PROVINCE RESOURCES LIMITED

ASX Announcement
(ASX: PRL)
2 March 2022

Completion of Scoping Study Allows HyEnergy™ Green Hydrogen Project to Move Forward

Highlights:

- **Completion of positive Scoping Study opens the way for Province and Total Eren (together "the Partners") to commence Pre-Feasibility Study**
- **Completion of the Scoping Study has also launched the commencement of negotiations on a Joint Development Agreement (JDA) between the Partners.**

Province Resources and Total Eren have completed the Scoping Study for their planned HyEnergy™ green hydrogen development in the Gascoyne region of Western Australia. Attached is a summary of the outcomes of the Scoping Study.

The completion of the Scoping Study marks a significant milestone in the development and allows the project to move into its next phase.

The Scoping Study found that thanks to the prevailing wind conditions and quality of the solar resource in the Gascoyne region, optimized configuration of wind turbines and solar farms would lead to a relatively high-capacity factor and electrolyser utilisation.

Development requirements which were part of the Scoping Study included solar arrays and wind turbines, transmission lines, electrical infrastructure, road works, electrolysers, batteries and hydrogen storage and administration buildings.

Province Resources signed a binding Memorandum of Understanding with Total Eren in April 2021 to work jointly on the Scoping Study and the Partners have now begun discussions on a JDA.

Total Eren is a global renewable energy Independent Power Producer ("IPP") with more than 3.5 GW of solar and wind farm assets in operation or under construction. Total Eren is circa. 30% owned by TotalEnergies, one of the world's largest energy companies.

Province and Total Eren have also executed a Memorandum of Understanding with Perth-based Global Energy Ventures (ASX:GEV) to study the export of green hydrogen to Asian markets using a compressed hydrogen marine supply chain, which is progressing well.

Province is continuing to progress the necessary licences and other approvals from the Western Australian Government to provide land access required for feasibility studies. This process includes consultation with the Yinggarda (Ingaarda) and Baiyungu native title holders, pastoralists, the Shire of Carnarvon and the broader Gascoyne community.

Province Resources Managing Director David Frances said it was exciting to have concluded the Scoping Study and to decide to undertake the Pre-Feasibility phase of the HyEnergy™ Project.

"The Scoping Study has helped further define the technical and other requirements for this project, allowing the commencement of more detailed work which will inform the development," Mr Frances said.

"This process has satisfied us that there is broad support for the HyEnergy™ Project from key stakeholders and given us great confidence as we keep moving forward with this development".

"Green hydrogen will play a significant role in enabling countries to meet their net zero by 2050 targets and the HyEnergy™ Project can be a major contributor to global supply."

In accordance with ASX and ASIC policy, the Scoping Study does not include any forecast financial information, including capital cost estimates, on the basis that there may not be a reasonable basis for including this information based on the preliminary nature of the Scoping Study. Province expects to be able to more accurately define these variables as part of the Pre-Feasibility phase on the HyEnergy™ Project.

Completion of this important milestone triggers performance milestones in the Class A Performance Shares issued to the original vendors of the HyEnergy Project (see ASX release dated 17 February 2021) and Class A Performance Rights issued to certain directors and staff during 2021. The Appendix 2 and cleansing notice follows.

This ASX announcement has been approved for release by Province's Board of Directors.

For more information contact:

David J Frances
Managing Director-CEO
david.frances@provinceresources.com

ASX Release – 2 March 2022

PROVINCE RESOURCES – HyEnergy™ PROJECT SCOPING STUDY

HIGHLIGHTS

- Scoping Study for the HyEnergy™ Project confirms the technical feasibility for an integrated green energy production project, using renewable power generated from the identified Gascoyne Resource.
- The Scoping Study is based on a 2 Phase Development:
  - Phase 1 – Construction and Operation of 4GW of Upstream Power Generation, using an optimized mix of wind turbine and solar arrays, transmission infrastructure and downstream hydrogen production facilities initially involving 2.6 GW of electrolysers with compression and storage. Phase 1 is also intended to include all common infrastructure as well as downstream hydrogen processing facilities such as ammonia production, liquefaction, compression, storage, pipeline injection. Downstream hydrogen processing facilities will be determined during the PFS and will be optimized to suit economic market demand for the products.
  - Phase 2 – Expansion of facility by a further 4GW of renewable power generation to support an additional 2.6GW of hydrogen electrolysers. Additional downstream hydrogen processing facilities will be included, again reflecting the market demand for the products in the future.
  - Province Resources' multidisciplinary in-house team addressed key areas including traditional owner engagement, government engagement, commercial agreements, technical development, environmental approvals and project risk management, supported by various expert consultants, supporting the development of the HyEnergy™ Project.
  - Province Resources signed a binding Memorandum of Understanding with Total Eren in April 2021, requiring the completion of the scoping study. The parties have begun discussions on a Joint Development Agreement (JDA).
  - Positive Scoping Study outcomes have supported the decision to move into a detailed Prefeasibility Study in 2022 targeted for completion in Q1 2023. This PFS will support future critical engagements and decisions moving the project forward.
  - Province Resources is a first mover in large scale green hydrogen production in Australia and continues to make meaningful strides in moving the project towards a reality.

