Quarterly Activities Report
September 2022

31 October 2022: **Provaris Energy Ltd (ASX: PV1, Provaris, the Company)** is pleased to provide the following update on the Company's development activities for the **quarter ended 30 September 2022.**

Highlights

TIWI H2 PROJECT

- Successful completion of the Conceptual Design Study in August, confirming the feasibility for an integrated 100,000 tonnes per annum compressed hydrogen (H2) production and export project.
- Awarded Major Project Status by the Northern Territory Government.
- Ongoing dialogue with stakeholders and government agencies related to the Referral Submission to the Northern Territory Environmental Protection Authority (NT EPA).
- Ongoing project stakeholder meetings, including on-country meetings with the traditional landowners (Munupi clan).
- Preparation for aerial survey, mapping and geotechnical work on the Solar PV Precinct.

HYENERGY EXPORT PROJECT

- Completion of Milestones 3 and 4, and submission of Milestone 5 reports to WA Government, as part of the WA Renewable Hydrogen Fund grant.
- Final deliverables under review with the WA Government include the Final Study Report and a public Knowledge Sharing Report.

SHIP ENGINEERING AND CLASS APPROVAL FOR THE 'H2NEO'

- ABS Class progressing to the final stages of FEED level review of H2Neo engineering and design.
- Completion of dispersion, fire, and explosion safety studies incorporated in the HAZID analysis and Class Approval milestones in 2022, followed by completion of a second HAZID analysis with ABS Class in Houston.
- Small-scale material and weld testing procedures ongoing for structural steel plate and stainless-steel liner.
- Class 'Approval for Construction' milestone on track for December 2022.

BUSINESS DEVELOPMENT ACTIVITY

- Announced Co-operation MOU with Total Eren for the development of compressed H2 supply chain opportunities identified for H2 markets in Asia & Europe.
- Advanced Compressed H2 Study for a full supply-chain transporting H2 from Morocco to a major Europe port targeted for green hydrogen distribution.
- Invitation and presentation at Gastech 2022 in Milan, followed by a European marketing trip to meet with industry stakeholders, technical partners and financial market groups in London and Oslo.
- Continued to qualify and progress opportunities reviewing compressed H2 as an alternative transport carrier into European markets. Multiple opportunities being qualified for H2 production from Norway.

CORPORATE

- Cash position of $9.7 million as at 30 September 2022.
- Provaris Norway AS and Oslo office opening held in September.

Provaris Managing Director and CEO, Martin Carolan, commented: *"Significant progress was made in the quarter with the delivery of a positive Design Concept Study and lodgment of our NT EPA Referral Submission, which is the result of over 6 months of development to position Tiwi H2 as the leading H2 export project in the Northern Territory.*

The release of our co-operation MOU with Total Eren during the quarter is the result of extensive technical and commercial due diligence on compressed H2 over many months and is supported by identified projects now at different stages of studies and joint marketing activity to position compressed H2 as a simple and competitive solution.

Our confidence in compressed H2 becoming a mainstream and commercial alternative for transport of H2 continues to grow with the key de-risking approval milestone on our shipping on track for December and a positive Concept Design study completed for the Tiwi H2 project."

CO-OPERATION MOU SIGNED WITH TOTAL EREN

During September, Provaris was delighted to announce a Memorandum of Understanding (**MOU**) with **Total Eren,** a leading French-based renewable energy Independent Power Producer ('IPP'), to further our co-operation on the development of green hydrogen projects in Asia and Europe where the application of Provaris' compressed H2 storage and transport supply chain can be applied.

The MOU is the culmination of almost 12 months of technical and commercial analysis of Provaris' compressed H2 carrier supply chain, which includes opportunities already identified to be assessed between Total Eren and Provaris for the feasibility of importing hydrogen into Europe and Asia using Provaris' compressed hydrogen supply chain.

Agreement includes the development of solutions that will meet the requirements of offtakers, port authorities, shipyards, and ship operators. Total Eren are developing a global portfolio of green H2 projects that include Chile, Morocco, Australia and Tunisia, with a focus on the H2 markets of Europe, Japan, Korea and Singapore.

