AURIZON

# 2020 | Climate Strategy and Action Plan

Delivering for a sustainable future

# Contents



# Managing Director & CEO message

I am pleased to present Aurizon's first Climate Strategy and Action Plan.

Since 2014, through our Sustainability Report, we have described how we have addressed climate-related risks as part of our reporting on Environmental, Social and Governance (ESG) responsibilities. Our Climate Strategy and Action Plan builds upon that work, bringing a sharper focus within our Company to this global challenge with specific targets, initiatives and investments to further reduce our carbon footprint.

We accept the scientific consensus on climate change, and support the objective of finding a pathway to limit global warming to less than 2°C, aligned to the Paris Agreement. We also recognise that we all have a role and responsibility – government, business and the general community – in achieving an effective transition to a lower carbon future.

As Australia's largest rail freight operator, we will contribute in two broad areas:

- Continued emissions reduction in the supply chains in which we operate in transporting more than 250 million tonnes of freight annually for the Australian economy. Our target of net-zero operational emissions by 2050 is ambitious yet, we believe, achievable.
- Working across the national freight industry to decarbonise Australian transport supply chains that deliver for consumers, communities and industry. This recognises that rail is currently the safest and lowest impact mode of freight transportation.

It is recognised that innovation and new technologies will play a key role in delivering a lower carbon future, and certainly rail is no different. More than 90% of our emissions are associated with the consumption of energy (fuel and electricity) in the operation of our locomotive fleet.

That's why we plan to invest $50 million in the Future Fleet Fund, targeting adoption of low-carbon technologies for our locomotive fleet. Battery and hydrogen power are exciting medium- to long-term opportunities in this space. However, we are already well positioned to capture the near-term benefits of an increasing proportion of renewables feeding into the national energy grid. Aurizon operates the only electrified heavy-haul rail network in Australia – the Central Queensland Coal Network – with a large proportion of locomotives tapping into the electric power.

As we implement initiatives in this Climate Strategy and Action Plan, our commitment to customers, the communities in which we operate, and our shareholders remains unchanged. We understand the important role we play as an essential transport provider in Australia's national economy. We believe we can achieve the twin objectives of contributing to a low-carbon economy, while continuing to support sustainable development, income generation and employment in the regional communities where more than 80% of our employees live and work.

I look forward to providing updates on our progress towards the initiatives detailed in this report, on our pathway to reaching net-zero emissions in our operations by 2050.

I would also welcome feedback on our inaugural Climate Strategy and Action Plan, by sending your comments to **sustainability@aurizon.com.au**.

**Andrew Harding**
**Managing Director & CEO**

# Our business and climate change

**Aurizon is Australia's largest rail freight operator and an ASX-listed company. Our purpose is to grow regional Australia by delivering bulk commodities to the world. Each year, we transport more than 250 million tonnes of Australian commodities, connecting miners, primary producers, and industry with international and domestic markets.**

## Our position

Aurizon accepts the scientific consensus on climate change and supports the objective of finding a pathway to limit global warming to less than 2°C, aligned to the Paris Agreement[1]. We also acknowledge the Intergovernmental Panel on Climate Change's (IPCC) Special Report on the impacts of global warming of 1.5°C above pre-industrial levels[2].

We recognise that the use and transformation of commodities hauled by Aurizon on behalf of customers, are contributing to greenhouse gas (GHG) emissions. Australia is the largest supplier of export metallurgical coal and the second largest supplier of thermal coal. Coal exported from Australia is almost entirely destined for Asia for use in steel production and energy generation.

We recognise our role and responsibility in helping to reduce global GHG emissions, and directly contribute to the decarbonisation of the transport supply chains in which we participate. We also recognise that Asian economies neighbouring Australia are seeking to deliver sustainable development outcomes, including improving living standards for their people. In this context, we support a measured global transition to more renewable energy sources, recognising that the Asian region is projected to draw upon coal-fired generation for a prolonged period.

We continue to advocate for policy actions to increase the use of rail freight on key national freight corridors, recognising the broader environmental, social and safety benefits. This also acknowledges our key role in supply chains for Australia's resources sector which, in turn, supplies inputs for low-emissions technology, such as batteries, solar, electric cars, wind turbines and telecommunications.

## Strategy in action

Rail freight is a key enabler in decarbonising transport supply chains because it is currently the safest and lowest-impact mode, with road freight producing 16 times as much carbon pollution as rail freight per tonne kilometre[3].

We have already made progress towards reducing our operational GHG emissions. Since 2010, we have achieved a 20% reduction in our locomotive carbon footprint (GHG emissions intensity) through investment in new rollingstock, introduction of new technology, and improved rollingstock management and work practices.