SCOPING STUDY PARAMETERS – CAUTIONARY STATEMENTS

In accordance with the ASX Interim Guidance on reporting on scoping studies, the Scoping Study referred to in this announcement is a preliminary technical and economic study of the potential viability of the HyEnergy™ Project required to reach a decision to proceed with more definitive studies. It is based on low level technical and economic assessments that are not sufficient to support or to provide any assurance of an economic development case.

To achieve the range of proposed Feasibility Studies and potential project development outcomes indicated in the Scoping Study, additional funding (beyond the Pre-Feasibility Study stage) will be required.

Investors should note that there is no certainty that Province Resources Limited will be able to raise funding when needed. It is also likely that such funding may only be available on terms that may be dilutive or otherwise affect the value of Province Resources Limited's existing shares.

It is possible that Province Resources Limited could pursue other value realisation studies such as sale, or partial sale of the Project. If it does, this could materially reduce Province Resources Limited proportionate ownership in the Project.

Province Resources Limited has, concluded, that based on the results of the Scoping Study and strong market fundamentals there is sufficient degree of confidence to progress to the Pre-Feasibility stage, however, given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

HyEnergy™ PROJECT SUMMARY

BASIS OF SCOPING STUDY

The Scoping Study was compiled by Carnac Project Delivery Services (Carnac) using PRL supplied information, publicly available information and was supplemented by limited desk top studies. No additional engineering activities were carried out by Carnac.

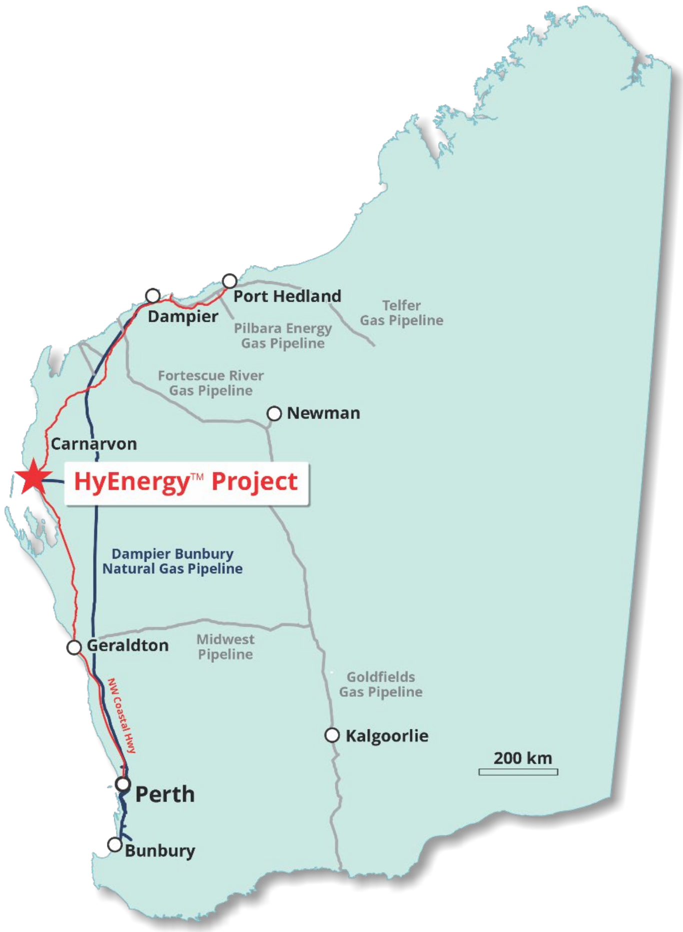
The work prepared in the Scoping Study covers the potential build out of the development from 8GW of renewable energy, though it is recognised that the project will be developed in phases.

PROJECT OVERVIEW

The HyEnergy™ Project (the Project) is a potential large scale green hydrogen project located in Western Australia's (WA's) Gascoyne Region. The location is as per Figure 1 – HyEnergy™ Location Plan.

