Wellington Registry **ENV-WLG-2024-001**
Te Whanganui-a-Tara Rohe

In the Environment Court
I Mua I Te Kōti Taiao O Aotearoa

Under the Resource Management Act 1991

and in the matter of the direct referral of an application for resource consents by Meridian Energy Limited in respect of the proposed Mt Munro wind farm under section 87G of the Resource Management Act 1991 (**RMA**).

Meridian Energy Limited
Applicant

and

Tararua District Council, Masterton District Council, Manawatū-Whanganui Regional Council and Greater Wellington Regional Council (**Councils**)
Consent Authorities

and

s 274 Parties

Statement of Evidence of Grant John Barnard Telfar on behalf of Meridian Energy Limited

24 May 2024

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QUALIFICATIONS AND EXPERIENCE

1. My full name is Grant John Barnard Telfar.

2. I hold a BSc (Hons) in mathematics and statistics and an MSc in statistics and operations research. I am an industry advisor in the Development team for Meridian Energy Limited (**Meridian**) based in Wellington. I have held this position since 2021, and have worked in the electricity industry for 30 years.

3. My responsibilities include:

   (a) ensuring that a long-term strategic view guides Meridian's renewable energy development aspirations and activity; and

   (b) the commercial valuation of Meridian's pipeline of renewable energy options as projects move from concept through to a final business case and investment decision.

4. Overall, I help guide the creation and management of Meridian's long-term power system, economic, and market views to 2050, which includes the role of new generation assets such as the Mt Munro Windfarm. Before my current role, from 2019 I was the modelling and portfolio manager within the Wholesale Trading team at Meridian, and prior to that, from 2014, I was a strategic advisor within the Strategy and Finance team at Meridian.

5. In these roles I was responsible for identifying future energy system scenarios for Meridian and leading the economic modelling to underpin iterations of Meridian's corporate strategy. When Meridian and other New Zealand wind developers began establishing grid-connected wind generation, I led the analysis and report writing in collaboration with Professor Goran Strbac of Imperial College London regarding the system impacts and costs of integrating wind power into the New Zealand electricity system.[1] That analysis and report remain the authoritative analysis of wind integration in New Zealand.

[1] Gorban Strbac, D.P et al, *The System Impacts and Costs of Integrating Wind Power in New Zealand*, 2008.

6. In these roles I provided the main economic and financial analysis and advice for a number of business cases for Meridian Board decisions to invest in nearly 700MW and approx. $2 billion in Meridian's new generation development projects, spanning the period 2004 to 2024.

7. Before 2014, I held a variety of roles with Meridian, and with a number of local and international advisory consulting firms, focusing primarily on strategy, analytics, and power system economics. I have 30 years' experience in the electricity sector.

8. This statement is not made as an expert but rather it is a statement in the context of my position with Meridian. The primary purpose of my statement is to assist the Court in understanding the context of wind development options as part of the wider electricity system in New Zealand and its importance with respect to the contribution to the same, particularly in the context of increasing demand scenarios as New Zealand moves towards a lower-carbon economy. I confirm, however, that I have read the Environment Court of New Zealand Practice Note 2023 and that I have complied with it when preparing my evidence.

9. I am authorised by Meridian to present this evidence as its representative, in relation to Meridian's application for resource consents for the Mt Munro Wind Farm proposal (**Mt Munro** or the **Project**).

10. I have also read and am familiar with the statements of evidence of Dr Jennifer Purdie (Climate Change), Nicholas Bowmar (Project Design and Consultation).

SCOPE OF EVIDENCE

11. My evidence addresses:

    (a) Meridian's role in the energy sector;

    (b) the New Zealand Electricity Market and how this operates;

    (c) the role of renewable electricity generation and the energy choices facing New Zealand;

(d) wind development in New Zealand and Meridian's wind development philosophy;

(e) the benefits that can be attributed to wind projects; and

(f) submissions which raise issues in relation to New Zealand's energy system.

INTRODUCTION TO MERIDIAN ENERGY

12. In this section of my statement, I provide an overview of Meridian. The purpose of this is to give context to Meridian's development of new wind generation.

13. Meridian was one of four companies formed from the split of the Electricity Corporation of New Zealand (**ECNZ**) beginning with Contact Energy Limited in Nov 1995, then followed by Genesis Energy Limited, Mighty River Power (now Mercury), and Meridian on 1 April 1999. All companies are now listed, with Contact fully privatized, while the other three mixed ownership model companies remain partially state owned. Meridian is now listed on the New Zealand and Australian stock exchanges and is 51% owned by the New Zealand Government.

14. Meridian is a renewable energy generator and electricity retailer, and is committed to generating electricity from 100% renewable sources – water, wind and sun. The company generates around 30% of New Zealand's current electricity production.

15. Meridian's core business is the generation, marketing, trading and retailing of electricity and the management of associated assets and ancillary structures in New Zealand.

16. Meridian retails electricity across New Zealand with around 290,000 customers supplied through its Meridian and Powershop brands.

17. Meridian owns and manages:

(a) two hydro-electricity schemes in New Zealand: the Waitaki Power Scheme (from Lake Pūkaki downstream and comprising 6 power stations), and the Manapōuri Power Scheme; and

(b) six wind farms in New Zealand: Te Uku (Raglan), Te Āpiti (Manawatū), Harapaki (Hawke's Bay – currently under construction), Mill Creek (Wellington), West Wind (Wellington) and White Hill (Southland) and has entered into a joint venture with New Zealand Windfarms Limited for the repowering and extension of the Te Rere Hau windfarm (Manawatū-Whanganui).

18. Meridian's hydro stations generate enough electricity to power the equivalent of around 1.6 million homes each year and its wind farms generate enough electricity to power the equivalent of around 270,000 homes each year.

19. Meridian is actively investigating and pursuing options for new renewable generation capacity and is investigating a number of sites that have potential for wind and solar development. Meridian is also developing grid resilience and reserve options, such as the Ruakākā Energy Park near Whangārei which will include a 100 MW battery storage system (currently under construction) together with a proposed 120 MW solar farm. Meridian has also recently put forward two projects which it considers should be in the list of projects included in the Fast-track Approvals Bill. These are:

(a) **Waiinu Energy Park**, located 42km north-west of Whanganui in South Taranaki. This project would comprise wind generation (350 MW, 50 turbines), solar generation (400 MW), and a battery storage system, with a maximum annual generation of approximately 2,000 GWh. The project is one of the largest economic renewable energy development opportunities in New Zealand that Meridian is aware of; and

(b) **Western Bay Solar**, located on the western side of Lake Taupo. This project would have a maximum capacity of 500 MW.

20. Meridian has a proven track record in the development and operation of energy projects both in New Zealand and overseas, and within sensitive areas such as the Fiordland National Park and Ross Island, Antarctica. We have an experienced generation team which has been managing wind farms for over 20 years. We have built on this experience as we continue to develop wind farms today.

21. Meridian brings this approach and experience to the design of the Mt Munro wind farm, and to its construction and operation should consents be granted.

THE NEW ZEALAND ELECTRICITY SYSTEM AND HOW IT OPERATES

22. The New Zealand Electricity System and how it operates today are outcomes of the physical elements of the country and the electricity system overlaid by Government reform prior to and during the 1990s. This culminated in the establishment of a wholesale marketplace for the generation and sale of electricity in 1996.

23. The government reforms split the sector into generation, transmission, distribution, retail and consumers, and established a regulatory regime to oversee the competitive and monopoly elements of the industry. This is diagrammatically represented in Figure 1 below.

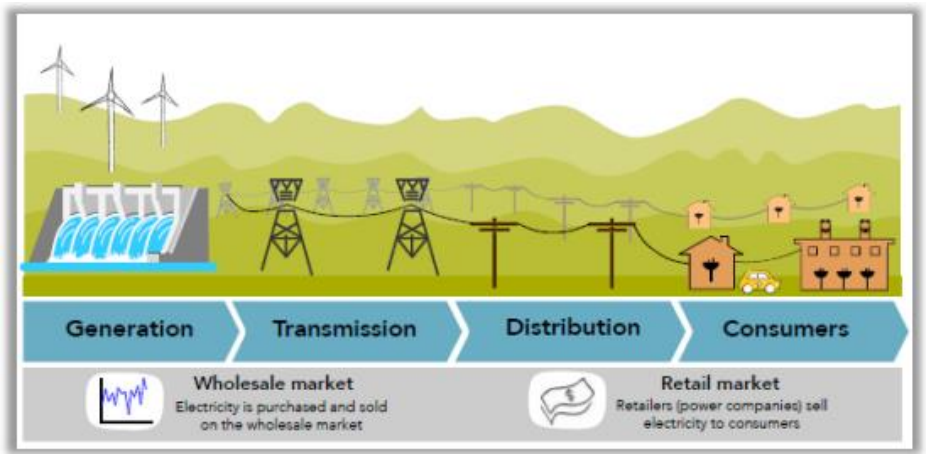


Figure 1: The New Zealand electricity system[2]

[2] New Zealand Productivity Commission – Low-emissions economy – Final report August 2018

24. The New Zealand Electricity Authority, which replaced the previous government authority (the Electricity Commission) in November 2010, was established as an independent Crown entity responsible for the efficient operation of the New Zealand electricity market. The Authority is a dedicated electricity market regulator. Its purpose is to promote competition and ensure a reliable supply by the efficient operation of the electricity industry for the benefit of consumers. The Commerce Commission regulates the monopoly aspects of the industry, transmission and distribution.

25. Transpower performs two functions within the electricity system. Its first function is as the Grid Owner and operator of the national grid. Its second function is as the System Operator. As System Operator Transpower is responsible for managing the real-time power system and operating the wholesale electricity market. This ensures that generation matches demand at all times and that electricity is dispatched to meet demand securely and at lowest cost. The System Operator facilitates the market clearing process to ensure that demand and supply match at all times. It is not in and of itself responsible for any individual actions taken within the power system, aside from actions specified in the Electricity Industry Participation Code that can be taken during rare periods of emergency management of the power system when under stress.

26. The electricity market in New Zealand is an energy only marketplace. Generators compete for the opportunity to generate electricity and get paid for what they supply at the marginal market price for each half hourly trading period. The marginal market price is the highest price at which electricity is supplied to the National Grid in each half hour. There is generally mandatory separation between lines and retail electricity businesses and there is open and equal access to transmission and distribution networks. Finally, there is full retail contestability between providers. In broad terms, this means that *any* new retailer or any new load or generation that complies with consent conditions and connection standards can begin operations when they themselves are convinced that there is a commercial opportunity.

27. The New Zealand electricity market includes competitive wholesale and retail markets, as depicted in Figure 2. Electricity markets have relatively unique characteristics in that, once generated, electricity cannot be easily stored in the system and generation must be continuously matched with consumption on a moment-to-moment basis to ensure that the entire system is maintained in a stable and secure state. As discussed above it is the role of the System Operator to co-ordinate the matching of supply and demand in real time.

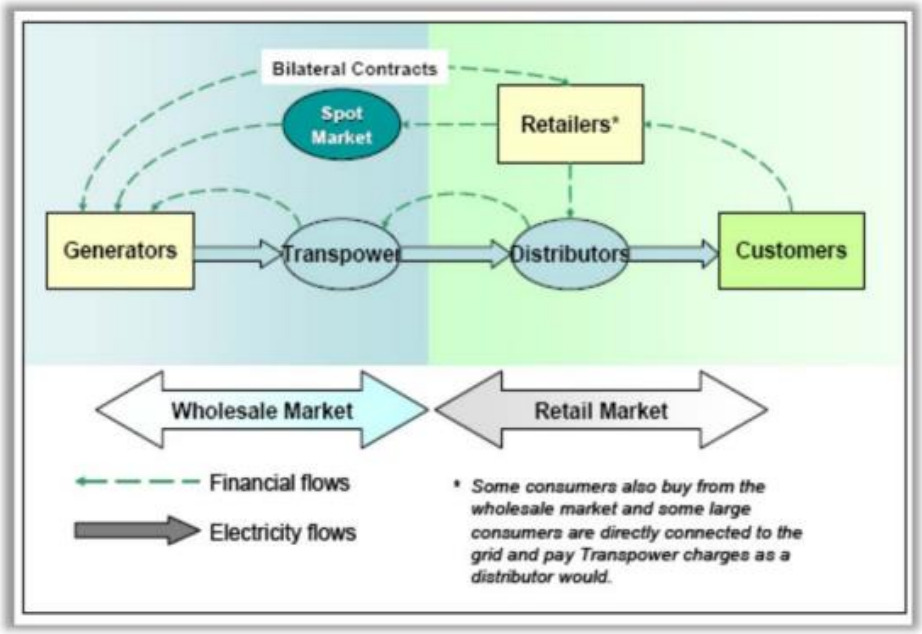


Figure 2: The commercial structure of New Zealand's Electricity Market

28. The nature of New Zealand's power system is determined by its geography, population base and natural resources (see Figure 3). The network by its nature is isolated, long and drawn out across the length of the country. Demand is dominated by the North Island with energy being exported or imported between both islands via the High Voltage Direct Current (HVDC) link. Most of the time there is a positive flow of electricity energy to the North Island via this link, although sometimes the flow of electricity is in the opposite direction, depending on the state of hydro generation and storage in the South Island and relative levels of demand.

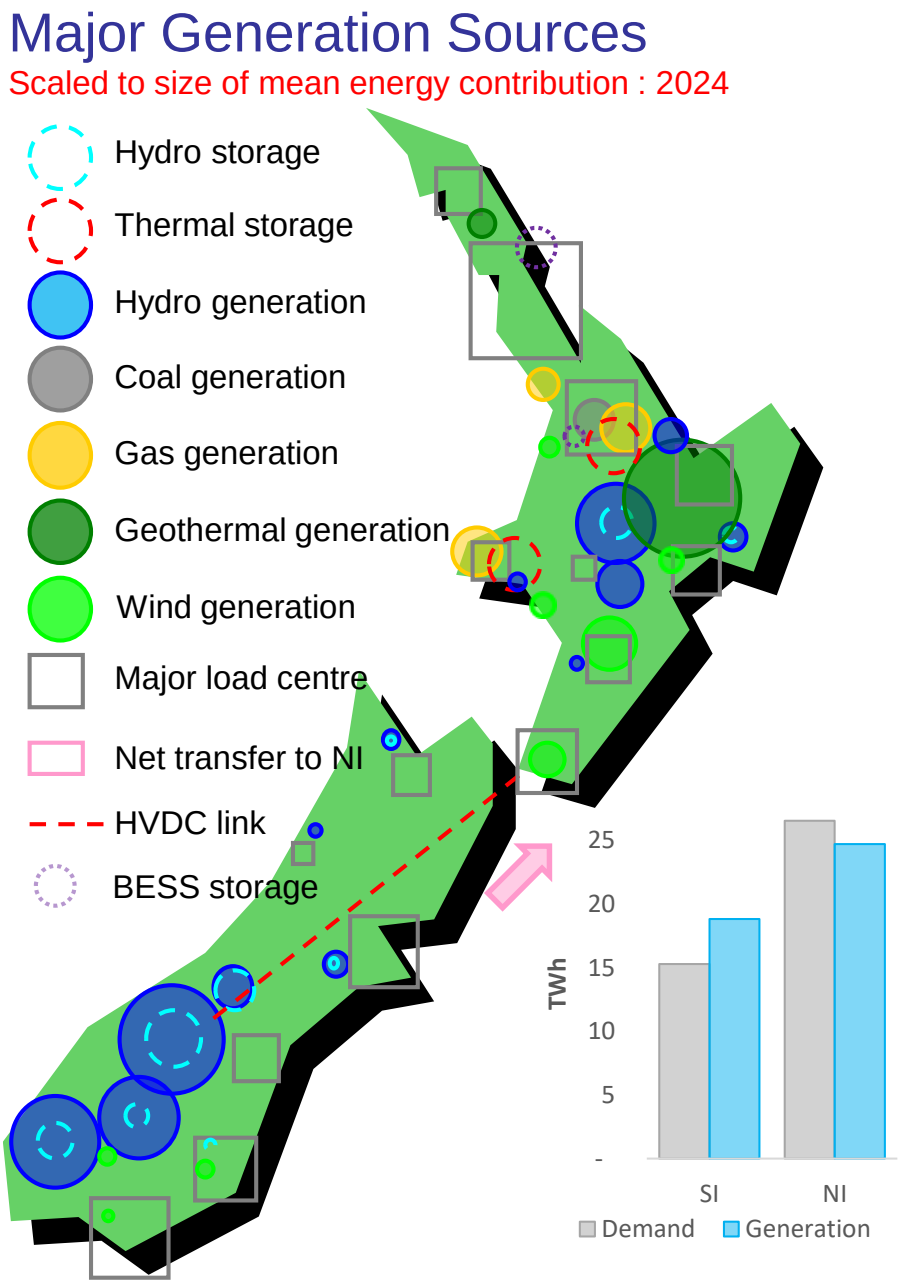


Figure 3: The New Zealand power system – key generation sources by fuel type, Meridian Energy

THE SIGNIFICANCE OF WIND GENERATION WITHIN THE NEW ZEALAND ELECTRICITY SYSTEM

29. The New Zealand power system has historically been characterised by the dominance of hydro generation of electricity. As other new generation has been added to the system, the proportion of total generation from hydro has declined from a high of 80% in the 1970s to between 50–60% in recent years. This proportion will likely reduce further over time as total demand and supply grow with only a modest

amount of remaining economic and realistically consentable hydro development likely.

