



# 2022 SUSTAINABILITY REPORT

Delivering for a  
sustainable future



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**Unless otherwise noted, all information and figures exclude the impact of the acquisition of One Rail Australia, given this occurred on 29 July 2022.**

### Cover image:

Aurizon grain train approaching the Port of Newcastle, New South Wales

We acknowledge the Traditional Custodians of this land and pay our respects to the Elders past, present and future for they hold the memories, the traditions, the culture and hopes of Aboriginal Australia. We must always remember that under the ballast, sleepers, rail systems and office buildings where Aurizon does business, the land was and always will be traditional Aboriginal land.



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# AURIZON'S SUSTAINABILITY PERFORMANCE FY2022



**1.5%**

decrease in  
greenhouse  
gas emissions  
against FY2021

**85%**

of our employees  
work across  
regional locations  
in Australia

**43  
charities**

supported through  
our Community  
Giving Fund

**\$1.2  
billion**

spent with suppliers, a  
large percentage of that  
in regional Australia

**6.7%**

of our workforce is  
Aboriginal or Torres  
Strait Islander, up  
from 6.6% in FY2021

**23%**

of our workforce  
is female

**18%**

improvement in  
Total Recordable  
Injury Frequency  
Rate (TRIFR)

**0**

Serious Injury  
and Fatality (SIF)  
actual events  
during the year

# MANAGING DIRECTOR AND CEO MESSAGE

On behalf of Aurizon, I am pleased to share our ninth Sustainability Report.



ANDREW HARDING, MANAGING DIRECTOR AND CEO

The report demonstrates the significant progress we have made during the past 12 months with initiatives to build a more sustainable future for our communities, customers and stakeholders.

As Australia's largest rail freight operator, we recognise the importance of being transparent on how we manage the risks and opportunities related to environmental, social, and governance criteria. Aurizon has maintained the highest rating for eight consecutive years by the Australian Council of Superannuation Investors for Corporate Sustainability Reporting in Australia. As of June 2022, we are actively participating in the FTSE4Good Index Series, MSCI, and Sustainalytics ESG Ratings, and this will be our sixth year reporting against the Task Force on Climate-related Financial Disclosures.

Aurizon's Climate Response Strategy focuses on a range of initiatives and investments to decarbonise Aurizon's operations and to contribute to a low-emissions freight transport sector for Australia. We have a range of initiatives, large and small, underway to reduce our carbon footprint.

A key focus is developing low-carbon technologies for our locomotive fleet through collaboration and partnerships, for the benefit of Aurizon, our customers and the national economy. We are working with global mining company Anglo American on a study to assess the introduction of hydrogen-powered freight trains. A separate project has engaged the University of Queensland and Central Queensland University on rollingstock and infrastructure requirements for battery and hydrogen-powered rail solutions.

And in June 2022, we signed a new electricity contract for our Central Queensland Coal Network where 25% of energy will be acquired from renewable sources, such as solar and wind farms (from 2024 onwards).

We also continue to look at other initiatives across the business. This includes the introduction of lithium-ion battery technology that has improved operational reliability; our circular economy program to reduce waste to landfill and reduce environmental impact by reusing and recycling materials within local communities and local industries; and installation of solar arrays and upgrades to yard lighting with LED technology to improve energy efficiency. You can find out more detail about these in this report.

We recognise the demand for new economy minerals — which are used in emerging technologies such as electric vehicles, renewable energy products, low-emission power sources, and consumer devices — is expected to grow exponentially over the coming decades. While high-quality Australian metallurgical and thermal coal remains in demand, we recognise the need to deliver sustained value for our customers and investors in re-balancing Aurizon's portfolio.

Our Bulk business, including our recent acquisition of One Rail Australia, is well positioned to assume a greater proportion of the Company's earnings as we pivot toward hauling these future-facing commodities.

