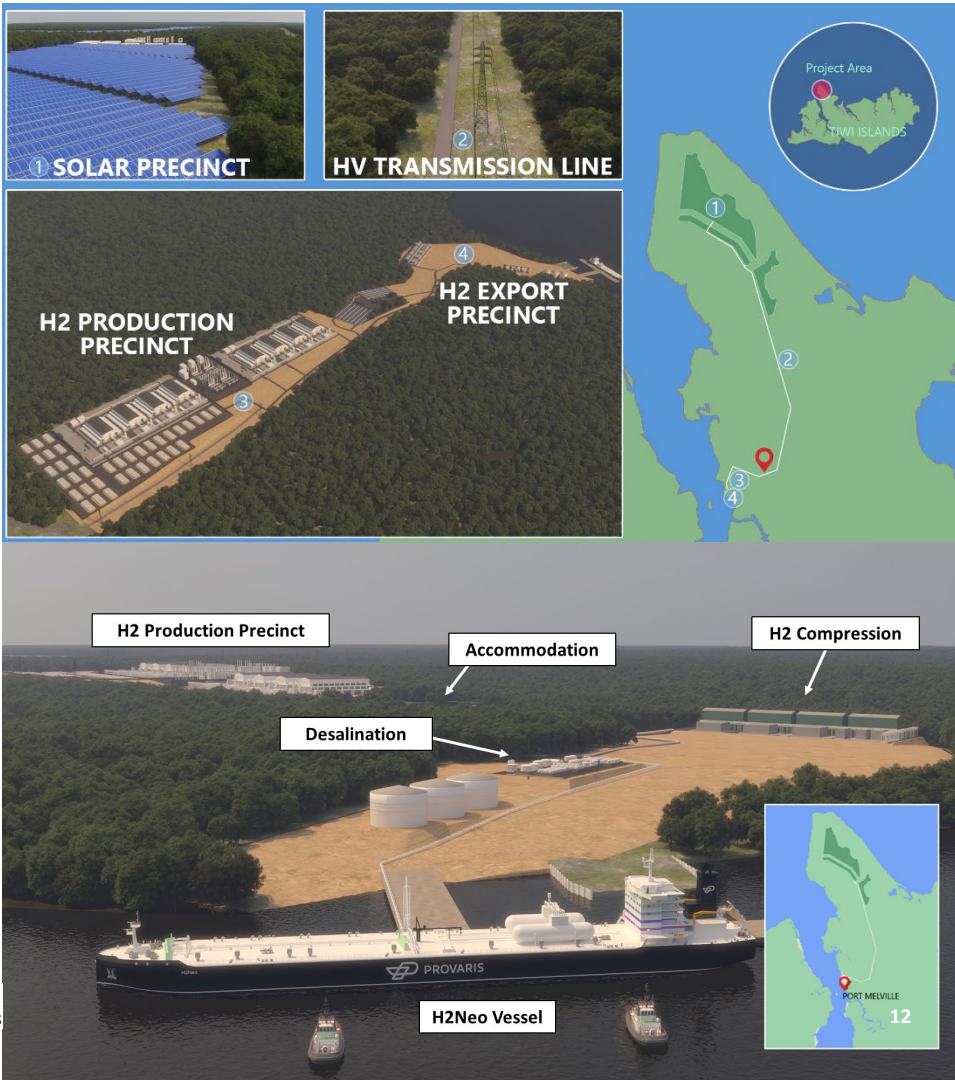
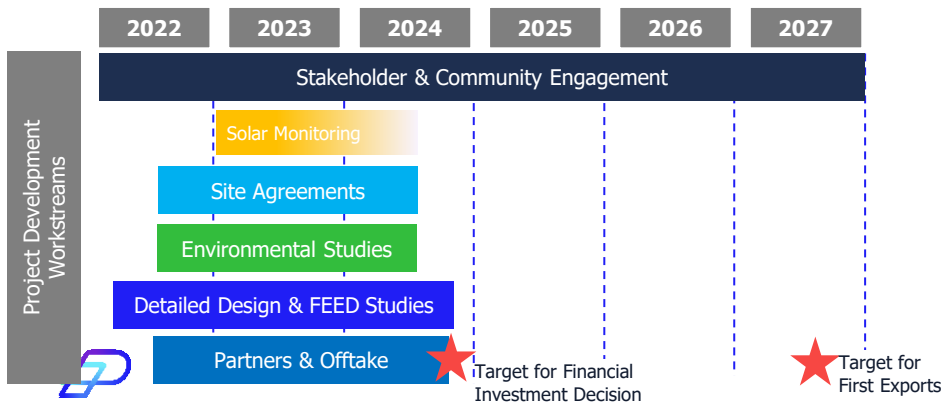
Tiwi H2 awarded **Major Project Status** by Northern Territory Government