30. There has been a significant wave of new wind, solar, and geothermal projects commissioned over the last few years. However, hydro generation is still the largest single source of generation at approximately 57% (25TWh) per annum in a typical year. Geothermal contributes around 20% (9TWh), wind contributes 10% (4.3TWh), and coal, gas and thermal plant together contribute 5–15% (2–7TWh) depending on rainfall conditions.

31. Beginning with the original Brooklyn wind turbine in Wellington, commercial wind development in New Zealand has grown to over 20 individual wind facilities and 1,250MW of installed capacity as at 2024 – see Figure 4. Most commentators suggest there will be a large increase in wind's contribution to the power system over the next three decades (Boston Consulting Group Limited (**BCG**) in Figure 5 suggest that at 6,000MW by 2050 there could well be a fivefold increase from today). The projected unprecedented increase in demand for electricity, and the consequent need for new generation, is covered in more detail in the evidence of Dr Purdie.

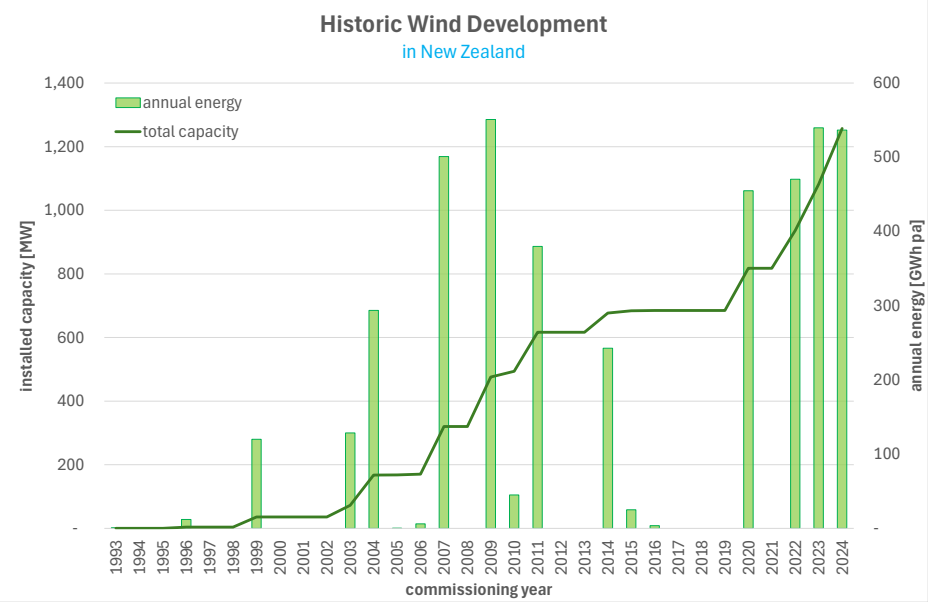


Figure 4: Historical wind development in New Zealand 1993 to 2024, Meridian Energy Limited

RENEWABLE GENERATION

32. As well as being New Zealand's largest generator of electricity, Meridian is also the country's largest generator of renewable energy, is committed to generating electricity from 100% renewable sources.

33. This commitment has several key drivers. Most obviously there is an environmental dividend – in our view, generation from renewable sources has the least life-cycle impact on the environment and will help New Zealand meet its decarbonisation goals.

34. Of equal importance to the environmental benefit is the fact that New Zealand's renewables are the lowest-cost option available to generate electricity to meet society's needs. New Zealand has benefited from half a century of low-cost electricity from our hydro-stations. New Zealand can continue to build on that heritage with innovative development of large-scale wind and solar power, paired with battery storage systems.

35. The careful selection and development of the best sites will result in both environmental benefits and the market and system benefits of secure power supply at lowest cost. As explained in Mr Bowmar's evidence, the Mt Munro site has been assessed as one of the best in Meridian's portfolio.

36. The benefit of low-cost power is a community/societal benefit. It is critical that companies such as Meridian meet the challenge of a growing need for electricity by pursuing the lowest cost options that are available to them. The electricity market and commercial investment disciplines ensure that Meridian and other market participants make prudent decisions about which projects to consent and construct.

37. Economic gains are derived where renewables are dispersed, rather than concentrated in a single location. Dispersed development means that each region can make a contribution to a national system providing diversity and resilience, one that is greater than the sum of all its parts. The location of Mt Munro within New Zealand's overall generation and distribution network is a positive factor.

38. In addition, when wind farms are generating, hydro inflows can be held in storage. When wind generation is low, reserved hydro capacity can make up for the shortfall. Wind variability tends to be over a few days, while hydro storage varies over a longer timeframe (typically six months), so wind and hydro together make an excellent combination for a secure supply.

39. Developing renewables is good for the environment, good for the economy, good for society, and good for New Zealand – especially given the urgent need for new renewable electricity generation as part of New Zealand's decarbonisation goals, as described in the evidence of Dr Purdie. But developing renewables is not easy.

OUR WIND DEVELOPMENT EXPERIENCE

40. Wind developers compete for transmission capacity, for equipment prices and performance. Most of all, developers compete for the best sites.

41. With Meridian's existing experience, we are able to maximise the chances of project success (both consenting and economic). Meridian is careful and deliberate in our approach to all aspects of developing a wind farm proposal, a process which is explained in greater detail in the evidence of Mr Bowmar. We focus on developing good relationships that will thrive, not just survive, throughout the inevitable ups and downs of a project.

42. Mt Munro is a major commitment for Meridian. As later witnesses will describe, we have all the key ingredients for a successful wind development at Mt Munro: a consistent and strong wind resource, suitable terrain for construction, a suitable planning framework, and transmission located nearby. The Board of Directors has approved our seeking resource consents for this project because it is satisfied that it is a viable project, and indeed one of the best in Meridian's portfolio. Meridian has spent the time and resource necessary to thoroughly investigate this Project.

SUSTAINABILITY IN DEVELOPMENT PROJECTS

43. Sustainability is a key aspect of Meridian's development projects. Meridian employs two full time sustainability experts dedicated to assessing, planning and designing our projects in a sustainable manner and each of Meridian's site management teams have a full-time sustainability expert based on site to implement planned measures and to seek out any new opportunities.

44. The foundation to our approach is the Meridian Sustainability Infrastructure Framework (**SIF**) that was developed and approved in 2023, and is attached as **Appendix A**. Although Meridian has always taken a sustainable approach to its projects, the SIF provides firm guidance and ensures a consistent approach across the business.

45. The first step of Meridian's approach is to undertake a project-wide materiality assessment that draws out our key focus areas for that project, beyond the consent and whatever else Meridian would do as "business as usual". It also sets the tone of the project and provides an initial platform for discussion around sustainability.

46. Based on these results the project is able to prepare an initial Sustainability Management Plan (**SMP**) to guide the planning, development and procurement stage of the project in all things sustainability-related, including a strong focus on reducing emissions. The SMP for the Te Rere Hau Windfarm Repowering is attached as **Appendix B** as an example. This plan includes project Key Performance Indicators (**KPIs**) and will be refreshed for the construction phase.

47. All main contractors have to provide their own SMP according to their specific scope, including an assessment of their key impacts and mitigations and details on their sustainability site staff. From here individual discipline workshops are held to assess specific options in more detail. A sustainability register is used to document, assess and track each option. This is an ongoing process that continues through the length of the project.

48. The Te Rere Hau Windfarm Repowering is the first time Meridian has fully implemented the SIF, but recent projects have included numerous aspects of the process. For the Harapaki windfarm project, which started in 2021 and is due to complete later this year, there was an SMP and full-time sustainability staff constantly working towards sustainability wins. This included saving approximately 14,000t CO_2e and diverting 79% of project waste from going to landfill.

49. GHG data was tracked monthly with all contractors and suppliers providing monthly GHG reports that enabled us to identify and action key issues on a monthly basis but also identify key emissions across the project that can be targeted when planning for the next project.

50. We continue to learn from Harapaki with Life Cycle Assessments (**LCAs**) for the substation and Operations & Maintenance building due in the second quarter of 2024. Learnings will feed into planning and design for future projects, including Mt Munro.

51. Meridian is also undertaking a full windfarm LCA of Harapaki in partnership with Victoria University. Initial results have shown an energy payback of four months and GHG payback of 1.5 years. The final report and the full project-life GHG data obtained from Harapaki will inform how Meridian plans and designs future projects to reduce emissions.

52. To-date these assessments and data have highlighted that the bulk of emissions from windfarm construction have come from turbine components, diesel use on site, and concrete and steel, in that order. As such Meridian is focused on reducing emissions in relation to these aspects.

ELECTRICITY IN MODERN LIFE

53. The electricity system, from generation to local distribution, is critical infrastructure in the New Zealand economy. Over the past 130 years electricity has reshaped how New Zealanders live and work. Electricity has also become so central to day-to-day life that there are frequently no substitutes, yet its availability is often taken for granted. This is due to its unique advantages over other forms of energy, specifically:

    (a) Flexibility – it can be transmitted over large distances instantly in the quantity required;

    (b) Versatility – it can be converted into the three major uses of energy: heat, light and motive power;

    (c) Efficiency – it can be controlled and used with unparalleled precision;

    (d) Availability – it can be produced from a number of different sources;

    (e) Quality – it is the motive force behind high end applications such as electronics, computing, and increasingly fuels our digital society.

54. Meridian also considers that:

    (a) As a result of the foregoing factors, reliable and cost-effective access to electricity is fundamental to the ongoing security and development of both New Zealand and its economy;

    (b) Electricity is an essential resource to industry. Without modern electric devices and technology New Zealand's industry would be uncompetitive in the world market. Electricity is a critical input to industry and commerce in support of jobs; and

    (c) Electricity supply is also critical to the ongoing operation of communication networks and other infrastructure, as well as the operation of banks, hospitals, schools and other public and private institutions that are critical to the ongoing social,

economic, and cultural wellbeing and the health and safety, of people and communities.

ELECTRICITY DEMAND PROJECTIONS

55. Electricity demand in New Zealand has been relatively flat for the past decade as energy efficiency (LEDs, insulation, appliances, domestic heat pumps, industrial process improvements) has lowered the level of demand growth for electricity.[3]

56. This is expected to change as population and the economy are forecast to grow, and as the economy decarbonises, meaning electricity demand is projected to increase over the next 30 years. While all forecasts agree that demand will increase, there is uncertainty about how great the increase will be due to variable factors such as future efficiency measures, technology changes, population increases, and changes in GDP.

57. MBIE, Transpower, BCG and other organisations all expect that all forms of energy demand will grow over the next 30 years at least. There is broad agreement that around a doubling of electricity demand by 2050 is likely (see Figure 5). Although the spread of projections from other government agencies and industry bodies can be wide based on differing assumption sets, all agree there will be an increasing demand for electricity.

[3] Transpower 2018: Te Mauri Hiko – Energy Futures white paper

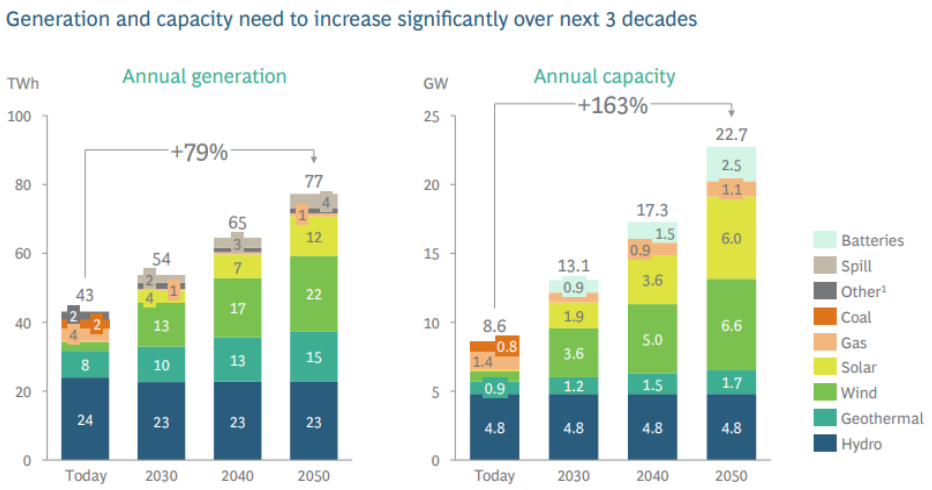


Figure 5: The Future is Electric, Generation and Capacity Needs, Boston Consulting Group, 2022.

58. Transpower projects significant electrification – the shift from energy sources such as coal, gas and oil to renewable electricity – while the rate at which transport and stationary energy (process heat, industrial boilers, etc) will electrify will depend on a variety of factors.

59. There is broad consensus that taken together these features describe an increasingly large role for electricity in the future New Zealand economy, and create a need for additional generation, the bulk of which must be renewable in nature if international climate obligations and current domestic government policy goals are to be met. The construction of new renewable generation and the move away from non-renewables will happen over time as asset life-cycles naturally require replacement and generators respond to demand growth and the market opportunities this presents for commissioning new generation projects.

60. Regardless of climate ambitions, demand growth and retirement of existing generation plant will necessitate a significant ongoing role for new generation build. Wind, geothermal and solar are expected to dominate new options, reflecting their role as the cheapest way to create more new generation in bulk. New, small, clean, gas-fired turbines are likely required to support system stability until at least 2035.

61. Strong international imperatives to reduce greenhouse gas emissions, as evidenced in New Zealand by the Zero Carbon Act, Powering Past Coal Alliance, and 100% Renewable electricity policy, mean that a significant increase in renewable generation share over time is expected, especially as thermal plant is retired and new, cheap supply technologies come to market.

62. With a potential energy generation capacity of 90 MW, and an estimated annual production of approximately 300 GWh, Mt Munro wind farm is well placed to contribute to meeting the incremental demand growth predictions. This is further explained in the statement of Dr Purdie.

NEW GENERATION OPTIONS

63. There are a range of generation options available for meeting future demand for electricity. Viable generation options are limited by any company's ability to obtain consent for particular projects, gain the necessary land access and connect to the electricity transmission and distribution networks. Other factors such as government policy, regulation and transmission investment may influence the set of available options. In terms of which projects proceed to construction, an overarching issue is project economics.

64. From an economic perspective, in New Zealand's energy generation market, of the consented projects, those that should proceed to construction are the ones with the lowest long-run marginal cost. The market contains incentives to achieve this, and the cost of advancing expensive or uneconomic projects is borne by the project proponent.

65. Even if the overall economic environment is favourable for renewable projects, depending on the relative economics of various projects, new renewable investment may be limited to those few projects with favourable attributes (such as quality of resource and access to transmission grid capacity).

66. This analysis is also confirmed in the 2022 report prepared for the power industry by BCG[4] where in their analysis wind, provided it has the suitable building blocks described above for development, is – along with solar and geothermal – the most cost-effective investment for new generation. These renewable technologies have become significantly cheaper over the last 10 years, and are expected to do so (in real terms) in the future. This is illustrated in Figure 6 below.

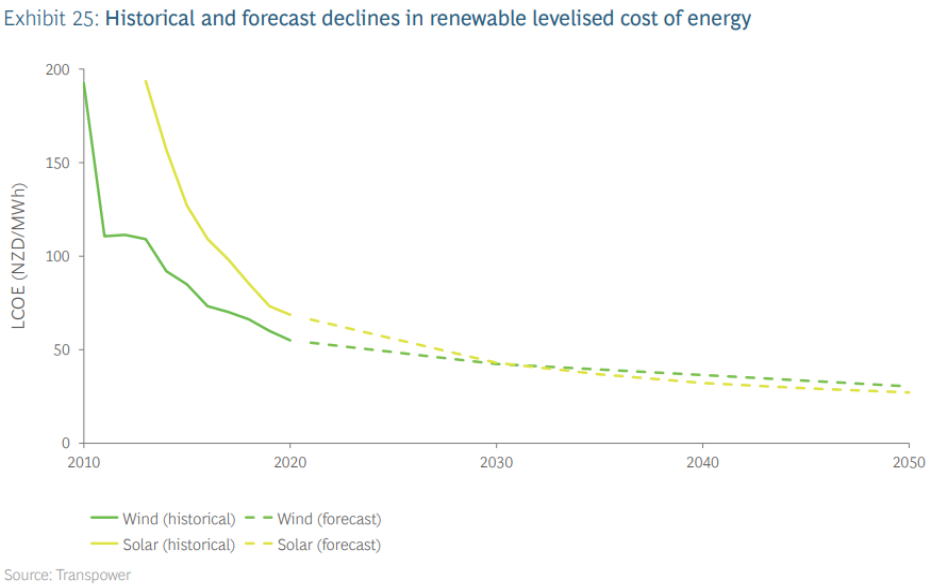


Figure 6: The Future is Electric, Historical and forecast LCOE, Boston Consulting Group, 2022.