Our strategy to further reduce our Scope 1 and 2 emissions will help the Australian rail freight sector to maintain its position as a key enabler of transport decarbonisation over the long-term. Our position in the supply chain enables us to lead a step change towards decarbonising Australia's freight sector, by leveraging our substantial investment in electric traction infrastructure and stimulating progress in the development of low-carbon technologies. In turn, we hope to see these activities contribute to reducing the Scope 3 emissions of our customers.

We are committed to a long-term reduction target of net-zero operational emissions by 2050. Our plan to achieve this target is outlined in the following sections.

The following pages provide an overview of our climate change strategy, commitments and key actions.

1 United Nations Framework Convention on Climate Change (2015) *Adoption of the Paris Agreement*, 21st Conference of the Parties, Paris: United Nations.
2 IPCC, 2018: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. In Press.
3 Deloitte Access Economics 2017, *Value of Rail: The Contribution of Rail in Australia*.

# Aurizon's Climate Strategy and Action Plan

**Our Climate Strategy and Action Plan is built on the following three key pillars:**

| Three key pillars |  Manage Risk and Build Resilience |  Deliver Decarbonisation |  Create Carbon Abatement Opportunities |
|---|---|---|---|
| **Objectives** | Understand and respond to climate-related risks and opportunities. | Position Aurizon to lead the Australian freight sector in achieving net-zero operational emissions by 2050. | Explore carbon abatement opportunities to complement direct abatement initiatives and offset hard-to-abate emissions. |
| **Commitments** | › We will continually assess and enhance climate change considerations in the way we manage our business and key assets. | › We are committed to achieving net-zero operational greenhouse gas emissions by 2050<br>› We will take a leading role in accelerating decarbonisation of Australia's freight sector<br>› We will contribute to decarbonising the supply chains in which we participate. | › We are committed to increasing the proportion of carbon-neutral energy into our energy mix<br>› We will investigate opportunities to invest in and/or generate carbon offsets with environmental and social co-benefits. |
| **Actions** | Continue to assess and enhance our processes for managing climate-related risk and leverage opportunities by:<br>› Continuing to use scenario analysis to consider transition risks over short-, medium- and long-term time horizons<br>› Continuing to enhance our capability to assess physical risk to key assets and operations<br>› Embedding consideration of climate-related risk into risk frameworks and investment standards. | Achieving our operational decarbonisation goals will be driven by:<br>› Establishing the $50m *Future Fleet Fund* (to be dispensed over 10 years)<br>› Implementing our *Tracking Towards Net-Zero Operational Emissions* initiatives (outlined on the following page)<br>› Establishing partnerships and forums for customer and industry collaboration<br>› Continuing advocacy for the significant role that rail contributes in the transition to a low-carbon economy. | Our commitment to integrating carbon-neutral and carbon-negative solutions has been incorporated into our *Tracking Towards Net-Zero Operational Emissions* initiatives, and will prioritise:<br>› Cost-effective renewable energy to augment supply to our electrified rail infrastructure and real estate portfolio<br>› High-quality, credible, verified and co-beneficial carbon offset portfolio development. |
| **Section in this report** | *Managing climate risk and building resilience* | *Our pathway towards decarbonisation* | *Renewable energy and carbon offsets* |

## Tracking Towards Net-Zero Operational Emissions

**We are driving operational decarbonisation through our *Tracking Towards Net-Zero Operational Emissions* initiatives.**

2010 ---------- 2020 ---------- 2030 ---------- 2050

### 2010-2020
**PROGRESS TO DATE**

**We have already made progress towards reducing our operational GHG emissions**

### 2020-2030
**CLIMATE STRATEGY AND ACTION PLAN IMPLEMENTATION**

**Targeting further emissions intensity reductions by 2030**

- Map and refine our operational decarbonisation pathway in line with our target of net-zero operational emissions by 2050.
- Leverage existing energy efficiency capabilities and assets, such as electrified rail in the Central Queensland Coal Network.
- Pursue partnerships and create forums for collaboration to lead a step change towards decarbonisation of the Australian freight sector.

### 2030-2050
**TECHNOLOGY PATHWAY**

**Implement preferred long-term technology pathway to deliver a step change emissions intensity reduction post-2030**

- Invest in the development and adaptation of low-carbon technologies for the Australian rail-freight sector through the *Future Fleet Fund*.
- Explore opportunities to integrate renewable energy into our current energy mix through direct investment in projects, power purchase agreements and/or behind-the-meter solutions.
- Utilise carbon offsets through project development/investment and/or purchase, where required. Prioritise offsets with environmental and social co-benefits.