Agreement provides Provaris with a key partner to facilitate and accelerate the delivery of the first fleet of Provaris' GH2 Carrier 'H2Neo', including investigation of a future financing scheme. It is also inclusive of a study underway with a port operator in Europe comprising the techno-economic analysis and preliminary engineering of a dedicated compressed H2 terminal which would connect to Europe's dedicated H2 backbone and salt caverns for storage.

Total Eren is a project partner in the HyEnergy export H2 project in relation to which Provaris is completing a feasibility study for the export of 200,000 tpa as compressed H2 for Asia.

TIWI H2 PROJECT, TIWI ISLANDS, NORTHERN TERRITORY

Provaris acknowledges that its proposed Tiwi H2 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 Munupi Clan and other key stakeholders.

The Company continued to advance its flagship green hydrogen export project (**Tiwi H2**) during the September quarter. Located on the Tiwi Islands, Northern Territory (NT), the Tiwi H2 project will develop an integrated compressed hydrogen export supply chain for up to 100,000 tonnes per annum, avoiding up to 1 million tonnes of CO2 emissions annually.

Focus for the September quarter, included:

- **Completion of a Conceptual Design Study.** Provaris announced the successful completion of the Study in August and will continue to advise shareholders of relevant details and outcomes as development activities progress. Highlights are set out below.
- **Major Project Status was awarded by the NT Government**, having significance and economic benefits to the Territory and the traditional owners of the Tiwi Islands.
- **EPA Referral consultation with all key stakeholders**, including the key findings and level of environmental impact to the Munupi Clan and Tiwi Land Council, along with Northern Territory and Federal Government agencies.
- **Preparation of an EPBC Referral submission to the Australian Federal Government's Department of Climate Change, Energy, the Environment and Water**. The EPBC Referral is the second of Tiwi H2's environmental assessment processes, with a decision expected in the December quarter 2022.
- **Pre-feed engineering of Solar Precinct:** Preparation for Aerial LiDAR and Imagery surveying to be completed in December quarter 2022, providing an accuracy of +/- 10cm elevation over the proposed Solar Precinct. Together with the geotechnical program scheduled for early 2023, such information will feed into the front end design work for the solar farm, sub-stations and transmission line.
- **Land Access:** Continued discussions with the Tiwi Land Council about the Tiwi H2 project and future commercial and partnership arrangements.
- **Project Partners:** Preliminary discussions with interested parties with a view to exploring a joint development or future development and ownership structures for the project.

Completion of Positive Tiwi H2 Project Concept Design Study

The completion of the positive Tiwi H2 Project Concept Design Study (**Study**) established a clear pathway for Provaris to progress the project forward to Pre-FEED and FEED level technical, commercial, and economic studies and consideration of potential financing options. The Study reinforced several observations and outcomes from the 2021 Compressed Hydrogen Chain Scoping Study undertaken by Provaris. Refer to the ASX Announcement made on 2 August 2022 for a detailed summary of outcomes and next steps.

In summary, the Study focussed on the technical parameters and estimated capital cost of the Tiwi H2 project and identified no material technical impediments to Provaris' ongoing progression of the Tiwi H2

project. Furthermore, the Study supported the merits of compression and the utilisation of Provaris' proprietary H2Neo carriers in transporting compressed hydrogen from the Tiwi H2 project to South-East Asian energy markets.

Figure 1: Illustration of Tiwi H2 project.