67. A wind farm with the right site fundamentals will be amongst the most price competitive projects when compared to all other generation options.

68. Also improving the economics of wind generation are the advances being achieved in turbine efficiency. Direct drive turbines (without gearboxes and requiring less maintenance), blade aerodynamics and the increase in the ratio of rotor swept area to generator size have increased the yield available per turbine. The steady growth of operating wind farms in New Zealand is now supporting our own local core of key engineering expertise in maintenance of wind turbines which has long-term advantages for operating costs of wind farms.

[4] Climate Change in New Zealand: The Future is Electric, BCG 2022

69. As explained by Mr Bowmar, Meridian is continuously assessing potential wind farm sites throughout New Zealand. The determining factors associated with wind farm development extend beyond wind speed alone. In particular, the ability to connect into local networks or the national grid, ease of construction and consenting ability/environmental considerations, as well as the commercial implications of each site location are all key influences that feed into the selection process.

70. Critical to the ability to incorporate large amounts of wind generation into New Zealand's generation mix is geographic diversity in the siting of wind farms. If wind farms are located in separate parts of the country the effect of intermittency, which is based on whether the wind is blowing or not, is reduced. Meridian has adopted a strategy of having geographically dispersed wind farm sites to better use the wind and weather patterns over the extent of the country.

71. Generation technologies inherently exhibit different characteristics – one of these being intermittency. Wind generation is an intermittent technology in that turbines only operate when the wind is blowing. Notwithstanding this, intermittent technologies are supported by other types of generation which can be used in a flexible manner, such as hydro generation and newer battery technologies. This enables the provision of a secure and reliable electricity supply. Consequently, wind and other future intermittent renewable electricity generation technologies complement hydro generation.

72. New Zealand has a unique ability to use the flexible mix of the country's diverse wind resources alongside hydroelectricity resources. Wind variability tends to be within or over a few days, while hydro storage varies over a longer timeframe (typically 3-6 months), so wind and hydro together make for a firmer, more secure electricity supply.

MT MUNRO AND THE NATIONAL POLICY STATEMENT ON RENEWABLE ENERGY

73. The National Policy Statement on Renewable Energy 2011 (**NPS-REG**) sets out objectives and policies to promote and encourage the sustainable development of renewable electricity generation under the Resource Management Act 1991 (**RMA**). Mr Anderson fully evaluates this NPS in the relevant statutory context in his evidence. My intention in this section of evidence is to provide information that is relevant to the NPS considerations.

74. The NPS identifies eight policy areas which decision makers regarding renewable projects should have regard to. Of particular relevance to Mt Munro are those matters that directly relate to the generation of electricity from wind farms.

75. The NPS requires decision makers to understand and have regard to the benefits associated with projects such as Mt Munro, the implications of the project against achieving the Government's renewable generation target and the practical constraints of developing wind development projects where the wind resource and infrastructure requirements dictate, to a large extent, the location of the project.

76. Mt Munro wind farm adheres directly to these statements and supports them in a direct and practical way.

BENEFITS ATTRIBUTABLE TO MT MUNRO

77. Policy A of the NPS-REG states:

> *POLICY A*
>
> *Decision-makers shall recognise and provide for the national significance of renewable electricity generation activities, including the national, regional and local benefits relevant to renewable electricity generation activities. These benefits include, but are not limited to:*
>
> *a) maintaining or increasing electricity generation capacity while avoiding, reducing or displacing greenhouse gas emissions;*

b) *maintaining or increasing security of electricity supply at local, regional and national levels by diversifying the type and/or location of electricity generation;*

c) *using renewable natural resources rather than finite resources;*

d) *the reversibility of the adverse effects on the environment of some renewable electricity generation technologies;*

e) *avoiding reliance on imported fuels for the purposes of generating electricity.*

78. Mt Munro will not directly produce emissions when generating its electricity, and will act to displace emissions from other sources, so supporting part (a) of Policy A. Because wind farms bid electricity into the market at a very low offer price they are a price taker and hence will generate when the wind blows. Other generators such as thermal plant have an operating cost associated with the use of the fuel and hence have what is called a Short Run Marginal Cost (SRMC) of operation. If the operator is commercially prudent then the plant will only run when the market price is above the cost of this SRMC. Included in this SRMC are predominantly fuel and emissions costs.

79. As set out in Dr Purdie's statement, the Carbon Dioxide (CO_2) emitted for each GWh of generation from gas or coal powered electricity generation is significantly higher than for wind.[5] Further, given the very low cost of operating a wind farm and the high SRMC of a thermal station, wind energy acts to displace high-emissions thermal generation.

80. Mt Munro also supports the benefit highlighted in part (b) of Policy A regarding increasing the security of supply of electricity at a local, regional and national level.

81. Given it will generate electricity from a renewable and local resource, Mt Munro goes to the heart of supporting parts (c) and (e) of Policy A. The impacts of the wind farm on the land are largely reversible if it ceases being an economic proposition. Removing its footprint on the land is easier than for almost any other form of generation. Turbines

[5] Evidence of Jennifer Purdie at [56]

can be removed, foundations can be covered and, if applicable, roads can re-vegetated. This also supports Policy A under section (e).

LOCAL AND REGIONAL BENEFITS

82. Beyond the NPS-REG there are a number of direct benefits to local communities from a wind farm developed in an area.

83. Mt Munro will have a total budget of approximately $300 million. Based on Meridian's most recent experience at Harapaki, it is anticipated that at least 10% (i.e. $30 million) of this will be spent locally. At Harapaki, Meridian set itself a target of 10% of total budget to be spent directly in the region. This has been well exceeded, with 18% of the total budget being attributed to 'local spend'. This was formally embedded in the contractual arrangements for the project, with a key performance measure of the construction team being that more than 40% of the workforce's primary place of residence being Hawke's Bay. To-date, a total of 2,580 people have been inducted to the Harapaki site with 48.9% residing in the Hawke's Bay.

84. Local expenditure in the construction of a windfarm comes predominantly from civil works, electrical infrastructure installation, turbine transportation and cranage, and project management. At Mt Munro, this spending would be spread over the construction timeframe which is likely to be 32 months in total. A construction project of this scale would have a peak of 100 to 150 people on site at any one time. Based on the experience at Harapaki (which at 176 MW is just under twice the size of Mt Munro), we expect Mt Munro to induct somewhere between 600-1000 onto site across the construction phase.

85. Once constructed, the windfarm operations phase would begin. A 20-turbine windfarm such as Mt Munro would have up to eight full time staff on-site to manage the maintenance and operational aspects of the wind farm, as well as a number of ongoing staff visits for regular equipment inspections and engineering support. Additional staff may be required for major maintenance activities such as mid-life refurbishments or ongoing transmission, substation, communications and road maintenance. Our experience from other wind farms located

in rural environments (Te Āpiti, White Hill, Te Uku and Harapaki) has seen a number of these staff base themselves close to the site for ease of access and as a result become part of the community. Operational phase local expenditure is for supply services such as engineering, civil works (maintaining roads and erosion controls), warehouse storage, and repairs to and maintenance of equipment.

86. Beyond direct employment opportunities, Meridian typically also provides a community fund to recognise the contribution our generation communities make to our hydro and wind operations and to the country's wider electricity sector.

87. Meridian established the Power Up Community Funds (the Power Up Funds) in 2005. There are currently funds established and operating for the benefit of each of the communities associated with Te Āpiti, White Hill, West Wind, Mill Creek and Te Uku and wind farms, and for both our Waitaki and Manapōuri hydro schemes. A Harapaki wind farm fund is currently being established. If Mt Munro proceeds to construction it is likely, at the discretion of the Meridian Board, that a fund would be established for the local community.

88. Meridian seeks to support projects which will contribute to sustaining and building the capacity and capability of these communities. The process of establishment therefore seeks to identify the issues that are important to the community, and which the community thinks the Power Up Fund should support.

89. The funds represent an opportunity for Meridian to work in partnership with the community in which they operate, and to facilitate community outcomes of real value. Funding proposals are considered by an advisory panel comprising Meridian and community representatives. This panel decides which projects should be funded and for how much, within an annual budget.

90. The amount available through each fund is determined by the Meridian Board, and reflects the long-term average energy output from the facility or scheme. Each year the seven current Power Up funds collectively grant more than $600,000 towards projects that support sustainable community development. Power Up Te Āpiti currently has

$32,000 available annually for projects which benefit the communities of Woodville and Ashhurst. Power Up Te Uku also has $32,000 available annually for projects in Raglan, Te Mata, Waitetuna and Te Uku. The exact amount that might be available in a Mt Munro fund will depend on the output of the facility when finally constructed. However, it is likely to be of a similar value to the Te Āpiti and Te Uku funds.

RESPONSE TO SUBMITTERS

91. In this section I respond to a number of matters raised in submissions.

SOURCE OF INCOME FOR THE FARMERS

92. Submissions in favour of the proposal have referred to the potential for additional income for the landowning farmers on the land,[6] which will support the long term viability of the existing farming business on the land.[7] In Meridian's experience, this has been a positive benefit as the wind farm provides a steady and additional source of income for the landowners and it can provide an element of economic robustness to the community.

LOCAL EMPLOYMENT

93. The financial benefit of the proposal to locals has been raised in submissions, with some describing it as a positive[8] and others questioning whether there will be any benefit.[9] As I have mentioned in paragraphs 83 to 85, there will be considerable local employment opportunities both during the construction period and in the operations phase, as well as local spend during construction, estimated at 10% of overall budget.

[6] Submission 10 (Anderson); Submission 13 (Anderson)

[7] Submission 13 (Anderson)

[8] Submission 10 (Anderson); Submission 13 (Anderson); Submission 60 (Eketahuna Golf Club)

[9] Submission 73 (Groombridge); Submission 24 (Olliver); Submission 33 (Wi Repa); Submission 68 (Gully)

94. One submission has raised a concern about the potential for local businesses to be disrupted.[10] This has not been the experience in other Meridian windfarms, and indeed there has been a net benefit to the local economy from local employment and spend (both for project catering and staff personal spending) at local businesses during the construction phase.

RESPONSE TO S 87F REPORT

95. As detailed in Dr Purdie's evidence, Ms Ryan for the Councils considers that "at least" a high-level construction emissions management plan is warranted for Mt Munro and has recommended that this is brought through into conditions. Meridian does not consider that a condition requiring this would be useful or workable, and does not proffer this in the updated condition set attached to Mr Anderson's evidence.

96. While the minimisation of GHG emissions is important, it could be counterproductive and potentially unworkable for this to be certified by a third party through a management plan process.

97. Meridian already tracks and minimises GHG emissions in the construction and operation of its generation assets and overall business operations. Meridian is committed to its Climate Change Action Plan,[11] which includes a "Half by 30" target. This is a challenge and commitment to halve the total operational emissions that we produce by 2030. The emissions we do produce, we offset, and Meridian has been carbon neutral since 2019. This has been achieved through the purchase of gold standard carbon credits to offset Meridian's emissions, and then through the Forever Forests programme. This involves the planting of 1.5 million seedlings over the next five years in permanent forests around New Zealand.

98. In my view, Meridian's 'business as usual' approach to tracking and reducing emissions in its development projects, as described earlier in

[10] Submission 68 (Gully)

[11] Available at https://www.meridianenergy.co.nz/public/Climate-Action-Plan-23.pdf

my evidence, should be sufficient to address Ms Ryan's concerns, especially in the context of a renewable energy project which will result in a net reduction in national GHG emissions.

CONCLUSIONS

99. The proposed Mt Munro wind farm is an exciting high-quality project that will deliver benefits for Meridian, New Zealand, the local area and community. It provides an option to respond to the increasing need for electricity into the future and diversifies the fuel source for generating electricity. The project satisfies and supports a number of government policies and is viewed by Meridian as a very positive, viable project.

100. As identified within the evidence of Dr Purdie there is a clear imperative to move New Zealand's electricity system to 100% renewable generation by 2035 and to move to a zero-carbon economy by 2050. This will require the development of a substantial amount of new renewable electricity generation over the next 10–30 years to meet expected demand.

101. New Zealand's proportion of electricity generation that comes from renewables is increasing and was 88% in 2023. 50-60% of New Zealand's renewable generation comes from hydro generation depending on rainfall. Committed new renewable projects will push NZ past the 90% renewable share of total generation by 2025.

102. All forms of energy demand are expected to grow over the next 30 years at least. Transpower, BCG and other organisations forecast a doubling of electricity demand by 2050. This is a result of increasing population and economy size, but also due to electrification of transport and industrial processes (currently based on the consumption of oil, gas, and coal).

103. A significant increase in new renewable generation plant build is expected over the next 30 years at least, as demand increases and New Zealand phases out coal and moves towards the 100% renewable government target. The most likely new renewable generation forms will be a combination of wind, geothermal and solar.

Grant Telfar

24 March 2024

Appendix A - Sustainable Infrastructure Framework

Sustainable Infrastructure Framework

Prepared by: Sustainability, and Development Environment and Sustainability teams

Reviewed by: Kaihautu Māori
Head of Procurement
Head of Renewable Development
Head of Renewable Construction

Endorsed by: GM Development and GM Corporate Affairs and Sustainability
Issued: 29 May 2023

Version: 1.0

Contents

Purpose

The purpose of this Sustainable infrastructure framework (**framework**) is to provide guidance for Meridian staff on how to apply sustainability practices on major infrastructure projects (e.g., development and construction of new renewable generation assets), which are consistent with Meridian's Sustainability Policy and broader Group sustainability commitments.

The framework is focused on major infrastructure projects but provides relevant considerations for asset-based projects of any size whether development or maintenance focused. The guidance is intended to enable a consistent methodology to be applied across the Meridian Group, whilst providing flexibility for project specific tailoring by considering what is material to any project over the whole of life.

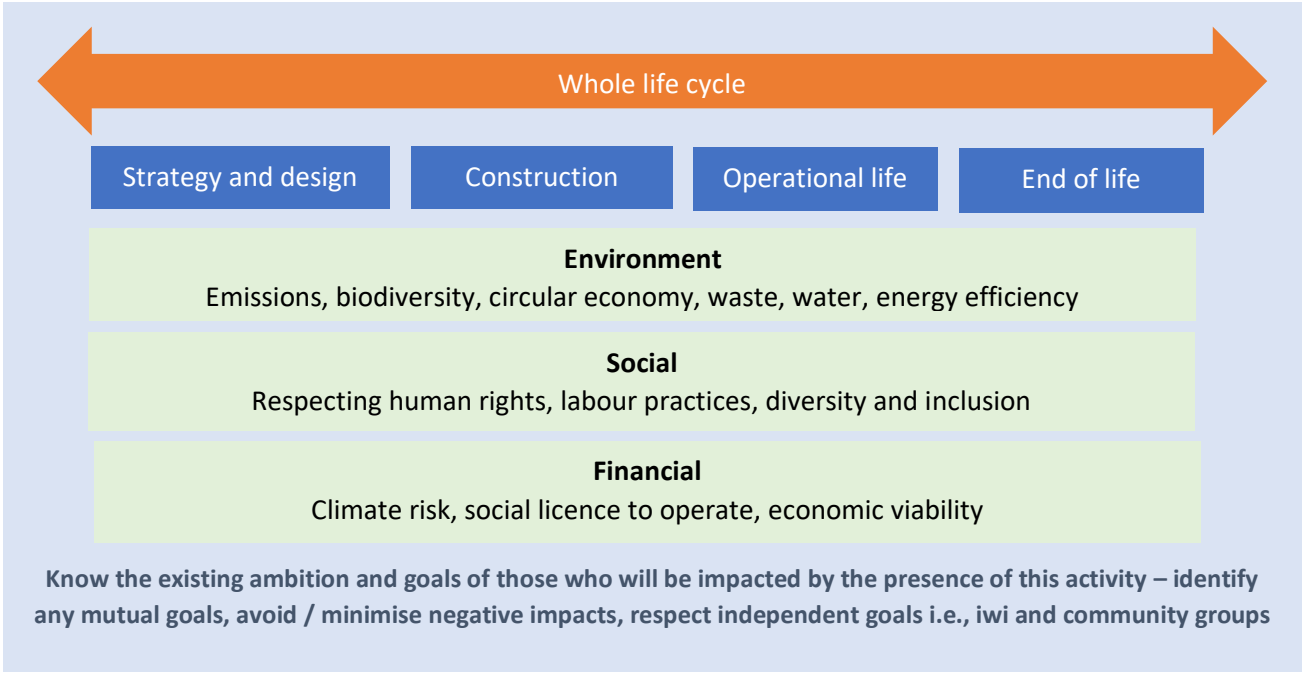
Meridian's *Sustainability Policy* highlights the significant contribution to be made by Meridian as a renewable energy company where material decarbonisation across multiple sectors. Meridian has prepared this infrastructure specific guidance given the scale of Meridian's decarbonisation commitments, including numerous large infrastructure projects, and to ensure Meridian embeds a holistic approach to sustainability.

