



Shipping Solutions for the Energy Transition

Compression | Simplicity | Efficiency

Quarterly Activities Report | June 2021



Global Energy Ventures Ltd (ASX: **GEV**, the **Company**) is pleased to provide the following update on the Company's development activities for the quarter ended 30 June 2021.

HIGHLIGHTS

- **Strategic review undertaken for the marine CNG business model and business development opportunities for the gas markets of Brazil; the Americas; and the Middle East and Northern Africa (MENA) region. The pipeline of CNG opportunities total ~1 BCF/day requiring a fleet of over 20 CNG ships.**
- **Commenced the development of a pilot scale compressed hydrogen (C-H2) ship for operation by the mid-2020s.**
- **MOU signed with Wärtsilä to design and develop sustainable propulsion systems for the C-H2 ship that can utilise future carbon-neutral fuels, including compressed hydrogen.**
- **Qualification and screening of several business development opportunities for the C-H2 supply chain. Includes the identification of a suitable site for GEV's own renewable hydrogen production and export facility.**
- **MOU signed with ILF Consulting Engineers in Germany for the identification and development of hydrogen projects in Europe and Australia.**
- **Agreement secured with a US energy merchant for gas supply and transportation of up to 200 MMscf/d over 20 years to support an economic export of US natural gas using a CNG supply chain.**
- **Appointment of key management positions, including Martin Carolan as Managing Director and CEO, with Maurice Brand stepping back to Non-Executive Chairman.**
- **Implementation of a globally recognised reporting platform for an Environmental, Social and Governance (ESG) framework.**
- **Cash position of \$6.5 million continues to fund the Company's planned program for the next 12 months.**

Martin Carolan, Managing Director and CEO commented: *"Building upon the successful foundations of a compressed hydrogen supply chain developed in the previous two quarters, the Company has now commenced an accelerated timeline for a pilot scale C-H2 ship to be fully approved and construction ready by the end of 2022. Our confidence continues to grow in our approach to a low-cost, modular solution for the establishment of a marine transport solution for hydrogen, and positioning GEV in the enviable position of being first to market.*

We look forward to outlining our plans for the development of a C-H2 project in the September quarter and exhibit the benefits of C-H2 and the timeline for commercialisation.

We are also pleased to have made progress on our CNG business development program with new objectives set for the remainder of 2021. While material progress remains contingent on the decisions of our counterparties, the opportunities remain material and can still generate value to the shareholders."

CNG OPTIMUM - REVIEW OF COMMERCIALISATION ACTIVITY AND PLANS FOR 2021

The Board and Management team remain fully committed to the commercialisation of a marine CNG supply chain. The engineering and approvals of the CNG Optimum ship is advanced to the point of being 'construction ready' and the integration with technical partners for loading and unloading provides the Company with a solution that has been accepted by the engineering and shipping departments of major energy companies.

What remains outstanding is a binding agreement with a customer to integrate marine CNG within a major gas development project. This is despite our conviction that CNG remains technically feasible, commercially sound and delivers economic returns to all stakeholders in the value chain, including GEV.

Management remains confident there is still a role for CNG in the future of gas markets globally, this is evidenced by its increasing share of energy usage globally and a strong commodity price forecast. Energy majors are also sitting on proven assets that require monetisation options outside of the traditional LNG model.

During the June 2021 quarter, GEV management undertook a detailed review of the marine CNG business model and development opportunities that remain open and at various stages of negotiations or discussions with bankable partners, and new recommendations and strategies will be put in place to position GEV for success.

The scale of the qualified CNG opportunities are all material in terms of gas volumes to support stand-alone projects, and while we are unable to disclose further details of each opportunity, the cumulative volume of gas to be transported across the four regions totals ~1 BCF/day translating to a fleet of over 20 CNG ships.

The outcome from this review has reinforced the key benefits of marine CNG and its relevance in the new era of the Energy Transition, which will involve new challenges in developing gas fields.

