Consultation: Advancing New Zealand's energy transition
Energy and Resources Markets
Ministry of Business, Innovation and Employment
PO Box 1473
Wellington 6140

2 November 2023

Re: New Zealand Steel submission on the *Offshore renewable energy paper*

This is a submission from New Zealand Steel on the Ministry of Business, Innovation and Employment's (MBIE) consultation package – Advancing New Zealand's energy transition. Separate submissions have been provided for each paper; this submission acts as the overarching key messages summary including the separate submission on the Offshore renewable energy paper.

New Zealand Steel - contributing to the productivity and resilience of New Zealand

1. Formed in 1965, New Zealand Steel has been an integral part of New Zealand's history. Steel production began in 1968 and major expansions completed in 1987 created an integrated steel mill. The company is in Glenbrook, Southwest of Auckland on 560 hectares in industrial land, on the southern shores of the Manukau Harbour. As a significant employer with more than 1,500 people employed directly in high-skilled, well-paid jobs, and indirect employment of a further 2,500 people, NZ Steel makes a substantial contribution to the people in its community.

2. NZ Steel is a critical part of New Zealand's supply chain and provides a reliable supply of high-quality steel products to New Zealand's building, construction, industrial, energy, infrastructure manufacturing and agricultural sectors. Around 650,000 tonnes of steel is made a year and almost all our production is consumed in New Zealand or supports the Pacific Islands' needs. We contribute around $900m to the New Zealand economy each year.

BlueScope Climate Action Strategy

3. NZ Steel's parent company, BlueScope, is committed to exploring and collaborating to pursue emerging and breakthrough technologies to work towards its 2050 net zero goal across all global operations, including New Zealand.

4. Achieving the 2050 net zero goal is highly dependent on a range of key enablers, requiring collaboration and action across multiple sectors and stakeholders.

Energy and Decarbonisation at New Zealand Steel

5. Energy policy and decarbonisation are inseparable. In line with the BlueScope climate strategy, in September 2023 New Zealand Steel is committed to the construction of an Electric Arc Furnace (EAF) at Glenbrook. Work

is underway to install an EAF to shrink its carbon footprint and secure the future of domestic steel making. The environmental, societal and economic benefits to the country are far reaching:

- **Significant gross emission reductions** of 800,000 tonnes of $C0_2e$ per annum, seeing NZ Steel almost halve its emissions from day one, (over 45% of New Zealand Steel's gross carbon emissions reduced). This is the country's largest industrial decarbonisation project to date.
- **Retain critical domestic steel industry** and its related jobs, contribution to economic resilience and domestic supply chains, without emissions leakage.
- **Recycle domestic scrap steel** in volumes up to 300,000 tonnes. Steel is infinitely recyclable, and this project will make New Zealand as close to self-sufficient as possible using renewable energy via an innovative partnership with an electricity generator to recycle domestic steel scrap rather than shipping it offshore.
- The benefits are made possible through partnerships across public and private sectors.
- Decarbonisation at scale has occurred without deindustrialisation.
- A power supply deal that gives flexibility to lower demand on the grid during peak time loads, strengthening the grid's demand management flexibility.
- Provides optionality for further reductions in steel making related emissions.

6. Energy policy, security and affordability are intrinsically linked to our national carbon net-zero 2050 goal, but also the continued viability of manufacturing in New Zealand. We know, through recent experience, that collaboration and joined up thinking is critical. New Zealand Steel's EAF project only came about through careful collaboration between industry, steel suppliers, commercial and environmental regulators, central government alignment and buy in from electricity generators.

7. Our main message is that New Zealand needs a coherent and joined-up energy eco-system that leverages the country's competitive advantages, recognises all of the interdependencies and avoids unintended consequences. New Zealand Steel has made submissions on all MBIE energy consultation papers, however our top ten submission points that span all energy areas are as follows.

Advancing New Zealand's Energy Strategy – Key Points

8. MBIE guide completion of the NZ Energy Strategy using a 'one eco-system' nationwide approach. This should be visionary guiding a holistic pathway as NZ transition to a low emissions society.

9. Reliable, firmed and affordable energy together with demand response efficiencies is essential for heavy manufacturing, NZ Steel is no exception. The integration between energy and heavy manufacturing will only grow deeper over time as NZ Steel continues to decarbonize and leverage its Glenbrook site to more energy related opportunities. In this sense, NZ Steel is as a major energy user as a heavy manufacturer and energy policy is critical for our success and the continuation of steel making here.

10. Electrification is key to reducing emissions (both from the grid but also for opportunities like hydrogen). For this to be achieved NZ will require an abundant supply of reliable, affordable electricity generated from renewable sources.

11. The challenges posed to the stability of the electricity grid by increased intermittent generation, namely wind and solar, must be recognised. As for the challenges of dry-year risks to hydro generation. Firming of the power supply is essential – firming solutions are multifaceted and must be understood in totality.