With the Gascoyne Region's climate and wind patterns, the renewable energy resource is World Class and is expected to be an attractive and viable option. The Project site covers a flat lying, arid landscape with low intensity pastoral land use.

The renewable energy potential of the site is discussed further in – RESOURCE ASSESSMENT.



HyEnergy™ Location Plan

The Project is proposed to be a potential green hydrogen production project based on an ultimate 8 Gigawatt (GW) of renewable energy.

The project will potentially be developed in two phases, currently contemplated as each stage being 4GW of renewable energy. Project phasing to build out the development to full capacity will be determined during the PFS.

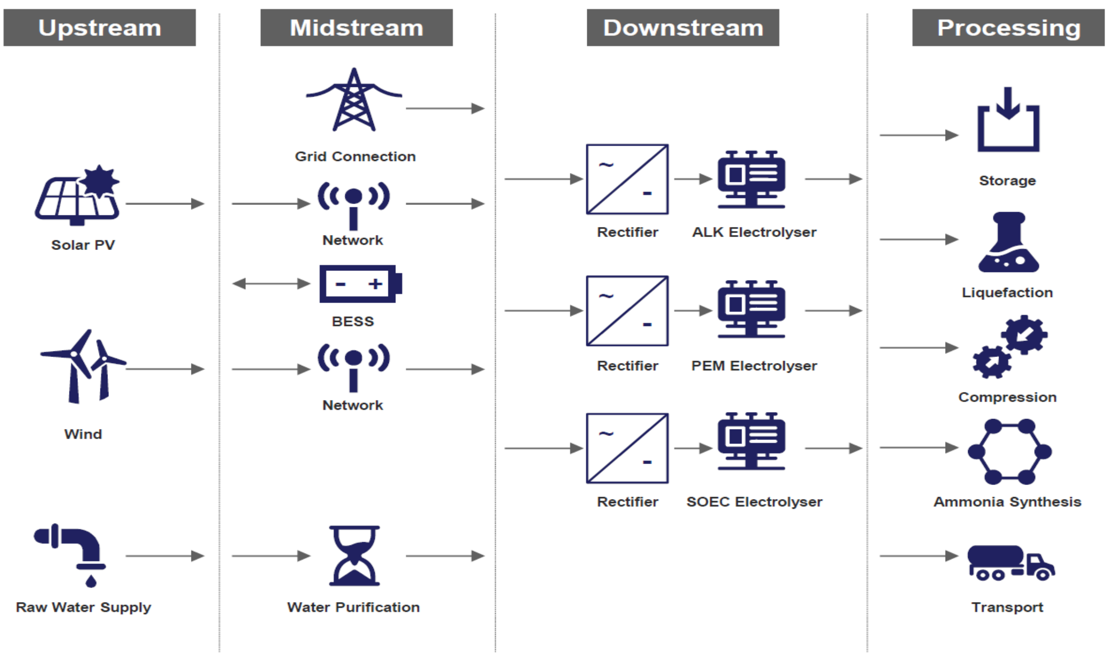
The intention is for the hydrogen to be available for the domestic market, including potential blending into the WA domestic gas network and other domestic applications, pending further technical studies, market conditions and offtake agreements. However, it is likely that export to overseas customers, primarily in South East Asia will form the core offtake.

Hydrogen Export options under consideration include Liquified Hydrogen, Compressed Hydrogen, Liquid Organic Hydrogen Carriers (LOHC) and Ammonia. Further studies are required during the PFS to identify the preferred solution(s).

PRL has executed a Memorandum of Understanding with Perth based company Global Energy Ventures to explore pressurised hydrogen export to South East Asian customers. The outcome of this work will be incorporated into the PFS workplan.

The Project aims to establish and expand WA's market share in global hydrogen exports and to contribute to decarbonisation of the Global and Australian economies.

The simplified pictorial description of the infrastructure and process flow proposed is shown in Figure 2 - Indicative Infrastructure and Process Flow. Hydrogen processing including options such as liquefaction and ammonia synthesis may occur as a later stage process, pending market demand for end-product.



PROJECT TENEMENT STATUS

PRL identified a world class renewable resource in the Gascoyne Region of Western Australia.

On 10th September 2021, PRL secured the first of its approvals with a Section 91 Licence granted for a site north of Carnarvon. The licence covers a 98.6 sq km site north of Carnarvon, known as the Town Common.

The Section 91 licence under the Land Administration Act allows the Company to begin environmental and other on-ground studies on site to support a broader feasibility study for the Project.

Discussions are also underway with the State Government, Traditional Owners, and Pastoralists over the broader area of the Gascoyne Region required to support the Project wind, solar and hydrogen production assets.