Benefits of Marine CNG to the Energy Transition

Material reduction in emissions compared to an LNG supply chain over regional distances

Replaces upfront capital investment with a modest shipping tariff

Minimal fixed infrastructure with the CNG fleet being ~75% of project capex

Ships can be redeployed at the end of field or project life or change in market conditions

Challenges for natural gas going forward

New 20-year term investments in LNG offtake are becoming increasingly challenging

Underdeveloped and stranded gas reserves will become increasingly difficult to commercialise without consideration for CO2 offset solutions

Management makes the following update on each of the focus regions for CNG for 2021.

- **MENA Region:** Discussion remains ongoing for a commercial framework to be agreed in 2021. The opportunity involves a large existing gas producing field, large export volumes, short distance to market, technical acceptance of CNG by the operator and an acceptable project rate of return. Approval of CNG is required by senior management to see this progress as an alternative to pipelines.
- **Brazil:** Significant technical and commercial feasibility completed over 2019/20. Offshore Brazil is uniquely suited to CNG. Transportation fees are commercially attractive as an alternate solution to deepwater pipelines. Communication continues with one in-country producer and operator of offshore fields, with GEV awaiting further details of a multi-field offshore development planned by the operator.
- **US Gulf Coast:** During the June quarter, GEV secured an agreement with a US energy merchant for gas supply and transportation of up to 200 MMscf/d over 20 years. Together with pipeline access to an offshore site for CNG export, GEV now has the support for an economic export of US natural gas using a CNG supply chain. A fresh approach to gas markets will be to secure partnerships for the regional markets of interest to

jointly develop gas markets that include Mexico and Central America for new “power purchase agreements” and “request for information” pending in the region during 2021/22.

- **Other Regions:** Management to revisit proposals delivered in 2020 that were deemed compelling, however did not fit with the strategic focus of the resource owner at the time of submission. CNG business model review will include concepts of potential CO2 capture within a supply chain solution while also focussing more on a solution that delivers a reduction in emissions that resource owners are now under more pressure to address in future development proposals for gas monetisation.

COMPRESSED HYDROGEN (C-H2) SHIP & SUPPLY CHAIN

The June quarter continued to see the advancement and marketing of the Company’s C-H2 ship and supply chain, which is targeting to become the first bulk carrier of hydrogen at scale, globally. Compressed hydrogen provides a unique supply chain solution that is low cost, simple and efficient, that includes the development of valuable IP without significant technical barriers to be resolved.

Development commenced for a pilot scale C-H2 Ship for operation by the mid-2020’s

During the quarter, GEV commenced the development of a pilot scale C-H2 Ship with a cargo capacity of 430 tonnes of hydrogen. The addition of a pilot scale C-H2 ship will:

- Align with the scale, timeline, and downstream market opportunities for green hydrogen projects under consideration, both here in Australia, as well as, in Asia Pacific and Europe.
- Reduce overall development risk, capital, and construction schedule, and
- Enable GEV to achieve its target of an operating fleet of C-H2 vessels by the mid-2020’s.

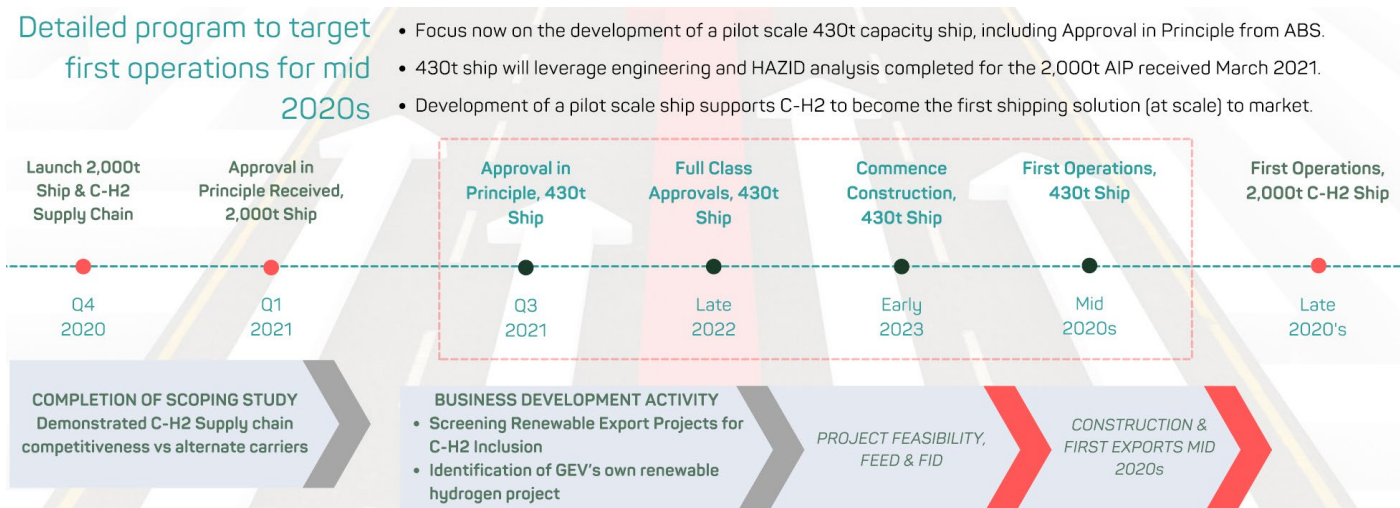
The development program will target American Bureau of Shipping (ABS) Approval in Principle (AIP) for late in Q3 2021 and Full Class Approval late in 2022. GEV is also supported by the appointments of Capilano Maritime, C-FER Technologies, Tekara Project Services and American Bureau of Shipping who worked with GEV to successfully achieve AIP for the 2,000-tonne C-H2 ship in March this year.