**20%**
EMISSIONS INTENSITY REDUCTION ACHIEVED SINCE 2010

TARGETING A FURTHER
**10%**
EMISSIONS INTENSITY REDUCTION BY 2030

TARGETING
**NET-ZERO**
OPERATIONAL GHG EMISSIONS BY 2050

# Managing climate risk and building resilience

Manage Risk and Build Resilience

**Since 2017, we have aligned our climate-related risk disclosures to the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) recommendations, as published in our annual Sustainability Report. This framework has enabled consistent climate-related financial risk disclosures by companies in providing information to investors, lenders, insurers, and other stakeholders.**

The Final TCFD Recommendations Report, released in June 2017, outlines four 'core' elements for disclosing climate-related risks: Governance, Strategy, Risk Management, and Metrics and Targets. Our approach under each of these elements is outlined below.

## Governance

Our Board has ultimate responsibility for our Company's consideration of climate-related risk. It is guided by our Audit, Governance and Risk Management Committee (AGRMC) and Safety, Health and Environment Committee (SHE) as part of our risk framework and broader corporate strategy and planning. The AGRMC includes several members of the Board, including the Chairman, and is responsible for reviewing our governance policies, framework and compliance.

## Risk management

### Climate-related risks and opportunities[4]

- **Climate-related risks:** TCFD divides climate-related risks into two major categories:
  - **Transition risks** relate to a wide set of changes in policy, law, markets, technology, and prices that are necessary to achieve the transition to a low-carbon economy
  - **Physical risks** stem from the direct impact of climate change on our physical environment — through, for example, resource availability, supply chain disruptions, or damage to assets from severe weather. These risks can be chronic or acute.
- **Climate-related opportunities:** Opportunities associated with climate change include the benefits associated with our efforts to mitigate and adapt, such as resource efficiency and cost savings, development of new products and services, accessing new markets, and building resilience along our supply chain.

We consider a wide range of social, environmental and economic risks within our strategic planning by applying integrated risk assessments to support informed decision-making. Our business is exposed to both the transition and physical risks associated with climate change; however, we are also positioned to take advantage of climate-related opportunities.

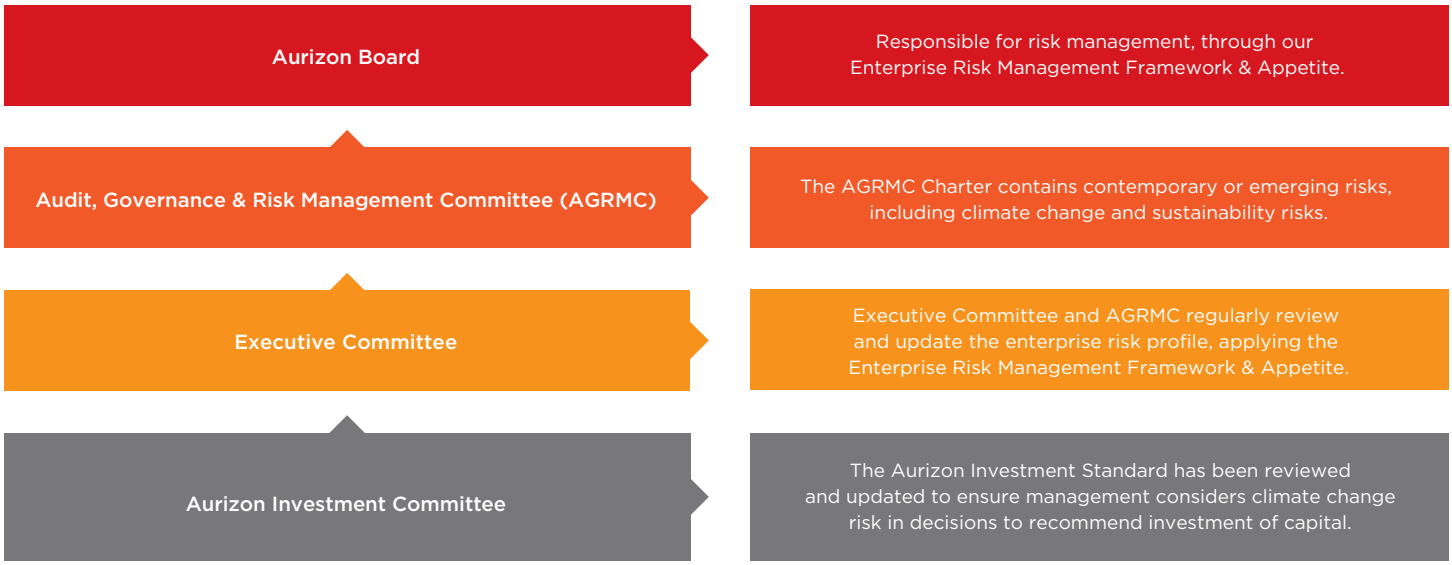
The AGRMC Charter acknowledges the need for the Board, and in turn, management to maintain effective risk management so as to identify and manage risks. This includes, but is not limited to, contemporary or emerging risks, such as conduct risk, digital disruption and cyber risks, and also climate change and sustainability risks. A copy of the charter is available on the Governance section of our website, aurizon.com.au. In that regard, climate change risk is incorporated into our Enterprise Risk Management Framework & Appetite, and is therefore specifically considered when making investment decisions. In addition, the internal management process governing investment decisions, the Aurizon Investment Standard, has been reviewed and updated to ensure management considers climate change risk in decisions to recommend investment of capital.