This framework does not focus on compliance related requirements (which are a minimum standard) – rather guidance focus is provided on the embedding of Meridian's additional voluntary commitments that enhance practical, positive sustainability outcomes.

Sustainable infrastructure defined

Sustainability at Meridian means doing the right things today so our planet and people can survive and thrive. Applying sustainability to infrastructure development includes the adoption of a whole-of-lifecycle approach – the figure below illustrates this.

Generally speaking, the choices made at the strategy and design phase will have the biggest aggregate impact over the life of any asset. It is worth investing the time at the strategy and design phase to systematically identify the biggest opportunities relevant for each development.



Roles and responsibilities

Meridian's **corporate centre Sustainability team** are accountable for:

- Developing Group-wide sustainability commitments and providing guidance to the business on what project-specific or business unit specific choices would be consistent, or not, with those.
- Providing advice to teams and/or business units on the project-specific application of this *framework.*
- The adoption of changes to, or any new Group-wide sustainability commitments e.g. Sustainability Policy updates, and Group-wide sustainability certification requirements etc.
- Meridian sustainability team are contactable at sustainability@meridianenergy.co.nz.

Meridian's **Kaihautu Māori** is accountable for:

- Developing Group-wide guidance to the business on te ao Māori, and engagement principals and advice to support business unit and project teams in respecting and engaging with iwi and hapu to understand their aspirations and objectives, in order to ensure Meridian staff adopt a consistent principle based approach.
- Kaihautu Māori is contactable at andre.konia@meridianenergy.co.nz.

Meridian's **corporate centre Procurement team** are accountable for:

- The Group-wide procurement policy/principles/guidance and consultancy to the business to ensure all procurement activity is informed by our purpose and sustainability commitments, whilst managing risk and maximising the value we receive from our supplier engagements.
- Meridian's procurement team are contactable at procurement@meridianenergy.co.nz.

Meridian's **financial control team** are accountable for:

- The preparation of Meridian Group Greenhouse Gas (GHG) inventory, which includes the compilation of emissions data from projects across the business.
- Meridian's emissions reporting team are contactable at carbon@meridianenergy.co.nz.

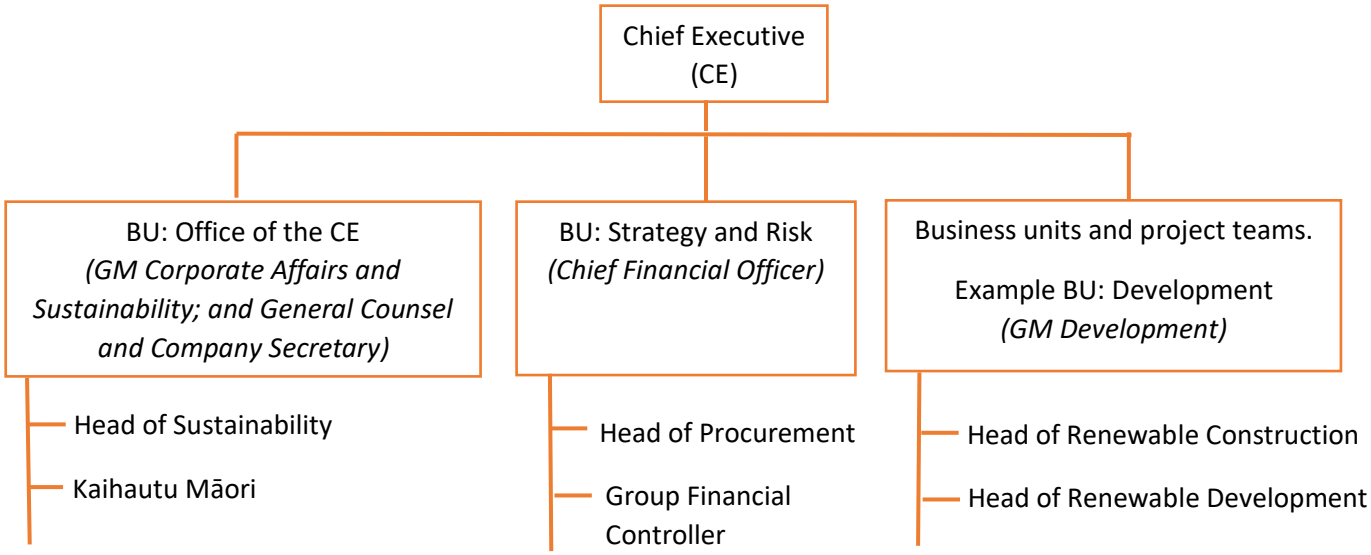
Meridian **project teams and business units** are accountable for:

- The practical application of this *framework* on a project-specific basis. For example, developing a project-specific Sustainability Management Plan (where appropriate) and setting associated KPIs such as managing emissions and waste consistent with Meridian Group's sustainability commitments.
- Behaving and making decisions consistent with Meridian's Code of Conduct and Sustainability Policy i.e., all staff take personal responsibility to apply sustainable practices in their sphere of influence – we are all in the waka together.
- The adoption and resourcing of any additional project-specific sustainability initiatives over and above those emphasised in the current version of this *framework,* in consultation with the corporate sustainability team i.e., project teams may wish to explore and adopt certifications such as Greenstar or an Infrastructure Sustainability Council (ISC) rating.

Meridian's **suppliers** are accountable for:

- Engaging with Meridian and providing goods and/or services in a way consistent with any defined project-specific requirements.
- Compliance with Meridian's Supplier Code of Conduct.

A Meridian organisational chart showing where the **responsibilities outlined above** lie across the business are illustrated in the figure below. To seek detailed visibility of other roles in these functional areas and incumbent representatives in these roles, please refer to Meridian's internal intranet Electric Avenue (use search function to find an individual, then select "organisation" tab to see reporting lines).



Meridian Group's sustainability commitments

Meridian's purpose of *Clean energy for a fairer and healthier world* anchors the focus that our business places on sustainability. Additional relevant Meridian Group sustainability commitments which have informed this infrastructure-focused framework are outlined below.

Codes of conduct

Meridian's Code of Conduct emphasises how sustainability defines who we are at Meridian and highlights our aims such as: maintaining biodiversity, reducing waste and emissions in all activities across our business, being a climate action leader through the efficient and sustainable use of resources and contributing economically to the success of communities in which we operate.

Meridian's Supplier Code of Conduct recognises that who we work with and how they go about their business, treat their staff and manage their supply chain is our business and so outlines our expectations of suppliers in the areas of ethical business, social responsibility, health, safety, wellbeing and environment.

Sustainability Policy

Meridian's Sustainability Policy provides the foundation to embed sustainability leadership across our business, guiding all associated choices and behaviours. Our Sustainability Policy outlines our holistic approach to sustainability – recognising the environmental, social and economic elements of sustainability and the balance required over time. Our sustainability policy formalises our commitment to making a meaningful contribution to the UN SDGs (see below) that are most relevant to our business and includes the importance we place on sustainability leadership, transparent disclosure, engaging with stakeholders consistent with our publicly available Stakeholder Engagement Guidelines and reporting and having a Governance structure in place to support these commitments.

ESG performance

Meridian's ambition for global sustainability leadership evidenced by measured Environment, Social, Governance (ESG) performance via the S&P Global annual Corporate Sustainability Assessment (CSA). For context this CSA requires a substantial and broad set of commitments, with evidence of application, across an extensive set of underlying evaluation categories - examples of some infrastructure-specific categories include: supply chain management, operational eco-efficiency (energy and water consumption, emissions (SF6, NOx, Sox, dust, scope 3), non-hazardous waste and hazardous waste management), biodiversity, climate strategy, labour practices, human rights, health and safety.

Material topics and impact management

Consistent with the Global Reporting Initiative (GRI) standards which Meridian adopts, is the requirement for Meridian to identify its material topics and impacts. An impact is the effect Meridian (or any organisation) has or could have on the economy, environment and people, including on their human rights. Meridian's material topics represent our most significant impacts and are publicly disclosed annually in our integrated Annual Report.

Important is our commitment, and the requirement to, have in place policies, commitments and actions to manage material topics and impacts including mitigation and remediation actions. Many of Meridian's impacts are relevant to this framework such as: increasing the supply of renewable energy, adverse effects of generation assets and activities on cultural values, disposal of waste and other emissions and impacts of supply chain / ethical sourcing. For a full list of Meridian's material impacts, refer to Meridian's FY22 Annual Report pages 108-9.

Climate Action Plan and Half by 30

Meridian's commitment to deliver against our Climate Action Plan (CAP) and our Half by 30 gross operational emission reduction target (with underpinning scope 1+2, and scope 3 science-aligned targets). Our CAP highlights our commitment to proactively minimise emissions from **one off construction emissions**.

United Nations Sustainable Development Goals (UN SDGs)

Meridian is committed to making a tangible contribution to the **United Nations Sustainable Development Goals (UN SDGs)** that are most relevant to our business context and stakeholders. These are outlined in our Sustainability Policy and were identified by assessing the underlying UN SDG targets against current initiatives and emerging focus areas that we believe we can most materially contribute to.

United Nations Global Compact

Meridian joined the UNGC in 2022, a voluntary leadership platform for the development, implementation and disclosure of responsible business practices. As a participant, Meridian will continuously progress the alignment of our strategies and operations (including infrastructure development and maintenance) with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption and take action in support of UN goals and issues embodied in the SDGs.

Human Rights, including modern slavery

Meridian is committed to respecting human rights and recognises human rights to be universal and inherent to us all regardless of nationality, sex or gender, national or ethnic origin, colour, religion, language, or any other status. Human rights include freedom from slavery, forced labour and child labour, the right to work and take part in cultural life, freedom of association, a safe and healthy work environment, freedom from discrimination and all other rights included in the International Bill of Human Rights. Given our unique place in the world, we also recognise indigenous rights of iwi which is consistent with the United Nations Declaration on the Rights of Indigenous Peoples and Te Tiriti o Waitangi.

Meridian is committed to assessing and mitigating the risk and impact of modern slavery through our business activities Meridian's Modern Slavery Framework (MSF) outlines how our business assesses, manages and seeks to continuously improve our response to modern slavery risks in our supply chain. Our framework has six elements: governance, risk assessment, embedding – due diligence, embedding – grievance and remediation, embedding – training, monitoring and reporting. Our MSF also ensures we meet the requirements under the Australian Modern Slavery Act 2018.

Meridian's commitments to respect human rights, including indigenous rights, and mitigate modern slavery risk, such as by completing due diligence, are relevant to our infrastructure development and maintenance activities.

Meridian's Biodiversity and deforestation commitment

The multiple requirements Meridian Group must collectively meet and deliver against, to deliver against our commitments, ambitions and targets above, have been integrated into this infrastructure-focused *framework.* Of note, is the inclusion of commitment "no net deforestation" across Meridian's operations.

How to apply this guidance

There are three key steps to ensure application of the framework to any project:

Materiality assessment

It is recommended that a materiality assessment is completed to determine the most relevant sustainability areas of focus for a specific project. The principle behind this recognises that attention and resource can be prioritised on the most material impacts and project will or could have. For example, during the first year of construction of Meridian's Harapaki windfarm, the majority of construction emissions were caused by diesel use on site and materials (concrete). Context such as this can inform where mitigation focus is best placed on future comparable projects.

At its simplest level, a materiality assessment includes:

1. **Identifying** actual and potential impacts across a range of sustainability criteria (consider all stages of the lifecycle (strategy and design, construction, operational life, end of life)
2. **Assessing** the significance of impacts
3. **Prioritising** the most significant impacts for action

Meridian's sustainability team can provide support regarding the application of a materiality assessment for projects/teams on request.

How to undertake a materiality assessment

The materiality assessment process is a three-step guide to help you determine the sustainability areas (impacts) most relevant to your project and right size your level of ambition. It is designed to identify decisions that we make at the design stage of a project which can influence all stage of its life-cycle – through construction, operational life and end-of-life.

Depending on the size of your project it is designed to be completed in 1 hour, but more time can be taken for larger scale and more complex projects.

Use the SIF Materiality Process steps.xlsx (sharepoint.com) to help you complete the assessment.

Step 1: Get clear on your operating context and stakeholders

This step helps you get clear on the 'boundary' of your project and what might be unique to it. This includes understanding the range of activities it will involve, relevant stakeholders and relationships who you control over or who have an interest in the project, and the degree of influence you have/their importance at this stage of the project. You will use this information to help identify the most relevant sustainability issues and impacts (eg. climate change, human rights, labour practices, product responsibility).

Suggested activity – 20 minutes

1. Brainstorm the activities and relationships relevant to your project, using the prompts below. You should consider the whole-of-life cycle – from project design to end of life.

Activities	Relationships - Business, mana whenua, community and other stakeholders
What are the types of activities you will be carrying out?	What relationships will you have as part of this project? What types of relationships are they?
What types of products/services are being offered?	What type of activities will be undertaken through the relationship (e.g. manufacturing, security)?
What types of workers will be controlled/influenced by your activity? What work will they perform? What kind of contractual relationships could exist?	What are the geographic locations of those relationships/ activities? What sectors are they?

2. Highlight all activities or relationships (or elements of) you have the ability to influence at this strategy and design phase of the project. These are within the boundary of your project for the purposes of the materiality assessment. Take note of any activities or relationships that are not highlighted as they may be important considerations later in the project.

Step 2: Identify relevant impacts

Impacts indicate how your project will contribute to sustainable development. Impacts can be actual or potential, negative or positive, short- or long-term, intended or unintended, and reversible or irreversible.

In this step you will identify your project's impacts on the economy, environment, and people, including impacts on their human rights, across your project's activities and relationships.

Suggested activity (10 mins)

Familiarise yourself with each of the social and environment impacts in the SIF Materiality Assessment Tool and rate their relative importance and relevance to you project. This first pass on impacts is more an art than science. It's designed to help you quickly identify which impacts warrant being taken through to the next step for a more thorough assessment and action planning.

Note: Any mandatory impact area must be carried through.

Tip: You may like to use the United Nations Global Compact 'cause-contribute-linked' continuum to help rate the impact (see assessment tool).

The impacts listed are a starting point, reflecting the key sustainability areas identified in the SIF and Meridian lessons to-date. Add additional impacts as needed.

Once you have rated the relative importance of each. Discuss and agree the cut-off point (threshold) for taking impacts through to the next step. It may not be feasible to address all impacts at once.

Step 3: Assess the significance of the impacts and action category to address

In this step you will assess the significance of the identified impacts and identify the broad action category/ies for how you will mitigate the impact (for negative impacts) or enhance them (for positive impacts).

Suggested activity (20 mins)

Significance is assessed against two criterion – severity and likelihood. Weightings are used to determine a total score for each impact. The score helps indicate relative priority, and thereby inform how and how 'elevated' your treatment to mitigate/enhance that impact through action should be. It can also be used as a benchmark to monitor progress (for this project, or across multiple Meridian projects).

The **SEVERITY** of an actual or potential negative impact is determined by:

- Scale: how serious the impact is
- Scope: how widespread the impact is, for example, the number of individuals affected or the extent of the environmental damage.[1]

The **LIKELIHOOD** is the chance of the impact happening.

You can involve relevant decision-makers, or other stakeholders in this assessment – or it could be just you and or your immediate team.

The **ACTION CATEGORIES** include:

- Due diligence questions – ensure you ask potential suppliers to provide information in relation to this impact as part of your procurement due diligence processes (eg. RFP, RFI, ROI)
- Set KPI/targets/metrics – it is important to monitor change over time in the project performance against this impact.
- Design consideration – you will be explicit about how this impact will be addressed in the design phase.
- Collaborative conversations – to manage this impact you will need to work alongside key stakeholders or interested parties, such as mana whenua, community groups, other partnerships

[1] Adapted from GRI 3 - note for purpose of simplicity have not included score of 'irremediable character: how hard it is to counteract or make good the resulting harm'

Sustainability framework – focus areas and key requirements

The underlying requirements that comprise Meridian's Sustainable Infrastructure Framework (SIF) are outlined below to ensure key sustainability actions are captured for each project.

Note – compliance requirements (legal or consent based) are taken as a compulsory minimum standard and NOT outlined below. The Meridian requirements outlined below largely represent Meridian's additional *voluntary* commitments - informed by Meridian Group's sustainability commitments (see above).