PRL is progressing discussions with the State Government and the Shire of Carnarvon on a long-term lease of the Town Common area.

RESOURCE ASSESSMENT

It is expected that the quality of the Gascoyne resource and advantage in shorter distance to markets relative to the Mid-West will be major competitive advantages in developing a successful project. The identified Town Common site north of Carnarvon for the HyEnergy™ Project will likely contain the production and some upstream generation assets.

Due to the prevailing wind conditions and quality of the solar resource, it is expected that the optimized configuration of wind and solar generated power will result in a relatively high-capacity factor and electrolyser utilisation compared to other proposed Western Australian projects.

A preliminary review of site met data has been undertaken, with data sourced from the Bureau of Meteorology Website. Data for average monthly solar exposure and average monthly 9am and 3pm wind speeds has been assessed. Comparison of the relative renewable resource potential of the Gascoyne to the Mid-West regions are as shown in Table 1 – Resource Overview.

Table 1 – Resource Overview

	Solar Average annual solar exposure (MJ/m*m)	Sunny Days	Wind 9am Average Annual Wind Speed (km/h)	Wind 3pm Average Annual Wind Speed (km/h)
Gascoyne (Carnarvon Airport)	22.08	96.0%	20.7	25.7
Mid-West (Geraldton Airport)	17.9	99.7%	18.8	24.2

Additional studies are required to fully characterise the resource, optimise the mix of wind and solar generation and determine capacity factor and utilisation factors for the downstream facilities which will be used primarily to size the electrolyser and associated utilities. More granularity in historical data is required (i.e. hourly mean wind speeds and solar exposure need to be assessed) to fully understand the resource.

Both mobile and static meteorological data collection assets will be deployed across the larger potential upstream generation area to fully assess the renewable resource.

For the purpose of this Scoping Study, the following assumptions have been made:

- 1,561 x wind turbines (5.6GW) distributed over most of the lease area
- 2.4GW Solar farm

The Project is proposed over a total land area of 771,174 Ha for the ultimate 8GW size. However, the total disturbance footprint for the Project will only constitute roughly 1.3% of this land to be occupied by physical infrastructure.

Due to the nature of the resource and mix of wind and solar, it is expected that there will be curtailed power at times of the day over seasons. Exploitation of this will be explored during the PFS to determine how value can be captured and used to enhance the project economics.

Options would include Battery Energy Storage Systems and the generation and storage of production water.

SCOPE OVERVIEW

It is assumed that all generation and production facilities will be located within an area of approximately 800,000Ha currently subject to Section 91 applications.

The Scope for the Ultimate Development includes:

- Power Generation Facilities
- Hydrogen Production and Storage Facilities
- Project Construction Facilities
- Downstream Facilities

POWER GENERATION FACILITIES

Wind Turbines (5.6GW-1,561 turbines)

Wind turbine technology is considered mature, with continuing advancement focused on increasing the size of turbines to further reduce their cost of power.

According to the Global Wind Energy Council, approximately 22,000 wind turbines (52 GW) were installed globally in 2017 (GWEC 2018).

Typically, turbines suitable for the HyEnergy™ Project would have a hub height of up to 135 m and have a rotor diameter of up to 127 m. Wind turbines typically have three blades and generate power between wind speeds of 3 m/s and 28 m/s. They can be designed to survive the strongest cyclones that would impact the northwest coast of Australia and have been erected in similar arid zone settings in other parts of the world.

Table 2 - Wind Turbine Assumptions

Wind Turbine Assumptions	
No. Wind Turbines Required	1,561
Rated power	3,000 / 3,500 / 4,000 kW
Rotor diameter	82m to 127 m
Hub height in meter	86 m to 135m
Wind class (IEC)	IEC IIA
WEC concept	Gearless, variable speed, single blade adjustment

Solar Arrays (2.4GW)

Solar PV technology is considered mature, with continuing advancement focused on increasing panel efficiency and reducing project costs. Solar arrays typically have a capacity of around 200 kW, and they are combined in large numbers together with inverters to create large solar PV farms. Large solar farms are being developed around the world with multi-GW projects already under construction.

For the HyEnergy™ Project, solar arrays to generate a peak power load from 2.4 GW of Tier 1 solar panels, mounting structures, inverters and transformers with DC and AC cabling.

Figure 3 - Typical Large Scale Solar Array

BESS

Batteries complement generation from intermittent sources like wind and solar farms because they allow fast reaction and storage times. South Australia recently commissioned the world's largest lithium ion battery, the Hornsdale Power Reserve (Refer to Figure 5 - South Australian Hornsdale Tesla Battery Installation) which has a total capacity of 100 MW / 129 MWh. Similar projects at larger scales are now being developed and installed around the world.

