

# Climate Change Disclosures Meridian Energy Limited FY20

Prepared in accordance with the  
recommendations of the  
Taskforce on Climate-related  
Financial Disclosures (TCFD)

AUGUST 2020



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More information on the impacts of climate change on our business can be found in our CDP submission which is publicly available on their [website](#).

## Disclaimer

Quantifications in this report of financial impacts of climate change (both positive and negative) are estimates only and are not intended to constitute earnings guidance. No representation is made as to their accuracy, completeness or reliability. These risks and opportunities may not eventuate and if they do the actual impact may differ materially from these estimates.

# 1. Governance

## TCFD requirements

- Describe the board's oversight of climate-related risks and opportunities.
- Describe management's role in assessing and managing climate-related risks and opportunities.

Meridian's Board of Directors is responsible for overseeing the management of risks, including those related to climate change. The Audit and Risk Committee supports the Board in this function by performing reviews of Meridian's primary business risks and its Risk Management Policy. The Audit and Risk

Committee meets on a quarterly basis, with committee proceedings reported back to the Board. The different levels of responsibilities and the supporting Risk Management Policy that governs the management of climate-related risks at Meridian are illustrated in Figure 1.

Meridian's Risk executive management Policy provides the overarching framework for assessing, monitoring and managing climate-related risk. This policy meets New Zealand standard AS/NZS ISO 31000 Risk Management—Principles and guidelines. At an operational level, Meridian's executive

management team assesses and monitors climate related risks and opportunities in accordance with the level of risk assigned through the Risk Management Policy (risk categorisations are shown in Figure 2).

Figure 1. Governance of climate-related risks at Meridian Energy Limited



## 2. Risk Management

### TCFD requirements

- *Describe the organisation's processes for identifying and assessing climate-related risks.*
- *Describe the organisation's processes for managing climate-related risks.*
- *Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.*

In addition to Meridian's overarching Risk Management Policy, we have relied on recommendations of the Taskforce on Climate-related Financial Disclosure (TCFD) for identifying and assessing climate-related risks. Meridian staff, including climate scientists, energy modelling and risk specialists, are tasked with staying up-to-date with the latest climate-related research, conducting regular risk assessments and performing detailed climate change analysis. This involves undertaking climate scenario modelling and analysis using inhouse analytical models and maintaining long-term scenarios of supply-and-demand balance in the New Zealand electricity system.

### Our risk management process entails considering 2°C and 4°C scenarios across a 30-year time horizon to 2050.

From a risk management perspective, we believe this mid-century horizon is appropriate and aligns with our long-term business planning and risk management timeframes, which are defined as: Short-term 1 to 5 years; Medium-term 5 to 10 years; and Long-term 10 to 30 years. We regularly monitor whether climate science requires us to reassess this approach.

The inputs used to inform our scenario analysis and modelling include projected changes in precipitation, wind, temperature and extreme events, coupled with generation and electricity market data. The outputs allow us to analyse a range of potential futures and explore implications for Meridian's assets, operations, financial plans, and business model.

In accordance with Meridian's Risk Management Policy, we assess the significance of each identified climate risk using a likelihood and consequence matrix. This allows us to determine the appropriate level of response for each issue identified. Levels of risk are categorised as either extreme, high, medium or low (Figure 2 provides further details on the levels of risk categorisation and corresponding management response as determined by Meridian's Risk Management Policy). Risks are reviewed on an annual basis to ensure they reflect material changes in our knowledge, business strategy, and operating environment.

Through the processes described above, we have identified over 20 climate-related risks and opportunities. An overview of top physical and transition impacts are contained in our Strategy disclosures and summarised in Tables 1 & 2. Note that none of the climate impacts identified in this report are listed as top risks in our Corporate Governance Statement FY20.