GEV’s successful design and development strategy for the 2,000-tonne ship proved that large scale C-H2 ships are possible and paved the way for the development of a pilot scale version, with the completed engineering and HAZID analysis to be transferred to the 430-tonne program to reduce cost and schedule.

The 430-tonne ship is an ideal size to meet the requirements of an emerging industry and ensure the Company can establish a commercial solution for the marine transportation of green hydrogen. Figure 1 below provides a summary of the proposed development timeline. Updates will be provided as key milestones are achieved in the next two quarters.

For more details on the key ship specification details, refer to the company’s [ASX release on 7 June 2021](#).

Figure 1: GEV’s C-H2 Development Timeline



MOU signed with Wärtsilä to design and develop sustainable propulsion systems for the C-H2 ship

During the quarter, GEV and Wärtsilä signed a Memorandum of Understanding (MOU) to design and develop the electric drive propulsion system for the C-H2 ship. C-H2 shipping is ideally suited for transporting green hydrogen with a lower delivered cost and having a technology leader such as Wärtsilä, GEV can deliver a shipping solution that is completely sustainable. Wärtsilä Marine Power leads the shipping industry in its journey towards a decarbonised and sustainable future.

Wärtsilä will join GEV's engineering team as another highly credible technical partner working on advancing ABS approvals, and ultimately the construction and operation of GEV's C-H2 shipping solution.

Wärtsilä will also be responsible for integration of power generation using hydrogen blended fuels. Ballard Power Systems continues to advance hydrogen fuel cells at scale which can be substituted for a zero-emission shipping solution. Electric drive propulsion is ideally suited for the ships dynamic positioning capability that will enable unassisted connect and disconnect with near-shore loading buoys.

Petteri Saares, Wärtsilä Sales Director commented on the MOU: *"This project is an important stepping-stone along the journey towards a decarbonised maritime industry, something that Wärtsilä is fully committed to supporting. We are actively developing propulsion alternatives that can utilise future carbon-neutral fuels, raise efficiency levels, and which significantly improve environmental performance. This agreement with GEV is fully in line with our own ambitions."*



Compression delivers a proven, simple, and efficient method for transporting green hydrogen. It is a preferred solution for marine hydrogen transport but is often overlooked due to its lower volumetric energy density. The parties to this agreement believe that the C-H2 project will eliminate the technical barriers and deliver a superior solution than other transport alternatives."

For more details, refer to the company's [ASX release on 24 June 2021](#).

MOU signed with ILF Consulting Engineers (ILF) in Germany for the identification and development of hydrogen projects in Europe and Australia.

During the quarter, GEV and ILF signed a Memorandum of Understanding (MOU) to identify commercial opportunities for the application of GEV's C-H2 supply chain for hydrogen projects in markets that include Australia and Europe.