Emissions – this includes embodied emissions, which are those from the manufacture and supply of materials (i.e., concrete, steel etc) and services during construction, and emissions 'designed in' but occur during the operational life of an asset (i.e., diesel generators, transport movements from maintenance activities, SF6 leakages etc).

Mandatory emissions reporting – all projects must measure GHG emissions and report to carbon@meridianenergy.co.nz. Best practice and preferred reporting frequency is monthly – particularly for large development projects (such as during construction of a wind farm), an acceptable cadence for lower GHG emitting projects is quarterly (i.e., during commercial scale solar construction), and the absolute minimum frequency is annually.

Mandatory emissions KPIs during construction phase – all major projects must set KPIs that meaningfully incentivise the minimisation of gross emissions during construction. Specifically identify opportunities to reduce embodied emissions – either reduce quantity of a material needed in the first place, check material choice has the low embodied carbon whilst still meeting the task need.

Mandatory emissions impact assessment (for construction and operational emissions) – all major projects must seek to minimise (1) construction emissions (i.e., innovate to avoid high emission materials/activities such as concrete and diesel consumption, and (2) the impact on Meridian's ongoing operational emissions (assets in-service life) to ensure we remain on a path to achieve our commitment to half our operational emissions by 2030 – think SF6, intended subleasing of land (i.e., livestock), back-up generators and the energy source, embedding infrastructure to support EV transport etc.

Recommended dust emissions impact assessment – it is recommended that the potential impact of dust emissions is understood at the materiality assessment stage, in order to determine if project-specific metrics/KPIs and actions are required. In some cases, consent requirements may stipulate. In others, Meridian may wish to take additional measures beyond compliance to mitigate community impacts - for example is a construction site near a township. An air quality monitor could be used for particulates, providing a recordable amount of dust emissions. Dust suppressant could be utilised to mitigate impacts.

Recommended consideration of other emissions – NOx, SOx, Ash and Gypsum waste, Direct Mercury – assess if these emissions sources are likely to be relevant to the project and if mitigation action is required (NOx/SOx relevant to fleets / fossil fuel combustion and ash/gypsum/direct mercury linked to coal combustion.

Energy efficiency – any opportunity to minimise energy consumption and deliver useful services with less energy should be adopted. Particularly as an electricity generator, Meridian wishes to demonstrate leadership and walk the talk on energy efficiency.

Recommended energy efficiency measures – it is recommended that the potential impact / benefits from energy efficiency opportunities is understood at the materiality assessment stage, in order to determine if project-specific metrics/KPIs and actions are required.

Water - any opportunity to minimise water consumption, and also ensure water quality is preserved, is to be strongly encouraged.

Mandatory water quality measures – all major projects must ensure Meridian does not have a direct or indirect detrimental impact on water quality. Largely, this is typically addressed through compliance requirements but Meridian could also choose to adopt voluntary options to enhance water quality through the offset or restoration of wetlands at a project location or region, for example.

Optional water consumption measures – it is recommended that at the materiality assessment stage, opportunities to minimise water consumption are retained in order to determine if project-specific metrics/KPIs and actions are required. For example, regulations may focus on water take requirements and discharge, but not on how water is used on a site. Project teams could consider roof offtake options from rain water for example.

Efficient resource use and waste – seek to optimise the use of resources and avoid unnecessary overconsumption, or the creation of waste. Meridian's ambition is for zero waste when its operational assets and key items and materials reach end-of-life (solar panels, batteries, turbines, concrete, metals etc).

Mandatory resource use optimisation assessment – all major projects must estimate, identify and implement initiatives to ensure the sustainable use of resources and minimise waste – following the avoid, reduce, reuse, recycle hierarchy. This could include: reducing the quantity of material required in the first instance, identifying second-life solutions for goods and materials etc.

Mandatory recycling and waste reduction management on site - all major projects must have recycling services provided and the integrity of materials optimised by best practice separate at source stations. Wherever practical, second life solutions to materials will be put in place. Steps must be taken to prevent the unnecessary inclusion of waste in the procurement of goods and services (i.e., packaging / wrapping). Reporting on waste management is mandatory.

Mandatory hazardous waste management – all major projects must measure and report on hazardous waste management (mitigating actions to minimise at the outset, hazardous waste types, quantities and how it was appropriately treated / disposed).

Highly recommended end-of-life management – all major projects must capture accountabilities for the end of life management of key project-specific items / materials (i.e., solar panels, batteries, wind turbine components etc). Meridian will ensure proactive commitment is made to assess viable options early to ensure planning is in place to contribute to the creation of new end of life solutions if required – equally, Meridian expects suppliers to take responsibility for the materials and goods they supply. For example, and where project-relevant, supplier agreements for solar panels and batteries should include a requirement for that supplier to provide an end of life solution / offer to Meridian (it may be that Meridian finds an alternate / better solution – but ensuring an option and accountability is placed with the relevant supplier is important, incentivising support for supplier product stewardship schemes).

Biodiversity - ensure the project applies Meridian's Biodiversity and deforestation commitments (see references section).

Mandatory (where relevant) afforestation assessment – for all major projects – where any deforestation will occur (for example, a development activity requiring land use change or the clearing of flora), ensure deforestation measurement is completed and share with

sustainability@meridianenergy.co.nz, noting species[2] impacted. Based on Meridian's net company deforestation position for the subject financial year, formally assess options for a voluntary netting-off afforestation project to ensure the Group commitment of "no net deforestation" is maintained. Note that Meridian's Forever Forests carbon sink programme achieves an afforestation co-benefit that can contribute to Meridian's no net deforestation position. Any decision and voluntary netting-off afforestation investment beyond the option assessment phase will be brought to the attention of the relevant Executive Sponsor.

Climate risk and adaptation - Meridian is committed to ensuring we assess and manage climate-related risks and opportunities, consistent with our voluntary commitment to do this adopting the voluntary global framework development by the Task Force for Climate-related Financial Disclosures (TCFD). Meridian is actively aligning our practices to new mandatory requirements under the Aotearoa New Zealand Climate Standards (issued Dec 2022). Meridian's Group Risk Policy was updated in 2023 to account for climate risk more explicitly and an active change-programme is underway to embed new risk assessment processes in the business.

Highly recommended climate impact assessment – for any major acquisition or development, it is highly recommended Project teams consult with Meridian's strategy modelling, Risk and Sustainability teams in order to determine apply the most current due diligence actions to take that will be consistent with increasing requirements for climate risk assessment, including understanding potential adaptation actions. Meridian's climate-related issues change programme is underway and spotlights the use of 3 climate scenarios as far as 2100 to understand potential exposure to the physical impacts of climate change due to hazards such as extreme rainfall, drought, sea level, storms, temperature etc.

Land use – Beyond biodiversity and water considerations already outlined, other land use factors to consider include things such as soil health and climate resilience (options to improve flooding and erosion resistance). Broader land use considerations relevant to the project site/region are encouraged to be identified and included in the materiality assessment per guidance above.

Human Rights (including Modern slavery) - Meridian is committed to respecting human rights and we have specific requirement to assess and complete due diligence on modern slavery risks, consistent with our Modern Slavery Framework (MSF). Meridian commenced a first every Human Rights risk assessment in 2023, this framework may be updated as this risk assessment advances and our most salient human rights issues are identified (to prioritise first action on).

Mandatory modern slavery due diligence – Project teams must consult with Meridian's Modern Slavery quick reference guide to ensure due diligence is completed consistent with Meridian MSF. If there is any uncertainty on requirements, project teams should contact Meridian's procurement or sustainability teams.

Diversity and inclusion - Meridian's Belonging Policy emphasises that building a diverse and inclusive workplace culture will result in enhanced relationships, better customer service and improved financial performance. Equally, to support capability development and attract and retain talent – it is important to Meridian to take active steps to increase our diversity and ensure we maintain an inclusive culture. We believe it is important to share this commitment with our suppliers, as we recognise an extension of this commitment, with our supply chain partners, would also add value.

[2] Excluded from the boundary of Meridian's 'no net deforestation' commitment are Wilding Conifers, which are considered a tree weed.

Ethical sourcing - it is very important to Meridian to operate our business in an ethical way, this includes ensuring those we work with, such as our suppliers, also conduct themselves ethically.

Mandatory code of conduct requirements – ensure all major projects include the requirement for suppliers to meet our Supplier Code of Conduct (which includes requirements on ethical standards). Furthermore, consistent with Meridian's Code of Conduct – ensure our ethical standard requirements are met.

Local economy, mana whenua and communities - Meridian is committed to supporting communities and creating opportunities for those where we operate.

Mandatory local community benefit required – all major projects must identify tangible measures that can be adopted at the project level to meaningfully contribute to local communities. It is recommended at the materiality assessment stage, the scope of this be determined. A local employment metric should be considered by project teams. **Iwi and hapu -** Meridian recognises that our infrastructure activities impact mana whenua, who have been kaitiaki of an area for an enduring time. The knowledge, values and aspirations of mana whenua are incredibly important to know, and respect, having unique and deep knowledge of a local environment.

Mandatory mana whenua due diligence: all major infrastructure development project teams shall ensure:

(1) time is taken to know any prior Meridian conversations with the relevant local iwi / hapu;

(2) research local iwi/hapu objectives and aspirations including through publicly available information (i.e., environmental values and principles) and by korero (prior to any korero, ensure the right local leaders are engaged with, Meridian's Kaihautu Māori can advise/support);

(3) A Cultural Impact Assessment (CIA) is completed; as part of the cultural impact assessment if not included a timeline of local history, key events, occupation and interests of neighbouring Iwi and hapu to build a foundation of contact points for future engagements.

Mandatory project consideration on the adoption of localised mana whenua values and principles – insights from mana whenua due diligence to be applied to demonstrate Meridian's commitment to upholding local values and principles i.e., could inform local economy objectives or voluntary biodiversity initiatives etc.

Mandatory priority on enduring engagement with mana whenua – recognising the 'milestone' based nature of infrastructure projects and the changing points of contact that can occur within Meridian as a project transitions (i.e., from development to construction to operation), it is important to ensure there is seamless communication with mana whenua throughout these changes. Meridian can also commit to initiatives to build long term partnerships past the build end date by embedding enduring actions that honour the significance of local knowledge and practices such as annual pilgrimage / hikoi to sites of significance i.e., Harapaki for matariki etc. Meridian has opportunity to further extend the opportunities past the intent of the relationships for mutual benefit cadetships, internships and building a future workforce for both parties.

Documentation, reporting and audits - All major projects at Meridian should have a Sustainability Management Plan (SMP) in place. An SMP template that can be adapted for a specific project is provided in Appendix A – some content embedded from a recent Meridian project has been retained for the purposes of providing practical examples of how metrics and focus areas have been described and sought to be measured.

Of note in the SMP template are key items such as: Greenhouse Gas (GHG) measurement and reporting requirements, regular audits, having assigned accountabilities for sustainability at the

project level, a focused but balanced set of focus areas – for example, this could be on emissions, water management, waste, enabling outcomes important to local mana whenua etc.

Project team members and contractors are required to be familiar and compliant with the contents of Project-level SMPs and to be particularly aware of the content that relates to their responsibilities.

Mandatory SMPs for larger projects – All major Development projects require a Meridian SMP and all main suppliers are required to produce a scope specific SMP for approval by Meridian before project work begins.

Cross-cutting project sustainability requirements – evaluate the merit of adopting the following initiatives into project requirements – these initiatives being a representation of those which have had success on other Meridian infrastructure-specific projects.

- Ensure Suppliers can align their practices and provision of goods and services with Meridian's Supplier Code of Conduct
- Include questions in your Request for Proposals/Requests for Information etc relevant to your sustainability impacts. This will give you confidence you're asking for the right sustainability information from suppliers.
- Quarterly sustainability forums with Meridian staff and suppliers.
- Requirement to regularly (monthly or quarterly) profile sustainability initiatives implemented with benefits and lessons shared (profiled within and external to Meridian)
- Ensure any sustainability KPIs are useful, sufficiently diverse, and meaningful and quantifiable for the project. Consider if the KPI would be relevant to comparable projects to evidence project-on-project improvements.
- Adding a requirement for Meridian project leads to talk through any Sustainability Management Plan with those required to execute on it i.e., not a document that is filed and forgotten.
- Requiring the provision of Environmental Product Declarations (EPD) where available (or encouraging suppliers to develop these for future provision). An EPD provides visibility of the specific impacts for a product or material and can be an evidence based means of enabling comparison between options under assessment.
- Completing a project Life Cycle Assessment (LCA). An LCA, completed against a recognised standard, will ensure Meridian has a sound evidence base to disclose the life cycle impact of a specific project. It can also serve as a useful tool to identify opportunities for future comparable projects to minimise any negative impacts. Meridian may for example, choose to complete an LCA on an entire wind farm development, or substation, to substantiate any claims of achieved emission reductions.

Training and skills development

Meridian will make training available to staff to support with the understanding of core concepts and practices and ensure effective application of this framework. Training currently available includes:

- Meridian Sustainable Procurement e-learning module – available to Meridian staff on Electric Avenue
- Specialist training by external providers can be sought for specific roles in Meridian, or to support personal development, including on topics: carbon accounting, Global Reporting Initiative (GRI) standards, Life Cycle Analysis etc. Please contact Meridian's sustainability team for more information.
- Ongoing professional development webinars through Meridian's memberships including by providers:
    - Sustainable Business Council,
    - Sustainable Business Network
    - United Nations Global Compact
    - Science Based Targets initiative

Please contact Meridian's sustainability team for information on how to access these webinars / professional development courses.

Future options

This Framework is subject to review at least every two years to ensure it remains aligned with latest requirements, captures feedback from users, and lessons learned from infrastructure projects continue to be captured. To provide visibility of some of the potential new future options under consideration now, which may be embedded in this framework in the future, please refer to the following:

- Climate risk assessment and adaptation plans
- Human rights due diligence
- Embodied emissions assessments
- Specific guidance on certification schemes such as those from the Infrastructure Sustainability Council (ISC)
- Biodiversity initiatives
- Alignment with Circular Economy Framework (in draft)
- Broader land use considerations

Reference tools and materials

Meridian

Meridian's Sustainability Policy (public)

Meridian Code of Conduct (public)

Meridian Supplier Code of Conduct (public)

Meridian Modern Slavery Statement (public)

Meridian Biodiversity and Deforestation Commitment (public)

Meridian Belonging Policy (public)

Modern Slavery Framework and quick reference guide for due diligence (Meridian intranet – Electric Avenue)

Meridian Sustainable Procurement Hub (Meridian intranet – Electric Avenue), including:

- Meridian's emissions recording template (excel for sharing with supplier – Electric Avenue)
- Example RFI and RFP sustainability questions for suppliers

[Coming soon – Meridian's Circular Economy Framework]

[Coming soon – Meridian Human Rights Framework]

External references

Infrastructure Sustainability Council

Life Cycle Association of New Zealand resources

Green Star (Building standard)

Living Standard (Building standard)

Australasia Environmental Product Declarations

Sustainable Business Network (SBN) Circular Economy Directory

Glossary

Adaptation is the process of adjusting to an actual or expected climate in order to moderate harm or exploit opportunities. Adaptation actions can include structural, institutional, ecological or behavioural options.

Adaptive capacity is the ability of systems, organisations, humans and other organisms to adjust to change.

Audit is a systematic, independent and documented process for obtaining objective evidence and evaluation the extent to which audit criteria are met.

Certification is a procedure by which a third party or 'certifier' gives written assurance that a product or service conforms with certain standards. For example Green Star certification ratings for buildings.

Circular economy refers to a model of the production and consumption of goods which prioritises keeping resources in use for as long as possible – so extract maximum value whilst in use, then recover and regenerate other products and materials at the end of each service life. So rather than 'make, use, dispose', the focus is to ensure products can last and be easily repurposed.

Climate-related risks refers to the transitional and physical impacts of climate change. Transitional risk can be driven by regulation or changes in customer preferences for example which are motivated by climate issues. Physical climate-related risk relates to acute or chronic climate impacts where chronic can be changes to seasonal patterns or long-term trends (such as average precipitation, temperature etc) and acute relates to risks from the increasing frequency or intensity of one-off events such as storm and flooding events.

Climate-related opportunities recognises that climate-related impacts can also represent opportunities (not purely risks) – at the same time as evaluating risks from the drivers outlined above, consider the opportunities which could also arise. For example, increased demand for renewable energy.

Embodied emissions are those emissions that goes into producing a good. For example, the heat required to produce cement to manufacture concrete is currently often provided by burning coal, the most carbon intensive fossil fuel.

Energy efficiency is a ratio of output or useful energy or energy services or other useful physical outputs obtained from a system, conversion process, transmission or storage activity to the input of energy.

Life Cycle Analysis is an analytical process for the systematic and quantitative evaluation of the environmental impacts of a product or service.

Modern slavery is a term to describe situations where coercion, threats or deception are used to exploit victims and undermine or deprive them of their freedom. For example a worker cannot refuse or case work, or is deprived on personal freedom because of coercion, threats or deception.