The safety, health and wellbeing of our employees remains a priority for us. Aurizon has not been immune to the prevalence of COVID-19 in the community, and the many protocols

that were embedded since mid-2020 remain in place to protect the health of our employees. Despite many COVID-19-related challenges, our employees continued to show great discipline in looking after their health and wellbeing, allowing us to continue delivering freight across Australia.

We also continue to focus on improving operational safety. It was pleasing to see improvement across our safety performance results during the 2022 financial year, across the metrics of Total Recordable Injury Frequency Rate and Rail Process Safety. This is a direct result of the focused work we carried out in building and implementing simple systems and processes, understanding and controlling safety hazards, and building leadership and capability with a strong in-field presence. We remain committed in our safety efforts, protecting ourselves, each other, and the communities in which we operate. Aurizon recognises the importance of contributing to the communities where our people work and live. We do this through our Community Giving Fund by providing cash grants to eligible community organisations with projects focused on community safety, environment, education or health and wellbeing. This year, 43 deserving groups benefitted from the Fund.

We acknowledge and respect the Traditional Owners of the land and the communities where our operations are based. As a company with a large national footprint, we can contribute positively to our nation's reconciliation efforts. In March 2022, we were delighted to launch our second Stretch Reconciliation Action Plan (RAP). The RAP sets out the actions we will take to achieve our vision and further reconciliation in our business and the communities where we operate.

In our communities and along our supply chains, we are committed to responsible environmental management. We do this by effective management of environmental risks and improved enterprise environmental performance, employing proactive and evidence-based management measures covering key environmental issues, such as climate change, resource use, and clean air. You can read more about these measures in this report.

I am proud of the commitment our employees have shown in embracing our journey to build a strong and sustainable business for now and the future.

# ABOUT AURIZON

Aurizon (ASX: AZJ) is Australia's largest rail-based transport business.

Our purpose is to grow regional Australia by delivering bulk commodities to the world. We provide customers with integrated freight and logistics solutions across an extensive national rail, road and port network that traverses Australia. With our fleet of around 600 locomotives and 12,500 wagons, we transported 245 million tonnes of Australian commodities in Financial Year (FY) 2022, connecting miners, primary producers, and industry with international and domestic markets.

We hold the long-term lease and operate one of the world's largest coal rail networks, the Central Queensland Coal Network (CQCN), a critical piece of infrastructure supporting about 90% of Australia metallurgical coal export volume. After our acquisition of One Rail Australia (One Rail) in July 2022, we hold the long-term lease and operate the nationally significant north-south rail infrastructure from Tarcoola to Darwin. This acquisition expands Aurizon's operations to include South Australia (SA) and the Northern Territory (NT).

