Briefing to the Incoming Minister

New Zealand requires a significant increase in renewable energy generation to accelerate the decarbonisation of the economy and meet the country's growing demand for electricity. Copenhagen Infrastructure Partners (CIP) and the NZ Super Fund (NZSF) have established the Taranaki Offshore Partnership to assess the feasibility of establishing one or more offshore wind farms in New Zealand. We believe offshore wind has the potential to play a central role in New Zealand's long-term energy strategy and, at the same time, to deliver tangible benefits to regional communities.

Based on CIP's extensive experience in developing offshore wind farms around the world, we believe the Government has a crucial role to play if New Zealand is to seize this opportunity. Some high-level observations on the progress we have made in New Zealand and lessons from our overseas offshore wind farms are outlined in this briefing.

The opportunity presented by developing offshore wind in New Zealand

1. *Offshore wind enables new renewable energy generation at the requisite scale to support decarbonisation*: While New Zealand has over 80% renewable electricity today, only 40% of all energy used across the economy – including transport and industrial heat – is renewable. Significantly more renewable energy is required to bridge that gap and offshore wind offers advantages over other renewable energy sources.

   Globally, the development of onshore renewable energy is increasingly constrained by competing priorities for land use and visual amenity concerns, while new hydro generation faces significant barriers to obtaining resource consent. The scale required to rapidly decarbonise economies means that often onshore wind and solar farms can not be delivered quickly enough to meet national decarbonisation objectives.

   Offshore wind benefits from constant winds at sea and the ability to use larger turbines than can be installed on land. Offshore wind therefore has a higher capacity factor than onshore wind, meaning it requires less infrastructure to deliver more energy to consumers. Its ability to enable renewable energy generation at scale has made it one of the fastest-growing renewable energy technologies globally.

   New Zealand has an outstanding offshore wind resource. Our analysis shows that the net capacity factor (the ratio of average power output to maximum potential power output) of offshore wind in the South Taranaki Bight is greater than 50%, which is 1.5 times the onshore portfolio average. Producing the equivalent output of a 1GW offshore wind farm would require a 1.5GW onshore wind farm (which would occupy approximately 150km², about the size of Tauranga) or a 3.9GW solar energy farm (which would occupy approximately 100km², about the size of Napier).

2. *Offshore wind enhances energy security*: Offshore wind complements other forms of renewable energy, potentially generating when onshore wind or hydro generation are limited by weather conditions or other factors. The development of offshore wind at scale in the North Island (where we are currently focusing our attention) would also help mitigate energy security risks for the areas of greatest load, which currently depend heavily on South Island-based hydro and the HVDC cable across Cook Strait.

3. *Offshore wind supports the development of new industries, contributing to economic growth*: In addition to supporting existing industries to transition to clean energy, offshore wind offers the potential for New Zealand to be at the forefront of new industries like green hydrogen. As a new industry itself, offshore wind development brings new skilled job opportunities, smoothing the transition from oil and gas as the world shifts to more sustainable energy sources over the long term.

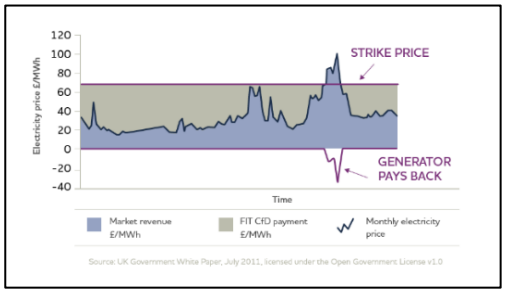
The role of Government in facilitating the development of an offshore wind industry

1. *Government can create an enabling regulatory environment and accelerate the process of developing regulatory settings:* Currently, MBIE is working to develop the regulatory framework for the whole life cycle of offshore wind development. It is critical that this happens in a timely manner if New Zealand is to anticipate the rapidly increasing demand for renewable energy rather than being forced to play catch-up, with the commensurate risks and extra costs that would bring. In our experience, an approach that allows preliminary development work to begin in parallel with the design and implementation of regulations would help achieve that, while ensuring those regulations are aligned with the wider future energy strategy of New Zealand.