Appendix B - Te Rere Hau Sustainability Management Plan

Sustainability Management Plan (SMP)
Te Rere Hau Wind Farm Repowering

Planning, Design and Procurement Phase (Pre-FID)

DRAFT – v0.1

Document No. MELNZ-MPL-SB-0002

Sustainability Management Plan

Project Name	Te Rere Hau Wind Farm Repowering
Project Sponsor	Guy Waipara
Project Director	Chris More
Project Manager – Design	Alan de Lima
Project Manager – Construction	Alan de Lima
Project Location	Tararua Ranges, Palmerston North
Key Project Dates	Commencement – November 2023
	Financial Investment Decision – May 2024
	Construction Start Date approx 3Q2025
	Construction Completion Date approx 4Q2027
Project Number	R24028

Control of this Document

Only the Project Director or Project Manager can change this document. When the document is changed, a new revision will be created and distributed with a new revision number and date.

Revision	Date	Status	Author	Reviewed	Approved Meridian	Approved - Project LP
0.1	November 2023	Initial Pre-FID plan	Lloyd Clark	Criggy Haas	Alan de Lima	Project LP Board

Document Control

The PDF electronic document is the controlled document. Printed copies are uncontrolled.

Future Revisions of this Document

This document will be revised and reissued as required throughout the project duration. The most notable review and potential revision will be undertaken for construction phase.

Project Te Rere Hau Wind Farm Repowering Personnel

All Te Rere Hau Wind Farm Repowering project team members are required to be familiar with the content of this Sustainability Management Plan (SMP) and to be particularly aware of the content that relates to their responsibilities.

The Project Manager is responsible to ensure that the requirements of this Plan are fully implemented.

Contents

Section One: Sustainability Overview

1 Introduction

This Te Rere Hau Wind Farm Repowering Project Sustainability Management Plan (SMP) documents the sustainable management structures and sustainability processes that the Te Rere Hau Wind Farm Repowering Project (the Project) will use to support Meridian's sustainability commitments.

The SMP will allow new project team members, Contractors and suppliers to gain an understanding of:

- How Meridian and the Project team approach sustainability on this Project, consistent with Meridian's wider business sustainability commitments;
- The sustainability requirements that Contractors need to adhere to and deliver against; and
- Key sustainability areas of focus for the Project and its Key Performance Indicators (KPIs). These apply to the Project as a whole and will be delivered on through the work of Contractors.

At this stage of the project this document is primarily an internal support and guidance document but can be used externally to assist in informing potential suppliers and contractors of likely expectations during procurement and construction, although a detailed construction SMP will be created for the construction phase based on this document.

This document aligns with Meridian's Sustainability Policy and other Project-relevant Meridian Group sustainability commitments -such as those outlined in Meridian's Code of Conduct, Supplier Code of Conduct, Modern Slavery Framework, Biodiversity and deforestation commitment and Climate Action Plan. See below for further reference links. It will also align with the environmental management activities for the construction and management requirements as to be set out in Meridian's Construction Environmental Management Plan (CEMP), once that document is created.

Meridian launched its Sustainable Infrastructure Framework (SIF) in early 2023. The SIF has informed this SMP, enabling Meridian's sustainability policies and commitments to be applied to this project's specific context, and for relevant, practical, and positive sustainability outcomes to be identified.

In addition to complying with industry best practice in environmental management, Meridian expects Contractors and Suppliers to engage fully with sustainability best practices for each of the sustainability areas of focus outlined in this document and take an innovative approach to emissions reduction and impact.

2 Scope of SMP

This SMP currently relates to activities for the wind farm planning and design phase in relation to all aspects including: earthworks, civil works, turbine erection, buildings and electrical fit out and connection works.

Contractors are responsible for managing their own sustainability practices, managing sub-contractors they have engaged and for general compliance with legislation, industry best practice, and our Supplier Code of Conduct.

3 Project Information

Meridian Energy Limited (MEL) and New Zealand Windfarms (NZWF) have formed a Joint venture ("Project LP") to design, construct and operate a large-scale wind farm at the site known as Te Rere Hau. The Project Site is located at 376 North Range Road, on the Tararua Range to the north of Pahīatua-Aokautere Road, approximately 11km south-east of Palmerston North. The proposed development involves the construction, operation, and maintenance of the wind farm consisting of up to 39 turbines with a nominal output of 4.2MW each. The exact number is still under consent consideration. The existing 96 turbines will be decommissioned and removed from site. The Project will look to utilise as much of the existing infrastructure and assets as possible.

Meridian is undertaking the majority of the services required to deliver the Project on behalf of the Joint Venture (JV). When delivering these services to the JV, Meridian will be applying its internal policies, plans and processes.

During the post-FID construction stage contracts will be awarded by the JV with Meridian managing these on the JV's behalf.

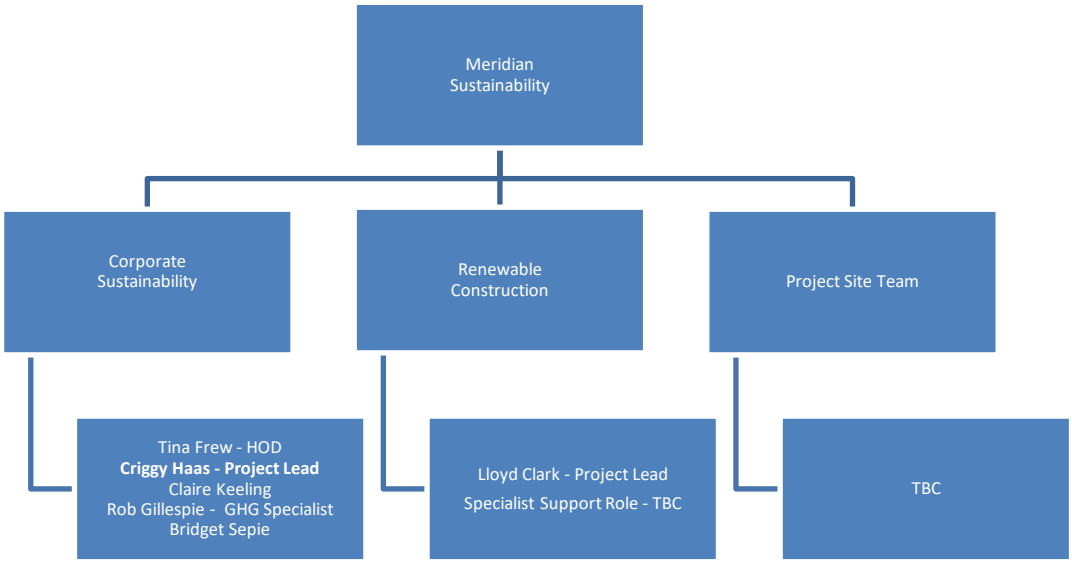
Meridian will report to the Project LP Board in all matters relating to delivery of the services.

Figure 1. Site Location

4 Sustainability at Meridian & Te Rere Hau Wind Farm

The Project will contribute to Aotearoa New Zealand's urgently needed transition to a net zero future, and brings benefits to people and communities, including greater energy security. Sustainability at Meridian means doing the right things today so our planet and people can survive and thrive. Applying sustainability to infrastructure development involves taking a whole-of-lifecycle approach that maximises social, environmental and economic sustainability outcomes over the whole life cycle of the project (raw materials through to end of life).

This SMP has been developed in consultation with the corporate sustainability team. Responsibility for Meridian's sustainability programme, as it relates to this project, is represented in the chart below. The appointed corporate sustainability representative dedicated to Te Rere Hau is Criggy Haas.



Meridian has a robust sustainability programme. Every year we conduct an annual assessment to identify our most potential material and actual material impacts on the environment, economy and people, including human rights, throughout our value chain. The identification of these impacts, along with our sustainable development goals and our sustainability policy help to inform the areas of focus specified in the SIF and in this document.

Meridian's sustainability programme focuses on the United Nations Sustainable Development Goals (UN SDGs) where we believe we can make the most impact. There are four UN SDGs in which we believe we have a significant role to play:

- SDG7 Affordable and Clean Energy;
- SDG8 Decent Work and Economic Growth;
- SDG12 Responsible Consumption and Production; and
- SDG13 Climate Action.

We also take action in support of a number of other UN SDGs where we can demonstrate a commitment within our sphere of influence to operate in ways that are consistent with our purpose and the issues important to our operations and stakeholders. These include:

- SDG5 Gender Equality
- SDG6 Clean Water and Sanitation
- SDG9 Industry, Innovation and Infrastructure
- SDG10 Reduced Inequalities
- SDG15 Life on Land.

We are a member of the UN Global Compact – a voluntary leadership platform for the development, implementation and disclosure of responsible business practices. As a participant in the UN Global Compact we're committed to aligning strategies and operations with 10 universally accepted principles in the areas of human rights, labour, environment and anti-corruption, whilst also taking action in support of UN goals and issues embodied in the SDGs.

Since 2019 Meridian has voluntarily adopted the Task Force for Climate-related Financial Disclosures (TCFD) framework to identify our climate-related risks and opportunities, and where those are transitional or physical. In December 2022 the New Zealand XRB (External Reporting Board) released new climate standards that are compulsory for publicly listed companies (and other specified organisations). Meridian's FY23 disclosure aimed for early voluntary alignment with these standards, a year before required in our FY24 report. Our annual disclosure requires on-going active assessment of climate risks and opportunities across our value chain – including development of our assets, in our operations as well as our supply chain – as well as reporting against our climate targets and metrics.

Our approach to sustainability on this Project is also informed by lessons from our most recent renewable development projects – the Harapaki Wind Farm in the Hawkes' Bay and the Ruakākā BESS project. We learnt for example that the most material source of emissions during construction were on-site diesel use, overseas freight, and concrete. Opportunities for improvements with regard to on-site waste management practices were also identified. All of these will be key focus areas for this Project.

Main contractors and suppliers will be required to detail in their SMP emissions associated with the following equipment, materials and services:

- **Turbine componentry** – supplier to provide an estimated forecast and what will be done to try and reduce or mitigate emissions;
- **Other Equipment** - suppliers to provide an estimated forecast and what will be done to try and reduce or mitigate emissions;
- **Diesel use** – assess likely diesel usage on site and how they intend to reduce diesel use on site;
- **Transport emissions** – assess likely transport usage such as commuting, shipping, freight and international travel and how they intend to reduce or mitigate emissions;
- **Concrete and steel** – assess areas of usage and how to reduce use (and therefore, embodied emissions) to a minimum. Where use is absolutely required planning for efficiencies to reduce wastage;
- **Material emissions** in general, and any notable **climate risks** (and mitigations);
- **Waste management** - a waste management plan (WMP) that assesses likely waste creation volume & streams and how this will best be managed using reduction, reuse and recycling procedures to divert waste from landfill and support the project in meeting its waste KPI;
- **Community** - how they intend to contribute to the well-being of local communities and iwi / hapū; and
- All contractors and suppliers will confirm what emissions they offset themselves with details of the offset process and systems.

These are key focus areas but the expectation is that the contractors SMP will assess likely key impacts according to scope and look to manage, reduce and mitigate as much as is reasonably practical. In line with guidance from this document and the Meridian SIF.

The principles for Project sustainability include:

1 *Taking a whole-of-life view*. Environmental, social and economic impacts will be different over the life of an asset – we will consider all stages of the lifecycle (strategy and design, construction, operational life, end of life) when identifying actual or potential impacts.

2 *Actively managing environmental and social impacts.* We have minimum standards of environmental and social management and performance of our global workforce. We expect all our suppliers to meet and sign up to our Supplier Code of Conduct and to mitigate actual

and potential negative impacts on people and the environment through the project's supply chain.

3 *Reducing our emissions footprint, building climate resilience and supporting leading sustainability management* practices. Meridian seeks to minimise impact on the local environment as well as resource consumption and emissions associated with construction and operation of the repowered Te Rere Hau Windfarm, as well as manage the impacts of climate change. This Project will demonstrate a beyond compliance approach to sustainability and environmental management and embody Meridian's values and goals as it is executed.

4 *Enhancing local employment and good community relationships.* We will maximise local employment opportunities and will seek ongoing relationships with suppliers who bring innovative ideas to the table that would improve the environmental and social outcomes of our projects whilst enhancing good community relationships.

5 *Continuous improvement.* Meridian is committed to maintaining and investing in its renewable energy development pipeline which explores options to grow New Zealand's generation capacity. We proactively use lessons from each development to inform our future sustainability practice.

The aspiration to be exemplary in the practice of sustainability - encompassing the four pillars of well-being (environmental, cultural, social and economic) – and aligning with and supporting Kaitiakitanga.

Kaitiakitanga encompasses:

- protecting, restoring, enhancing the Māuri (life supporting capacity) of all things from a Te Ao Māori view.;
- fulfilling spiritual, emotional and inherited responsibilities to the environment.
- maintaining mana over te Taiao (the environment); and
- ensuring the welfare of the people.

5 Sustainability in Decomissioning & Demolition

Although the existing assets belong to NZWF the decommissioning and demolition of the existing wind farm is part of the joint venture scope. Once the assets are on the ground it will then be over to NZWF for removal. The scope of this is yet to be determined but is expected to be largely concerning removal of turbines. MEL will also provide support and advice on potential repurposing. The exact scope of this works is yet to be defined but expected to relate to the following:

- Project management;
- Disassembling existing turbine componentry;
- Removal of cables in the way of the planned development; and
- Disestablishing existing infrastructure such as transformers.

It is currently expected that the bulk of this impact and any potential savings will primarily relate to diesel usage by plant and machinery on site secondarily fuel usage for travel to and from site.

At present NZWF have noted that they intend to relocate / reuse 65 turbines and the remaining turbines would be kept as parts for the 65 to be reused. Concrete and steel platforms will be left in place and become a carbon sink, except when in the way of the repowering development, which based on current design might the case at ten locations.

Once the volume of removal is known for concrete, steel and cables a plan can be made with NZWF as to the most sustainable, feasible and viable reuse or disposal option.

6 Sustainability in Design and Procurement

Sustainability will be embedded in each step of the development Project, from design and planning, supplier evaluation and procurement, to construction and end-of-life management (i.e. through the life cycle of the project).

Generally speaking, the choices made at the strategy and design phase will have the biggest aggregate impact over the life of any asset. It is worth investing the time at the strategy and design phase to systematically identify the biggest opportunities relevant for each development. As an example, at the Harapaki Wind Farm Development the carbon impact of the civil design was reduced by 30% of the original through efficiency and innovation in design by placing a sustainability lens over the project and working collaboratively with our design engineers.

The following are key sustainability documents which set out Meridian's values as a responsible business and generator, and form our baseline expectations for sustainability in the tender and delivery phases of the project:

- Meridian Supplier Code of Conduct sets out our expectations of suppliers in the areas of ethical business, social responsibilities, health, safety, wellbeing and the environment.
- Meridian Sustainability Policy (refers to Meridian's priority SDGs).
- Meridian Climate Action Plan.

To achieve good sustainability performance during the construction stage of the Project Meridian will require Contractors and Suppliers to demonstrate their understanding and performance in sustainability. Meridian tender documentation is prepared in such a way that the bidding Contractors recognise the importance of good environmental and sustainability practice.

The project KPIs reflect Meridian's specific sustainability objectives for the Project.

Prior to construction, the Contractor will be required to submit a detailed SMP to address the project aspects noted within this SMP.

It is expected that each of the operatives on site adhere to their SMP for the duration of their contract works, and in turn requires each of the Meridian Project Team to be familiar with requirements as outlined in this plan and ensure the requirements are reflected in their relevant plans and to manage and promote adherence to them.

Section Two: Project roles and responsibilities for sustainability during Construction

Sustainability in the construction phase is the responsibility of each person and operative involved in the Project, embedding sustainability in every stage of its development. In addition to complying with industry best practice in environmental management, Meridian expects our team, Contractors and suppliers to:

- engage fully with sustainability best practices for each of the environmental measures outlined in this document;
- measure and report their social and environmental impact using sustainability KPIs;
- take an innovative approach to maximising opportunities to reduce carbon emissions; and
- Understand and assess climate risk associated with the project, including physical supply chain risks due to global climate changes.

Sustainability KPIs will form baseline reporting and be tracked throughout the construction of the Project.

As the Project progresses, the Meridian team will take practicable steps to maximise opportunities for innovation in sustainability and climate action (carbon reduction and building resilience to the impacts of climate change) and to celebrate them when utilised.