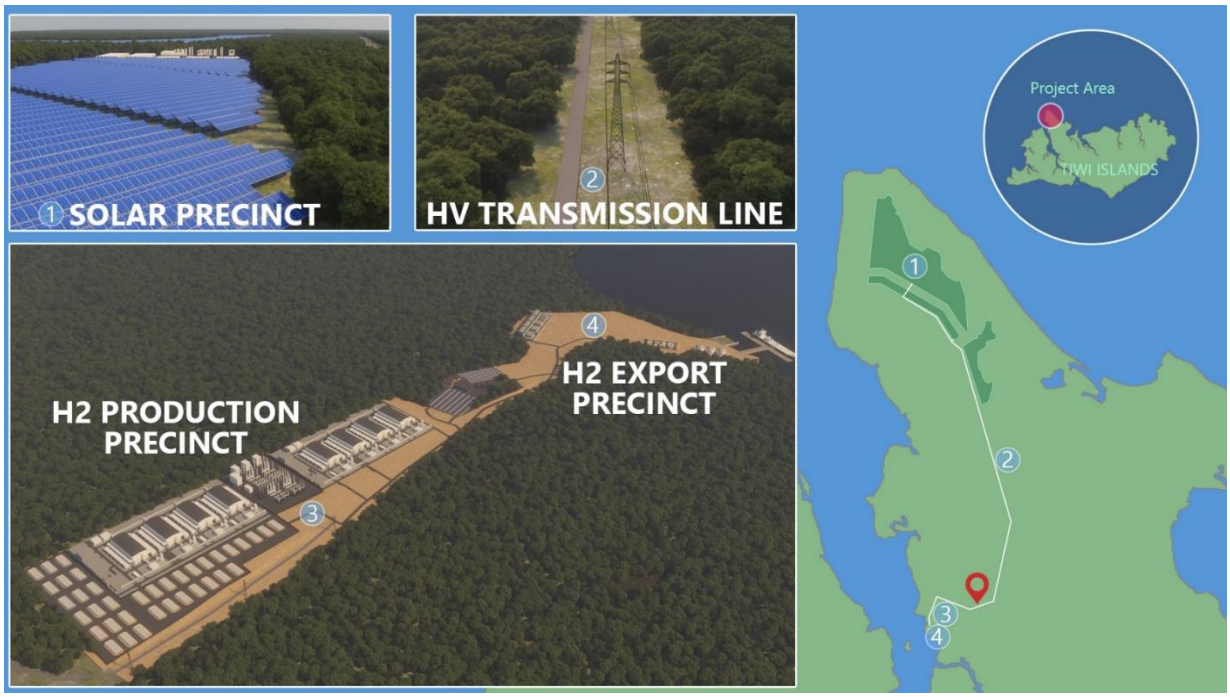
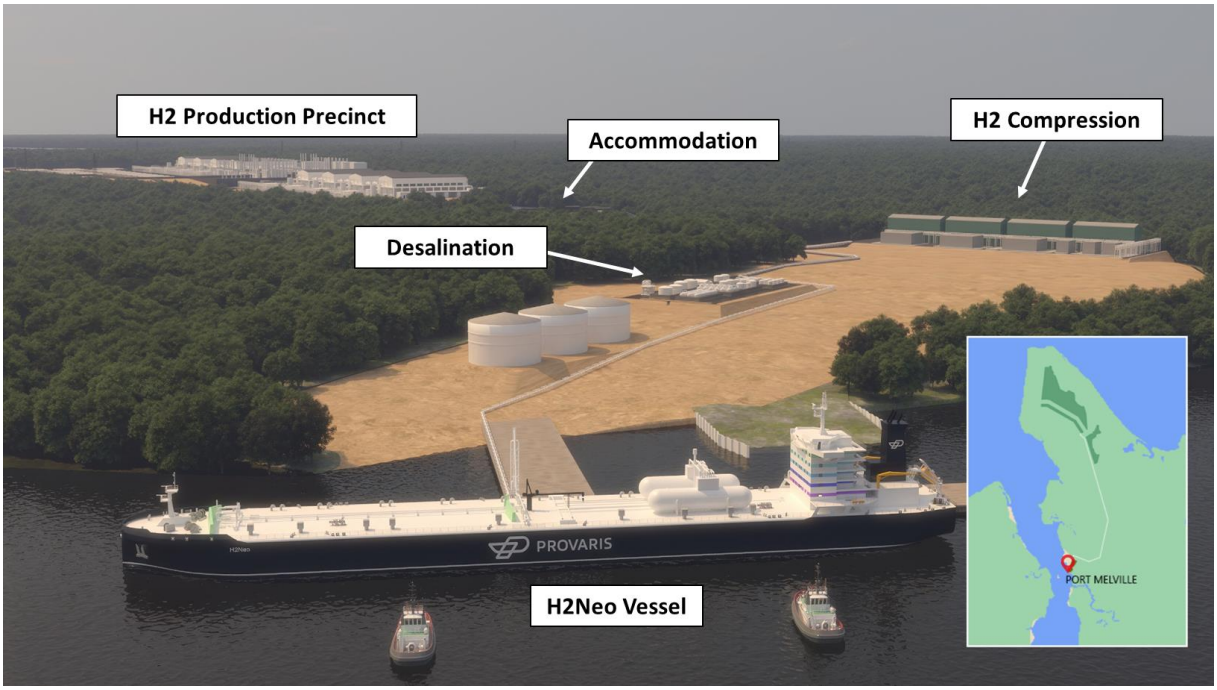