## What we deliver

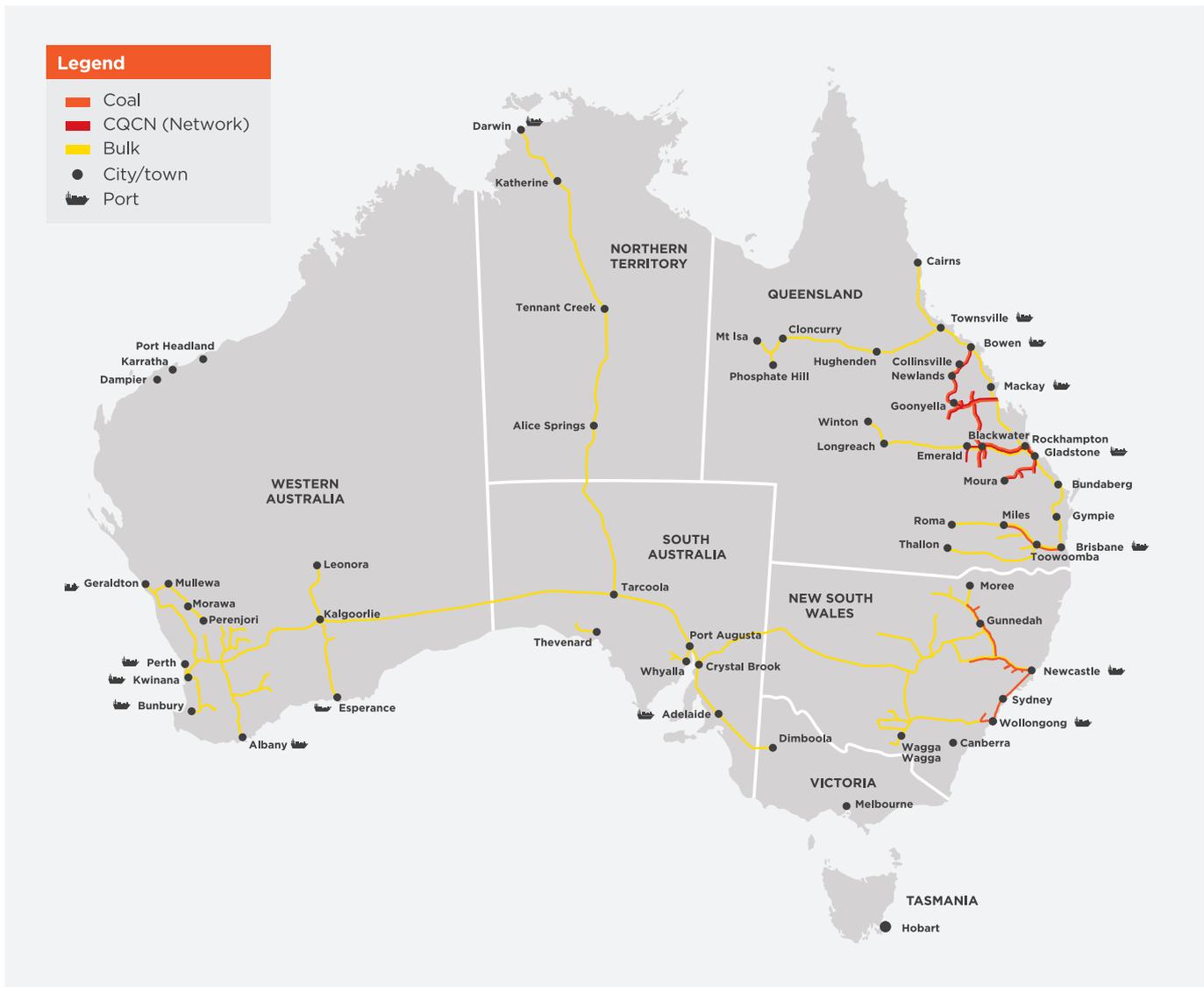
Our key operational areas are broken into three business units: Coal, Bulk and Network.

### Coal

Our Coal business provides a critical service to Australia's \$110 billion<sup>1</sup> export coal industry, the nation's second largest source of export revenue in FY2022. We haul around half of Australia's export coal volume. As a supply chain partner for our customers, we transported 194 million tonnes of coal in FY2022.

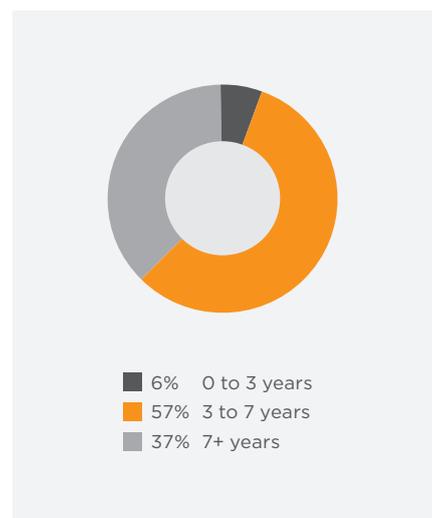
Coal hauled is split approximately evenly between metallurgical coal and thermal coal, with demand linked to Asian steel production and energy generation, respectively. Our Coal business continues to invest in and develop initiatives that give our

FIGURE 1 AURIZON'S OPERATIONS





**FIGURE 2** COAL HAULAGE CONTRACT PORTFOLIO (AS AT 30 JUNE 2022)



customers greater insight into their ordering, rail planning and daily activities. With a strong contract book, we aim to improve Return on Invested Capital (ROIC) and preserve cash flows for the Coal business while safely providing excellent service for our customers.