- We will encourage new thinking – and thinking out of the box – aiming to deliver social, economic, natural resource, cultural and environmental value to all stakeholders;
- We recognise sustainability related issues are important to Meridian and each respective stakeholder on the project, as such the team will endeavour to meet those expectations at every step of project delivery;
- The project team will provide regular communication to site teams and stakeholders on sustainability matters throughout project delivery and will manage adherence to the Project Sustainability Plan (this document);
- Our project management system will allow us to assess and manage the environmental, natural resource, social and economic risks associated with the project in order to deliver the best value to all project stakeholders;
- We measure and report our sustainability footprint for the Project with focus on the KPIs outlined below in Section Three: Sustainability in practice on-site;
- We will identify sustainability- and climate-linked risks and the most appropriate party to manage these risks as a key part of sustainable construction procurement and project delivery processes; and
- We will research and benchmark our sustainability services and practices with those from other internal business units and those from outside our industry, with the intention of identifying best practice and establishing benchmark performance.

When procuring services and products for the Project we will establish minimum standard benchmarks that will set targets and allow us to measure performance (through agreed KPIs) for major supply contracts.

Other areas of focus may include (but are not limited to):

- Recognised achievements and performance of Contractors / consultants in sustainability;
- Achievement of best value, through balancing quality, price and desired outcomes;
- Responsible consumption and production;
- Waste management;

- Whole of life costs;
- Energy efficiency;
- Water consumption; and
- Source of materials – local, regional, national or international.

The project team will hand over to the construction site team once appointed and in place (this will include stream leads responsible for specific aspects of the project, such as electrical, civil). The details of the site team will be included once available.

7 Contractor Sustainability Management Plans

Main contractors will be required to develop a SMP which will set out how the Contractor will apply best sustainability practices to comply with this SMP and Meridian's Supplier Code of Conduct. This document is required to be approved by Meridian. Main contractors may incorporate sub-contractor activities or require individual sub-contractors SMPs as they see fit. The SMPs will include relevant KPIs and quality assurance measures to ensure they are met. The approved SMP is a pre-requisite for working on site for all Contractors and their subcontractors.

The Contractor must:

- Forward a copy of their SMP to Meridian for review and comment, and have the plan agreed before people, plant and equipment are permitted on Site and any work undertaken; and
- Assess and agree with sub-contractors the Sub-contractor's requirements or individual SMP to ensure it complies with Meridian's requirements before Sub-Contractor's people, plant and equipment are permitted on Site and any work undertaken.

Meridian will:

- Assess and approve the Contractor SMP before people, plant and equipment are permitted on Site and any work proceeds; and
- During construction of the Project, Meridian will audit the Contractor's area of works against their SMP. The frequency of this will depend on the scope being undertaken but is expected to be at least every quarter, with the Contractors expected to undertake internal monthly audits with resulting reports provided to Meridian shortly after.

Annual review:

During the Project and term of the Services Agreement, the Contractor's SMP, Sustainability Reporting Structure, reporting content and frequency will be reviewed by Meridian on an annual basis to ensure they remain aligned with international best practice and are compliant with Meridian's Sustainability policies.

As a minimum main contractor SMPs must include the following:

1. Impact assessment relevant to their scope of works, as summarised in section 3 and detailed in section 8. This would identify relevant sustainability aspects and what impact is being caused and through carbon and materiality assessment would highlight the key focus areas and what is being done to mitigate the impact;
2. Confirmation of:
    a. Who will be the projected appointed sustainability representative. This must be a suitably qualified and experienced person (SQEP) subject to Meridian approval.
    b. How much involvement or on-site presence the sustainability representative will have. Main contractors, such as the main civil, electrical and turbine contractor are expected to have full time representation. With the two main site components, for

civils and turbines having full time on site representation. Meridian understands this will be according to scope and scale and has recent experience of various project personnel frameworks that have worked well, such as using a supporting expert consultant for smaller contractor scopes.

c. What quality control measures are expected to be implemented, such as monthly internal audits.
d. Provision of monthly GHG reports by the 15th of each proceeding month.
e. Provision of annual and / or end of project sustainability reports as relevant to scope and time involved on the project.
f. How sustainability will be embedded into project scope and actions.
g. Acceptance to being part of Meridians quality assurance framework. Such as attendance to sustainability meetings and being part of quarterly sustainability audits.
h. Keeping a sustainability initiatives and learnings register that will be provided every month along with GHG reporting.

3. Response to modern slavery and human rights questionnaire with any clarifications as relevant.
4. How carbon and materiality assessments will be conducted for initiatives and learnings, construction changes and material changes requested or chosen by the contractor.
5. Waste management plan that provides a prediction of waste streams and volumes and how waste and material management will occur on the site, with a view to minimise waste and divert from landfill in-line with project KPIs.

8 Knowledge Sharing

There are several ways in which the Meridian team will share sustainability knowledge, these will include the following:

- Within the project using meetings, sustainability moments, inductions, training, individual team briefings, subject matter expert presentations and toolbox talks. Key environmental and sustainability issues and successes will be discussed by the Site Environment and Sustainability Specialist at the weekly team meetings for all project staff.
- Quarterly sustainability performance updates. All project components will be invited to this meeting where performance against KPIs will be provided, as well as alignment to the wider business sustainability status. Contractors will be invited to provide their own presentations on key wins and challenges.
- Beyond project boundaries to the Meridian internal intranet (Electric Avenue/Viva Engage). Where a sustainability initiative or learning is proven to have provided significant or material mitigation it will be profiled. This may go public if deemed appropriate.
- From outside the project onto the project when applicable. This can be demonstrated by knowledge generated outside the project is brought in and shared within the project. This could include sustainability-related presentations provided by parties external to the project, meetings or email correspondence with sustainability advisors or managers from other projects.

Knowledge sharing across the four types outlined above will be captured in the form of meeting minutes, power point slides, articles, reports when events occur / articles are published.

Section Three: Sustainability in practice on-site

9 Sustainability areas of focus

The sustainability areas most material for the project, and that have informed the below KPIs, are summarised in the table and expanded upon below.

Environment	**Social & Economic**
• Resource efficiency and responsible consumption (including emissions impact) • Greenhouse Gas (GHG) emissions reduction and reporting • Waste management and reduction for hazardous and non-hazardous waste. • End of life Management of windfarm components • Air quality • Biodiversity • Climate Risk	• Ethical Supply Chain (Human Rights & Modern Slavery) • Stakeholder engagement • Engagement and discovery with mana whenua • Project workforce and supporting local
Cross-cutting	
Quality assurance and accountability within sustainability through a robust quality assurance process. Regular measurement and reporting to support with transparent performance assessment and disclosure.	

10 Key Performance Indicators

Meridian believes that a KPI framework will provide a focus on achieving outcomes consistent with Meridian's sustainability goals during Project delivery, and sets a benchmark for sustainable design, procurement, construction and operations.

The intent is to develop a collaborative approach to monitor environmental and sustainability performance and have an identifiable sustainability focused culture operating across the Project. This goes hand in hand with an expectation for each Contractor on site to undertake necessary assurances to ensure achievement of project KPIs. During construction of the Project, the sustainability journey will be captured monthly through KPI reporting with focus on socio-economic and carbon metrics.

In order to support a strong sustainability culture, the overarching construction KPIs are:

Table 1 – Overarching Project Sustainability KPIs

Focus Area	**KPI**	**Target**

1. Stakeholder engagement / Iwi engagement plans	Compliance to cultural, archaeological and stakeholder engagement plans	100% compliance
2. Project workforce and supporting local	Local employment and investment	>50% of the workforce's primary place of residence is in the Manawatū-Whanganui , and Wellington regions and 15% of project cost is spent locally.
3. Regular measurement and reporting to support with transparent performance assessment and disclosure.	Encouraging good behaviours and embedding continuous improvement	5 new initiatives per quarter demonstrating on-site sustainability practice in action (e.g. emissions reduction, circular economy, water efficiency). All Contractors will provide their register of sustainability initiatives monthly with their Greenhouse Gas (GHG) report. Meridian will profile at least one initiative to staff each quarter.
4. Resource efficiency and responsible consumption (including emissions impact) Emissions reporting	Monitoring sustainability and environmental performance	Resource consumption is tracked. All Contractors provide monthly GHG emissions impact report 100% of the time and this considered on a quarterly basis to identify key factors and what five changes could be made to reduce our impact.
5. Waste management and reduction Hazardous waste reporting	Waste management*	>85% waste diversion from landfill for site Evidence can be provided, appropriate to the project phase, that waste (hazardous and non-hazardous) has been avoided through design, reduction, reuse and recycling.

6. Fuel Use Reduction / Emissions reporting	a) Transport emissions efficiency target** b) Site vehicle/machinery idling	On-site emissions target for plant and heavy machinery of 2 L/m^3 (2 litres of diesel per cubic metre of material moved). This equates to 2l / 5.39kgCO2e/m^3 Monitoring devices within plant expected. Idle time for plant and heavy machinery is <35%.
7. Fuel Use Reduction / Emissions reporting	Travel to site	15% of light vehicles travelling to site are EV or hybrid. 75% of haulage vehicles are Euro 4 rated or higher. >50% of light vehicles arriving to site are shared occupancy. Opportunities for car pooling of Contractors and site staff (to/from and around site) are investigated and implemented.
8. Ethical sourcing and adherence to Supplier Code of Conduct (Human Rights & Modern Slavery)	Ethical procurement/Modern Slavery	100% pre works completion of the Meridian modern slavery questionnaire including follow up questions and the provision of requested supporting evidence. 100% confirmation of adherence to Meridian's Supplier Code of Conduct, or their own acceptable equivalent or articulation of reasonable efforts to meet any expectations that cannot currently be met.
9. Resource efficiency	Water usage	HOLD - TBC – will follow consent conditions, which are yet to be established. To be updated for the construction SMP.
10. Emissions Reporting	Carbon Reduction	Reduce carbon burn by 15% against BaU (three years previous).

		Current BaU three year previous emissions is 75,000tCO_2e so target is 63,750tCO2.
11. Climate Risk	Climate Risk Assessment	HOLD - DEPENDING ON FINDINGS OF THE WORKSHOP AND IF WE HAVE ONGOING PROJECT REQUIREMENTS - Climate risk assessment to be undertaken. All identified risks associated with the site in relation to climate are mitigated down to target or appropriately accepted in line with Meridian's Risk Management Framework.
12. Overall	Project Wide	Score of >80% within quarterly and annual audits.

*Waste includes all construction and site village waste streams
**On-site means all vehicle/machinery use on Sites 1, 2 and 3 only. No public road use to be included.

11 Key Focus Areas Explained

Environment

Emissions impact of materials and services

Meridian is committed to reducing the overall impact of the project, including reducing gross emissions as far as possible (including from the development activity and through the asset's operational life). Contractors are required to demonstrate initiatives and designs to lower the emissions impact for the Project, which have been incorporated into each of their project scope specific SMPs.

Emissions: this includes embodied emissions, which are those from the manufacture and supply of materials (i.e., concrete, steel etc), and emissions 'design in' but occur during the operational life of an asset (i.e., diesel generators, transport movements from maintenance activities, SF6 leakages etc).

Key areas for attention in reducing carbon impact include the following:

Main Equipment

On a recent large scale windfarm development project undertaken by Meridian turbine componentry materials accounted for 59% of all project emissions. This was by far the largest emissions factor. It was also four times what was originally forecasted. We expect the main equipment supplier to provide accurate initial GHG data based on LCA or similar, and for such analysis to highlight what has been done to try and reduce these emissions.

On-site fuel use

Reduce on-site emissions from heavy plant and machinery through removing these requirements in design and site practices. Reduce idle time within the work area, which on average accounts for 50% of emissions across construction in New Zealand. Contractors will be expected to illustrate what is being done in this regard. On a recent large scale windfarm development project undertaken by Meridian large plant and machinery fuel use accounted for 85% of carbon emissions in the first 12 months and 65% of carbon emissions in the first 24 months. Expectations include:

- Consideration for hydrogen plug-ons;
- In-situ emissions monitoring devices within all each plant & machinery;
- Use of biodiesel/renewable diesel if available within the region;
- Regular pro-active maintenance – maintenance schedules required;
- Machinery should not be older than 5 years and have a Euro star 4 rating;
- Efficiency in site planning, preparation and implementation to remove inefficiencies and idle time;
- On site awareness for operators including within site induction, toolbox talks / pre-starts, competency level training etc; and
- Sub-contractors not working or contracted to run times.

In 2023 Meridian commissioned a general study on diesel reduction measures within construction sites. The resulting matrix of options is shown in Appendix C. We expect the contractor SMP document to review this matrix and select best options to their scope and in relation to this specific project.

Concrete & Steel

On a recent large scale windfarm development project undertaken by Meridian 50% of buildings emissions came from concrete both concrete and steel accounted for 40% of emissions overall (excluding turbine componentry). The project will aim to reduce use of concrete and steel as much as possible, by seeking alternatives such as engineered timber and Mateenbar. If concrete is to be used ensure use of additives in place of Portland cement as much as engineering standards will allow. This greatly reduces the GHG impact from concrete. The most common additive used is fly-ash although others are available. Fly-ash is known to be used in the local area and throughout New Zealand.

During construction, ensure efficiency in any concrete and steel use. E.g. accurate forming and steel measurements and look to reuse any concrete leftovers in non-engineering requirements or for aggregate such as forming tie down blocks, road barriers and maintenance areas or platforms. In this manner a recent Meridian project was able to completely eradicate waste concrete and minimise steel waste.

Life-cycle impacts

Life Cycle Analysis is a great way for a business to understand the impact of a product or service across its life cycle (raw materials, manufacturing, through to end of life). Asking suppliers if they can provide LCAs on a particular product we are purchasing for use in our project is one way that we can better understand the carbon impact (and other impacts) of our supply chain.

Meridian is currently engaging in Life Cycle Analysis (LCA) studies to support decision making on appropriate and most sustainable materials to use on the Project wherever practical to do so, and we expect Contractors and suppliers to do the same. These include the control/switching room LCA, a construction diesel study and individual mini LCA's.

Meridian has already undertaken LCAs at other sites and this information can also be utilised. This means getting a carbon value for one material or location vs another. This will be a key part of discussions for focus materials known to have a high carbon footprint through content or travel distance, such as concrete and steel. When time constraints exist and a decision on materials is required before an LCA can be completed the Meridian Project sustainability representative (currently Lloyd Clark) should be consulted.

Travel to and from site

Meridian has completed transitioning their light vehicle fleet to 100% electric. Meridian's next target will be transitioning the utility fleet to electric power by 2025, removing dependency on fossils fuels from transportation and improving ongoing efficiency on site. It is expected that Contractors will move on this electric vehicle journey with us throughout the Project.

Electric vehicle chargers will be available on site throughout construction in support of reducing emissions per 100km travelled. All those travelling to site will be encouraged to carpool and if sufficient numbers are on site a bus system may be created. Meridian is undertaking an early electrification study to inform the site how many charging stations and battery swap locations can be established. Considering the existing infrastructure we are considering this to be a notable amount and will look to all site operators to utilise EV options.

In 2023 Meridian started to document electrical plant and machinery available in New Zealand and have been keeping a register that can be used to inform site planning, along with the early electrification study.

All site staff will be encouraged to use electric vehicles (both light vehicles and an ATV) to fulfil site transport purposes around the site.

Meridian's Climate Action Plan highlights our focus on air travel emissions also. Meridian staff and Contractors are strongly encouraged to be purposeful with their air travel. If there is no material value to be gained from in person presence – remote meetings are preferable. Where travel to site is required, it is encouraged that requirements are co-scheduled to minimise unnecessary air travel. The number of people travelling should be considered also.

Contractor SMPs will be required to confirm their air travel emissions budget and monitor these throughout their contract. SMPs should also indicate how they will embed appropriate air travel culture with their staff and any principles they will apply to guide air travel choices (eg. when flying is acceptable). There is an air travel project KPI to support ensure budgets are met.

Meridian has developed an in-house air travel carbon calculator to help staff easily calculate tonnes of CO_2 (tCO_2) emissions that will result from flying and to support choices around air travel (using the flight emissions factor Meridian uses in its annual GHG Inventory). The calculator is available to Meridian staff on Electric Avenue and can be shared with Contractors on request to support travel planning.

On a recent large scale windfarm development Meridian undertook the following measures to reduce transport of materials to site:

- On site concrete batching plant – this completely removed transport of concrete to site;
- On site water take and storage – this completely removed transport of water to site;
- On sourcing of aggregate increased from one third to over two thirds – this greatly reduced transport of aggregate to site; and
- Seeking locally sourced materials – this notably reduced transport GHG emissions.

Freight

Materials and goods for the project should be sourced as locally as possible to minimise freight emissions. Where materials must be sourced overseas sea freight not air freight should be used and

delivered to the closest port possible. If sea freight is only possible to a more distant port, it is preferrable to continue to freight by sea to move to a closer port rather than transport via road. Sea freight emissions per kilo is lower by a factor of 100 compared to freight by road.[1] The Harapaki project had a win in this area with shipping emissions from China to New Zealand. The turbines were originally booked on six older ships, resulting in large emissions however when challenged and changed to three newer ships and far less emissions as a result.