ILF is an international engineering and consulting firm based in Munich focussed on major energy, industrial and infrastructure projects (for more details: www.ilf.com). GEV will benefit from ILF's expertise in the full hydrogen value chain from renewables, water supply, hydrogen production, transportation and storage and offers solutions for a large spectrum of hydrogen-related projects.

Importantly, the MOU will provide GEV with access to the fast-developing hydrogen economy in countries like Germany, leading the world with clean energy policy, incentive schemes, deep pools of ESG financing, and centres of hydrogen demand.

GEV and ILF have now commenced the qualification of identified hydrogen projects suitable for the inclusion of a C-H2 shipping solution into Europe. Opportunities will include onshore and offshore production and loading applications.

Jens Kottsieper, ILF Business Development Manager, commented on the MOU: *"We recognise the need for shipping of hydrogen into Europe given the need for large quantities. Transporting large quantities of gases has been a topic that has kept us busy for over 50 years. We are glad to be able to complement our pipeline and hydrogen expertise with GEV's expertise in low-cost transport by ship. The cooperation with GEV allows us to advise our customers even more comprehensively on their transport issues"*.



For more details on ILF and the MOU, refer to the Company's [ASX release on 31 May 2021](#).

Qualification and screening of several business development opportunities for the C-H2 supply chain - Includes the identification of a suitable site for GEV's own renewable hydrogen production and export project.

Partner discussions for the inclusion of C-H2 as an alternative export carrier.

The Company remains encouraged with the response to early marketing of our C-H2 supply chain. Qualification and screening continue for a number of partner opportunities identified by the GEV management team and others that are a result of inbound enquiries. The hydrogen development opportunities relate to Australian export projects looking to Asia Pacific as well as export projects within regional distances of European markets. As a reminder the competitive transport distance for the C-H2 supply chain is up to 4,500 nautical miles.

Identification of GEV's own renewable hydrogen production site in Australia for a fully integrated export project.

In parallel to our discussion with potential partner projects, GEV has advised shareholders that it also seeks to develop an upstream renewable energy and hydrogen production project in order to advance an export project from Australia into Asia Pacific markets. The scale of such a development would be designed to match the suitable volumes for the pilot scale 430-tonne ship and allow for modular growth in scale as the market demand grows.

The Company's strategy is to develop a project that can position GEV as the first to export green hydrogen from Australia and support a modular approach to growth with the demand for hydrogen.

Due diligence continues on a preferred site in Northern Australia that benefits from a shorter distance to market and access to infrastructure. Strategic partners have also been identified to provide specialist technical and commercial support across the full value chain.

GEV will continue to keep shareholders informed as each of these commercial activities progress.

European Union completes a comprehensive study regarding the transport of hydrogen. Key findings are supportive of compressed H2 shipping.

In June 2021 the European Commission's Joint Research Centre [published a policy brief](#) highlighting that the delivery of large amounts of renewable hydrogen over long distances could be cost-effective, given the sufficient volumes that would be required to support the EU's policy of making renewable hydrogen a viable solution to decarbonise different sectors over time.

The comprehensive study assessed the various transport options for hydrogen into European demand locations. The transport carrier types (defined as 'packaging modes') included: compressed hydrogen, liquefied hydrogen, ammonia and liquid organic hydrogen carriers (LOHC).