Technology and cost breakthroughs in the last decade mean that batteries are rapidly becoming a regular feature of modern power grids. Large batteries are now being deployed to cost-effectively help manage power flows and quality.

For the HyEnergy™ Project, a BESS may add value to:

- Provide base load power for critical systems
- Provide base load power to electrolysers to keep them hot when in turn down mode

Figure 4 - South Australian Hornsdale Tesla Battery Installation

Power Generation Supporting Infrastructure

- Transmission Lines to hydrogen production site boundary
- Electrical Infrastructure such as substations, inverters, rectifiers etc

HYDROGEN PRODUCTION FACILITIES

Hydrogen Electrolysers (5.2GW)

A selection between PEM, Alkaline and Solid Oxide Electrolyser Cell technology will be required during the PFS phase. Life cycle costs of the technologies will need to be assessed.

PEM electrolysis are likely to consist of 2MW stacks built into modules. The size of modules is likely to be dictated by logistics constraints (transport by ship to nearest port, road transport to site), so is likely to consist of 5 stacks per module for a 10MW unit.

Preliminary sizing of hydrogen production unit for the purpose of capital cost estimate and for sizing of associated facilities is as follows:

Total Electrolyser Capacity	5.2 GW
Utility Systems Load (15%)	780 MW
Number of 2MW Stacks	2,600 stacks
Number of modules	520 modules
Production at 100% Uptime	782,000 tpa
Predicted hydrogen production	550,000 tpa
Average daily production	1,500 tpd
Capacity Factor Range	60% to 75% (to be determined during PFS)

For reference, the hybrid (wind + solar) capacity factor for the Asian Renewable Energy Hub is claimed to be 70%. For the HyEnergy™ Project, it is currently believed that the Gascoyne has a similar quality solar resource but a superior wind resource.

Process Water Production Facilities

It is assumed that process water will be produced by reverse osmosis most likely using sea water. Locations for the intake and outfall locations are yet to be determined and are subject to future technical, environmental and cultural studies though it is likely that it will be north of the Carnarvon Town on the coast and in the vicinity of the Town Common area.

There are numerous examples of successful desalination plants operating in Western Australia in sensitive habitats. Reverse osmosis represents mature technology which is well understood and has low risk.

Key considerations are most likely to be environmental approvals associated with water sources, outfall / disposal, ground disturbance, shore crossing, sea-bed disturbance and associated impacts.

There are two major desalination projects operated by Water Corporation in the Perth Metropolitan Area in Kwinana (144 Ml / day) and Binningup (300 Ml / day) with intake and brine outfall both to the ocean. A further large-scale plant is under development in Alkimos.

If required, further demineralisation and purification to meet the electrolyser process water specifications can be carried out either on a module basis or on a unit basis where multiple smaller modules comprise a production unit. Economies of scale can be achieved using larger modules however operational flexibility needs to be considered (electrolyser turn down and maintenance) so ultimate configuration (stacks per module and modules per process unit) will be determined and optimized during the PFS Phase.

Water storage will be required to ensure a consistent and reliable supply of process water to electrolysers and this may also help with exploiting peak power demand from Upstream generation.

Table 3 - Desalination Plant Assumptions

Desalination Plant Assumptions	
Water Requirements	10 litres of water per kg of Hydrogen
Peak Water Requirement	22,500 tpd (22.5 Ml per day)
Average Water Requirement	15,000 tpd (15.0 Ml per day)

Hydrogen Storage

Hydrogen most likely will initially be stored in high pressure containers, irrespective of ultimate end use.