Figure 2. Level of risk categorisation and response as determined by Meridian's Risk Management Policy

Risk rating	Low	Medium	High	Extreme
Ownership	Manager or subject matter expert	GM together with their direct report	GM	CEO
Resourcing	Staff and resources applied based on risk/reward assessment	Staff and resources applied based on to risk/reward assessment	Priority focus of staff and resources at reducing risk and building mitigation in response	High priority focus with significant organisational effort directed at moving risk out of the Extreme rating
Reporting	Business units oversee and review actions	Risk review process with GM and their direct reports to ensure adequate assessment of risk and treatments are in place	Bi-annual formal reporting to A&R Committee meeting	Monthly reporting to the Board
Monitoring	Business units monitor improvement initiatives via quarterly review	Monitoring undertaken by peers or self-monitoring as appropriate	Risk owner (GM) to select most appropriate monitoring (peer or external) to ensure the steps we are taking are necessary and sufficient	Risk owner (CEO) needs to consider whether we need independent advice to provide assurance that the steps being taken are necessary and sufficient



# 3. Strategy

## TCFD requirements

- Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.
- Describe the impact of climate-related risks and opportunities on the organisation’s businesses, strategy, and financial planning.
- Describe the resilience of the organisation’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

Climate impact definitions			
Physical impacts		Transition impacts	
Physical climate impacts arise from extreme weather events (e.g. storm, flood, drought) or from the longer-term shifts in climate patterns (e.g. increasing temperatures and changes to hydro lake inflows). These		Transitional climate impacts refer to risks and opportunities resulting from the policy, legal, technology and market changes occurring in the transition to a low carbon economy. Depending on the nature, speed, and focus of these changes, transition impacts may pose varying levels of financial and reputational risk or opportunity.	
changes may result in financial risks or opportunities due to the direct and indirect impacts they can have on business operations, assets, markets or supply chains.		Source: Based on Recommendations of the Taskforce on Climate-related Financial Disclosures	
It is clear that the impacts of climate change in New Zealand and globally will be devastating without strong climate action by both government and business. For Meridian, a 4°C warmer world in 2100 would present significant challenges, both in terms of the potential physical impacts on our dam structures, but also in terms of the uncertainties as to how our society will function in those circumstances, and what an electricity business may look like as a result.		grows at an unprecedented and potentially disruptive rate but may be offset by contractions in agriculture and international tourism.	
Our analysis of how climate change impacts us is only undertaken out to 2050, as this is the time horizon we use for making decisions on new investments. We have utilised four scenarios to explore the strategic and operational implications of climate change for our business:		<b>Lower electricity demand:</b> This version of our Evolution scenario is intended to explore the potential impact on electricity demand should there be a significant disruption to industry as a result of physical or transition-related impacts of climate change (for example, the dairy industry phasing out in New Zealand over a 10 year period).	
<b>Evolution:</b> This is a “business as usual” scenario in which the world is on track to warm by more than 4°C this century. Under this scenario, no major policy changes have been enacted, no disruptive regulatory constraints have been placed on New Zealand’s electricity market, and there have been no significant industry disruptions. It describes moderate improvements in energy efficiency, a moderate increase in demand due to population growth, and a moderate increase in demand from the electrification of transport and industrial heat conversion.		<b>No climate change:</b> This version of our Evolution scenario removes the physical impacts of climate change on both supply and demand.	
<b>Revolution:</b> In contrast, our 2°C scenario assumes substantial regulatory intervention to rapidly decarbonise transport and process heat in New Zealand. Under this scenario, demand		The first three of these models assume the same level of temperature increase between now and 2050, as the physical impacts of climate change (including the availability of water and wind energy) are much the same regardless of which temperature increase scenario is chosen from the Intergovernmental Panel on Climate Change (the IPCC).	



## Physical risks

For us as a generator from natural resources, physical impacts from climate change are both positive and negative. Our modelling indicates that we are likely to get more water in our hydro catchments, with a change in seasonality to better match demand, and that demand is likely to increase with higher temperatures. However higher temperatures will also increase the likelihood of extreme rainfall events.

**We are still thinking through what the physical impacts from climate change may be on the electricity system as a whole, and how that would then impact our business.**

For example, higher temperatures may impact the carrying capacity of the transmission and distribution network, and those networks may also be disrupted by increased frequency and severity of extreme weather events. There may also be increasing competition for water, for example from increasingly frequent east coast droughts (particularly in the Canterbury region).