12. Demand flexibility is recognised as an essential tool in managing increased intermittent generation and peak-time loads. NZS encourages the development of an auxiliary market with appropriate demand response products enabling industrial users to provide demand flexibility. Demand response products that reflect true economic value reduce the required generation overbuild and reduce the cost of the marginal MWh, supporting both security of supply, increased competition in the wholesale market and overall system cost.

13. NZ Steel is exploring the next stage of decarbonisation following installation of the EAF. To fully remove coal from the ironmaking process an alternative reductant source is required to produce direct reduced iron (DRI). One option being investigated is using hydrogen as the reductant. While viability is yet to be proven there are promising signs. However, we are concerned at the expectations being built for green hydrogen in NZ. Hydrogen as a process input and/or energy source has many challenges through the complete end to end supply chain and will be dependent on availability of large amounts of electricity at costs several times lower than the current wholesale and futures market prices.

14. Further to point 6 above, a hydrogen steelmaking opportunity will only come about if a 'hydrogen hub' type concept is seriously considered at the Glenbrook site. This will require careful engagement with end-to-end supply chain partners and regulators – practical workshops are essential.

15. Whilst green hydrogen is a likely end state for ironmaking, NZ Steel believes there is a credible transition pathway using natural gas as the reductant. Converting the ironmaking process to using natural gas can facilitate a further step change in decarbonisation, transitioning to green hydrogen when the infrastructure exists.

16. While electrification can be and is a substitute for many applications, gas will remain essential for some industrial applications until new technologies are available and implementable. Until alternatives can be found, natural gas remains an important fuel source for peaking and dry-year electricity generation.

17. NZ Steel supports the further investigation of offshore wind in New Zealand mainly because of the scale of the green electricity it provides and the downstream opportunities that scale unlocks. Appropriate engagement with iwi and communities is essential.

Developing a Regulatory Framework for Offshore Renewable Energy – New Zealand Steel Submission

Due to the specificity of the consultation paper questions, New Zealand Steel has chosen to provide its general comments on Offshore Renewable Energy:

1. Subject to the correct implementation policies, New Zealand Steel views offshore wind as extremely beneficial for Aotearoa New Zealand. We say this for the following reasons:

    a. We think New Zealand has a strong competitive advantage for offshore wind given our world class wind resource, stable political environment and bipartisan policy support for a large-scale electrification of our national economy.

    b. Offshore wind is at a scale that will drive regional growth and employment. We understand that offshore wind infrastructure opportunities in both Southern Taranaki and Northern Waikato are possible. We would endorse both of these locations – we would especially encourage the Northern Waikato geographical opportunity due to the regional benefits it can provide Waikato and Tamaki Makaurau and the efficiency of being closer to a large urban demand base.

    c. The above Waikato opportunity is subject to genuine engagement by developers and regulators with local iwi and communities – this is critical, and a partnership approach needs to be followed.

    d. The generation scale of offshore wind unlocks opportunities that would otherwise be unavailable to Aotearoa. We understand that phase 1 offshore infrastructure builds are in the range of 1GW. This is the scale of green electricity that is required for large scale electrolysers that can produce green hydrogen and other clean derivates.

    e. One potential decarbonisation pathway available to New Zealand Steel is the use of green hydrogen to reduce our ironsand feedstock to make green steel. The EAF reduces our gross emissions by 45% - a future hydrogen technology could get us much higher and indeed potentially to 100%. However, green hydrogen production requires a large amount of green firmed appropriately priced electricity – at a scale much greater than what we require for current steel making and even EAF electricity demand requirements. Offshore wind has the potential to deliver green electricity at the right scale and within the needed timeframes. This larger scale potentially unlocks not only green hydrogen for steelmaking but also for other users and off-takers both within New Zealand and abroad including the potential manufacturing of green Ammonia, SAF and green methanol.

2. Whilst we are not experts in offshore wind, we would note the following:
    a. The affordability of electricity from offshore wind will be crucial if that electricity is to underwrite these other green energy commodities referred to above. Again, joined up thinking and a coherent set of policies are required. One lever to obtain better pricing is to ensure that a coherent asset underwrite process is considered. Offshore wind is at a scale where upfront investment is unlikely unless the government has an efficient and transparent underwrite policy. Two possible ways for this to occur would be if the government were to consolidate its large demand into an offtake vehicle and/or for

the government to centrally manage a CFD auction process – this would take careful planning to ensure the right pricing outcomes are obtained.

b. The feasibility process for offshore wind needs to encourage investment, manage community expectations and environmental outcomes – we would encourage MBIE to follow the examples of other sophisticated jurisdictions who have feasibility regimes which balance these imperatives. Without a world class approach to feasibility our concern is that large investment will either not occur or not occur in time for New Zealand to reach its net zero targets. We also note that the time lag between upfront investment and an actual economic return is a number of years – and a coherent efficient feasibility process is required to mitigate this risk for large overseas investors in offshore wind.