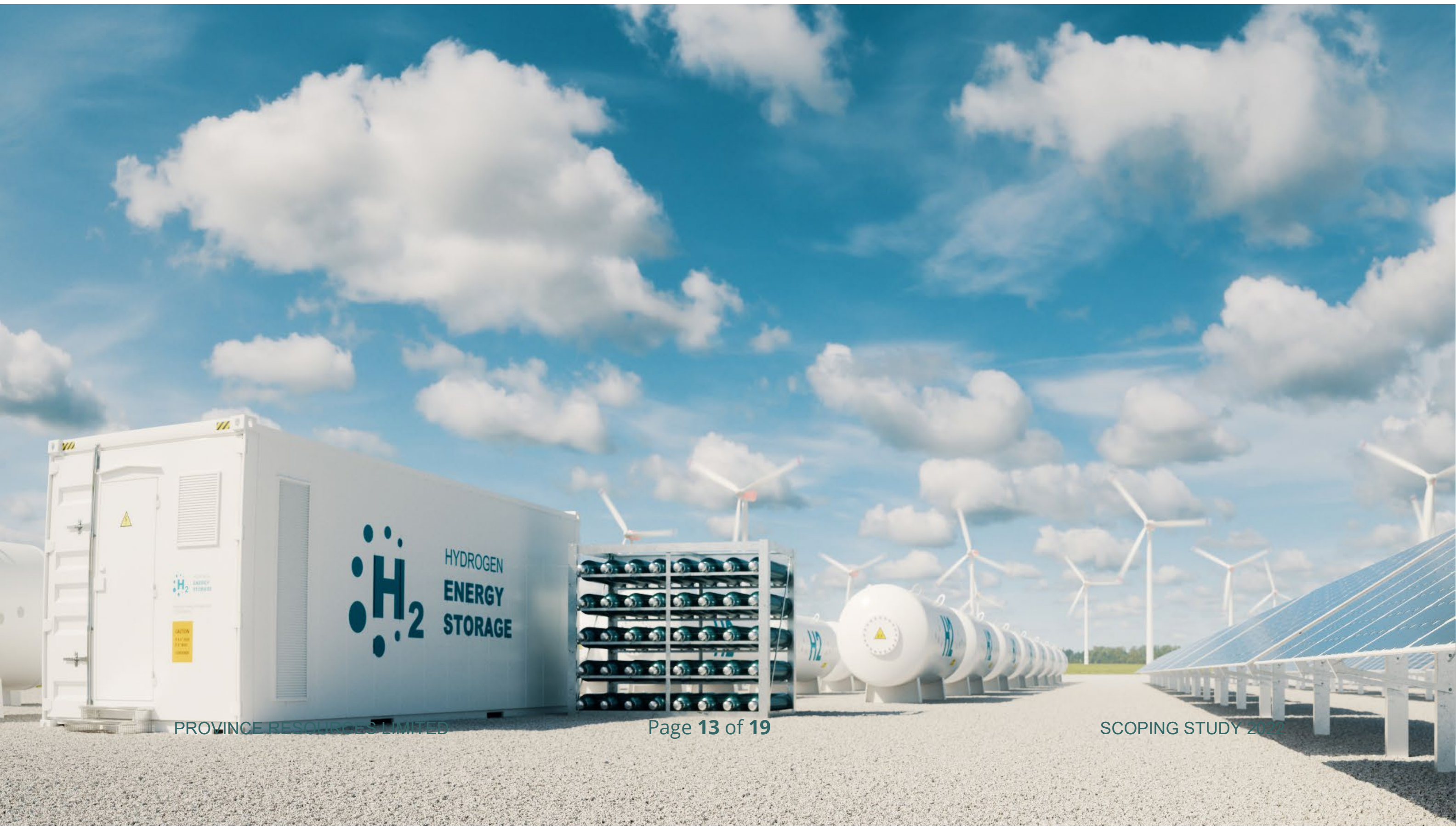
This will provide a buffer for further downstream facilities to ensure a constant and predictable hydrogen feed rate that will not be impacted by hydrogen production and intermittency of renewables upstream.

Studies are required during PFS to determine optimum storage requirements. It will ultimately be dictated by offtake frequency and volumes.

A MoU has been signed with Global Energy Ventures to assess compressed hydrogen shipping options to nearby South East Asian Markets. Studies are underway by GEV and input into the PFS will be required to determine optimal storage configurations.

Direct pipeline injection of hydrogen into the Dampier to Bunbury Natural Gas Pipeline will require little in the way of storage and additional compression

Buffer zones will need to be explored during PFS to ensure ALARP outcome for overall project risk profile.



DOWNSTREAM FACILITIES

Downstream Process Infrastructure (Ammonia Production, Liquefaction Plant)

Downstream processing will be explored as value enhancement opportunities for the Project.

These could be done as part of the initial development where required to provide commercially attractive marketable outputs, or for future consideration where appropriate. These may be carried out as part of the PFS.

Some options to be considered will include:

- Ammonia Plant
- Liquid (Cryogenic) Hydrogen
- LOHC's

Domestic Export Facilities (Truck Loading, Connection to DBNGPL, Metering Facilities)

Some domestic export options will include:

- Connection to Dampier to Bunbury Natural Gas Pipeline
- Export via trucked tube trailers
- Coastal carriers using GEV High Pressure H2 ships (under development)

STATEMENT OF REQUIREMENTS

This section sets out the Statement of Requirement for the HyEnergy™ project. These are the assumptions to be carried forward into the prefeasibility study work.

