

THE RENEWABLE
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REVIEW

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Editor
Munir Hassan

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PREFACE

At the start of my career in the renewable energy industry, renewable energy generation was seen as an immature, fast-developing subsector that was seeking to get a foothold in, and be accepted within, the existing mature and stable electricity sector. Renewables focused on gaining political and social support for new or decentralised technologies that were often perceived as costly and unreliable. At that time, primarily developed economies were funding and supporting this nascent industry through feed-in tariffs or certificate schemes that provided a top-up revenue to such projects.

Over the past couple of decades, the conversation has moved on substantially. Once the industry had matured, it focused on new jurisdictions, larger projects, and marginal efficiencies from technological gains. With banks, investors and developers exhibiting an almost insatiable appetite to deploy capital and debt in the sector, the main question seemed to be whether the industry could feed this desire through a sufficiently ambitious pipeline of projects. The main challenges to delivering on this ambition are grid constraints, changing legal and regulatory frameworks, geopolitical shocks, pressure on subsidy prices, and a potential trade war sparked by the 2022 Inflation Reduction Act in the United States.

On the first of these, the volume of grid applications for renewables projects has risen exponentially in recent years across distribution and transmission levels, placing significant pressure on the system. Over the past five years in the UK, the number of new connection offers has grown tenfold. Constraints are causing delays in project development, requiring projects to move to another location on the network, or preventing projects from being built altogether. To accommodate the required growth in renewables, network capacity on the distribution and transmission systems will have to expand significantly over the next decade.

With respect to legal and regulatory regimes, the industry often looks to public bodies for revisions to unlock issues such as grid constraints. These requests have generally found a ready audience among policy makers because governments have announced commitments to achieving large volumes of new capacity in short time frames to demonstrate progress towards decarbonisation targets. Governments want to be seen to be clearing the rocks off the runway for the renewables sector. However, legal, regulatory, and industry framework changes remain a double-edged sword, both facilitating investments and creating hiatuses until the new rules are developed, considered, implemented and bedded in.

These past years have seen a number of geopolitical shocks that have been challenging for the energy sector, such as rising global prices exacerbated by Russia's invasion of Ukraine, which highlighted issues in the global renewable energy supply chain. Disruptions to this supply chain, along with the war in Ukraine, deprived countries of access to both Russian and Ukrainian raw materials, leading to volatile commodity prices, particularly steel.

Although supply chain issues are still apparent, the end of 2022 saw the introduction of a price cap of US\$60 per barrel on Russian oil exports by the G7, European Union and Australia, demonstrating the extent to which energy markets were transformed in just one year.

At the same time as costs have increased, prices for renewable output have continued to drop. As an example, the fourth round of auctions for contracts for difference in Great Britain concluded in July 2022 with record-low prices of £37.35/MWh (in 2012 prices) awarded for fixed-bottom offshore wind. The attraction of renewables for many has been the move away from active subsidies for the sector, focusing more on removing legal, political and structural barriers to deployment. It is a commonly held view that renewable power is, in many places, the cheapest form of new capacity to add to the electricity system. Its greatest challenge will be continuing to deliver on the promise of being the cheapest form of new capacity while building at a huge scale and dealing with many cost and deployment challenges.

Along with all of the challenges, there were also some sweeteners for the sector. The US Inflation Reduction Act was enacted in August 2022 sending a palpable sense of shock at its scale across the global renewables market. The Act aims to spur investment in green technology in the United States by devoting US\$369 billion in subsidies through grants, loans, and tax credits. This has been seen by many in Europe as a threat, fearing a relocation of European businesses in clean hydrogen, carbon capture, and solar industries to the United States. In response to this, the European Commission has proposed a Green Deal Industrial Plan, which includes regulatory reform, a set of green subsidies, and the relaxation of state aid rules in an attempt to drive funding. The aggressive stance from the European Union and the similar pending response from the United Kingdom has led many to believe that a green trade war may be on the rise.

This is a hugely exciting time to be working in renewable energy. This guide has been produced for professionals looking for an overview of the legal framework, current status, and challenges in structuring, financing and investing in renewable energy projects in selected jurisdictions. Whether you are already active in the sector or simply interested in learning more about the legal framework and key developments underpinning the renewable energy industry, I hope that this guide will provide you with an insight into our exciting industry.

Munir Hassan

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NEW ZEALAND

*Anton Trixl*¹

I INTRODUCTION

*The government's 2050 vision for energy and industry is for Aotearoa New Zealand to have a highly renewable, sustainable and efficient energy system supporting a low-emissions economy. Energy will be accessible and affordable and will support the wellbeing of all New Zealanders. Energy supply will be secure, reliable and resilient, including in the face of a global shock. Energy systems will support economic development and an equitable transition to a low-emissions economy.*²

– Hon Dr Megan Woods, Minister of Energy and Resources (2022)

Until 2018, New Zealand's energy policy framework had been relatively stable for 25 years.³ However, for the past five years there has been a concerted effort to develop the renewable energy sector through both robust policy development and financial investment. Indeed, the Ministry of Business, Innovation and Employment affirms that the share of energy supply from renewables is at a 30-year record high at 40.8 per cent.⁴ The key drivers of policy reform in New Zealand are the government's commitment to achieve 100 per cent renewable electricity by 2030 and to reduce all greenhouse gases (except biogenic methane) to net zero by 2050.⁵ These targets form the foundation of New Zealand's energy transition.

While New Zealand has long benefited from a high percentage of renewable electricity generated from hydropower, geothermal resources and, increasingly, wind and solar, roughly 60 per cent of broader energy use still comes from fossil fuels.⁶ This heavy reliance on fossil fuels for wider energy use, coupled with technological transformation, international commitments, volatile commodity prices and the direct impacts of climate change, are proving to be a strong incentive for the New Zealand government to push policy change and investment in renewable energy.

1 Anton Trixl is a partner at Anderson Lloyd. The author would like to thank Alex Booker, George Leach and Emma McClean of Anderson Lloyd for their invaluable assistance in the preparation of this chapter.

2 Ministry for the Environment, 'Towards a production, sustainable and inclusive economy – New Zealand's First Emissions Reduction Plan' (June 2022), 203 (<https://environment.govt.nz/assets/publications/Aotearoa-New-Zealands-first-emissions-reduction-plan.pdf>).

3 Ministry of Business, Innovation and Employment, 'Regulatory Charter – Energy markets regulatory system' (August 2018), 10 (www.mbie.govt.nz/assets/46dcfbf4e1/energy-regulatory-system-charter.pdf).

4 Ministry of Business, Innovation and Employment, 'Energy in New Zealand 2022' (August 2022), 5 (www.mbie.govt.nz/assets/46dcfbf4e1/energy-regulatory-system-charter.pdf).

5 Ministry of Business, Innovation and Employment, 'New Zealand Energy Strategy' (October 2022), 3, (www.mbie.govt.nz/dmsdocument/25373-terms-of-reference-new-zealand-energy-strategy).

6 See footnote 4, at 5.

II THE YEAR IN REVIEW

The past year has seen significant activity in renewable energy policy and development. In May 2022, the government released the Emissions Reduction Plan in tandem with the first three emissions budgets covering 2022-2025, 2026-2030 and 2031-2035.⁷ Together, these lay out the long-term policies and strategies that will allow New Zealand to meet the legislated 2050 emissions targets. This regime is intended to enable New Zealand to meet its international commitment under the United Nations 2015 Paris Agreement to reduce net greenhouse emissions by 50 per cent below 2005 levels by 2030.⁸

To further decarbonise the economy and meet the net zero goals, the Climate Change Commission reported that renewable electricity generation will need to grow by 70 per cent.⁹ The Emissions Reduction Plan outlines a number of actions designed to achieve this, including accelerating the development of new renewable electricity generation, and ensuring the electricity system and market can support high levels of investment from the private sector in the decarbonisation of the energy sector.

i Emergence of offshore wind

The government is developing a regulatory framework to enable investment in offshore renewable energy, announcing that legislation will be in place by July 2024.¹⁰ The government has proposed two approaches: companies will be issued permits to engage in offshore feasibility studies; or a collaborative exercise where developers and stakeholders will share information on the feasibility of offshore development.¹¹ Long-term power purchase agreements are being considered by government to encourage new renewable generation projects, including offshore wind development.¹²

This has resulted in a surge of offshore wind proposals including:

- a A proposed 1.4GW offshore wind project by BlueFloat Energy, Energy Estate and Elemental Group located off the coast of Waikato.¹³ The same group also proposed a 900MW offshore wind project in South Taranaki.¹⁴

7 Hon James Shaw, New Zealand government, 'Aotearoa sets course to net-zero with first three emissions budgets' (9 May 2022), (www.beehive.govt.nz/release/aotearoa-sets-course-net-zero-first-three-emissions-budgets).