Our haulage contracts are long term, particularly in our Coal business, with 37% of the portfolio having a remaining contract life of seven or more years (figure 2). The long-term nature of our contracts provides greater certainty for our future revenue streams, as well as greater commercial and operational certainty for all stakeholders across the supply chains in which we operate.

**Bulk**

Our Bulk business includes haulage of a range of bulk commodities, such as iron ore, bauxite, alumina, base metals, grain and fertiliser-related products. During FY2022, our Bulk business delivered 51 million tonnes of commodities. The business also provides supply chain services to customers, including ballast cleaning, hook-and-pull, and port services.

In Queensland (QLD), we service the North-West Minerals Province from Mount Isa to the Port of Townsville, including bulk storage and handling

services as part of Aurizon Port Services (APS). We also service the south-west region of the state.

In New South Wales (NSW), the Bulk business services customers with transport solutions including bulk storage and handling services at the Port of Newcastle as part of APS. Acquired in FY2021, APS includes a direct interface between rail and sea transport, with a dedicated private rail siding where wagons can be unloaded adjacent to the shipping berth.

In Western Australia (WA), we continue to deliver our customers’ products to the ports of Geraldton, Esperance, Fremantle, Kwinana, Bunbury, and Albany. In FY2022, Aurizon and the CBH Group signed a long-term rail haulage and maintenance contract covering all rail requirements for CBH’s WA grain harvests.

Following on from the acquisition of One Rail in July 2022, the Bulk business also includes the integrated rail business with 2,460 kilometres (km) of track infrastructure in SA and the NT, now referred to as Bulk Central. The new business not only has strong growth opportunities in SA and the NT but also is a key link in our national footprint - from west to east - in providing a national service offering for customers.

**Our Bulk business has been successfully turned around, with the next phase of growth underway.**

1 Australian Bureau of Statistics

**Network**

We operate and manage the CQCN under 99-year leases from the QLD Government. These leases commenced in 2010. The CQCN connects over 40 mines to five export terminals, as well as to domestic customers (figure 3).

The CQCN is a critical part of the global supply chain, with around half of all global seaborne export metallurgical coal (used for steel production) travelling across the network. This 2,670-kilometre multi-user track network comprises four major coal systems: Newlands, Goonyella, Blackwater, and Moura.

The Goonyella Abbot Point Expansion (GAPE) is the connecting link for the Newlands and Goonyella systems.

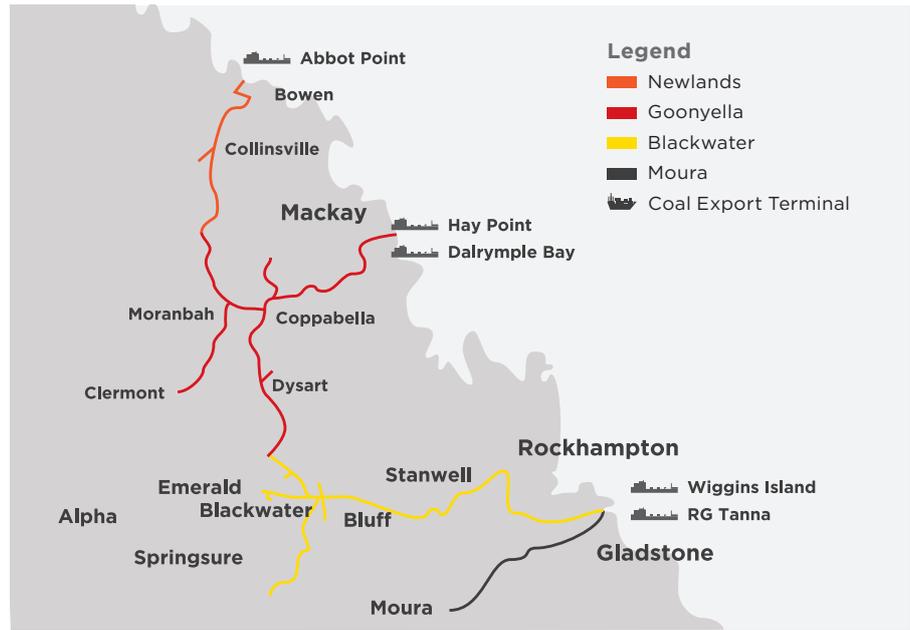
Around 70% of volume hauled across the network is considered metallurgical coal (the other 30% is thermal coal), with demand linked to Asian steel production.