Our Executive Committee and AGRMC regularly review and update the enterprise risk profile that applies the Enterprise Risk Management Framework & Appetite to identify and rate enterprise level risks for our Company (see figure 1). Included in these risks are Transition risks aligned to our Strategic Planning, and the Physical risk of disruption arising from increased severity and/or frequency of extreme weather events (higher temperatures, strong winds, flooding and associated erosion, bushfires and others). See *Strategic planning* for more detail.

We continue to review and report on our short-, medium-, and long-term climate-related risks annually in our Sustainability Report.

4 Financial Stability Board, *Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures*, June 2017.

**Figure 1 – Aurizon's governance of climate-related risk[5]**




## Strategic planning

We consider climate-related transition risks through our Strategy in Uncertainty framework, which includes scenario analysis. This process considers short-term impacts as well as risks that emerge over the medium- to long-term, when the timing and magnitude are less certain.

Our management team and Board are directly engaged in identifying the scenarios for consideration, as well as developing plans and initiatives to position the organisation to mitigate risks and take advantage of opportunities. This strategic process is repeated every six months to ensure that our strategic priorities are continually updated to proactively respond to emerging market dynamics and opportunities.

These scenarios are used to inform our portfolio considerations and strategic decisions, and are detailed in our annual Sustainability Report.

### Physical risk and building resilience

We are building our technical capability to model climate change impacts under multiple climate change scenarios.

Over the past several years, we have responded to numerous severe weather events across our operational portfolio. These events have demonstrated the resilience of our key assets, operations and the effectiveness of our incident preparation, management and recovery processes. However, our sector is characterised by long-lived capital assets and, according to climate change models, our activities are concentrated in climatic regions that could trend towards hotter and drier conditions and increasingly severe weather events over the coming decades.

We recognise that building our capacity to assess and integrate physical risk scenarios into strategic planning and risk assessment processes will serve to improve decision-making. This will be achieved by leveraging forward-looking assessments of climate-related factors informed by increasingly robust models.

We aim to leverage the best available information to build capability, and continually improve our understanding of the potential impacts of climate change under multiple climate change scenarios for our business, supply chains and the communities in which we operate.

## Metrics and targets

As a company, we report against our annual Scope 1, 2 and 3 GHG emissions in our Sustainability Report. The following section, *Our pathway towards decarbonation*, outlines how our new target of net-zero operational emissions (Scope 1 and 2) by 2050 will be achieved.

## Emissions reporting[6]

**Scope 1 emissions**: Direct GHG emissions released into the atmosphere as a result of an activity, e.g. emissions associated with combustion of diesel in locomotives.

**Scope 2 emissions**: Indirect GHG emissions released into the atmosphere from the indirect consumption of an energy commodity, e.g. emissions derived from consumption of purchased electricity.

**Scope 3 emissions:** Indirect GHG emissions, other than Scope 2 emissions, that are generated in the wider economy, e.g. emissions derived from extracting, producing and transporting purchased materials, such as fuel and electricity, as well as emissions associated with employee travel and commuting.

5 Other Aurizon Committees not shown include the Safety, Health and Environment (SHE) Committee, Nomination and Succession Committee, and the Remuneration and Human Resources Committee. For more information about our committee structures, see our Annual Report.

6 The Greenhouse Gas Protocol, *A Corporate Accounting and Reporting Standard*. Available: https://ghgprotocol.org/corporate-standard.