Figure 2: Illustration of H2 Export Precinct



Study highlights for the Tiwi H2 project include:

- Confirmation that the Tiwi H2 project is technically feasible for an integrated compressed hydrogen production and export project utilising proven technologies.
- First hydrogen production and export targeted for 2027, for an assumed 30-year project life.
- Total project capital cost estimate during construction is expected to be in the range of USD $4.5 to $5.2 billion, with ~70% of the project capital cost being non-compression related.
- Existing deep water port facilities and land access mostly cleared of native vegetation to save development time and capital.

- Solar intensity on Tiwi is competitive to produce green hydrogen, with the benefits of compression enabling "load following" of the variable hydrogen production profile, and thereby reducing additional requirements for battery and hydrogen storage.
- Compression requires only 1.0 kWh per kg, which represents only a 2.0% loss in hydrogen for export, with a small footprint of <2 ha required for compression facilities.
- Desalination has a minor impact on the cost of hydrogen with <1% in terms of capex, opex and energy use or a 0.2% loss in hydrogen for export.
- Proximity to markets benefits the delivered cost with respect to South-East Asian energy markets.
- Significant social and economic benefits to the Munupi landowners and the broader Northern Territory economy, with the identification of ~500 construction jobs and ~100 operational roles.
- 100,000 tpa of green hydrogen export could offset up to 1 million tonnes of CO2 emissions per annum across power generation, mobility and industrial applications.
- Strong ESG credentials for project financing and government funding given the alignment with both the NT and Federal Government targets for hydrogen export projects (examples include. CEFC, ARENA, NAIF).

NT EPA Referral Submission and Outcome

Subsequent to the quarter, the NT EPA advised the Tiwi H2 project will require an Environmental Impact Statement (EIS) with respect to the environmental assessment process.

The scope of the EIS will be subject to the Terms of Reference, with a draft version scheduled for December 2022, which will also reset the Tiwi H2 development schedule to reflect the timing of the EIS process. Further updates on the development schedule will be provided once the final Terms of Reference for the EIS are issued by the NT EPA.

Project Schedule – first exports remain a target for 2027

Preparation continues on the schedule of activities and timing for a decision to proceed to Pre-Feed level studies can now be aligned with the scope of the draft Terms of Reference scheduled for December 2022. The overall schedule will also be aligned with further permissions and consultation on commercial terms with the Munupi Clan (the traditional landowners) on Melville Island (largest of the Tiwi Islands and location of the Tiwi H2 project).

First exports remain a target for 2027, which would maintain the project's 'first mover status' for export of green H2 from Australia.