The physical impacts of climate change most material to Meridian are described below:

### Extreme rainfall in hydro catchments

Climate change is likely to increase the severity of extreme rainfall events, and consequent flood events, across New Zealand, which then poses a potential increased risk of physical damage to our dam and hydro assets in the Waiau and Waitaki catchments.

The safety criteria for extreme flood events is defined in the NZSOLD Dam Safety Guidelines as “Probable Maximum Flood (PMF) - An estimate of a hypothetical flood (peak flow, volume and hydrograph shape) that is considered to be the most severe “reasonably possible” scenario for a particular catchment”. The PMF (Probable Maximum Flood) values for our hydro systems were updated in 2016 for Waitaki catchment and 2017 for the Waiau catchment, and are subject to expert independent review. These PMFs then inform our dam safety approach, which follows best practice in that all of Meridian’s high potential impact category dams are required to be assessed, maintained, and managed to remain safe even under extreme flood and seismic loads.

The assessment of PMF is highly conservative. While we consider it to be highly unlikely that an extreme flood larger than the PMF event would occur in the short-term, there is a possibility that the PMF may need to be raised in the next several decades, as a result of increases in global and regional atmospheric temperatures and changes to

atmospheric circulation leading to increases in the severity of extreme rainfall events.

This leads us to consider two risk impact scenarios;

Firstly, it is foreseeable that the PMF values that we are required to manage to assure the safety of our dams could rise which could potentially have a substantive financial impact on our business, as an increased PMF would require us to increase the flood capacity of our dams, starting at some point in the next 30 years. This could be achieved through either modification of dam structures, spill outlets, or by reducing the maximum operating water level to allow for more flood storage capacity, or a combination of these measures. The most likely options currently considered include reducing the maximum control level in Lake Pūkaki in the Waitaki system, which could have an ongoing earnings cost of up between \$4m-8m per annum by 2050, and for the Waiau catchment, physical changes to lake control structures with a one off cost of up to \$30m. These potential financial impact estimates are what we have submitted to the CDP, with the \$30m annualised to \$3m/yr.

**To manage this risk we plan to re-evaluate the PMFs every decade.**

We are also advocating to independent external consultants responsible for PMF calculations that they take into account the ongoing scientific research in relation to how extreme rainfall events affect our catchments, and the extent to which climate change will contribute to that going forward. And we are likely to invest in future rainfall-runoff modelling to ensure the risk is better understood.

Secondly, if an extreme rainfall event of a scale sufficient to damage our structures were to occur in the shorter term, the potential consequence to Meridian includes damage to the dam and/or hydro structures and business interruption (restrictions on our generation operations for a period of time) but not dam failure. We’re exposed to this risk in both our catchments but not both simultaneously, as it is ‘exceptionally unlikely’ that an extreme flood could occur in both catchments in the same timeframe. The impact in the Waitaki system may be in the order of \$60m to \$80m and in the Waiau catchment between \$55m and \$80m. In the event of material damage and business interruption losses, Meridian holds insurance for both physical damage and lost generation after 30 days resulting from damage to generation assets which would reduce the financial impact by potentially up to \$35m. We consider this risk very unlikely to occur due to our extensive dam safety management approach, and as such have not reported this potential financial impact estimate in our CDP submission.

### Changes to inflow profile

Projected changes to Meridian's inflow profiles in the Waiau and Waitaki catchment areas are likely to better match anticipated changes in New Zealand's electricity demand profile.

There is not likely to be any increase in drought risk to our hydro catchments under 2° or 4°C scenarios. To the contrary, average annual rainfall is projected to increase by approximately 5-15% by 2055<sup>1</sup>. This would have a positive impact on our revenues through increased production of hydroelectricity.