8 Rt Hon Jacinda Ardern and Hon James Shaw, New Zealand government, 'Govt increases contribution to global climate target' (31 October 2021) (www.beehive.govt.nz/release/govt-increases-contribution-global-climate-target).

9 See footnote 10, at 211.

10 Ministry for the Environment, 'Towards a productive, sustainable and inclusive economy – New Zealand's First Emissions Reduction Plan' (June 2022), 212 (<https://environment.govt.nz/assets/publications/Aotearoa-New-Zealands-first-emissions-reduction-plan.pdf>).

11 Eamon Rood, 'Govt commits to offshore energy regs by 2024' (December 2022), *Energy News* (www.energynews.co.nz/news/renewables/132313/govt-commits-offshore-energy-regs-2024).

12 See footnote 10, at 212.

13 Greta Yeoman, '1.4 GW Waikato offshore wind farm proposed' (November 2022), *Energy News* (www.energynews.co.nz/news/offshore-windfarms/130176/14-gw-waikato-offshore-wind-farm-proposed).

14 Greta Yeoman, 'JV aims for 900 MW Taranaki offshore wind project' (November 2022), *Energy News* (www.energynews.co.nz/news/offshore-windfarms/129677/jv-aims-900-mw-taranaki-offshore-wind-project).

- b New Zealand Superannuation Fund's proposed 1GW wind farm in the South Taranaki Bight, in a joint venture with Copenhagen Infrastructure Partners. The sponsors have indicated that this could be scaled up to 2GW.¹⁵
- c The Australian company, Oceanex Energy, is investigating the possibility of developing a 3GW offshore wind farm off the coast of Taranaki.¹⁶ Oceanex Energy have consulted with government and are surveying the region's capacity.
- d European offshore wind developer Parkwind announced that it has been investigating the viability of offshore wind generation in New Zealand.¹⁷

ii Changes to electricity transmission

The government indicated that work is being undertaken to support development and efficient use of New Zealand's transmission and distribution infrastructure. One innovative scheme is Transpower's proposed renewable energy zones (REZ) in Northland, which would allow multiple parties to co-locate and share the costs of a single connection to the grid.¹⁸ Beneficially, REZs would allow electricity network capacity to be efficiently expanded in regions where network capacity may constrain new clusters of renewable generation. Transpower is currently reviewing the submissions it received as part of its consultation process in late 2022 and has yet to confirm whether the development of the Northland REZ will progress. The new transmission pricing methodology set by the Electricity Authority came into force on 1 April 2023, seeking to address potential disadvantages for early investors. A key change included in the new methodology is a charge for second and subsequent investors that is refunded to the early investor, thereby spreading the cost of anticipatory connection capacity among those who benefit.¹⁹

Onshore wind

The completion of the 133MW Waipipi Wind Farm and the Turitea North Wind Farm in 2021, heralded a stream of new wind energy projects. The wind sector continues to grow in New Zealand, with development occurring through the country, building on New Zealand's existing wind generation capacity of approximately 690MW.²⁰ Three major wind projects are currently under construction and a number of others are in development, including the projects listed in the table below.

15 Eamon Rood, 'NZ Super scopes offshore wind grid access, offtake' (August 2022), *Energy News* (www.energynews.co.nz/news/offshore-windfarms/124282/nz-super-scopes-offshore-wind-grid-access-offtake).

16 RNZ, 'Oceanex Energy eyes Taranaki for offshore wind farms' (May 2021), (www.rnz.co.nz/news/business/441767/oceanex-energy-eyes-taranaki-for-offshore-wind-farms).

17 Eamon Rood, 'Belgian offshore wind firm sees big NZ potential' (June 2022), *Energy News* (www.energynews.co.nz/news/offshore-windfarms/122674/belgian-offshore-wind-firm-sees-big-nz-potential).

18 Transpower, 'Renewable Energy Zones', (February 2023), (www.transpower.co.nz/projects/renewable-energy-zones).

19 Electricity Authority, 'Code amendments to support the implementation of the new transmission pricing methodology', (June 2022), (www.ea.govt.nz/documents/1790/Decision-paper-Code-amendments-to-support-TPM-implementation.pdf).

20 New Zealand Wind Energy Association, 'New Zealand's Wind Farms', (www.windenergy.org.nz/wind-energy/nz-windfarms).

Developer	Wind farm	Capacity	Stage
Firstlight Network	Tairāwhiti ²¹	80MW	Planning
Genesis	Castle Hill ²²	300MW	Consenting phase
MainPower	Mt Cass ²³	93MW	Development
Manawa Energy	Huriwaka ^{*24}	130MW	Consenting phase
Mercury New Zealand	Kaiwaikawe ²⁵	73MW	Development
	Kaiwera Downs I ²⁶	43MW	Construction
	Kaiwera Downs II ²⁷	196MW	Development
	Puketoi ²⁸	228MW	Development
	Turitea South ²⁹	222MW	Construction
Meridian Energy	Harapaki ³⁰	167MW	Construction
	Mt Munro ³¹	60MW	Consenting phase
NZ Windfarms	Repowering of the Te Rere Hau Wind Farm ^{32, 33}	164MW	Consenting phase
Ventus Energy	Taumatotara ³⁴	48.4MW	Consenting phase
	Kaimai ³⁵	168MW	Consenting phase

* Previously known as the Central Wind Farm

- 21 Jacob McSweeney, 'Eastland eyes generation pipeline partners' (April 2023), *Energy News* (www.energynews.co.nz/news/electricity-generation/137248/eastland-eyes-generation-pipeline-partners).
- 22 Felicity Wolfe, 'Genesis downsizes Castle Hill, seeks more time' (April 2023), *Energy News* (www.energynews.co.nz/news/renewable-energy/137307/genesis-downsizes-castle-hill-seeks-more-time).
- 23 MainPower New Zealand Limited, 'Renewable Energy', (<https://mainpower.co.nz/about-us/renewable-energy>).
- 24 Felicity Wolfe 'Manawa eyes 230 MW at former Central Wind site' (May 2023), *Energy News* (www.energynews.co.nz/news/central-wind/138240/manawa-eyes-230-mw-former-central-wind-site).
- 25 Greta Yeoman, 'Project delays the new normal' (January 2023), *Energy News* (www.energynews.co.nz/news/electricity-generation/132777/project-delays-new-normal).
- 26 Jacob McSweeney, 'Kaiwera Downs' massive blades arrive in Bluff' (May 2023), *Energy News* (www.energynews.co.nz/news/kaiwera-downs/138374/kaiwera-downs-massive-blades-arrive-bluff).
- 27 See footnote 26.
- 28 See footnote 25.
- 29 Mercury NZ Limited, '2022 Annual Report' (August 2022), 9 (https://issuu.com/mercurynz/docs/mer0006_ar22_report_pp6_lr?fr=sYmI2ODQxNjE3MzA).
- 30 Jacob McSweeney, 'Damaged roads cloud Harapaki timeline – Meridian' (March 2023), *Energy News* (www.energynews.co.nz/search/content/Harapaki%20Wind%20Farm?f%5B0%5D=bundle%3Aarticle&f%5B1%5D=ds_created%3A%5B2022-12-31T11%3A00%3A00Z%20TO%202023-12-31T11%3A00%3A00Z%5D).
- 31 Meridian Energy Limited, 'Meridian Energy Annual Report' (2022), 26 (www.meridianenergy.co.nz/assets/Investors/Reports-and-presentations/Annual-results-and-reports/2022/Meridian-Integrated-Report-30June22.pdf).
- 32 NZX, 'Application Submitted for Fast-Track Consent – TRH Repower', (www.nzx.com/announcements/402572).
- 33 NZX, 'NZ Windfarms Ltd: Market Update', (www.nzx.com/announcements/409555).
- 34 Felicity Wolfe, 'Ventus eyes bigger turbines for Taumatotara' (April 2023), *Energy News* (www.energynews.co.nz/news/wind-energy/136988/ventus-eyes-bigger-turbines-taumatotara).
- 35 See footnote 34.