Key Activities for the Tiwi H2 project during the December and March quarters 2022 include:

- Ongoing referral consultation with all key stakeholders, including the key findings and level of environmental impact to the Munupi Clan and Tiwi Land Council, along with Northern Territory and Federal Government agencies.
- Engineering surveys and studies will continue to be undertaken (aerial survey followed by geotechnical program), mostly on-country, in line with the permissions granted to Provaris and as required to complete further detailed engineering activities.
- Prepare for and commence solar monitoring in two locations for a period of 12 months. Munupi Clan permission has been granted, with associated monitoring agreements with the Tiwi Plantation Corporation to be concluded in the December quarter of 2022.
- Receipt of the draft Terms of Reference for the EIS from the NT EPA during December.
- Receipt of outcome from the EPBC Referral lodgement with the Australian Federal Government's Department of Climate Change, Energy, the Environment and Water.
- Request for proposal and appointments of lead consultants in late 2022/early 2023 to commence front end engineering to support the proposed target of first H2 production and export in 2027.
- Ongoing discussions with strategic partners regarding offtake, investment, development, and future ownership structures for the project.

Figure 3: Illustration of H2Neo exiting the Aspley Straight, Tiwi Islands

HYENERGY EXPORT STUDY, WESTERN AUSTRALIA

In August 2021, Provaris entered a non-binding Memorandum of Understanding with Province Resources (ASX:PRL) and global renewable company Total Eren (together the HyEnergy Project partners) to support a technical and commercial feasibility study on exporting green hydrogen using compressed shipping from the 8 GW HyEnergy Project located in the Gascoyne region, WA, to nominated markets in the Asia-Pacific region.

The feasibility study is focused on a proposed phase 1 capacity of renewable energy generation for the export of 200,000 tpa of compressed H2 (out of a total of 550,000 tpa). The Study has received funding as part of the WA Renewable Hydrogen Fund (Round 2).

During the September quarter, Provaris completed Milestones 3 and 4, and submitted the remaining Milestone 5 reports to the WA Government, as part of the WA Renewable Hydrogen Fund grant.

Workstreams during the quarter included shipping cycle time analysis; design of shore-crossing and subsea pipeline to offshore mooring; review of port infrastructure options for Singapore and design of unloading terminal concepts; and final commercial modelling.

Final deliverables are now under review and awaiting completion. These include the Final Study Report and a public Knowledge Sharing Report.

As per the Financial Assistance Agreement executed with the WA Government, the outcomes of the Study Report are to be made available by the WA Government.

Figure 4: Overview of the HyEnergy Project to evaluate export using a using compressed hydrogen supply chain

Figure 5: Concepts for near shore unloading jetty for Jurong Island, Singapore

GH2 CARRIER – DETAILED ENGINEERING AND CLASS APPROVAL FOR THE H2Neo

Building on the June quarter, the **detailed Contract Design Package (CDP) has been completed for the H2Neo** (up from 90% complete in last quarter) and all engineering design documentation has been provided to ABS for their final review. Final work pages include the piping and instrumentation design for the cargo system (loading and discharging) that has been duly integrated into the H2Neo design. The cargo piping design has been performed with due consideration of various cargo handling simulations at load and discharge ports, including joint assessments with the process engineering team of a potential European receiving terminal.

The cargo piping design was developed in parallel with the gas dispersion, fire and explosion study that has been completed by ABS Consulting during the quarter. The **completed gas dispersion, fire and explosion study has**

verified the inherent safety in the design and identified some operational procedures that need to be included in the safety management system for the GH2 carriers.

A **second HAZID workshop was facilitated by ABS Class** during the quarter over three days in Houston, and attended by discipline experts within ABS' approval team and representatives from Provaris, Capilano (ship designer), Northern Marine (ship manager), and consultants engaged in the cargo containment and cargo handling system design.

ABS is now progressing a final FEED level review of the H2Neo design, covering the CDP, HAZID, and gas dispersion, fire and explosion study results, and has confirmed that they are on schedule to issue their approval letter by 1 December 2022.

Small Scale Testing at CFER Technologies is progressing according to schedule. The carbon steel tests have progressed to Phase B, with non-destructive evaluation of welds, whilst Phase A welding and testing is ongoing for the stainless steel liner material. Future tests are to be conducted in a high-pressure hydrogen environment.