Changes in seasonal rainfall are projected, with winter rainfall in Meridian's hydro catchments predicted to increase more than summer rainfall over the next few decades. Approximately half of the Waitaki summer inflows come from snow melt<sup>2</sup>. Rising snowlines and the resulting reduction in summer snow melt is projected to contribute to increased winter inflows and decreased summer inflows.

These seasonal changes in inflow profile are likely to improve alignment between our generating capacity and electricity demand. Current demand peaks in winter, whereas current hydro lake inflows peak in summer, requiring significant storage use planning. In the future these two variables are expected to align more. In addition,

rising annual average temperatures are likely to have a direct impact on heating and air conditioning, with less electricity required in winter for heating and more in summer for cooling, also improving the correlation between electricity demand and supply.

**This will allow Meridian to take advantage of the higher spot market electricity prices in winter and increase revenue, as well as increase production of hydroelectricity on an average annual basis.**

The potential annualised financial impact is \$12 million. This is calculated using the difference between the modelled "no climate change" scenario and the Evolution scenario, and is based on modelling the potential impact on Meridian generation revenues over 30 years and then annualised over the 2020 to 2050 timeframe. Note that there is significant uncertainty to this calculation.

### Increased electricity demand from physical impacts of climate change

NIWA<sup>1</sup> predicts that temperatures in New Zealand will increase by 1°C to 2°C by the end of the century and that rainfall will become 5-15% drier in the East and North of New Zealand. Under our Evolution modelling scenario, we forecast that a significant contributor to future electricity demand increases in New Zealand will be higher demand for cooling in summer and higher irrigation requirements in the agricultural sector, particularly down the East Coast, which is projected to be partially offset by lower demand for heating in winter.

**Increased electricity demand may enable Meridian to grow our electricity generation and retail businesses.**

The potential annualised financial impact is \$5 million. This potential financial impact is calculated using the difference between the modelled "no climate change" scenario and the Evolution scenario, and is based on the modelling the potential impact on Meridian generation revenues over 30 years and then annualised over the 2020 to 2050 timeframe. There is significant uncertainty to this calculation.

To respond to the potential requirement for new renewable generation Meridian maintains a pipeline of development options.



<sup>1</sup> NIWA 2020: Our future climate New Zealand website: <https://ofcnz.niwa.co.nz/>

<sup>2</sup> Kerr, T, 2013: The contribution of snowmelt to the rivers of the South Island, New Zealand. Journal of Hydrology (NZ) 52 (2): 61-82 201



## Transition impacts

The transition impacts of climate change (impacts caused by strong climate action policy), are also a mix of positive and negative for our business. Climate action is likely to increase electricity demand, from increased requirements for charging of electric vehicles, and the transition of some industrial heat processes from coal to electricity, however we could see an emissions-intensive sector of the economy negatively impacted by climate policy in a way that reduces demand. Policy that increases the percentage of renewable electricity on the grid may be positive for us in that we could build more renewable energy power stations, however it is also likely that price volatility will increase.

We rely on a wide range of government, industry, and academic sources to assess the potential impact of New Zealand's transition to a low-emissions economy on our business model, operations and revenues.

The transition impacts most material to Meridian are described below.

### Changes in electricity demand

Under our modelling, demand for electricity is likely to be significantly impacted as New Zealand's Climate Change Commission sets emissions budget targets in-line with the Climate Change Response Amendment Act 2019.

### Negative demand disruption – emissions intensive industries

Some of this impact could be negative.

**There are many uncertainties surrounding how emissions intensive industries will successfully transition to a low-emissions economy.**

For example, climate action policies targeted to emissions intensive industries could see a marked decline in the dairy industry, where a strong target on reducing methane could lead to a transition from dairy farming to other less intensive agricultural products. Meridian is a key supplier to the dairy sector and so could be specifically impacted by a reduction in electricity demand due to lower levels of dairy farming and processing.

This risk captures the downside drivers for future electricity demand. There may also be drivers that could increase future electricity demand such as population increase.