# Tiwi H2 export project

## advancing into Detailed Design early works for EIS submission

- **Early works program underway to fast-track workstreams required for the EIS submission in 2023**
- Owner's engineering team appointed to advance detailed design of the Solar Precinct to a 30% design basis in 2023. Enables tender for EPC construction proposals.
- Advancing land and site agreements through Darwin-based team with strong Tiwi community relations.
- Commenced a process to introduce project equity and development partner.
- Valuable support provided from Austrade and DFAT for outreach programs to attract and engagement international partners.





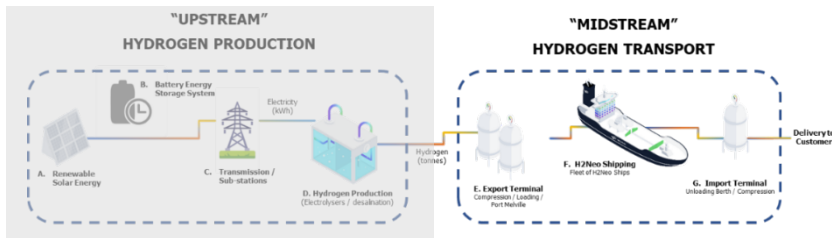
# Successful study for export of green hydrogen HyEnergy Project to Asia-Pacific



- HyEnergy Project targeting 550,000 tpa of green H2 for export
- Feasibility study to demonstrate the technical & commercial feasibility of compression using offshore loading solution for export to Asia-Pacific
- Scope for Provaris includes the export of 200,000 tpa from a Phase 1 with a focus on Singapore (Compression, shore crossing, subsea pipeline, offshore loading)
- Compression H2 solution is highly suitable given it supports scaled production, flexibility in loading, the project's proximity to markets, and

## OUTLOOK

- **Completion of final Knowledge Sharing awaiting acceptance and publication by the WA Government.**
- **HyEnergy has requested Compressed H2 be included into a Pre-Feasibility Study for the full project value chain in 2023**



NOTE: all illustrations are conceptual with final locations of all facilities to be determined by HyEnergy in future Feasibility Studies.



**This project receives funding from the Renewable Hydrogen Fund as part of the Western Australian Government's Renewable Hydrogen Strategy**



# 2023 milestones & outlook...

1

## H2 Shipping IP & Knowhow

- > **'Final' Class Approvals for Construction** final the H2Neo carrier
- > **Partnership with a Shipyard** for any future prototype design, testing and commissioning required
- > **Partnership with Shipowner(s)** and Financial Advisors on future contract, financing and construction

### NEW DEVELOPMENTS

- > **Launch of Compressed H2 Floating Storage** based on existing IP of GH2 carrier design
- > **Launch of next stage of development and Class Approvals for H2Max carrier** based on successful H2Neo approvals
- > **Assess & apply for suitable R&D funding schemes**



2

## H2 Production for Export

### TIWI H2

- > **Secure investment and/or Joint Development Partner(s)**
- > **Secure Offtake HOAs to progress to agreements**
- > **Completion of Detailed Design for Tiwi H2** in order to issue proposals to EPC for construction.
- > **Submission of EIS** for Territory and Federal approvals
- > **Assess & apply for suitable government funding schemes**

### NEW PROJECTS...

- > **Identification of Joint Development Projects** suitable for export projects suitable for Compressed H2

3

## H2 Marine Transport Services

### HYENERGY PROJECT

- > **Conclusions of WA funded Export Feasibility Report**
- > **Selection in the next stages** for integrated project feasibility studies

### EUROPE

- > **Secure Agreements for Provaris as mid-stream provider for a European based project(s)**
- > **Assess & apply for suitable R&D funding schemes**
- > **Development of strategic partner(s)** to accelerate deployment of midstream opportunities

[www.provaris.energy](http://www.provaris.energy)



ASX.PV1



@ProvarisEnergy



Provaris Energy Ltd.



Sydney, Perth, Oslo, Lisbon, Calgary



[info@provaris.energy](mailto:info@provaris.energy)

# Thank you

## Contact



**Martin Carolan**  
Managing Director  
[mcarolan@provaris.energy](mailto:mcarolan@provaris.energy)