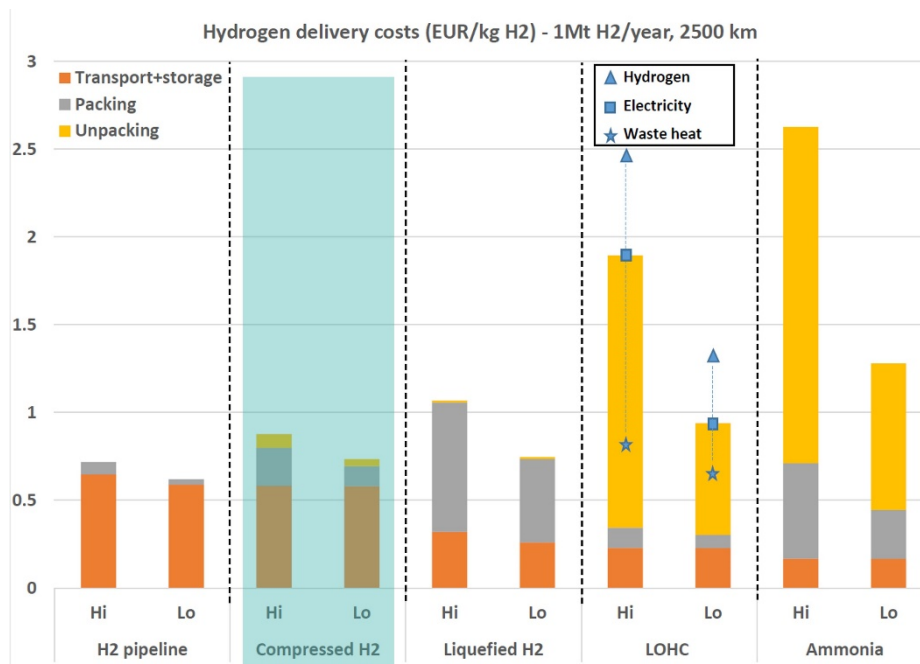
GEV emphasises the EU research was completed independently with its key findings being supportive of a compressed H2 shipping. This is consistent with GEV's own Scoping Study released on 1 March 2021.

Highlights of the study include:

- Set against renewable hydrogen production costs of EUR 1.5- 3.5 /kg, the contribution of hydrogen delivery costs to the final hydrogen price is not negligible.
- Case A was based on the delivery of 1 million tonnes of renewable hydrogen per year to a single industrial customer, with a transport distance of 2,500 km.
- The hydrogen delivery costs calculated for case A (See Figure 2 below) suggest that transport options based on compressed gas (by ship or by pipeline) are the most competitive solution.
- For LOHC and ammonia, packing and unpacking costs dominate, while transport costs represent a small fraction of the total. This indicates that they could be cost competitive for distances longer than the 2,500 km considered in case A.
- Unpacking chemical carriers accounts for a significant share of their total cost, mostly due to the processes' high energy demand and the fact that unpacking plants are likely to be placed in locations with a relatively high electricity price.
- The most cost-effective way to deliver renewable hydrogen depends on distance, amount, final use, and whether

there is infrastructure already available. There is no single optimal solution across every transport scenario.

Figure 2: Hydrogen delivery costs (Case A) EUR/kg H2 - 1Mt of H2/yr transported 2,500km



Source: European Union, JRC, June 2021

CORPORATE

Cash at 30 June 2021 is \$6.5 million (vs \$7.2 million 31 March 2021). The cash position provides the Company with sufficient runway for all planned development and corporate activity for the next 12 months.

Refer to the separately announced Appendix 4C for further details. Cash expenditure during the quarter was in line with guidance with total operational cash outflows of \$695,000, including project costs for the C-H2 development 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 2021 is \$190,000, comprising of fees, salaries and superannuation paid to Directors, including Executive Directors.

During the quarter, the Company made the following key management appointments to position the Company for growth and change in 2021. This followed the stepping down of Maurice Brand from his executive role as CEO. Maurice Brand will remain as Non-executive Chairman.

- Martin Carolan appointed as Managing Director and CEO
- Garry Triglavcanin re-appointed as Chief Development Officer
- Emma Connor appointed as Chief Financial Officer
- Luke Velterop appointed as Hydrogen Development Director

Adoption of global standard for ESG reporting

The Board is also pleased to announce that the Company will adopt an Environmental, Social and Governance (ESG) framework with 21 core metrics and disclosures created by the World Economic Forum (WEF). The ESG framework includes an impact measurement plan for each sustainability area which includes, but is not limited to, governance, anti-corruption practices, ethical behaviour, human rights, carbon emissions, land use, ecological sensitivity, water consumption, diversity and inclusion, pay equality and tax payments.

The Company has engaged impact monitoring technology platform Socialsuite to streamline the outcomes measurement and ongoing ESG reporting process.

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This ASX announcement has been authorised by the Board of GEV.