To evaluate this risk, we have modelled the impact of a significant reduction in electricity demand and (potential) drop in short-term wholesale prices as the market adjusts. The severity of impact on Meridian would depend on a number of difficult-to-predict variables, including the possible removal of transmission constraints, and the response of other electricity generators (e.g. thermal generation may be mothballed or retired which would reduce supply and moderate any reduction in wholesale electricity prices).

An activity of ours that mitigates this risk is our support of climate action policy that would increase electricity demand in other sectors, in particular the use of electricity in the transport and industrial heat sectors of the economy. In addition to this, government projections of population growth and GDP growth are expected to increase electricity demand over coming decades.

The estimated potential annualised financial impact is between \$12 million and \$17 million. The potential financial impact has been estimated by modelling the impact of a step-change reduction in demand. For this calculation we have looked at the case of a disruption to the dairy industry and compared it to our Evolution modelling scenario. Note that Meridian does not supply the entire dairy industry and it is unlikely that the entire dairy industry would be disrupted.

The estimated potential impact is a range of modelled values to reflect various uncertainties, and is an annualised figure over the 2020 to 2050 time period. Note that there is significant uncertainty to this calculation.

### Electrification of industrial heat and transport

Other impacts on demand could be positive for Meridian. For example, New Zealand's rapid transition to a low-emissions economy is likely to require the large-scale electrification of both industrial heat and transport. While our expectations are tempered by the potential of hydrogen to absorb at least some transport-related demand, ambitious emissions budgets could enable Meridian to grow our electricity generation and retail businesses.

**Under our Evolution scenario, we anticipate a moderate increase in electricity demand due to population growth and the slow but steady electrification of both industrial heat processes and transport.**

The estimated potential annualised financial impact is \$7 million. This estimate is calculated using the difference between the modelled "no climate change" scenario and the Evolution scenario, and is based on modelling the potential impact on Meridian generation revenues over 30 years which is then annualised over the 2020 to 2050 timeframe. There is significant uncertainty to this calculation.

Meridian is positioned to monitor the emergence of key trends indicating an abrupt transition trajectory and will ensure additional capacity is made available in order to ensure resilience is maintained. To respond to the potential requirement for new renewable generation Meridian maintains a pipeline of development options.

### **Increase in electricity spot price volatility**

As New Zealand increases its share of renewable generation it is likely that this will lead to higher levels of electricity spot price volatility. Thermal generation in New Zealand currently plays a significant role in responding to periods of reduced renewable supply such as dry periods in the hydro catchments. It is likely that much or all of this thermal plant will be replaced by renewable energy options over time. This could be in response to regulatory change (domestic or internationally driven) or more economic renewable options replacing ageing thermal plant.

NIWA<sup>1</sup> predicts no change to drought depth or duration in coming decades in Meridian hydro catchments. However, in a future with a high proportion of renewable generation, cold winters with high peak loads that coincide with low hydro, wind and solar generation could result in high peak prices as available generation runs short. These factors could increase electricity price volatility, and also the volatility of Meridian's earnings, and increase the costs of managing

Meridian's electricity portfolio through increased procurement of risk instruments.

**This risk will grow in increments over the next 10-20 years, increasing as each large coal and gas generation station retires and is replaced by renewables.**

The potential financial impact of \$1-40 million is a high-level estimate, is an annual cost, and is informed by actual costs of current risk instruments and an estimate of the magnitude of potential changes to electricity spot price volatility. This estimate is the estimated yearly cost from purchasing hedge cover to protect against increased electricity spot volatility in the event that the wholesale electricity market becomes significantly more volatile than it is today.