The renewable wind industry continues to grow in New Zealand, with development occurring throughout the country. The disbursement of generation coupled with electricity storage will help prevent supply shortages and mitigate the impacts of a dry-year event.³⁶

Geothermal

Construction on Tauhara, Contact Energy's 174MW geothermal development near Taupō, commenced in March 2021.³⁷ The project incurred delays and costs overruns as a result of covid-19 and supply chain disruptions, and is now expected to be operational by late 2023.³⁸ Firstlight Network, formerly known as Eastland Network, announced it is intending to develop two geothermal plants with a combined capacity of 85MW.³⁹ Firstlight Network currently has three geothermal production plants, with a combined generation capacity of 58MW in the Central North Island.⁴⁰

Solar generation

New Zealand is experiencing an unprecedented level of development and growth in solar generation. In 2022 New Zealand's total solar capacity increased by 35 per cent.⁴¹

Notably, at the larger end, Todd Generation gained approval to build what will be the country's largest solar farm, the 400MW project to be constructed south-east of Taupō. However, at the time of writing, the development of the project is subject to the outcome of an appeal over the resource consent.⁴² Construction on Lodestone Energy's 39MW solar farm in Kaitaia is underway with power generation expected in the third quarter of 2023, marking the first phase of Lodestone Energy's 229MW solar portfolio.⁴³ Also, Energy Bay, trading as Solar Bay Energy, is developing the Maungaturoto Solar Farm and has entered into a 10-year power purchase agreement with Mercury and New Zealand's largest rest home provider, Ryman Healthcare.⁴⁴

There has been a substantial increase in the number of medium to large-scale solar farms in development, which include those listed in the table below.

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- 36 Steve Rotherman, 'Solar imbalance in NZ energy mix?' (April 2023), *Energy News* (www.energynews.co.nz/news/downstream-2023/137239/solar-imbalance-nz-energy-mix).
- 37 Contact Energy Limited, 'Tauhara', (<https://contact.co.nz/aboutus/our-story/our-projects/tauhara>).
- 38 Eamon Rood, 'Tauhara 50% complete, first turbine arrives', (September 2022), *Energy News* (www.energynews.co.nz/news/geothermal/127261/tauhara-50-complete-first-turbine-arrives).
- 39 Steve Rotherham, 'Eastland Generation outlines 200 MW pipeline' (November 2022), *Energy News*, (www.energynews.co.nz/news/solar/131078/eastland-generation-outlines-200-mw-pipeline).
- 40 See footnote 39.
- 41 Electricity Authority, 'Installed distributed generation trends' (January 2023), (www.emi.ea.govt.nz/rlwmv2v).
- 42 Eamon Rood, 'Green light for Todd's 400 MW solar farm', (November 2022), *Energy News* (www.energynews.co.nz/news/electricity/130204/green-light-todds-400-mw-solar-farm).
- 43 Felicity Wolfe, 'Lodestone breaks ground on second site' (April 2023), *Energy News* (www.energynews.co.nz/news-brief/solar/138019/lodestone-breaks-ground-second-site).
- 44 Jacob McSweeney, 'Ryman secures Solar Bay output', (March 2023), *Energy News*, (www.energynews.co.nz/news/solar/135279/ryman-secures-solar-bay-output).

Developer	Solar farm	Capacity	Stage
Channel Infrastructure	Maranga Ra ⁴⁵	26MW	Development
Contact Energy and Lightsource BP JV	Glorit solar ⁴⁶	160MW	Planning
	Kōwhai Park ⁴⁷	170MW	Planning
Energy Bay (trading as Solar Bay Energy)	Albury ⁴⁸	20MW	Planning
	Fennessy Road, Naseby ⁴⁹	50MW	Development
	Maungaturoto ⁵⁰	20MW	Development
	Waimate ⁵¹	10MW	Planning
Far North Solar Farm and Aquila Capital JV	Pukenui ⁵²	16MW	Development
Genesis Energy and FRV Australia JV	Lauriston ⁵³	52MW	Development
HES Aotearoa†	Bunthythorpe ⁵⁴	20MW	Planning
	Clandeboye ⁵⁵	24MW	Planning
	Helensville ⁵⁶	51MW	Consenting phase
	Te Toke ⁵⁷	14MW	Planning
Harmony Energy	Tauhei ⁵⁸	147MW	Development
Hawkes Bay Airport and Manawa Energy JV	Hawkes Bay Airport ⁵⁹	24MW	Planning
Helios Energy	Edgecumbe ⁶⁰	115MW	Development
	Greytown ⁶¹	100MW	Planning
<p>* In partnership with Christchurch Airport. † Joint venture with Hive Energy, Ethical Power and Solar South West. ‡ In partnership with Te Riu o Waikato.</p>			

- 45 Mike Dinsdale, 'Channel Infrastructure wants new power supplier for Marsden Pt site' (August 2022), NZ Herald (www.nzherald.co.nz/northern-advocate/news/channel-infrastructure-wants-new-power-supplier-for-marsden-pt-site/SE6TD3YSK7ACYHQBNQ7ZGMNMTU/).
- 46 Lightsourcebp, 'Lightsource bp solar projects in New Zealand', (<https://lightsourcebp.com/nz/projects>).
- 47 See footnote 46.
- 48 <https://solarbay.com.au/project-map>.
- 49 Steve Hepburn, 'Farm looking to expand into solar power sector' (April 2023), Otago Daily Times, (www.odt.co.nz/regions/central-otago/farm-looking-expand-solar-power-sector).
- 50 See footnote 44.
- 51 See footnote 48.
- 52 Brent Melville, 'Far North Solar Farm a 'dead duck?' (October 2022), Business Desk (<https://businessdesk.co.nz/article/energy/far-north-solar-farm-a-dead-duck>).
- 53 Hive Energy, 'Renewable Energy Project Pipeline', (www.hiveenergy.co.uk/renewable-energy-project-pipeline).
- 54 See footnote 53.
- 55 See footnote 53.
- 56 Eamon Rood, 'Genesis secures 52MW Canterbury solar farm' (February 2023), *Energy News* (www.energynews.co.nz/news/solar/133867/genesis-secures-52-mw-canterbury-solar-farm).
- 57 See footnote 53.
- 58 Harmony Energy Limited, 'Harmony given the green light for developing New Zealand's largest solar farm' (September 2022) (www.harmonyenergy.co.uk/general/harmony-given-the-green-light-for-developing-new-zealands-largest-solar-farm).
- 59 Hawkes Bay Airport, 'Solar Farm Project' (<https://hawkesbay-airport.co.nz/about/sustainability/sustainability-solar-farm-project>).
- 60 Helios Energy Limited, 'Solar Energy Projects for the good of Aotearoa, New Zealand', (<https://heliosenergy.co.nz/projects>).
- 61 See footnote 60.

Developer	Solar farm	Capacity	Stage
Island Green Power Limited (trading as Waikato Solar Farms Limited)	Rangiriri ^{‡62}	130MW	Consenting phase
	Waerenga ^{‡63}	180MW	Consenting phase
	Waiterimu Valley ⁶⁴	140MW	Consenting phase
KeaX	Rolleston ⁶⁵	160MW	Consenting phase
Kiwi Solar Farms	Kairanga-Bunthythorpe ⁶⁶	28MW	Panning
Lodestone Energy	Dargaville ⁶⁷	Unconfirmed	Development
	Edgecumbe ⁶⁸	32MW	Construction
	Kaitaia ⁶⁹	39MW	Construction
	Waiotaha Valley ⁷⁰	Unconfirmed	Development
	Whitianga ⁷¹	Unconfirmed	Development
Meridian Energy	Ruakākā Energy Park ⁷²	120MW	Planning
Rānui Generation	Skinner Road ⁷³	32MW	Planning
	Three Streams ⁷⁴	32MW	Consenting phase
	Twin Rivers ⁷⁵	24MW	Development
Todd Energy (under subsidiary Nova Energy)	Rangitāiki, Taupo ⁷⁶	400MW	Consenting phase
* In partnership with Christchurch Airport. † Joint venture with Hive Energy, Ethical Power and Solar South West. ‡ In partnership with Te Riu o Waikato.			