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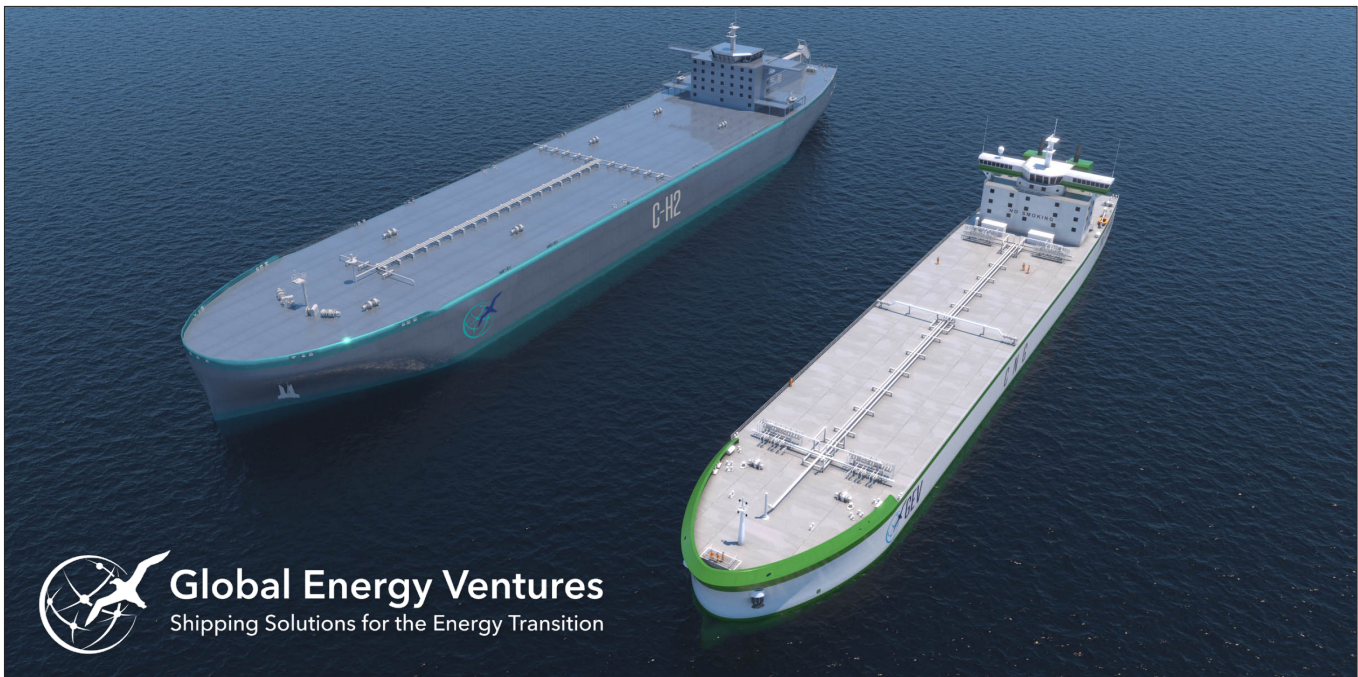
ABOUT GLOBAL ENERGY VENTURES LTD

Global Energy Ventures (ASX: GEV) is an energy transition Company with a mission to deliver compressed shipping solutions for transporting energy to regional markets. Our business model is to build, own and operate the production, storage and shipping of green hydrogen.

In 2020, GEV introduced the world’s first large-scale C-H2 ship and positioned the Company as an early mover to fast track the marine transport of Hydrogen. The engineering and design of the C-H2 ship has benefited from the Company’s long-standing history in developing compressed gas carriers through to final construction approval.

GEV has demonstrated that the simplicity and energy efficiency of its C-H2 shipping solution is ideally suited for exporting hydrogen over medium distances (i.e., Australia to Asia-Pacific) providing a lower delivered cost and eliminating the technical barriers of other transport alternatives.

For more details on the Company please visit www.gev.com



Disclaimer: This announcement may contain forward looking statements concerning projected costs, approval timelines, construction timelines, earnings, revenue, growth, outlook or other matters (“Projections”). You should not place undue reliance on any Projections, which are based only on current expectations and the information available to GEV. The expectations reflected in such Projections are currently considered by GEV 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 gas supply, gas reserve estimates, the ability to locate markets for CNG, fluctuations in gas and CNG 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. GEV undertakes no obligation to update any Projections for events or circumstances that occur subsequent to the date of this announcement or to keep current any of the information provided, except to the extent required by law. 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 GEV. \$ refers to Australian Dollars unless otherwise indicated.