Access to our rail network is managed under an access undertaking approved by the competition regulator, the Queensland Competition Authority (QCA).

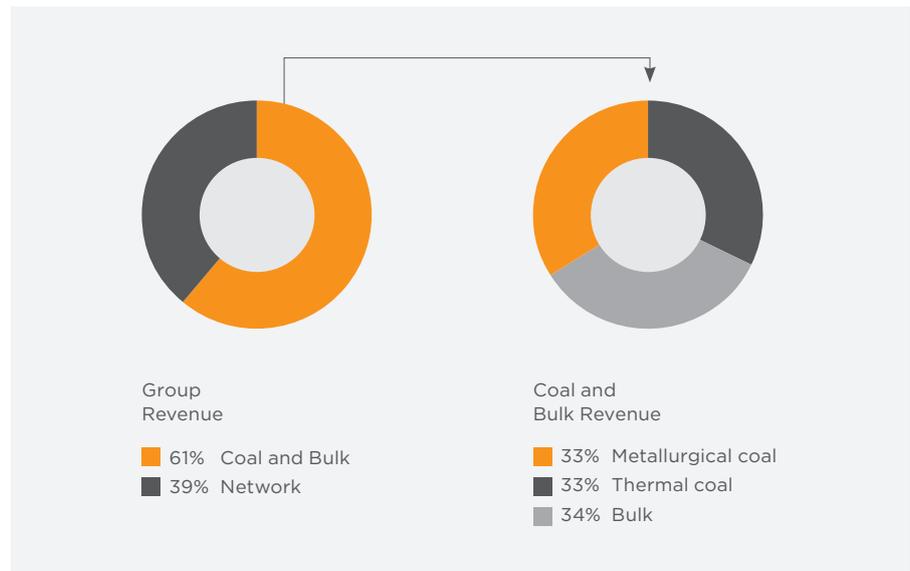
As shown in figure 4, over one-third of our Group revenue relates to Network, with the remaining revenue from our Coal and Bulk businesses. Within these two business units, approximately two-thirds of revenue relates to coal, with the remaining third non-coal.

The acquisition of One Rail increases the Bulk share of revenue by eight points to 42%.<sup>2</sup>

**FIGURE 3** AURIZON'S CENTRAL QUEENSLAND COAL NETWORK (CQCN)



**FIGURE 4** AURIZON'S REVENUE (FY2022)<sup>3</sup>



**Our strategy**

Our Strategy in Action framework, defined by our purpose, vision and values, continues to guide Aurizon’s pursuit of value creation and service delivery for customers and communities across Australia (figure 5).

Our Strategic Levers, which help us prioritise key drivers of value, also remain fundamental in how we execute on these priorities throughout the organisation.

Our strategic priorities are periodically reviewed by management and the Board, and are adjusted to reflect our view of the current and future external environment and our organisational goals.