## The future of coal

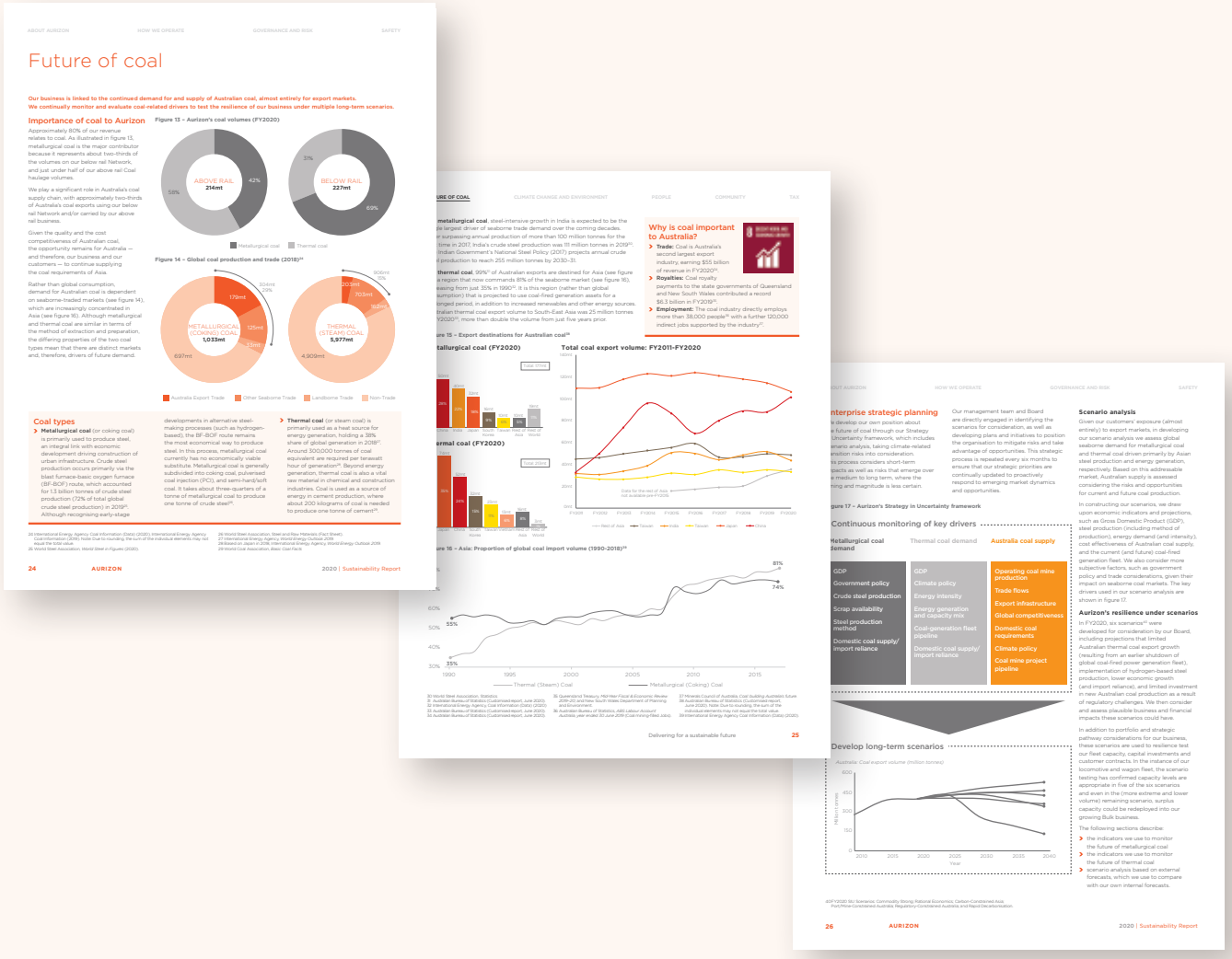
Our business is linked to the continued demand for Australian coal. Rather than global consumption, demand for Australian coal is dependent on seaborne-traded markets, which are increasingly concentrated to Asia. We support a measured global transition to more renewable energy sources, recognising that coal-fired generation will remain an affordable, reliable part of the energy mix for decades.

Although metallurgical and thermal coal are similar in terms of the method of extraction and preparation, the differing properties of the two coal types mean that there are distinct markets and, therefore, drivers of future demand.

- **Metallurgical coal** (or coking coal) is primarily used to produce steel, an integral link with economic development driving the construction of modern economies and urban infrastructure. Steel-intensive growth in developing Asian nations is expected to be the single largest driver of seaborne trade demand over the coming decades.
- **Thermal coal** (or steam coal) is primarily used as a heat source for energy generation. Almost all Australian thermal coal export volume is destined for Asia, a region with a relatively young existing coal-fired generation fleet with planned new capacity.

Our Sustainability Report supports our dialogue with stakeholders on the future of coal (see figure 2).

**Figure 2 – The Future of coal chapter of Aurizon's 2020 Sustainability Report**



# Our pathway towards decarbonisation

Deliver Decarbonisation

**We see collaboration and partnerships as the key to achieving step-change emissions reductions through technology investment and innovative energy pathways. In our pursuit to decarbonise our own operations, we are taking a leading role in the creation of forums for collaboration to lead the decarbonisation of the Australian freight sector.**

## Minimising our operational emissions

Because we are a large transport-based energy consumer, most of our emissions (>90%) are associated with the consumption of energy (fuel and electricity) in the day-to-day operation of our locomotive fleet (see figure 4). As highlighted in the *Our business and climate change* section, we have reduced our operational emissions intensity by 20% between 2010 and 2020 by improving the energy efficiency of our operations (see figure 3). While this is a significant achievement, we recognise that there is more to be done.

We are targeting net-zero operational emissions (Scope 1 and 2) by 2050. To support this long-term goal, we have set an additional emissions intensity reduction target of 10% by 2030[7] to maintain an emphasis on leveraging existing capabilities and assets in the near term.