The unprecedented increase in solar generation demonstrates that investors are excited by the financial returns and new development opportunities. Transpower anticipates that approximately 7.36GW of solar-produced electricity will be added to the national network

- 62 Eamon Rood, 'More solar referred for fast tracking' (April 2023), *Energy News* (www.energynews.co.nz/news/electricity/137371/more-solar-referred-fast-tracking).
- 63 See footnote 62.
- 64 See footnote 62.
- 65 Greta Yeoman, 'Kea planning 160MW solar project' (December 2022), *Energy News* (www.energynews.co.nz/news/solar/131310/kea-planning-160-mw-solar-project).
- 66 Carmelita Mentor-Fredericks, '45-hectare solar farm proposed for Palmerston North' (October 2022), *Farmers Weekly* (www.farmersweekly.co.nz/technology/45-hectare-solar-farm-proposed-for-palmerston-north).
- 67 Eamon Rood, 'Lodestone starts Edgecumbe solar construction', (March 2023), *Energy News*, (www.energynews.co.nz/news/electricity/135599/lodestone-starts-edgecumbe-solar-construction).
- 68 See footnote 67.
- 69 See footnote 67.
- 70 See footnote 67.
- 71 See footnote 67.
- 72 Steve Rotherman, 'Meridian starts works for big battery', (March 2023), *Energy News* (www.energynews.co.nz/news/batteries/135600/meridian-starts-works-big-battery).
- 73 Rānui Generation Limited, 'Rānui Generation Solar Farms' (<http://ranuigen.co.nz/projects>).
- 74 See footnote 73.
- 75 See footnote 73.
- 76 See footnote 42.

by the end of the decade, warning that the industry should carefully invest and plan to manage the pressure on the system, market infrastructure and regulatory framework from the increase in supply.⁷⁷

Hydrogen production

In late 2022, Meridian partnered with Woodside Energy and Japanese entity Mitsui & Co for the development of the Southern Green Hydrogen project, seeking to develop a 600MW green hydrogen and ammonia facility.⁷⁸ The project is forecasted to provide regular supply for 40 per cent of New Zealand's dry-year needs for electricity and aims to produce ammonia for international export. The parties are currently finalising commercial arrangements.⁷⁹

Resource consent for the Hiringa Energy and Ballance Agri-Nutrients green hydrogen joint venture project was granted (subject to conditions) in December 2021, but is currently subject to appeal. The High Court dismissed the appeal in October 2022, but Greenpeace appealed to the Court of Appeal, further delaying the project. If the project proceeds it will see the construction of a 24MW wind farm to generate electricity for the production of green hydrogen.⁸⁰

New Zealand's first nationwide hydrogen refuelling station network, developed by Hiringa Refuelling, achieved financial close in September 2021 and construction of the first station commenced in May 2022.⁸¹ Commissioning of the first four refuelling stations is expected at the end of 2023.⁸²

Trends in the electricity market

Wholesale electricity prices dropped throughout 2022, largely driven by a reverse in trends that had increased prices in recent years, such as low hydroelectric lake levels and tight gas supply.⁸³ Prices jumped in January 2023 from roughly NZ\$50 per MWh to NZ\$129 per MWh, reflecting the grid outages and critical events caused by adverse weather events.⁸⁴ The fluctuation in the electricity price creates problems for renewable development, with uncertainty making the forecasting of the future price curve for a project difficult.

Further, with 82 per cent of electricity coming from renewable sources, security of supply is a key risk for the New Zealand market. This was highlighted by the widespread blackouts

77 Eamon Rood, 'Transpower completely revises grid-scale solar forecasts' (April 2023), *Energy News* (www.energynews.co.nz/news/electricity/137587/transpower-completely-revises-grid-scale-solar-forecasts).

78 Meridian Energy Limited, 'Meridian's Southern Green Hydrogen Project selects Woodside Energy as preferred partner' (November 2022) (www.meridianenergy.co.nz/news-and-events/meridian-select-s-southern-green-hydrogen-partner).

79 Tim Daiss, 'Southern Green Hydrogen, possibly world's largest, advances' (December 2022), *Gas Outlook* (<https://gasoutlook.com/analysis/nzs-southern-green-hydrogen-possibly-worlds-largest-advances>).

80 See footnote 25.

81 RNZ, 'Work begins on first hydrogen refuelling station in North Island' (May 2022) (www.rnz.co.nz/news/business/466347/work-begins-on-first-hydrogen-refuelling-station-in-north-island).

82 Catherine Groenestein, 'Taranaki hydrogen developer warns NZ risk falling behind in green fuel projects' (April 10), *Stuff* (www.stuff.co.nz/taranaki-daily-news/news/300832635/taranaki-hydrogen-developer-warns-nz-risks-falling-behind-in-green-fuel-projects).

83 Electricity Authority, 'Wholesale price trends', (www.emi.ea.govt.nz/t/uvk5v).

84 See footnote 83.

throughout New Zealand on 9 August 2021, when record levels of demand coincided with an unexpected loss of generation from wind and hydro sources.⁸⁵ The variability of water inflows and the dry-year risk continue to be key concerns for the New Zealand electricity market.

Energy storage and risk mitigation

The NZ Battery Project, a government-sponsored initiative tasked with finding a 100 per cent renewable solution to New Zealand's security of supply challenges, is considering the efficacy of various technologies, including pumped hydro, demand-side response, bioenergy, geothermal energy and hydrogen to alleviate this risk.⁸⁶ In March 2023, the Cabinet announced plans to progress the NZ Battery Project from Phase 1 to Phase 2A. Phase 2A will involve the preparation of detailed designs and the review of policy to forecast the Lake Onslow pumped-hydro scheme's effectiveness in mitigating New Zealand's dry-year risk.⁸⁷ However, the NZ Battery Project team recognised the financial risks associated with Lake Onslow and have subsequently adopted a portfolio approach that will consider a variety of investments aimed at reducing New Zealand's dry-year exposure.⁸⁸ In connection with the NZ Battery Project, the government has indicated its desire to ban new fossil fuel baseload electricity generation, to further promote innovative low carbon methods to generate electricity and create resilience in New Zealand's electricity sector.⁸⁹ For a ban to be put in place, New Zealand's renewable energy industry must first demonstrate that it is resilient enough to cope with dry-year and critical events.

There has also been private sector investment and surveying in this space, the most notable being Meridian Energy's 100MW Ruakākā Battery Energy Storage System (BESS), which has commenced the first stages of construction and is expected to be operational in the third quarter of 2024.⁹⁰ WEL Networks and Infratec's 35MW BESS in Huntly was due to start construction in 2022. However, this project has experienced supply chain delays and there has been no indication when construction will now commence.⁹¹ Private investors have started to investigate the viability and versatility of using BESS in New Zealand to mitigate the shortfalls of wind and solar generation, and there is optimism that BESS may provide short-term supply security to meet the fluctuations in the demand and supply.⁹²

85 Steve Rotherham, 'Report identifies reforms to prevent blackout 'repeat' (October 2021), *Energy News* (www.energynews.co.nz/news/electricity-transmission/110379/report-identifies-reforms-prevent-blackout-repeat).

86 See footnote 10, at 213.

87 Minister of Energy and Resources, 'New Zealand Battery Project: Progressing to the Next Phase' (March 2023), (www.mbie.govt.nz/dmsdocument/26297-new-zealand-battery-project-progressing-to-the-next-phase-proactiverelease-pdf).

88 Steve Rotherman, 'Onslow not Battery Project's preferred option' (April 2023), *Energy News* (www.energynews.co.nz/news/pumped-hydro/136669/onslow-not-battery-projects-preferred-option).

89 See footnote 10, at 5.

90 Steve Rotherman, 'Meridian starts works for big battery' (March 2023), *Energy News* (www.energynews.co.nz/news/batteries/135600/meridian-starts-works-big-battery).

91 Greta Yeoman, 'Supply chain delays for Waikato BESS' (November 2022), *Energy News* (www.energynews.co.nz/news/grid-scale-batteries/130675/supply-chain-delays-waikato-bess).

