15/08/2022

Submitted via email to: nzgp@transpower.co.nz

NZ Offshore Wind Development Limited (NZOWD), a Joint Venture between NZ Super Fund and Copenhagen Infrastructure Partners, appreciates the opportunity to provide a submission on:

NZGP1 Stage 1 Shortlist Consultation document

NZOWD is exploring the feasibility of a large offshore wind farm in the South Taranaki Bight. Offshore wind is one of the fastest-growing renewable energy technologies globally, helping to transition energy systems to a consistent and reliable form of renewable power while creating jobs and economic investment in regional coastal towns around the world.

The initial development under investigation is up to 1GW, which represent over 11 per cent of New Zealand's current electricity demand capacity and could power over 650,000 homes. NZOWD believe the project could later expand to 2GW, helping to meet strong projected growth in demand for electricity in New Zealand, making it significantly larger than most other renewable energy projects currently under consideration in New Zealand.

CIP with NZD25 billion of current assets under management the global leader in greenfield renewable energy and offshore wind including approximately 30GW of offshore wind projects under development, construction and operation across North America, Europe, Asia and Oceania. CIP's investment in the South Taranaki project is part of a broader project development pipeline for CIP's upcoming flagship fund 'CI V'. This project will be CIP's first investment in Aotearoa New Zealand and follows the NZD58 billion NZ Super Fund's NZD208 million commitment to CIP's new Energy Transition Fund (CI ETF I) last year.

CIP and NZ Super Fund are in the early stages of project feasibility evaluation, which includes wind resource measurement, designing detailed environmental impact assessments with the support of local communities and experts, and examining industry potential and training needs for the Taranaki region. The partners will also focus on measures to ensure any project can coexist with other uses of the marine area.

NZOWD generally support the major capital investment programme under Transpower´s Net Zero Grid Pathways project. The staged approach allows for further review, refinement, and development of the preferred options should material or localised changes occur including, for example, more certainty around development and timeframes for an offshore wind renewable energy zone in the Taranaki region.

The following sections provide our initial views on the questions raised in the consultation document as well as additional comments.

Question 1: Do you agree with our staged approach to this major capital investment programme?

NZOWD generally agree. The staged approach allows for further review, refinement, and development of the preferred options should material or localised changes occur including, for example, more certainty around development and timeframes for an offshore wind renewable energy zone in the Taranaki region.

Question 2: Is our approach to NTS reasonable?

NZOWD notes that non-transmission solutions will be considered separately. In doing so it would be useful to industry if there was greater and more specific indication as to the levels (amount), locations, and possible capacity factor or the required usage or exposure time of NTS (including for example benefits of the firming of offshore wind generation) that would be needed/beneficial in order to:

a) avoid/defer/or reduce the need for the identified grid upgrades; and
b) support outages needed to perform the grid upgrades.

Question 3: Is our reduced list of options for enhancing capacity of the HVDC reasonable?

NZOWD generally agree this is reasonable. The 1200MW option appears to not offer as much benefit in the investment test analysis.

Question 4: Is our reduced list of options for enhancing capacity of the CNI 220 kV corridor reasonable?

NZOWD generally agree that the shortlisted scenarios are representative of the options considered. Although it is noted on Pg 70 that:

a) "CNI options C1, C2, C5 and C6 are all similar and since CNI option C6 enables the most competitive generation investment market, it would be akin to our preferred CNI option"; and
b) "We have arrived at our choice of shortlist options by considering the enabling ability of each option, leading us to CNI options C6, C8 and C9 (being the cheapest of our new line options)"

Whereas the investment test in Section 4.54 and Table 18 identifies option C1 and C11 appear to be being used in the analysis:

A summary of our shortlisted options is:

Shortlisted option	HVDC option	CNI option	Wairakei Ring option
Option 1	H1	C1	W1
Option 2	H1	C1	W4
Option 3	H1	C1	W7
Option 4	H1	C8	W1
Option 5	H1	C8	W4
Option 6	H1	C8	W7
Option 7	H1	C11	W1
Option 8	H1	C11	W4
Option 9	H1	C11	W7
Option 10	H2	C1	W1
Option 11	H2	C1	W4
Option 12	H2	C1	W7
Option 13	H2	C8	W1
Option 14	H2	C8	W4
Option 15	H2	C8	W7
Option 16	H2	C11	W1
Option 17	H2	C11	W4
Option 18	H2	C11	W7

In any case, NZOWD would also query as the C1 option was identified as the preferred option by the investment test, and C1, C2, C5 and C6 have been identified as being similar, then should further analysis and optimisation be performed between the C1, C2, C5, and C6 options to identify optimal development path and timing of the preferred option?

Question 5: Is our reduced list of options for enhancing capacity of the Wairakei Ring reasonable?

NZOWD have no specific comments.

Question 6: Are our scenario weighting sets reasonable?

NZOWD notes that further work should be performed during NZGP Phase 2 to identify more specific renewable energy zones and large generation and demand projects and scenarios to determine impacts on regional grids and grid backbone for such proposed and forecast projects.

This should identify larger and more likely zones/projects (e.g., offshore wind in the Taranaki region), inherent hosting capacities, as well as what upgrades are needed to the grid for different hosting capacities/scenarios. NZOWD would request that generation scenarios of 1GW, 2GW or more (without the assumption of new loads offsetting export capacity).