As illustrated earlier, our strategy for minimising our operational GHG emissions is underpinned by our decarbonisation pathway, *Tracking Towards Net-Zero Operational Emissions*.

### Our greenhouse gas emissions

**Figure 3 – Our locomotive emissions intensity reductions: FY2010 to FY2020[8]**

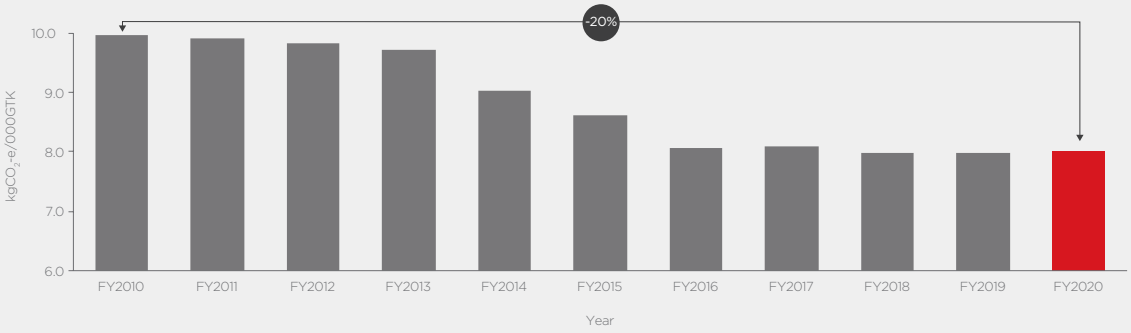
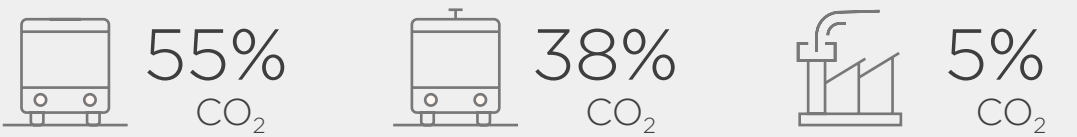



**Figure 4 – Our Scope 1 & 2 greenhouse gas emissions sources in FY2020[9]**




**Diesel locomotives** | **Electric locomotives** | **Facilities and other sources**

Our calculated Scope 3 emissions comprise approximately 9% of our overall GHG emissions profile. Of this, approximately 90% is linked to fuel- and energy-related sourcing and supply activities. To this end, reducing our operational Scope 1 and Scope 2 emissions will also contribute to material Scope 3 emissions reductions.

7 From a 2021 baseline on a tonnes of carbon dioxide per net tonne kilometre basis.
8 Detail on our emissions intensity data is provided in our Sustainability Report.
9 For a detailed breakdown of Aurizon's annual greenhouse gas emissions, refer to our Sustainability Report.

## Technology investment through the *Future Fleet Fund*

Our rollingstock and infrastructure have a long asset life (30+ years). As such, defining a decarbonisation pathway for net-zero GHG emissions requires long-term planning and a comprehensive understanding of existing and emerging low-carbon technologies.

It is our view that the next decade will be critical for development of near-zero carbon technologies to decarbonise rail freight emissions. To this end, we are targeting an alignment between the development and adoption of low-carbon technologies with our locomotive fleet asset management strategy.

To support our *Tracking Towards Net-Zero Operational Emissions* initiatives, we plan to invest $50 million over 10 years through the establishment of the *Future Fleet Fund*.

In FY2020, we began a comprehensive review of emerging low-carbon technologies, and their application in the Australian freight sector. Given our operational GHG emissions are affected by many variables (including locomotive and rollingstock fleet type, infrastructure, rail gauge, service type, commodity, jurisdiction and geographical location), our 2020 review has confirmed our belief that a one-size-fits-all approach won't work for our business. We therefore advocate for a technology-neutral approach and will continue to explore opportunities for our business to participate in emerging markets for low-carbon technologies.

Operational efficiency, infrastructure optimisation and electrification are key pillars to decarbonising the transport sector. Our review of current research[10], the CSIRO's National Hydrogen Roadmap[11] and the emergence of targeted government strategies[12] have strengthened our confidence in the potential for emerging technologies (including battery, hybrid, and hydrogen technologies) to deliver a step change towards decarbonisation. The *Future Fleet Fund* and *Tracking Towards Net-Zero Operational Emissions* initiatives will target development in this space.

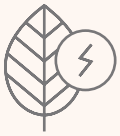
### Key technologies, state of play, opportunities, and risks[13]

Battery technology is more mature than hydrogen fuel cell technology; however, in many cases, these technologies are complementary. There is significant potential for these technologies to displace existing carbon-intensive power-trains in the medium-term, particularly in the rail freight sector. To illustrate some of the barriers and opportunities for technology uptake, the following shows a current comparison between battery and hydrogen power-train technologies.