92 Eamon Rood, 'Nickel-hydrogen among top-performing batteries – Ara Ake' (April 2023), *Energy News* (www.energynews.co.nz/news/batteries/136666/nickel-hydrogen-among-top-performing-batteries-ara-ake).

Future of Tiwai Point

The future of the Tiwai Point aluminium smelter has been in question ever since Rio Tinto, the smelter's majority shareholder, announced in July 2020 that it will close the smelter down in December 2024.⁹³ However, Rio Tinto has since expressed its intention to operate the smelter beyond 2024.⁹⁴ The smelter is directly connected to the Manapouri hydropower station and is New Zealand's single largest electricity consumer, consuming around 12 per cent of total electricity demand.⁹⁵ Meridian and New Zealand Aluminium Smelters signed an electricity supply agreement in April 2023 that will allow the smelter to reduce its electricity consumption by up to 50MW (subject to Electricity Authority approval).⁹⁶ This agreement will give Meridian flexibility to reduce the amount of electricity supplied to Tiwai Point if there is a supply shortfall due to a winter peak, critical event, or a dry-year.

Meridian announced that the development of the Southern Green Hydrogen project is not contingent on the smelter closing.⁹⁷ However, if the smelter closes in 2024, the hydrogen plant may provide an alternative use for the electricity currently consumed by the smelter.⁹⁸ Further, Tiwai Point is not one of the four sites currently being surveyed for the Southern Green Hydrogen project.⁹⁹

Interruptions in the market

Supply chain delays and cost escalations as a result of the war in Ukraine, the covid-19 pandemic and global inflationary pressures continue to be key challenges faced by renewable energy project developers, and have been cited as key challenges in the development of the Mt Cass Wind Farm, Huntly BESS project and Tauhara Geothermal Power Station.

III THE POLICY AND REGULATORY FRAMEWORK

i The policy background

As the government develops New Zealand's energy strategy for the foreseeable future, there has been a notable shift in policy from developing all of New Zealand's diverse energy resources (including oil, gas and coal), to an emphasis on accelerating investment in renewable energy generation, including the electrification of transport and process heat to help reduce New Zealand's energy-related emissions. The start of 2022 saw the end of the government's national energy strategy for 2011–2021. The new national energy strategy will set the policy direction and priorities for the energy sector, including setting a target for 50 per cent of total

93 RNZ, 'Tiwai Point aluminium smelter to keep operating until end of 2024' (Jan 2021) (www.rnz.co.nz/news/national/434490/tiwai-point-aluminium-smelter-to-keep-operating-until-end-of-2024).

94 See footnote 93.

95 Marc Daalder, 'Rio Tinto's Tiwai Point aluminium smelter – should it stay or should it go?', (October 2019), *Stuff* (www.stuff.co.nz/business/opinion-analysis/116851413/rio-tintos-tiwai-point-aluminium-smelter--should-it-stay-or-should-it-go).

96 Felicity Wolfe, 'Meridian, NZAS sign 50 MW DR agreement' (April 2023), *Energy News* (www.energynews.co.nz/news/demand-response/136932/meridian-nzas-sign-50-mw-dr-agreement).

97 Blair Jackson, 'Australian companies in the mix for NZ\$5b Southland hydrogen plant' (June 2020), *Stuff* (www.stuff.co.nz/business/green-business/129021380/australian-companies-in-the-mix-for-5b-southland-hydrogen-plant).

98 See footnote 97.

99 See footnote 97.

final energy consumption to come from renewable sources by 2035.¹⁰⁰ This ‘New Zealand Energy Strategy’ will be developed over the next two years and the government aims to release the final strategy at the end of 2024.¹⁰¹ The first three emissions budgets are stepping stones towards achieving New Zealand’s 2050 net zero target. The first emission budget, accompanied with the Emissions Reduction Plan sets the policies and strategies required to limit New Zealand’s emissions to 290 metric tonnes by 2025.¹⁰² In 2022, the Climate Change Emergency Response allocated NZ\$2.9 billion earned from the Emission Trading Scheme (ETS) to finance initiatives that emerged from the first emissions budget.¹⁰³

The primary driver of investment in renewable energy projects in New Zealand remains the ETS. The ETS incentivises investment in renewable energy ahead of fossil fuels by requiring carbon emitters to obtain and surrender emissions units to match the emissions from their operating activities. There is an overall cap on available units under the ETS and emitters can obtain units through the government’s industrial allocation, sequestration, the government’s quarterly auctions, or on the secondary market.¹⁰⁴ The ETS applies unit surrender obligations to about 52 per cent of New Zealand’s gross emissions.¹⁰⁵

For 2023, each auction will offer 4.475 million units, which is a decrease from 2022, with a price floor of NZ\$33.06 and a cost containment reserve of NZ\$80.64.¹⁰⁶ If the clearing price during an auction exceeds the cost containment reserve, the government can release more units to reduce the price. The government rejected the CCC’s recommendation in 2022 to significantly decrease the cap of units offered in each auction and increase the cost containment reserve.¹⁰⁷ Instead, the scheme will incrementally increase the price floor and cost containment reserve each year with the aim to reach a price floor of NZ\$44.35 in 2027 and a cost containment price of NZ\$129.97 in 2027.¹⁰⁸ Spot prices for units in the March 2023 auction decreased substantially from last year, with units trading at around

100 Ministry of Business, Innovation and Employment, ‘New Zealand Energy Strategy’ (October 2022) (www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-strategies-for-new-zealand/new-zealand-energy-strategy).

101 At footnote 4, at 10.

102 See footnote 10, at 14.

103 RNZ, ‘First Emissions reduction Plan spends NZ\$2.9b from Emergency Response Fund’ (May 2022), Radio New Zealand (www.rnz.co.nz/news/political/467196/first-emissions-reduction-plan-spends-2-point-9b-from-emergency-response-fund).

104 Ministry of the Environment, ‘ETS Auctions and how to buy New Zealand Emissions Units (NZUs)’ (June 2022), (<https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/ets/nz-ets-market/where-to-buy-new-zealand-emissions-units>).

105 Ministry for the Environment, ‘Coverage of the New Zealand Emissions Trading Scheme’ (June 2022), (<https://environment.govt.nz/what-government-is-doing/areas-of-work/climate-change/ets/coverage-of-the-nz-ets/#greenhouse-gases-covered-by-the-nz-ets>).

106 International Carbon Action Partnership, ‘New Zealand updates supply settings and auction price controls for 2023-2027’, (January 2023), (<https://icapcarbonaction.com/en/news/new-zealand-updates-supply-settings-and-auction-price-controls-2023-2027#:~:text=The%20new%20CCR%20trigger%20price,%2D5%20higher%20than%20before.>

107 Climate Change Commission, ‘Climate Change Commission recommends NZ ETS changes to stay on track for meeting emissions reductions targets’ (April 2023), (www.climatecommission.govt.nz/news/clima).

108 Ministry for the Environment, ‘government announces updated NZETS auction settings’ (December 2022), (<https://environment.govt.nz/news/government-announces-updated-nz-ets-auction-settings>).

NZ\$62.50 this year.¹⁰⁹ The CCC outlined that this reduction in the trading price of units will not result in the lowering of New Zealand's carbon emissions and reiterated the need to vastly decrease the total supply of units available.¹¹⁰

The renewable energy sector in New Zealand is not otherwise subject to any sector-specific support or fiscal mechanisms (including feed-in tariffs or renewable portfolio standards). While the government continues to champion the ETS as a primary component of New Zealand's strategy to drive the renewable energy sector, the industry and the government have recognised that it cannot be the only driver.

ii The regulatory and consenting framework

The Ministry for Business, Innovation and Employment (MBIE) acts as the regulatory steward of New Zealand's energy regulatory system and is responsible for developing regulatory policy in the energy sector. The Electricity Authority oversees the efficient operation of the electricity industry, undertakes market facilitation measures and monitors and enforces compliance with electricity market rules. The Electricity Authority is also responsible for the Electricity Industry Participation Code 2010 (the Code).

New Zealand's Commerce Commission promotes competition in New Zealand markets and is responsible for the economic regulation of natural monopolies, including Transpower and other electricity lines services under the Commerce Act 1986.

The Overseas Investment Office (OIO) regulates overseas investment in New Zealand under the Overseas Investment Act 2005 (OIA) and will be relevant to renewable energy project developments with more than 25 per cent ownership or control by overseas persons.