Whilst some scenarios have been mentioned, the locations and sizes of such more specific generation and load developments would likely have a greater impact on these specific MCP projects than the particular scenario weightings identified.

For example, NZOWD notes, while mentioned in both the long and short list consultation, that a sizeable wind region in Taranaki does not appear to have been included in the analysis or the sensitivity at this point but is to be included as part of the MCP submission.

Furthermore, by grouping the analysis of the HVDC and CNI options together this does not allow for analysis or sensitivity to be performed for such a wind region in Taranaki which would feed in between where the HVDC and CNI upgrades are proposed. This may have a material impact on the size and/or timing of the upgrades required on the CNI or Wairakei Ring projects and it could also influence changes to the timing of upgrades needed on the HVDC (the latter more so depending on NI firming/peaking capacities).

In any case we are of the view it would be worth performing a sensitivity on the preferred options for a wind generation increase in LNI/Taranaki to see how this may modify the scope or timing of the identified preferred options and/or for further consideration in Phase 2.

Question 7: Is our shortlist of HVDC and CNI options reasonable?

Please refer to responses on Q3 and Q4.

Question 8: Is our shortlist of Wairakei Ring options reasonable?

NZOWD has no specific comment on the shortlisting of options for Wairakei Ring.

Question 9: Is our choice of the preferred option reasonable?

NZOWD notes that no specific analysis, supporting information, or scrutiny is provided on the cost or benefits of the options. Based on the investment test performed the choice of preferred option does not appear unreasonable subject to clarification of our comments on CNI options Q4.

Question 10: Is our conclusion that upgrading existing assets is more economic than bypassing the existing grid reasonable?

NZOWD observes that given the maximum net benefit of the shortlisted options was $216m (Option 12 Disruptive Scenario) it is unlikely that the additional costs ($0.7b - $2.7b) of bypassing the existing grid would pass the investment test. However, given the analysis has not been conducted it cannot be conclusively said, and it is not shown whether other benefits may also be able to be realised.

Question 11: Do you agree that our choice of preferred option is robust against sensitivity analysis?

Please refer to NZOWD comments and response on scenarios in Q6 and CNI options in Q4. Not all of the sensitivity scenarios identified in the long list consultation, including generation at Taranaki, appear to have been considered or performed. It is noted however that some will be included as part of the MCP submission to the Commerce Commission.

Potential future		
	Sensitivity scenario	Description
1	No Southland load replacement	Tiwai closes in 2030, with no replacement load in Southland. This sensitivity scenario has been evaluated as an Investment Test sensitivity.
2	Southland load partially replaced[25]	Tiwai closes in 2030, but is replaced by a 300 MW hydrogen plant which can provide flexible demand response
3	Southland load replaced	Tiwai closes in 2030, but is replaced by a 600 MW hydrogen plant which can provide flexible demand response
4	High demand	Higher than anticipated electrification occurs. This is reflected in our WiTMH Mobilise to Decarbonise scenario which reflects the maximum extent of electrification. In 2050 electricity demand is 72 TWh. This sensitivity scenario has been evaluated as an Investment Test sensitivity.
5	South Island dry year solution	Lake Onslow is developed and provides dry year security of supply and competes in the wholesale market
6	Hydrogen future	Hydrogen becomes a viable zero carbon fuel, with North Island gas primarily replaced by hydrogen
7	Taranaki offshore wind	Taranaki offshore wind is developed
8	Taranaki demand grows	Taranaki region recovers from gas closures with new industry developed
9	Wind:solar generation mix 50:50	Grid-scale solar generation is developed more than anticipated in our scenarios. We test a 50:50 wind:solar future
10	Climate change effects	Climate change effects on hydro/wind and solar profiles are considered

Table 29: Sensitivity Scenarios

We have not been able to explore these futures at this time, but will by the time we submit a MCP to the Commission late in 2022.

NZOWD would be very interested in reviewing such analysis for a wind region in Taranaki of with generation capacity of 1GW and 2GW or more (without the assumption of new loads offsetting export capacity).

Additional questions and comments for consideration:

NZOWD requests Transpower to clarify expected timing for the further development of the Phase 2 long list options including for offshore wind development scenarios around Taranaki.

In general NZOWD agrees with and supports the Transpower NZGP1 staged MCP proposal. However, we note that the development of offshore wind in the Taranaki region was considered too uncertain to include in the revised EDGS and that network enhancements that will unlock the full potential of the offshore wind resource (1-2 GW or more) in the Taranaki region may only be considered in Stage 2 (post 2035).

It is our understanding that to increase the existing export capacity out of the region, the Brunswick-Stratford and the Stratford-Huntly 220kV transmission circuits are the limiting transmission paths. It is also noted that a new Bunnythorpe-Stratford-Huntly 220kV line will take in the order of 17 years to build.

NZOWD believes the likelihood of realising offshore wind in the Taranaki region may be higher than what Transpower has considered up to now. To this end, NZOWD would like to understand how NZOWD can keep Transpower informed of our progress and if regular updates from our side will be useful. Also, as the development of offshore wind in Taranaki becomes more certain will Transpower look to bring the transmission upgrade/replacement investigations forward?