2. *Government can contribute to investment certainty for developers*: We know from our experience of building offshore wind farms around the world that mechanisms such as Power Purchase Agreements (PPAs) and Contracts

for Difference help to incentivise new investments in renewable energy infrastructure by providing revenue certainty and reducing the risks associated with volatile electricity prices for developers. In the long term, an increased supply of renewable energy would apply downward pressure on electricity prices, benefitting consumers.

Contracts for Difference have been a successful mechanism in other parts of the world for governments and renewable energy generators to share in the upside and downside of electricity prices, smoothing the price volatility inherent in the electricity market where legacy fossil-fuelled generation continues to exist. They are proven to incentivise investment in renewable energy and have been key to the development of offshore wind in the United Kingdom and New South Wales, Australia, while helping ensure price certainty for consumers.



In some mature markets, the route to market for large energy projects such as offshore wind is turning to long-term Corporate PPAs with large customers. We are exploring such an approach in New Zealand; however, as noted recently by Transpower, there are a number of barriers unique to the current landscape, such as small volumes available for offtake, uncertainty around the creditworthiness of some large energy users and a general lack of experience in the CPPA market.

3. *Government can streamline the consenting framework*: As well as facilitating infrastructure development in general, a streamlined consenting framework would help support the development of offshore wind.
4. *Government can address wider infrastructure needs*: Our initial feasibility studies have identified likely needs for enabling infrastructure, including at regional ports and to the transmission network, to enable and optimise the potential of offshore wind.

Taranaki Offshore Partnership is well-placed to lead offshore wind development here given our international track record

We are in a unique position as a potential offshore wind developer in New Zealand, bringing access to capital, proven experience in offshore wind development and, through the NZ Super Fund, the assurance that returns will be used for the benefit of all New Zealanders.

- Copenhagen Infrastructure Partners and its development arm Copenhagen Offshore Partners are global leaders in renewable energy. Offshore wind projects comprise the majority of CIP's investment portfolio, with a pipeline of approximately 30GW of offshore wind projects at various stages of development, construction and operation. This portfolio of wind farm developments brings supply aggregation benefits (for example between Australian and New Zealand wind farm projects) that are not currently factored into local analyses of the economic viability of offshore wind in New Zealand.
- The NZ Super Fund is a long-term investment fund that was established to help the Government meet the increasing cost of universal superannuation. The Fund's assets are owned by the Crown on behalf of all New Zealanders, but the fund invests on a commercial basis, independently of the Government. The Fund's partnership with CIP on the South Taranaki project reflects its commitment to exploring commercially attractive investment opportunities in New Zealand infrastructure and in the global energy transition.

Progress to date

We are currently assessing the feasibility of offshore wind farms in the South Taranaki Bight and off the Waikato coast, which we envisage could produce up to 1GW each (comparable to some of the largest hydroelectric power plants in the country). Early feasibility activities include the one-year deployment of a Floating Light Detecting Radar Device (FLiDAR) for wind measurements in the South Taranaki Bight; iwi and stakeholder engagement, including establishing a local office in Hāwera and holding a series of public information sessions; employment of local staff and consultants; completion of an Industry Capability Mapping Study clarifying the opportunity for highly skilled jobs for the region and more widely across New Zealand; and a technical assessment of what would be required for the Port of Taranaki and the Harbour of Pātea to play a part in supporting the development and operation of an offshore wind farm.

While there is still a long way to go to determine commercial feasibility, on our current timeline a South Taranaki offshore wind farm could be commissioned in the early 2030s. Achieving this will require the operating context (e.g., the regulatory framework and consenting process) to keep up with the potential pace of technical development.