New Zealand's renewable energy environment is governed by a series of regulations designed to ensure security of supply, encourage renewable generation and keep renewable energy assets safe. The central regulatory tools governing the operation of New Zealand's renewable energy system are the Code, the Resource Management Act 1991 (RMA) and the ETS.

The Code governs the operations of electricity market participants. Each person who buys or sells electricity on the wholesale spot market, or who sells electricity to end users in the retail market, must register with the Electricity Authority as a market participant and comply with the Code.

New Zealand's electricity system consists of the following key participants:

- a* Transpower owns and operates New Zealand's national grid. Transpower acts as 'system operator' and has the role of coordinating the real-time transmission of electricity as a contracted service provider to the Electricity Authority.
- b* Contact Energy, Genesis Energy, Mercury NZ, Meridian Energy (together, the large 'gentailers') and Manawa Energy (which only generates electricity) collectively generate around 82.1 per cent of New Zealand's total electricity.¹¹¹

109 Gavin Evans, 'CCC seeks higher ETS prices, lower volumes' (April 2023), *Energy News* (www.energynews.co.nz/news/emissions-trading-scheme/137398/ccc-seeks-higher-ets-prices-lower-volumes).

110 See footnote 109.

111 Martin Kovacs, 'Biggest Power Providers: Which Companies have the largest market share?' (October 2022), (www.canstarblue.co.nz/energy/electricity-providers/biggest-power-providers).

- c There are 31 local electricity distribution businesses (EDBs) that transport electricity from the national grid, or from distributed generation, to end users.¹¹² Significant restrictions prevent EDBs from also engaging in retailing or generation of more than 250MW of electricity directly connected to the national grid (among other restrictions).¹¹³
- d More than 30 electricity retailers sell electricity to end users. However, about 83 per cent of end users buy their electricity from the four large gentailers.¹¹⁴

Generators and retailers must participate in the spot market for wholesale supply and purchase of electricity, which is administered by the Electricity Authority and hosted on the ASX. The RMA plays a central role in regulating the development of renewable energy generation in New Zealand. The RMA aims to ensure that natural and physical resources such as soil, air, water and buildings are managed sustainably. The effects that certain activities may have on resources are managed through a hierarchy of planning documents developed under the RMA. Those documents contain policies, standards and rules that prescribe whether an activity is permitted, requires resource consent or, in rare cases, is prohibited.

Renewable energy projects require resource consents from consenting authorities (which are predominantly regional and district councils) to commence a development or undertake activities that are not otherwise permitted under those rules or standards. The RMA regulates the process for obtaining a resource consent.

In making resource consent decisions, consenting authorities must consider the environmental impacts of allowing the activity, any mitigating or offsetting proposals and the relevant provisions of the hierarchy of planning documents, which include standards and regulations, national and regional policy statements, and regional and district plans. There is a suite of national directions which specifically apply to renewable energy generation.

The RMA places obligations on local and regional councils to consider climate change matters when preparing or changing their planning documents and when considering consent applications. For renewable energy projects, this means that a decision by the consent authority may also take into account the benefits that are likely to ensue from the new renewable project. There are a number of common hurdles to obtaining resource consents for renewable energy projects in New Zealand. The inherent sensitivity of the sites proposed for renewable energy project developments such as wind farms or hydro generation, together with the public participatory regime of the RMA, means that projects can attract significant opposition that can result in protracted hearing and appeal processes. For example, in respect of wind farm developments, objections have focused on factors such as landscape effects, ecology, visual impacts, blade reflections and turbine noise.

The RMA also requires consideration of Māori values and interests when determining applications for resource consents. When exercising functions and powers under the RMA, decision makers are required to recognise the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, *wāhi tapu*¹¹⁵ and other *taonga*,¹¹⁶ as a matter

112 Commerce Commission New Zealand, 'Electricity distributor map' (April 2023), (<https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-map>).

113 Electricity Industry Act 2010, section 73.

114 See footnote 111.

115 'Wāhi tapu' means a sacred place, sacred site or a place subject to long-term ritual restrictions on access or use (e.g., a burial ground, a battle site or a place where 'tapu' (sacred) objects were placed).

116 'Taonga' means treasure or anything prized and is a term often applied to anything considered to be of value including socially or culturally valuable objects, resources, phenomena, ideas and techniques.

of national importance; to have particular regard to *kaitiakitanga*,¹¹⁷ and to consider the principles of the Treaty of Waitangi.¹¹⁸ These obligations will often be further articulated and directed through the relevant planning documents and need to be considered when commencing a new project or for any major maintenance work.

Of particular relevance to the renewable energy sector is the significant role of the National Policy Statement for Renewable Electricity Generation 2011 (NPS REG) in promoting renewable energy project development in resource consents. The NPS REG sets out the objectives and policies for renewable electricity generation under the RMA and requires recognition of the benefits of renewable electricity generation activities. Notably, the NPS REG acknowledges that decision makers should have particular regard to the need to locate the renewable electricity generation activity where the resource is available, and the connection to existing infrastructure, especially the national grid is viable.

The government is currently consulting on proposals for making some changes to these regulations and the related policy that seek to make the consent process for renewable energy (i.e., solar, wind, hydro, geothermal, biomass, tidal and wave/current) more efficient, certain and environmentally sustainable. New renewable energy generation standards may also be developed at a second stage to support these proposals for change.

More broadly, significant reform of the resource management framework is underway at present and the repeal of the RMA and the introduction of three new pieces of legislation is expected in the near future: The Natural and Built Environment Act (NBA), the Spatial Planning Act (SPA), and the Climate Adaptation Act (CAA).¹¹⁹ Currently, in March 2023, the Select Committee is reviewing public submissions on the Bills and will report on any recommended changes by May 2023. The NBA Bill is likely to see a greater focus on achieving positive environmental outcomes, greater use of environmental limits, future consolidation of planning documents within a region, and it will be supplemented by the Spatial Planning Bill and Climate Adaptation Bill. The NBA continues to rely on national direction setting a number of key standards, so the current national policy statements and standard applicable to renewable energy generation will likely continue in a similar form after the NBA is enacted.

Notably, these new regulatory settings may provide a framework to better promote New Zealand's offshore renewable energy capability.¹²⁰ However, there is still a lack of clarity about how this supportive policy direction will be able to compete with the contrasting policy direction in the NZ Coastal Policy Statement, which takes a much more protective approach to developments in the marine area.

117 'Kaitiakitanga' means the exercise of guardianship.

118 The relationship between the Crown and Māori is founded on the Treaty of Waitangi. Investigations of claimed breaches of the Treaty are provided for under the Treaty of Waitangi Act 1975. Settlement of Treaty claims is a process between Māori and the Crown and involves both acknowledgement of and apology for breaches. It also sets out mechanisms to provide redress. Redress may involve vesting of Crown land or statutory acknowledgements or deeds of recognition in relation to Crown land or water bodies. Statutory acknowledgements apply to areas or sites with which iwi have a special relationship and will be recognised in any relevant proceedings under the RMA.

119 Ministry for the Environment, 'Pathway to reform' (September 2022), (<https://environment.govt.nz/what-government-is-doing/areas-of-work/rma/resource-management-system-reform/pathway-to-reform>).

120 Ministry of Business, Innovation and Employment, 'Enabling Investment in Offshore Renewable Energy: Discussion Document' (December 2022), 6 (www.mbie.govt.nz/dmsdocument/25828-enabling-investment-in-offshore-renewable-energy).

Renewable energy projects that have more than 25 per cent ownership or control by overseas persons, and involve investment in sensitive land or significant business assets may require a consent from the OIO before the investment can proceed. Whether land is 'sensitive land' under the OIA will depend on the area of land being acquired and the land type. For example, all non-urban land larger than five hectares is considered sensitive land.¹²¹ Temporary interests in sensitive land may also require consent, for example, where a lease has a term of 10 years or more. Leases of rural land with a term of less than 10 years and true easements are not considered 'interests in land' under the OIA and do not require OIO consent. Where the investment involves 'farm land', the landowner will be required to advertise the farm land to the market (to allow New Zealanders an opportunity to acquire the land) before entering into an agreement with the overseas person, but exemptions to this requirement may be obtained from the OIO. Overseas investment in 'significant business assets', being acquisitions in assets exceeding NZ\$100 million (or higher for certain jurisdictions), will also require consent from the OIO.¹²²

Additionally, investments in 'strategically important businesses' may need to be notified to the OIO. Strategically important businesses include businesses involved in electricity generation, distribution, metering, or aggregation if the business is a generator with a total nominal capacity in a financial year exceeding 250MW. These transactions may be blocked, or have conditions imposed, if it is considered necessary to manage significant national security and public order risks.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

Limited recourse project financing has been relatively limited in the New Zealand renewable energy sector. The large gentailers¹²³ have historically been responsible for the majority of new renewable energy project developments and they have primarily financed their projects on a corporate-financed or 'on-balance sheet' basis.