**Optimise: Progressing major transformation efforts**

Major transformation efforts continue to support the optimisation of our cost base and improve our competitiveness, with significant benefits delivered across fleet maintenance, network scheduling and corporate areas of the business.

Above Rail Asset Management (ARAM) is a multi-year transformation program improving maintenance strategies, planning and execution, and driving improved asset availability and reliability.

The success of Project Precision is an example of how we are embedding transformational processes across our business. Precision is releasing capacity and improving asset productivity in CQCN to deliver time back to the schedule and to enable deferral of fleet renewals. In FY2022, Precision Railroading transitioned to Business as Usual (BAU) and is now a critical continuous improvement vehicle for Aurizon.

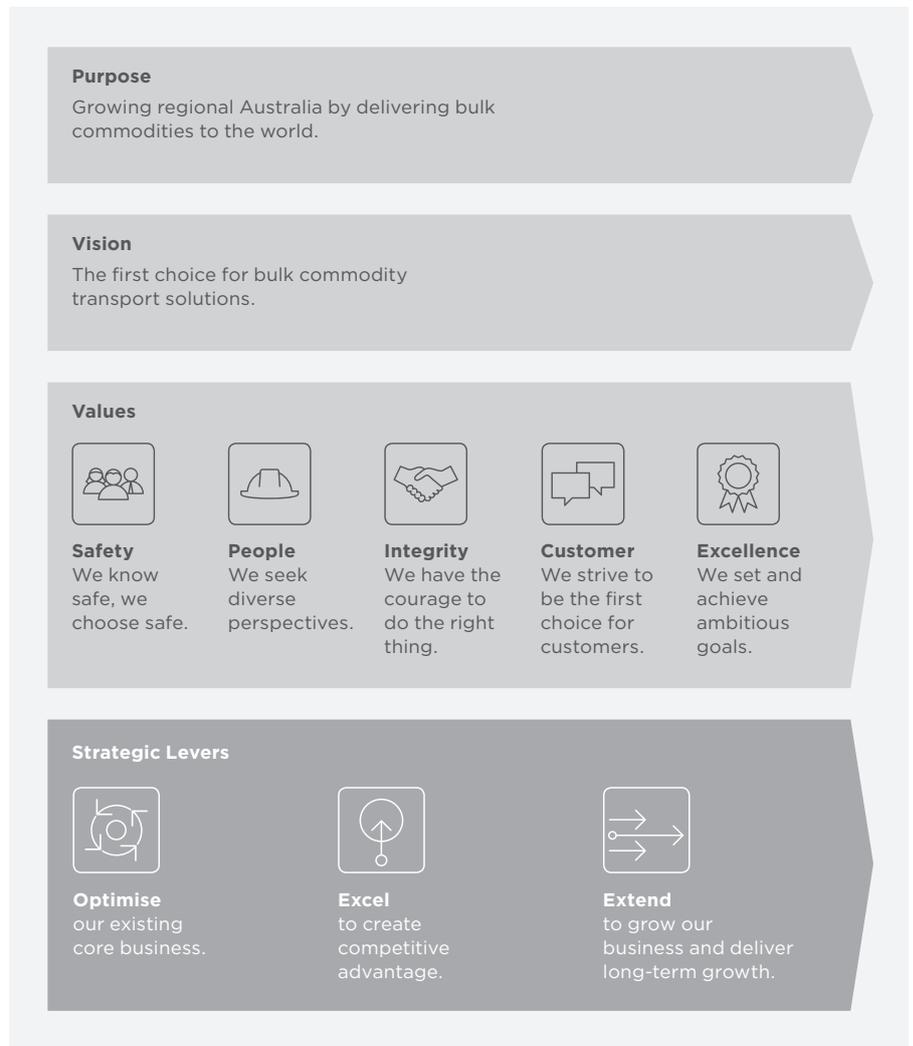
TrainGuard supervisory braking control will provide a step change in safety and productivity outcomes for our Coal business through reduction of Signals Passed at Danger (SPAD), less schedule disruption, and a pathway to driver-only operations.