UPSTREAM INFRASTRUCTURE

This includes the upstream wind and solar renewable energy generation infrastructure required to support hydrogen production.

Table 4 – Upstream Infrastructure

	Phase 1	Phase 2	Total
Total Generation Capacity	4,000MW	4,000MW	8,000MW
Wind Farm Generation Capacity	2,808MW	2,812MW	5,620MW
Number of Wind Turbines	780	781	1561
Solar Farm Generation Capacity	1,200MW	1,200MW	2,400MW

DOWNSTREAM INFRASTRUCTURE

This includes the electrical power distribution network, water purification plant and if required a back-up power supply such as a Battery Energy Storage System (BESS).

Table 5 - Downstream Infrastructure

	Phase 1	Phase 2	Total
Hydrogen Electrolysers	2,600MW	2,600MW	5,200MW
BESS*	120MWh*	120MWh*	240MWh*
Water Purification (Seawater Reverse Osmosis)	450m3/hr (demineralized water)	450m3/hr (demineralized water	900m3/hr (demineralized water)

* - Requirement for backup power supply will be studied during PFS, dependencies include electrolyser type and operating mode, utilisation, and capacity factors of overall system design.

APPROVALS

A full list of approvals, requirements and a schedule will need to be developed during the PFS phase. Due to the emerging framework for green hydrogen in Australia, fluidity in the development of approvals is to be expected and this will need to be factored in. A preliminary assessment is given below:

Table 6 - Primary Approvals

Proposal Activities	Land Tenure/Access	Type of Approval	Legislation Regulating this Activity
Access to Crown Land for feasibility purposes	Land Administration Act 1997 - Section 91 Licence	Licence	Land Administration Act 1997
Option to Lease for proposed project footprint.	Land Administration Act 1997 - Section 88	Option to Lease	Land Administration Act 1997
Construction and operation of accommodation camp and other buildings	Land Administration Act 1997 - Section 79 Lease	Building Licences	Local Government Act 1995
Construction and operation of prescribed premises	Land Administration Act 1997 - Section 79 Lease	Works Approvals and Operating Licences	Environmental Protection Act 1986 (Part V)

Table 7 - Decision Making Authorities

Decision Making Authority	Relevant Legislation
Minister for Lands	Land Administration Act 1997
Minister for Environment	Conservation and Land Management Act 1984 Biodiversity Conservation Act 2016
Chief Executive Officer, Department of Biodiversity, Conservation and Attractions	Conservation and Land Management Act 1984
Minister for Energy	Electricity Industry Act 2004
Minister for Aboriginal Affairs	Aboriginal Heritage Act 1972
Minister for Water	Rights in Water and Irrigation Act 1914
Chief Executive Officer, Department of Water and Environmental Regulation	Environmental Protection Act 1986
Chief Executive Officer, Shire of Carnarvon	Health Act 1911 and Health (Treatment of Sewerage and Disposal of Effluent and liquid Waste) Regulation 1974 Planning and Development Act 2005
Minister for Local Government	Local Government Act 1985
Chief Executive Officer, Economic Regulation Authority	Electricity Regulation Act 2004
Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety	Dangerous Goods Safety Act 2004

ELECTROLYSER CAPACITY AND TECHNOLOGY SELECTION

A selection between PEM and Alkaline electrolysis technology will be required. Some factors to be considered are included in Table 8 - Comparison of PEM and Alkaline Electrolysers. A complete analysis will be required to determine optimal electrolyser selection for the project considering complete lifecycle costs.

Table 8 - Comparison of PEM and Alkaline Electrolysers

Parameter	Comment
Capital Cost	Alkaline Electrolysers currently are a lower capital cost than PEM. Alkaline electrolysers are likely to have a higher requirement from a BESS as they do not have the turn down capability of PEM electrolysers
Power Requirements	PEM electrolysers are better suited to renewables as they have a wider operating range.
Opex and Maintenance	The alkaline electrolyser has a lower hydrogen output pressure increasing the cost for hydrogen compression. Alkaline electrolyser stacks will require a complete replacement at least once over the 25-year life. PEM Electrolysers will require major maintenance on a 7 year interval.
Utilisation	The PEM electrolyser operating range is wider resulting in higher utilisation and Capacity Factor from available power
Land Footprint	The alkaline system will require additional land for the electrolyser building due to increase in electrolyser footprint
Utilities	The alkaline system will require much larger quantities of nitrogen for shutdown/standby operation overnight resulting additional utility demand and an impact on OPEX.