To the extent that there has been project financing of renewable energy projects in New Zealand, it has been driven largely by independent developers. Independents have found it relatively difficult to get renewable energy projects banked over the past decade because of difficulties creating projects of sufficient scale; difficulties attracting offtakers that will offer a sustained and satisfactory price; and the distance of the renewable energy projects from the national grid. However, the past few years have seen an increasing number of renewable energy projects banked on a limited recourse basis, mostly geothermal and wind projects, with solar increasingly joining the mix. The principal developers of project financed renewable energy projects have been:

- a* wind, solar and hydro projects: independent energy companies and developers, such as Contact Energy and Lightsource BP JV, Far North Solar Farm and Aquila Capital

121 Toitū Te Whenua Land Information New Zealand, "Identifying sensitive 'land' (www.linz.govt.nz/overseas-investment/discover/our-investment-pathways/investing-land-provide-benefit-new-zealand/identifying-sensitive-land).

122 Overseas Investment Act 2005, s 13.

123 Contact Energy, Genesis Energy, Mercury NZ and Meridian Energy.

- JV, Genesis Energy and FRV Australia JV, Harmony Energy, Helios Energy, Lodestone Energy, MainPower, Manawa Energy, NZ Windfarms, Solar Bay and Todd Energy/Nova Energy; and
- b* geothermal projects: Māori land settlement trusts that have ownership of or access to geothermal resources (often in partnership with the large gentailers), and Top Energy in Northland.

The lenders most active in New Zealand renewable energy project financing have been three of the ‘major’ New Zealand banks: ANZ Bank New Zealand, Bank of New Zealand and Westpac New Zealand. However, the Waipipi Wind Farm (completed in March 2021) saw international banks project finance a wind project in New Zealand for the first time.

The primary offtakers of power generated from renewable energy projects in New Zealand have been the large gentailers. They have been the offtakers under power purchase agreements (PPAs) or counterparties on hedging contracts in the wholesale market. Recently, Ryman Healthcare, Solar Bay and Mercury entered into a 10-year power purchase agreement which will enable Ryman Healthcare to procure up to 20MW of the electricity produced at the Maungaturoto Solar Farm.¹²⁴ Amazon Web Services entered into a 15-year power purchase agreement with Mercury New Zealand to purchase half (approximately 51MW) of the electricity generated at its Turitea South Wind Farm.¹²⁵ The electricity purchased will be used to operate Amazon’s data centres throughout the North Island.

Documentation for the project financing of renewable energy projects in New Zealand largely follows international norms. The key documentation includes:

- a* A PPA or hedge contract to fix long-term pricing for the output from the project.
- b* An engineering, procurement and construction contract to construct the project (EPC contract). However, we are beginning to see disaggregated construction arrangements with the project sponsors bearing a greater degree of integration risk (example.g., the construction contracts for the Kaiwera Downs I Wind Farm and Waipipi Wind Farm were split between turbine supply, civil balance of plant and electrical balance of plant contracts. Several other project sponsors have used or are considering similar models for their renewable energy projects, including the construction of Lodestone’s five solar farms).¹²⁶
- c* A long-term operation and maintenance agreement, particularly for wind and geothermal projects.
- d* Land rights agreements, which often take the form of leases or easements, depending on the nature of the project.
- e* A transmission services agreement (TSA) and a connection works agreement each with Transpower, to allow connection to the national grid and transmission of output from the projects, or a connection agreement and a connection works agreement with an EDB for access to a distribution network.
- f* A resource consent for the project.

124 See footnote 44.

125 Felicity Wolfe, ‘AWS contracts Turitea output for data centres’ (4 Apr 2023), *Energy News* (www.energynews.co.nz/news/wind-energy/136770/aws-contracts-turitea-output-data-centres).

126 Chapman tripp, ‘Westpac’s financing heats up NZ’s largest solar project’ (November 2022), (<https://chapmantripp.com/about-us/news/westpac-s-financing-heats-up-nz-s-largest-solar-project>).

Security structures generally follow international standards with security being held by the financier directly or (where there are multiple financiers) by a security trustee under a security trust structure. Security typically comprises all-asset security provided by the project vehicle (including over rights under project contracts, interests in land, consents and licences) and share security given by the holding entity. In addition, financiers will normally have the benefit of direct deeds with project contract counterparties.

Bank debt tenors for project financing of renewable energy projects in New Zealand over the past few years have typically been in the range of three to seven years, with most around five years.

As project financing of renewable energy projects is not a standard practice in New Zealand, as in many other countries, each project tends to have its own unique features. We highlight below some impediments new renewable energy projects may face:

- a* Under the Code, it is not possible to enter into a TSA with Transpower until the project is connected to the national grid (which is usually well after financial close). The Code addresses this issue by requiring Transpower to offer a default transmission agreement to the project, which is found in the Code. In addition, Transpower does not generally agree to enter into direct deeds.
- b* A renewable energy project will require resource consents (as described above). Depending on the level of local opposition, it can take a prolonged period to obtain suitable resource consents and this must be factored into any project programme.
- c* Where the project involves land not registered under New Zealand's Torrens land registration system (such as Māori land) or that is not held privately (such as land owned by government entities or utilities), obtaining the necessary land rights to conduct the project, and formulating and registering an appropriate security package for the particular land, can be complex and time-consuming.
- d* Geothermal projects rely on access to the geothermal resource, which is often held by Māori land settlement trusts. Care needs to be taken when structuring security arrangements so the project can access the geothermal resource after the security has been enforced.

ii Non-project finance development

Most renewable energy projects in New Zealand are funded by the large gentailers on balance sheet using corporate-financed structures. We have, however, seen some hybrid structures under which a form of limited parent guarantee or underwriting has been provided to ensure the project is bankable.

V DISTRIBUTED AND RESIDENTIAL RENEWABLE ENERGY

Distributed solar energy and storage is beginning to play a greater role in New Zealand's energy mix. The Electricity Authority attributed an increase in residential distributed networks to be largely responsible for the 35 per cent increase in New Zealand's total solar capacity in 2022.¹²⁷ New Zealand's distributed solar generation capacity increased by a record 33.8 per

127 See footnote 41.

cent in 2022.¹²⁸ Electricity Authority figures evidence that at the end of 2022, New Zealand had 255.2MW of distributed solar capacity, up from 190.8MW at the end of 2021.¹²⁹ This is a 264 per cent increase from five years ago, when total installations reached 70MW.

Structures for rooftop solar projects range from standard supply and installation packages, where end users connect to the distribution network as a distributed generator, to fixed-price solar and battery packages with no upfront costs but a long-term fixed-price commitment.¹³⁰ Key participants in this market include Sunergise, solarZero, Vector Powersmart, Sky Solar, Harrison's Energy Solutions, Trilect Solar and CPS Solar.

Many entities are developing small-scale commercial solar networks on their premises for their own consumption. Kāinga Ora, the New Zealand state housing operator, is seeking bids to install solar on 100 state homes in Counties Manukau, which will be its second largest solar rollout to date. This aims to help tenants who cannot afford heating and to incorporate sustainable living into public housing.¹³¹

VI MERGERS AND ACQUISITIONS

Notable recent acquisitions include:

- a* In May 2022, Mercury NZ acquired Trustpower's retail business for a final price of NZ\$467 million.¹³² On completion, Mercury NZ acquired Trustpower's 234,000 retail customers and Trustpower became New Zealand's largest standalone electricity generator and renewable energy project developer under a new brand, Manawa Energy.¹³³
- b* In March 2023, Firstgas Group, owned by Australian based Igneo Infrastructure Partners, acquired 100 per cent of Eastland Network, now Firstlight Network.¹³⁴ Eastland Group owned regional infrastructure, including Gisborne Airport, Eastland Port, Eastland Network, and a number of geothermal power plants.¹³⁵ Firstlight Network will develop the existing pipeline of renewable energy projects and manage the existing utilities, assets and electricity supply to the Gisborne region.¹³⁶ The acquisition was for NZ\$260 million.¹³⁷
- c* In late 2022, BlackRock Real Assets announced that it has agreed to acquire solarZero – New Zealand's leading provider of solar, battery storage and energy services. The acquisition will see BlackRock Real Assets spend more than NZ\$100 million over the next three years to accelerate the growth of solarZero's solar and battery

128 Greta Yeoman, 'NZ rooftop solar sets new records' (January 2023), *Energy News*, (www.energynews.co.nz/news/solar/133367/nz-rooftop-solar-sets-new-records).