Table 1. Top climate-related financial risks for Meridian Energy







Top Risks			
Risk drivers	 <b>Extreme rainfall in hydro catchments</b>	 <b>Negative demand disruption - emissions intensive industries</b>	 <b>Increase in electricity spot price volatility</b>
Type	Physical	Transition	Transition
Scale	Medium	Medium	Medium
Likelihood	About as likely as not	About as likely as not	Likely
Timeframe	Long-term (30 years)	Long-term (30 years)	Medium-term (5-10 years)
Impacts	Increasing intensity of extreme rainfall events in hydro catchments.	Sudden drop in electricity demand as emissions-intensive industries are disrupted by ambitious climate change legislation or shifting consumer preferences for sustainable goods and services.	As New Zealand increases its share of renewable generation, it may lead to higher levels of electricity spot price volatility.
Financial implications	Increase in intensity of extreme rainfall events may require the lowering of dam water levels (reducing assets' generating capacity) and/or the strengthening of dam structures.	Reduced electricity demand may negatively impact on Meridian's revenue, for example if the dairy industry was curtailed due to climate action policy.	Increased costs of commodity risk management due to increases in the percentage of grid-connected renewable electricity generation.
Quantification	-\$11 million	-\$12 to -\$17 million	-\$1 to -\$40 million
Methodology	Estimated potential financial impact is an annualised figure over a 30 year time horizon of estimated civil construction costs and negative revenue impacts.	Estimated potential financial impact is an annualized figure over a 30 year time horizon, calculated by modelling the impact of a step-change reduction in demand and comparing it to our Evolution scenario. There is significant uncertainty to this calculation.	Estimated potential financial impact is a high-level estimate, an annual cost, and informed by actual costs of current risk instruments and internal views on magnitude of potential changes to electricity spot price volatility.
Management response	Probable Maximum Flood values are reviewed once every ten years to incorporate climate change.	Meridian supports of climate action policy that would increase electricity demand in other sectors, in particular the use of electricity in the transport and industrial heat sectors of the economy.	Meridian has a mature commodity risk framework that includes specific limits for allowable exposure to spot electricity price risk. Within that framework the cost of mitigation is traded-off against the impact of accepting the risk.

Table 2. Top climate-related financial opportunities for Meridian Energy

Top Opportunities				
Opportunity	 Changes to inflow profile	 Increased demand for electricity	 Electrification of industrial heat and transportation	
Type	Physical	Physical	Transition	
Scale	Medium	Medium	Medium	
Likelihood	More likely than not	Likely	Likely	
Timeframe	Long-term (30 years)	Medium-term (5-10 years)	Medium-term (5-10 years)	
Impacts	Annual and seasonal changes in inflow profile are likely to improve alignment between our generating capacity and projected changes in electricity demand.	Electricity demand in New Zealand is likely to increase from higher demand for cooling in summer and higher irrigation requirements in the agricultural sector, partially offset by lower demand for heating in winter.	The transition to a low-carbon future presents market opportunities for Meridian, including a projected increase in demand for renewable electricity driven by the electrification of industrial heat and transportation.	
Financial implications	Projected changes to inflow profile are likely to align to projected changes in electricity demand.	Increased electricity demand may enable Meridian to grow our electricity generation and retail businesses.	Increased electricity demand may enable Meridian to grow our electricity generation and retail businesses.	
Quantification	+\$12 million	+\$5 million	+\$7 million	
Methodology	Estimated potential financial impact is an annualised figure modelled over a 30 year time horizon. This is calculated using the difference between the modelled “no climate change” scenario and the Evolution scenario. There is significant uncertainty to this calculation.	Estimated potential financial impact is an annualised figure modelled over a 30 year time horizon. This is calculated using the difference between the modelled “no climate change” scenario and the Evolution scenario. There is significant uncertainty to this calculation.	Estimated potential financial impact is an annualised figure modelled over a 30 year time horizon. This is calculated using the difference between the modelled “no climate change” scenario and the Evolution scenario. There is significant uncertainty to this calculation.	
Management response	Wholesale market team manages the changing inflow profile using a market optimisation approach informed by weekly inflow forecasts and analysis of short- to medium-term weather patterns.	To respond to the potential requirement for new renewable generation Meridian maintains a pipeline of development options.	Pursuing alternative forms of electricity demand across workstreams focussed on electrification of industrial heat and transport. Maintain a pipeline of development options.	