During the quarter, CFER also completed a **report confirming the application of strain gauges to effectively monitor the integrity of the cargo tanks**. The report has been issued to ABS as part of their final review. CFER is further progressing their acoustic monitoring system, that can (if confirmed fit for purpose) be an option to strain gauges for cargo tank monitoring and / or applied as a secondary system.

An experienced major **Asian shipbuilder continues with their review of the CDP, confirming their ability and interest to construct the H2Neo,** and is currently in dialogue with local steel mills (to source carbon steel plates in compliance with the preliminary CFER testing results) and equipment suppliers to quote for the construction of H2Neo.

The de-risking milestone for Design Approval for Construction from Class for the H2Neo remains on track for December 2022. This milestone becomes an important catalyst to further technical qualification with third parties undertaking due diligence for selection of compressed H2 as a marine carrier in their H2 project development pathway.

BUSINESS DEVELOPMENT ACTIVITY

During the quarter Provaris has continued to promote the compressed H2 solution as a midstream solution for green H2.

In Asia, plans were made for a joint marketing road show in Japan and Singapore with Total Eren to be undertaken late October, along with Provaris' own marketing events in early November. Such road shows are increasing the awareness of compressed H2 as being a highly efficient and competitive alternative to liquefied hydrogen (LH2) and available to scale up from 2026/27 vs LH2 which is viewed as ready for the next decade.

In Europe, the focus has been on advancing preliminary scoping study level economics for projects in Norway that can take advantage of low cost renewable hydro power and develop H2 coastal export to opportunities given the limitation on grid connection in the country; whilst also a short shipping distance to the key import ports of Germany and Netherlands.

Norway is now demonstrating an increasing interest in regional H2 trade (400 to 1,000 nautical mile range), which is strategically in the 'sweet spot' for compressed H2. Norwegian exports to the EU will be very competitive on a near-term forecast LCOH basis. Renewable power projects seeking low-capex and scalable H2 export solutions (50 to 200 tonnes per day range) provide an ideal demonstrator project that can be fast-tracked given a very supportive Norwegian government for hydrogen production, local consumption, and export of clean energy. The EU has continued to introduce policy initiatives and investment support to accelerate the introduction of green hydrogen into the energy mix.

Opportunities in Europe can leverage the compressed H2 study underway for a full supply-chain transporting H2 into a major European port targeted for green H2 distribution, with the port owner being part of the consortium developing the dedicated H2 backbone and salt caverns for storage.

Figure 6: European Compressed H2 opportunities <2,000 nm

CORPORATE

During September management held a launch event of the Provaris Norway AS team and office, this included meetings with potential project partners who have announced the development of green H2 projects with export capacity, and a lunch event with our technical partners that included Ballard, ABS, and NOV, and also a number of Oslo-based investment banks and equity capital market participants.

Cash balance on 30 September 2022 was $9.7 million. Refer to the separately announced Appendix 4C for further details. Cash expenditure during the quarter was in line with the FY2022 approved budget, with total operational cash outflows of $1.8 million that includes corporate costs, project costs for Tiwi H2 and HyEnergy studies, and the completion of the H2Neo FEED level design package and Class approvals program.

The aggregate amount for payments to related parties and their associates included in item 6.1 in the Company's ASX Appendix 4C for the quarter ended 30 June 2022 is $418,000, comprising of fees, salaries and superannuation paid to Directors, including Executive Directors.

- END –

This ASX announcement has been authorised by the Board of Provaris Energy Ltd.

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About Provaris Energy

Provaris Energy (ASX: PV1) is the leading developer of integrated compressed hydrogen projects for export to regional markets. Our purpose is to develop green hydrogen supply chains that are simple and efficient to enable the global transport of zero-carbon energy.

Provaris is developing a portfolio of integrated green hydrogen projects, leveraging our innovative compressed hydrogen GH2 Carrier with a focus on value creation through innovative development that aligns with our business model of simplicity and efficiency.

The choice to support all of the development phases of a project is in line with Provaris' strategic desire to develop and invest in profitable hydrogen projects across the value chain, with a measured risk profile, and to retain an equity position of these assets over the long term.

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