129 See footnote 128.

130 www.solarcity.co.nz/solarzero.

131 Jacob McSweeney, 'More solar for state houses' (March 2023), *Energy News* (www.energynews.co.nz/news/solar/135745/more-solar-state-houses).

132 NZX, 'Trustpower retail acquisition unconditional' (May 2022), (www.nzx.com/announcements/391278).

133 Steve Rotherham, 'Manawa eyes opportunities as Trustpower sale finalises' (May 2022), *Energy News* (www.energynews.co.nz/news/mergers/119909/manawa-eyes-opportunities-trustpower-sale-finalises).

134 Steve Rotherman, 'Firstgas to buy Eastland Network' (November 2022), *Energy News* (www.energynews.co.nz/news/geothermal/130800/firstgas-buy-eastland-network).

135 See footnote 134.

136 See footnote 134.

137 See footnote 134.

technology platform.¹³⁸ Information as to the value and timeline of the solarZero transitions is still to be reported. However, the solarZero acquisition has further confirmed the growing overseas investment interest in the New Zealand renewable energy sector.

- d In February 2023, Vienna-headquartered OMV decided to explore the possibilities of selling its Asia-Pacific oil and gas assets, including 100 per cent of the shares in OMV New Zealand Limited. The company is New Zealand's largest gas producer and its assets include full ownership of the Maui gas field and a 74 per cent stake in the Pohokura gas field, as well as 69 per cent of the Maari oil field.¹³⁹ According to Meridian Energy chief executive, Neal Barclay, this proposed divestment will not necessarily jeopardise the energy transition, however if it signals less investment in gas supplies and infrastructure while most renewables projects are still being built, then that could be a big problem¹⁴⁰ because gas enables wider deployment of intermittent wind and solar generation.¹⁴¹
- e In February 2023, the Genesis Energy and FRV Australia JV announced it had signed an agreement with HES Aotearoa to acquire the development rights to construct the 52MW Solar Farm near Lauriston, Canterbury. Construction is expected to commence later this year with generation expected in 2024.¹⁴²

VII RENEWABLE ENERGY SUPPLY CHAINS

On a global scale, New Zealand has a relatively small renewable energy manufacturing sector limited to discrete, small to medium-sized businesses that focus on developing novel product technologies and intellectual property, as opposed to mass-scale manufacturing.

The government offers no sector-specific subsidies for the manufacture of renewable energy products in New Zealand. Although the government continues to emphasise the importance of growth in New Zealand renewable energy generation and investment in emerging renewable energy technologies, the role of New Zealand renewable energy product manufacturers has not generally been a major consideration.

In April 2019, the government established New Zealand Green Investment Finance Limited (NZGIF), a green investment bank with an initial NZ\$100 million of investment capital with further investments of NZ\$300 million in May 2021¹⁴³ and NZ\$300 million in

138 NZ Green Investment Finance, 'solarZero announces acquisition by Black Rock Real Assets' (September 2022), (<https://nzgif.co.nz/news-and-events/solarzero-announces-acquisition-by-blackrock-real-assets>).

139 Steve Rotherham, 'OMV seeks buyer for NZ business' (February 2023), *Energy News* (www.energynews.co.nz/news/oil-and-gas/134780/omv-seeks-buyer-nz-business).

140 Eamon Rood, 'Tiwai deal not certain, gas sector investment critical – Meridian' (March 2023), *Energy News* (www.energynews.co.nz/news/poll/135172/polls-who-will-buy-maui-and-pohokura-energy-reset-priorities-pm).

141 Steve Rotherham, 'POLLS: Who will buy Maui and Pohokura? Energy reset prioritises for PM' (March 2023), *Energy News* (www.energynews.co.nz/news/poll/135172/polls-who-will-buy-maui-and-pohokura-energy-reset-priorities-pm).

142 See footnote 56.

143 Eamon Rood, 'Govt adds NZ\$300m to green investment fund' (May 2021), *Energy News* (www.energynews.co.nz/news/climate-change/93981/govt-adds-300m-green-investment-fund).

May 2023.¹⁴⁴ The focus of the NZ\$700 million fund is to accelerate investment in low carbon solutions in New Zealand, and attract larger sums of private capital focused on developing renewable energy products.¹⁴⁵ To date, it has invested NZ\$163.45 million of debt and equity in 16 companies across various sectors including transport, agriculture, distributed energy and energy efficient services, including:

- a A NZ\$50 million financing deal to enable trans-Tasman bus operator Kinetic to deliver up to 150 electric buses.¹⁴⁶
- b A 20 million debt facility to leading international electric vehicle fleet and battery storage specialist, Zenobē, to electrify New Zealand's bus fleet.¹⁴⁷
- c A NZ\$10 million debt facility to Solagri Energy, for its solar offering to the dairy sector. Solagri will help install 120 arrays over the next three years, which will avoid 36,100 tonnes of carbon emissions.¹⁴⁸
- d A NZ\$10 million subordinated credit facility for Sustainable Fleet Finance from NZGIF alongside, a NZ\$10m facility from NZ Post to accelerate the transition of its contractor fleet to electric vehicles.¹⁴⁹
- e A NZ\$8 million debt facility (combined with NZ\$10 million in reserve) to solarZero Schools to provide solar facilities for schools across New Zealand.¹⁵⁰
- f A NZ\$1 million debt facility to electric vehicle charging provider, Thundergrid, to help the company accelerate its rollout of charging infrastructure and encourage the uptake of electric vehicles.¹⁵¹

New Zealand is party to 13 free trade agreements with several countries and does not impose any specific tariffs on renewable energy equipment from its trading partners.

VIII CONCLUSIONS AND OUTLOOK

The government has recognised that significant investment in New Zealand's renewable energy generation capacity is required if New Zealand is to maintain energy security, affordability and environmental sustainability, while pursuing the government's ambitious renewable electricity and climate change goals.

The Emissions Reduction Plan and various investment schemes employed by the government provide strong signals that it is committed to its net zero transition. Indeed,

144 Eamon Rood, 'NZGIF gets NZ\$300m boost' (May 2023), *Energy News* (www.energynews.co.nz/news/green-investment/138801/nzgif-gets-300m-boost).

145 See footnote 144.

146 Jacob McSweeney, 'Kinetic gets NZ\$50m for more e-buses' (March 2023), *Energy News* (www.energynews.co.nz/news/electric-vehicles/136340/kinetic-gets-50m-more-e-buses).

147 Greta Yeoman, 'NZGIF backs UK E-bus firm' (April 2022), *Energy News* (www.energynews.co.nz/news/electrification/119770/nzgif-backs-uk-e-bus-firm).

148 Eamon Rood, 'Solagri secures NZ\$10m NZGIF loan' (December 2022), *Energy News* (www.energynews.co.nz/news/electricity/131356/solagri-secures-10m-nzgif-loan).

149 NZGIF, 'Statement of Performance Expectations 2022-2023' (June 2022), 8 (<https://nzgif.co.nz/assets/Files/NZGIF-Statement-of-Performance-Expectations-2022-2023.pdf>).

150 See footnote 149, at 8.

151 Eamon Rood, 'Thundergrid gets NZ\$1m NZGIF loan' (February 2023), *Energy News* (www.energynews.co.nz/news/electric-vehicles/133597/thundergrid-gets-1m-nzgif-loan).

the major changes in regulatory framework and increased activity in the private markets have signalled that there is likely to be sustained growth in the number of renewable energy projects in New Zealand in the coming years.