### State of play: battery and hydrogen power-train technologies in 2020

#### Battery/Hybrid

- Battery technologies currently present greater efficiencies than hydrogen alternatives and come at a lower cost
- Battery supply chain and battery lifecycle (including cycle life, degradation, end-of-life strategies) need more development in the Australian rail freight context
- Currently, low energy density and high unit costs inhibit scaled adoption of battery power-trains for the Australian rail freight sector. However, battery technology is advancing quickly, signalling the potential for higher energy density and lower cost in the future.



#### Green Hydrogen

- Hydrogen has the highest energy density by weight of any substance, presenting a potential for the heavy freight and long-haul transport sector
- However, low energy density by volume and high energy intensity during production and transportation phases reduce hydrogen's comparative efficiency as a fuel source
- Hydrogen production, transportation and low energy density by volume contribute to inefficiencies
- Hydrogen supply chains are yet to be established at scale. Policy frameworks and market development will require development to improve the value chain
- Australia is well placed to develop a domestic and export hydrogen supply chain. This could lead to significant cost reductions for use in the Australian rail freight sector, and present opportunities for market participation.

10 Stephen Comello and Stefan Reichelstein, *'The emergence of cost-effective battery storage'* (2019) Nature Communications.
11 Commonwealth Scientific and Industrial Research Organisation (CSIRO), *National Hydrogen Roadmap* (2018).
12 Australian Government, *Australia's National Hydrogen Strategy* (2019).
13 Stephen Comello and Stefan Reichelstein, *'The emergence of cost-effective battery storage'* (2019) Nature Communications. Commonwealth Scientific and Industrial Research Organisation (CSIRO), *National Hydrogen Roadmap* (2018). Australian Government, *Australia's National Hydrogen Strategy* (2019).

## Partnerships and collaboration

The *Future Fleet Fund* has been established to help pave the way for step-change freight sector GHG emissions reductions in 2030 and beyond. We believe that through targeted investment, partnerships and collaboration, we can play our part in making an effective contribution towards decarbonising Australia's freight sector and the supply chains in which we operate.

### The *Future Fleet Fund* objectives and investment priorities

**1-3 Years**

- Refine our GHG abatement roadmap, by defining pathways and abatement cost curves
- Develop internal capability to leverage technological advances (energy sources, power-trains and Infratech)
- Take a leading role in the creation of forums for innovation and development by establishing partnerships with industry peers, customers, OEMs, research institutions and other collaborators in identifying least-cost abatement opportunities.

**3-5 Years**

- Adapt and deploy mature technologies and continue to leverage existing assets and capabilities, such as electrified rail in the Central Queensland Coal Network
- Trial and showcase emerging and breakthrough low-carbon technology applications and power-trains for the Australian rail freight sector.

**5-10 Years+**

- Implement preferred long-term technology pathway in line with our asset renewal cycle.

### Working with our customers to decarbonise the supply chains in which we participate

We play a key role in Australia's export supply chains. We recognise that we must ensure we continue to meet the needs of our customers and to adapt technologies to operate within the constraints of Australia's freight infrastructure and energy supply chains. While we are committed to decarbonising our own operations, our focus remains on maintaining cost effectiveness and improving our operational performance and efficiency for our customers.

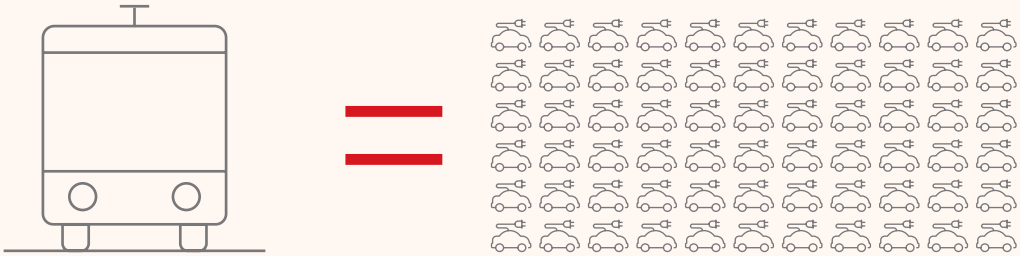
Our operations form part of the Scope 3 emissions of our customers. We recognise that as part of our Climate Strategy and Action Plan, we have an opportunity to work collaboratively with our customers to reduce their Scope 3 emissions and continue decarbonising the transport supply chain.

We directly advocate for policy actions to increase the use of rail freight on key corridors, recognising rail offers significant productivity, safety, environmental and emissions intensity benefits. Our aim is to ensure that rail freight remains competitive and part of the solution as the economy transitions to a low-carbon future.