Water

Contractors shall endeavour to reduce consumption of water during the Project. Contractors are expected to implement water management practices to facilitate optimal re-use and minimal consumption. Water supply will be required at the site over the construction period to support several aspects of the construction activities including:

- Dust control;
- Road construction;
- Machinery washing; and
- Site compound supply.

Permanent Building Guidelines

Meridian has designed recent substations, switch rooms and O&M buildings to a very high standard of sustainability design. These should be used as a template for future buildings.

LCA studies are currently being undertaken on the Harapaki substation and O&M building and this information will be made available as relevant and available to further inform sustainable best practice.

The main design and engineering component will be expected to undertake mini LCA analysis as required through the design phase.

Temporary Building Guidelines

In selecting temporary buildings for site consideration should be given to determine the Life Cycle Analysis of different options including, the materials used for construction, transportation to site, energy efficiency of building components including heating and cooling and opportunities for passive design. Examples include:

- Selecting timber over steel building materials.
- Energy efficient heat pumps.
- Low flow water taps.
- Orientation of building to allow for passive heating and lighting.

Reusing building or purchasing or renting second-hand buildings.

GHG Emissions reporting

Meridian reports on all Greenhouse House Gas (GHG) emission sources and activities within the organisational boundary of the Meridian Group GHG inventory. Its scope 1,2 and 3 measurement and reporting is also required by the new New Zealand Climate Standards. The GHG reporting includes measurement of each construction project's emissions during the development and construction process. Each of the Project main Contractors are required to report on their emissions impact (inclusive of sub-contractors) monthly throughout construction of the Project. Analysis of the

[1] Greenhouse gas reporting: conversion factors 2021 - GOV.UK (www.gov.uk)

data is required to identify key trends, impacts and opportunities to implement changes on site to reduce emissions.

A template has been appended within **Appendix A** along with a guidance document. This is subject to being updated as required and inline with best practice. Meridian can provide further guidance if required. Each monthly report is required for completion and submitted monthly to the Meridian carbon accountant (carbon@meridianenergy.co.nz). Timeline for submission is 15th of the following month. Environmental & Sustainability staff may also request cc on email distributions to enable tracking of delivery.

It is the responsibility of the Contractor to ensure timely delivery of this report along with all supporting data. The Contractor are responsible for the data submitted from the sub-contractors and promoting best practice and innovation to reduce the carbon footprint as the Project progresses.

The Contractor (including its sub-contractors) is also required to provide all information for annual reporting prior by mid-July. This annual report is focused on GHG data over the year but should encompass all relevant aspects of sustainability to highlight key impacts, key initiatives, key reductions (quantified), audit findings and reference and anything else pertinent.

Contractors are required to report contributions to Annual Carbon Offsetting each Financial Year. Details of all carbon credits bought for the Project by Contractors are required to be disclosed to Meridian.

Waste Management and Reduction

Aligned with our commitment to UN SDG 12, we are committed to avoiding waste generation and unnecessary resource consumption. The project will take active measures to reduce the volume of waste (hazardous and non-hazardous) produced through the application of the waste hierarchy in all its activities; minimising waste production and optimising reuse and then recycling. We support actions that maximise the ongoing value of products and materials when they reach 'end of life', such as product stewardship schemes.

The Contractor will manage all waste on site. This includes all construction, hazardous waste, site village waste. Waste is to be sorted and segregated in the below categories to facilitate reuse, recovery and recycling opportunities:

- Hazardous waste (resin, paints, contaminated solvents etc.),
- Waste for deposit (general construction inert waste for land fill),
- Waste for recycling or re-use (wood, metal etc.); and
- Batteries

Skips/bins require lids on the containers for lightweight waste or refuse to prevent contents from being blown around the Site and prevent materials from being thrown around site in a major storm event.

The Contractor is expected to create a site waste management procedure and facility that covers all of the above for itself and any sub-contractors. This area is expected to be well kept (including signage) and managed to enable maximum reuse either on site or by provision to stakeholders. Secondary to this the facility is expected to enable appropriate recycling according to local resources.

Waste management will be a key focus for the QA / auditing process to ensure maximum efficiency and accuracy. This will include inspection of receiving facilities. It is expected that for any waste disposal only a Class A / Class 1 landfill will be used and it is expected that the Bonny Glen landfill, which has a landfill gas capture system in place will be utilised. If a contractor intends to use a

different location or class of landfill this must be cited to Meridian within the contractor SMP or formal communication with reason for approval.

Waste data will be captured within the monthly GHG reporting.

Each month the Contractor will report the following information on hazardous and non-hazardous waste to Meridian through their GHG monthly report.

1. Total hazardous and non-hazardous waste recycled or reused (metric tonnes/kgs)
2. Total hazardous and non-hazardous waste disposed (metric tonnes/kgs)
   a. incinerated with energy recovery
   b. incinerated without energy recovery
   c. otherwise disposed
   d. unknown disposal method

Appendix B provides further details on waste management strategy, processes and systems.

End of Life Management (significant items)

End of life is a key consideration for Meridian's operational assets with an expectation that key items and materials (windfarm panels, batteries, turbines, concrete, metals etc) do not go to landfill. This will be further detailed within operational SMPs from Meridian and suppliers but is noted here so it can be considered within initial supply contracts for buy back or return to cradle options.

Refer to the Te Rere Hau Waste Management Guidelines (**Appendix B**) for a more detailed construction waste management procedure to further assist Contractors in meeting expectations.

Existing assets to be decommissioned are owned by NZWF and not considered part of the Meridian development scope, however Meridian is providing support to NZWF to pursue to the best solution including reuse of numerous existing turbines. At the moment NZWF intend to leave existing concrete foundations in-situ so they can provide a carbon sink.

Air Quality

Air quality (including particulate matter or dust) is a key aspect of sustainability management. The site ground conditions are expected to be a factor in creating particulate matter that will need relevant management. Meridian will aim to undertake an air quality assessment for the site to identify key receptors, risks and recommendations. This will be appended to this document as soon as it is available. Until then Contractors are expected to provide assessment of their specific works against the potential to impact to air quality, with relevant mitigations.

Water usage will be a key factor in management dust. Additives such as Dust X are encouraged, to reduce the amount of water required.

Meridian undertakes air quality assessments of all our sites regardless of consenting requirements which. A dust management plan will form part of the construction management plan.

Meridian is required to report on air quality as part of its Dow Jones accreditation and as such will be looking to reduce any impacts wherever possible.

Biodiversity

Meridian has a publicly available Biodiversity Commitment to maintain biodiversity by applying avoidance, remediation, mitigation, restoration and compensation approaches. Our focus is to implement initiatives that mitigate negative impacts and create positive impacts for Biodiversity on both land and in water.

In addition, Meridian has committed to no net deforestation across our operations (excluding Wilding conifers). During FY23 we implemented a monitoring programme for this commitment.

Climate Risk

Meridian is on a journey to build maturity in the way climate change is incorporated into strategic and operational decision making. Each year, Meridian completes a publicly available Climate Related Disclosure that assesses the climate-related risks and opportunities to Meridian. As part of this, Meridian has started to consider potential impacts from combined climate hazards for site evaluations for Renewable Development pipeline projects under different climate scenarios.

In addition, Climate Risks disclosed that are particularly relevant to our asset development projects include;

1) Damage to assets from extreme weather
   a. Risk to assets from extreme weather events (extreme rainfall impact on hydro operations treated separately).
2) Physical supply chain risks – reliable access to global supply chain goods and services
   a. Risk to Meridian's supply chain due to global climate changes
3) Transition supply chain risks –affordable and timely access to global supply chain goods and services.
   a. There is a risk of renewable energy asset development/maintenance costs increasing, and timely access to goods being impacted, due to increased global demand for associated goods and services because of international policy and market demand for low carbon products.

Evidence that these risks have been considered and mitigated within a project (from site selection, design, product use) demonstrates that these risks are being actively managed.

Meridian will facilitate a workshop to raise awareness and understanding on climate risk to the project team. Meridian will then facilitate an awareness workshop with suppliers and contractors as relevant during detailed planning, design and construction.

Ethical Supply Chain

Meridian is committed to operating an ethical business that is committed to respecting internationally recognised human rights, in line with the United Nations Guiding Principles on Business and Human Rights. These include all rights under the United Nations International Bill of Human Rights and the principles concerning fundamental rights in the International Labour Organization's Declaration on Fundamental Principles and Rights at Work. It should be noted that this includes eliminating all forms of Modern Slavery. Meridian's Supplier Code of Conduct reflects these updated commitments and as a result we have minimum standards we expect of our suppliers.

This SMP aims to adopt an effective and sustainable supply chain management process; embodying Meridian's Supplier Code of Conduct, which includes expectations of our Suppliers and Contractors in terms of ethical business, human rights and modern slavery, social responsibilities, health, safety, wellbeing, and environment. It is expected that Contractors and suppliers have assessed their associated products, services and processes to ensure they are compliant with Meridian's Supplier Code of Conduct.

Meridian is committed to taking proactive steps to identify and mitigate potential modern slavery risks in our supply chain. Our fourth Modern Slavery Statement was released in 2023, in line with our reporting obligations under the Modern Slavery Act 2018. As a part of identifying and assessing potential risks, Meridian issues a self-assessment questionnaire to each associated supplier as well as a request for supporting documentation as part of its due diligence.

Certain products that have been identified as significant in relation to Meridian's sustainability programme (and Meridians ESG supply chain programme that is currently under development) will be required to complete additional due diligence responses, including, but not limited to requests for supply chain tracing.

The ‘supply chain’ associated with this Project includes “every effort involved in producing and delivering a final product or service, from the supplier's supplier to the customer's customer. As a responsible generation, our supply-chain management includes managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer”.

Stakeholder engagement

Our Stakeholder Communications Plan for the Project will focus on three key areas:

- Delivering clear, timely and trustworthy communications to our stakeholders and community by:
    - Regular engagement via appropriate mediums with local mana whenua and key stakeholders including, local community near the site and both regional and district councils).
    - A regular e-Newsletter to the wider community.
    - Proactive media.
- Establishing Meridian and the Te Rere Hau Wind farm project as a positive and valued asset to the local community by:
    - Establishing a Power Up community fund.
    - Offering employment opportunities during construction.
    - Purchasing of goods and services in the region during construction.
    - Engaging with local schools, through school visits to talk about renewable energy and how windfarm farms and batteries etc are constructed and operate.
- Working with mana whenua to build and maintain a long-standing relationship that provides tangible benefits to iwi. NZWF have already established a memorandum of understanding which must be complied with and this includes set communication and engagement requirements such as monthly reporting and meetings, regular consultation on site incidents as well as on site representation such as cultural monitors. See further details below.

Each operative on the Project must understand our stakeholder guidelines and principles for engagement. A Stakeholder and Communications Plan reference will be completed in first quarter of 2024.

Project workforce and supporting local iwi

We have a focus on optimising broader benefits through the delivery of the Project, such as by contributing to the well-being and resilience of the communities and role in which we operate. We have set two project specific KPIs to measurably increase economic benefits through local employment and investment.

While many of the skills needed may be unable to be resourced locally, a large construction site can provide an opportunity for training people to undertake many jobs. Apart from reducing the need to engage workers outside the region, this can also help to improve relations between Meridian the construction teams and local community.

Contractors are required to capture their staff and sub-contractors staff’s place of primary residence and report the total number of staff and sub-contractor staff that have been engaged to work on the Project, the total number residing in the local region and those whose primary place of residence is outside the project region. For the purposes of privacy no personal details will be supplied to

Meridian. Progress against this target will be monitored through the Project Contractor monthly reporting process.

Engagement and discovery with mana whenua

Meridian recognises that our infrastructure activities impact mana whenua, who have been kaitiaki of an area for an enduring time. The knowledge, values and aspirations of mana whenua are incredibly important to know, and respect, having unique and deep knowledge of a local environment.

NZWF has undertaken extensive consultation with local Iwi. A cultural impact assessment (CIA) was provided by Ardmore on behalf of Te Whare Taiao o Rangitāne (Rangitāne o Tāmaki Nui a Rua) and received letters of support for both the repower and the extension from:

- Rangitāne o Manawatū
- Rangitāne o Tāmaki Nui a Rua
- Ngāti Kahungunu nui-ā-Rua

A memorandum of understanding (MoU) was executed and is now in place with Rangitāne o Manawatū for the repowering, which was then updated to include the extension.

The legal and mandated entity representing the iwi members of Rangitāne O Tamaki nui-ā-Rua, is committed to supporting and working with all to in implement the CIA recommendations for the Project as well as providing future benefits for iwi, which include:

- To promote cooperation in high quality environmental management which is of mutual interest to Rangitāne o Manawatū and NZWL in respect of the Site.
- To provide a forum for consultation and engagement to ensure the needs of both Parties are met in respect of environmental management of the Site and in particular the impact of the repowering and/or extension projects on the Tararua Range.
- To enhance the knowledge and understanding of both Parties of social, cultural, and environmental management and matters pertaining to proposed joint project work undertaken at the Site.
- To consult and actively engage with the body agreed to manage Iwi interests (Te Ao Turoa Environmental Centre - TATEC), in relation to any resource management issues in respect of the Site and any other impacts that may occur because of the project(s).

Key agreed actions include:

1. TATEC will receive a copy of monthly compliance reports;
2. TATE will assist TRH to provide cultural guidance;
3. Bi-monthly meetings during construction and annual meetings during operation; and
4. TATEC to be notified of any consent breach within 24 hours.

TATEC have noted the following three key areas that need to be part of the construction process:

1. Cultural Values

2. Natural Habitat
3. Construction impacts to natural environment; especially water, noise, dust and light pollution.

Further details are provided within the MoU.

Based upon the independent archaeological assessment conducted, bones, middens and other culturally significant artefacts may be discovered during the civil works and earthwork phase of this Project. We will work with Iwi to understand their cultural landscape, aspirations and discovery protocols so this can be reflected in our practice onsite. Further reference and guidance documents are being developed and are available as part of the Initial P,D&P CEMP.

Quality assurance and accountability

Successful project delivery and achieving project KPI requires all Contractors to play their role and ensure adherence to their respective SMPs.

Meridian's audit expectation and frequency are:

- Contractors will audit their performance against their SMPs monthly, or suitably according to scope. With a defined framework with explanation within their SMP.
- Meridian site team will undertake an internal project review of performance on a monthly basis, including assessment of Contractors.
- Meridian business will audit the project performance (including Contractors) against their SMPs quarterly.
- Meridian will engage an external independent auditor on an annual basis, to provide an additional level of assurance.

Measurement and record keeping

Timely and accurate reporting and record keeping is required throughout the Project. Contractors and suppliers will need to establish assurance processes to ensure this is achieved.

In summary and for ease of reference (and as noted throughout the SMP), the following will be reported during the Project:

Suppliers and Contractors	• Contractor scope specific SMP • Monthly GHG emissions report • Monthly initiatives & learnings register • Monthly QA / audit reports inclusive of KPI report • Annual Sustainability Report and / or End of Project Sustainability Report (depending on scope and length of time on project)

Meridian Project team	• Project specific SMP (this document) • Meridian specific GHG emissions reports • Quarterly KPI update report for all involved • Quarterly business audit reports • Annual external audit report • Live initiatives & learnings register • End of project key wins and learning summary report

12 Other matters

Legal record keeping

Disposal of waste and materials is only permitted by those licensed accordingly under New Zealand legislation and undertaken by an approved and certified waste collector. Contractors are required to hold copies of valid environmental permits for all facilities where waste will be transported to and waste carrier licences. The Contractor must ensure that copies of completed transfer notes for controlled waste and consignment notes for hazardous waste are collected and retained. All documentation must be retained for a minimum of two years for transfer notes and three years for consignment notes and be available for inspection.

The Contractor must keep records of the volume and or tonnage of each bin/skip disposed off-Site and these records are to be included as part of the Contractor's monthly reporting to Meridian.

Construction Environmental Management Plan (CEMP)

The CEMP is an umbrella document master plan that identifies the processes and the techniques to be used to ensure effective environmental management of the site.

The Project's CEMP details the environmental management activities to ensure compliance with the contractual and consent requirements and MEL's environmental objectives. This SMP should be used in conjunction with the CEMP (under creation) for best practice in environmental and sustainability standards. The objectives of the CEMP are:

- To provide guidance on environmental management for construction and commissioning activities.
- To ensure that the construction of the project complies with the requirements of the resource consents; and
- Provides a framework for the management of potential environmental effects associated with the construction and commissioning of the project via various management plans and supplementary environmental management plans.

An initial Construction Environmental Management Plan (CEMP) will be created pre-final consent to best inform initial project planning, this will be a draft version that covers the basic elements of a

CEMP. The document will be updated and expanded once the final consent documents are received from Council.

Revision

This Project SMP is a living document and will be updated as and when required to reflect Meridian's overall values. Meridian's Site Environmental and Sustainability Specialist will update all staff and Contractors on any revision to this plan and it is the responsibility of all to make themselves aware of the requirements and comply with the requirements relevant to their work.