STORAGE AND LOADING

Options include

- High pressure storage as a buffer between production facilities and communities
- High pressure storage for loading onto ships or injection into domestic pipelines
- Liquefied Hydrogen Storage for overseas export via ships or domestic export via road
- LOHC's for overseas export
- Ammonia Storage and Loading facility

SCHEDULE

A draft summary schedule has been prepared and is presented in Figure 7 below.

The critical path is assumed to be the supply and installation of the 780 wind turbines required for Phase 1 of the Project. The installation of mid-stream hydrogen production infrastructure could be phased over this period to permit early project start-up and ramping up to full production capacity over several stages.

The Schedule is indicative only. Province confirms that there are many factors that may contribute to delay in the Schedule (both internal and external).

HyEnergy™ PROJECT – PHASE 1 SCHEDULE

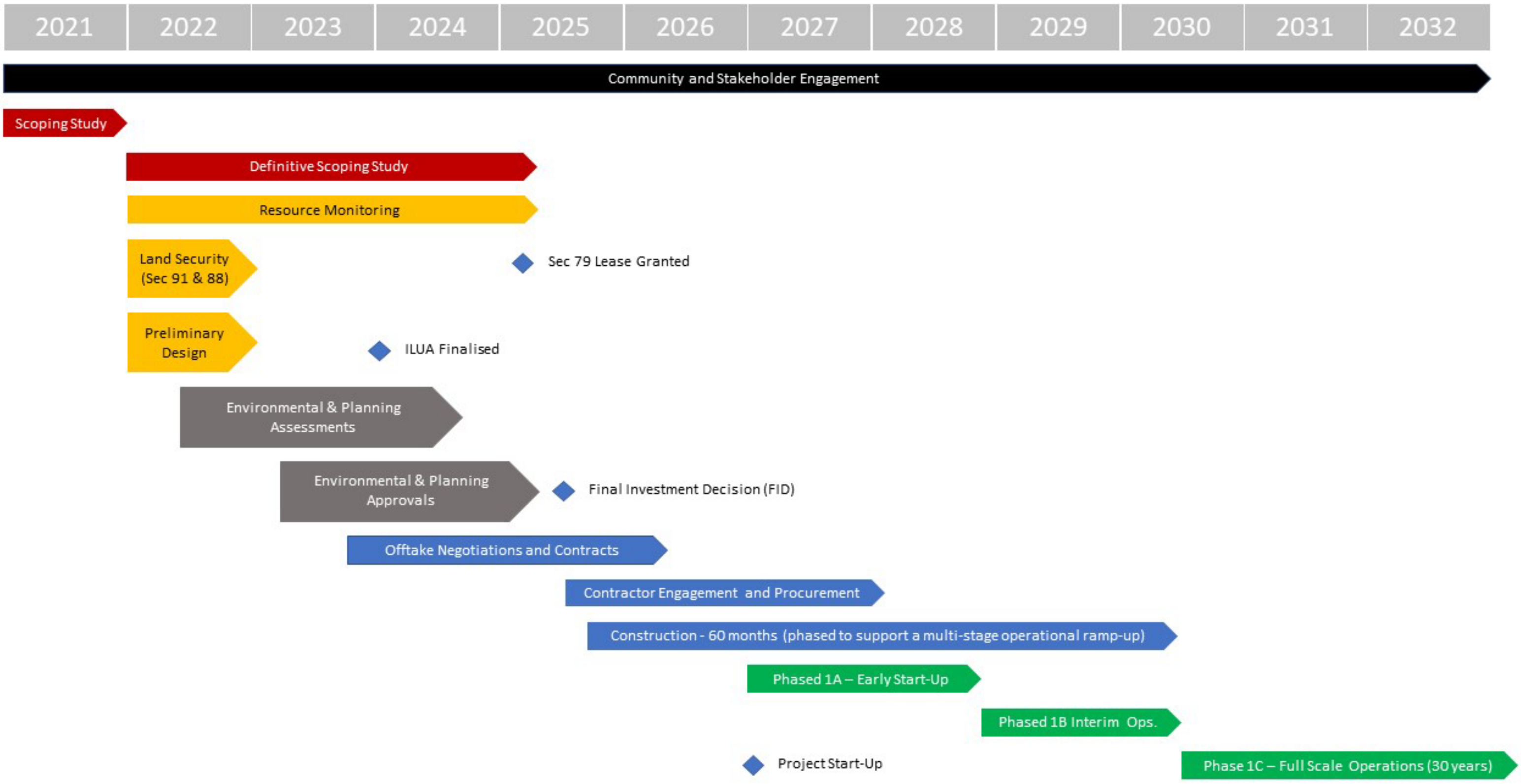


Figure 5 - Schedule