## Electricity consumption on Aurizon's electrified network infrastructure

We are one of the largest individual energy consumers in Queensland, and we operate the only privately owned, electric heavy haulage traction (electric traction) rail network in Australia (the Central Queensland Coal Network). Our business is making investments to improve the competitive position of electric traction.

We recognise cost-effective decarbonisation of the freight sector will require increased electrification of transport networks. As the proportion of renewable energy generation in Queensland's electricity grid increases in line with government targets, our electrified network in Central Queensland will continue to decarbonise. In recognition of this, our *Tracking Towards Net-Zero Operational Emissions* initiatives emphasise the need to ensure that we can continue to leverage existing capabilities and assets, such as our electrified rail network, as we decarbonise our operational emissions.



**The electricity consumption associated with a single locomotive on the CQCN**

**would equate to the operation of approximately**

**2800**

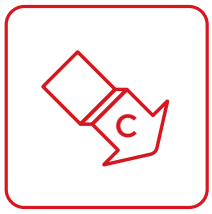
**light electric vehicles (EVs) per year[14]**

Central Queensland's electric locomotive fleet uses 1% of the state's total electricity consumption[15]. The electricity consumption associated with the operation of our entire electric locomotive fleet over the course of a year would be equivalent to operating up to 400,000 light EVs over the course of a year. Annually, this equates to a saving of approximately 100 million litres of diesel, or 13-35kt $CO_2$ emissions when compared to the equivalent operation of diesel locomotives.

14 Australian Bureau of statistics: Survey of Motor Vehicle Use, Australia 12 months ended 30 June 2018. Available: https://www.abs.gov.au/ausstats/abs@.nsf/mf/9208.0. Australian Government Green Vehicle Guide. Available: https://www.greenvehicleguide.gov.au.

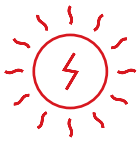
15 This comparison is based on Aurizon's calculated locomotive electricity consumption for FY2020 compared to the Australian Energy Regulator's wholesale statistics for annual electricity consumption across the National Electricity Market (NEM). Available: https://www.aer.gov.au/wholesale-markets/wholesale-statistics/annual-electricity-consumption-nem

# Renewable energy and carbon offsets



Create Carbon Abatement Opportunities

**We will continue to explore renewable energy and carbon abatement opportunities to complement direct abatement initiatives and offset hard-to-abate emissions across our operations. Our commitment to integrating carbon-neutral and carbon-negative solutions has been incorporated into our *Tracking Towards Net-Zero Operational Emissions* initiatives, as outlined below.**



## Renewable energy

One of our key *Tracking Towards Net-Zero Operational Emissions* initiatives is to continue to seek and, where feasible, adopt alternative and cost-effective low-carbon electricity options to augment supply to our electrified rail infrastructure and real estate portfolio.

We aim to increase the proportion of renewable energy across our energy mix. However, we are also aware of some of the challenges associated with low-carbon supply options and their application in large-scale, variable-load demand profile scenarios, such as our electrified network in the Central Queensland Coal Network.

We acknowledge that we will need to balance integration of low carbon supply options with cost-efficiency, customer expectations and regulatory requirements. These considerations will continue to inform the role that renewable energy can play as we define our pathway towards decarbonisation.

### Renewable energy and our real estate portfolio

As part of our commitment to decarbonising our energy profile, we are continuing to roll out rooftop and ground-level solar panel installations across our real estate portfolio. It will boost our total behind-the-meter solar energy generation capacity to 525kW by 2024, offsetting approximately 5% of our Queensland real estate (depots, yards and maintenance facilities) electricity consumption. We see this as a step in the right direction as we seek to reduce electricity consumption and GHG emissions across our national real estate portfolio.

## Carbon offsets

We are focused on decarbonising our operations through direct action; however, we acknowledge that our ability to decarbonise must consider the limitations associated with long-life assets. Given that we are targeting net-zero operational emissions by 2050, one of our key *Tracking Towards Net-Zero Operational Emissions* initiatives incorporates carbon offsetting as part of our medium-term strategy.

Our approach to carbon offsetting is to identify opportunities to participate in carbon markets by generating and/or purchasing credible and verified carbon offsets.

We will prioritise carbon offsets that have associated environmental and/or social co-benefits in association within our operational ecosystem and community catchments across Australia.

## Measuring progress for our Climate Strategy and Action Plan

Our plan to achieve our long-term reduction target of net-zero operational emissions by 2050 is underpinned by our three key pillars, as outlined in this report. These pillars are supported by our *Tracking Towards Net-Zero Operational Emissions* initiatives.

Our progress towards our emissions target and the supporting commitments and actions will be made available in our annual Sustainability Report.

Aurizon Holdings Ltd
900 Ann Street
Fortitude Valley
QLD 4006

aurizon.com.au