# 4. Metrics and Targets

## TCFD requirements

- *Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.*
- *Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.*
- *Describe the targets used by the organisation to manage climate related risks and opportunities and performance against targets.*

## Measuring what matters

### Monitoring of risks and opportunities

In order to identify changes and inform decision-making processes, Meridian measures and monitors:

- Frequency and intensity of extreme rainfall events in the Waiau and Waitaki catchments
- Electricity demand
- Price volatility

In FY2021, we will begin systematically monitoring our internal systems, policies and processes for managing climate-related risks, building resilience, and capturing commercial opportunities.

### GHG emissions

We monitor our Scope 1, 2 and 3 greenhouse gas (GHG) emissions in-line with the GHG Protocol to allow aggregation between business units and benchmarking against peers. Our annual emissions inventories are audited and publicly reported.

### Setting bold targets

#### De-carbonising Meridian

We considered setting Meridian's GHG emission reduction target in-line with an approach recommended by the Science Based Target initiative. However, the results weren't sufficiently ambitious. Indeed, as a 100% renewable energy generator, we were already below the proposed emissions intensity target for our sector (0.03 tCO<sub>2</sub>e/MWh by 2050, compared to our zero Scope 1 emissions from generating electricity). We wanted to do more and have, therefore, committed to:

- Halving operational GHG emissions across the Meridian Group by 2030 vs. 2019 baseline
- Going net Zero Carbon across our value chain from FY19 onwards

**We are once again Zero Carbon this year though purchasing and surrendering Gold Standard Voluntary Emission Reduction certificates from a wind farm and a solar farm in India.**

By 2025, though, we want to be able to use credits generated through our Forever Forests programme in partnership with Ekos and a range of third parties. These credits will be independently verified as NZUs (New Zealand Units). We are planting 1.5 million trees across the country, starting with land near Meridian's hydro stations and wind farms, planting the first seedlings in late 2019. The planted trees are a mix of natives and exotics. Mixed planting is the most productive way as to plant, with exotics being the

carbon 'engine' - pulling carbon down from the atmosphere in a hurry. They then create a canopy to protect the natives in their early days so they can flourish later in life. In the long term, the natives will take over, leaving a lasting legacy for future generations.

Meridian has a number of de-carbonisation initiatives underway in 2020, aligning with the Meridian Group goal of halving operational GHG emissions by 2030.

- At least 50% air travel reduction
- Energy efficiency audits at our wind and hydro asset sites
- 90% battery electric passenger vehicles by the end of 2020
- Investigating electrification of Meridian's boat at Manapōuri

### De-carbonising our value chain

Meridian launched our supplier engagement plan in late 2019 aligning with our Half by 2030 reduction goal. With the bulk of our carbon footprint in our supply chain (97% of our FY20 operational footprint), our work to engage our suppliers is crucial if we are to achieve our reduction targets.

- We have identified our high impact suppliers for sustainability and ethical risk, and have commenced a plan to engage and collaborate to measure and actively reduce their carbon footprint. We are also creating workshops on carbon and sustainability for lower impact suppliers with the objective to gain accurate carbon reporting and inspire reduction initiatives.
- We are deepening the sustainable procurement capability of our own staff through in house training including an eLearning module and team-by-team workshops focussing on goods and services procured for Meridian's operations. We have created sustainable procurement working groups for specific categories of our business, integrating responsible sourcing throughout our day to day activities (for example apparel, catering).
- This year we have started encouraging our people to take the climate action, both at work and in their personal lives, to help Meridian reach its goal of halving our emissions by 2030.

The first piece of this programme, “Move”, is one of the five pillars of our company’s internal sustainability culture programme, which includes Move, Eat, Buy, Connect and Advocate.

The Move pillar supports our people to change the way we get around, by encouraging low carbon methods of connecting with each other and innovation in how we move and work, locking in and improving on the changes that we all started during lockdown. As part of this work and to help keep climate action at the front of our peoples’ minds, we are also considering the Future Fit programme offered by Auckland Council.

- In addition, we are investigating partnerships with other organisations to empower our small to medium sized suppliers to take climate action in a way that works for their business and gets us on our way to a net zero carbon New Zealand in 2050.