**Excel: Optimising capital proactively**

Our focus on a proactive and disciplined approach to optimisation of capital and fleet deployments continues to underpin our ability to support Bulk growth and maximise enterprise value.

**The success of Project Precision is an example of how we are embedding transformational processes across our business.**

**FIGURE 5** AURIZON’S STRATEGY IN ACTION FRAMEWORK



2 Based on FY2022, using (unaudited) One Rail Bulk revenue for the 12 months to June 2022. Revenue is the sum of the Coal and Bulk business units (excluding track access) and One Rail Bulk (which includes South Australia/Northern Territory Infrastructure) and excludes Network.  
 3 Group revenue pie chart: Revenue is the sum of the Network, Coal and Bulk business units (less track access for both Coal and Bulk). Coal and Bulk revenue pie chart: Revenue excludes track access. Allocation for Coal based on estimated volume split.

In FY2022, the operational and strategic flexibility provided by Aurizon’s portfolio of rollingstock assets (the largest in Australia) has supported cascading of 11 locomotives from Coal to Bulk. This has enabled rapid deployment of consists to support capture of new volumes, while simultaneously driving enhanced capital productivity and cash flows.

Combined with our ability to flex our cost base and contract mechanisms to reduce the impact of inflation, we demonstrated the resilience of our business under shifting market conditions as we delivered on our commitment to maintain long-term, stable cash flows.

**Extend: Growing our Bulk business**

We continue to execute on our long-term ambition to double the size of our Bulk business by 2030. In FY2022, we have broadened our customer base in both traditional bulk commodities with the commencement of the CBH contract (Aurizon is now Australia’s largest grain haulage provider by volume), and in new economy minerals and metals, supporting Tronox with an east-west freighter service transporting mineral sands concentrate from the Broken Hill region in NSW through to Kwinana in WA.

The acquisition of One Rail provides the potential to materially grow Bulk earnings and increase exposure to

commodities associated with new economy markets (figure 6). In addition, development of our national presence into adjacent production-to-port value chain segments is expanding the scope of what we do, increasing our addressable market, and supporting delivery of compelling end-to-end multi-model solutions for our customers.

This growth opportunity could result in the commodity mix changing within Aurizon. Consequently, if Aurizon is able to capitalise on these opportunities, revenue from thermal coal could be less than 20% of the portfolio (excluding Network) by 2030<sup>4</sup>.



FIGURE 6 BULK OPERATIONS



Commodity	South Australia and Northern Territory Exposure
<b>Copper</b> Batteries, telecommunications	Australia holds the second largest copper resources globally, with two-thirds contained in South Australia <sup>5</sup>
<b>Grain</b> Food consumption	South Australia produces around 20% of Australia's grain, averaging six million tonnes per annum (over the past five years) <sup>6</sup>
<b>Magnetite</b> Green steel	South Australia holds around 44% of Australia's total identified magnetite resource <sup>7</sup>
<b>Phosphate</b> Fertiliser, agriculture	The Georgina Basin, encompassing parts of Queensland and Northern Territory, account for almost all of Australia's phosphate rock resources <sup>8</sup>
<b>Rare Earths</b> Electrical motors, wind turbines	Australia is ranked sixth in the world for rare earth resources <sup>9</sup> and South Australia holds around 80% of Australia's total rare earth oxides resource <sup>10</sup>

## OUR ROLE IN SUPPORTING PATHWAY TO NET-ZERO EMISSIONS

As Australia's largest rail freight operator, we are committed to owning and operating assets and delivering services to support our coal customers in QLD and NSW. Our continued participation in these industries is vital to ensure responsible and efficient delivery of rail haulage services, and to maintain the highest environmental standards as we work to directly support Australia's, and our own, pathway to net-zero by 2050.

Free cash flow from our Network and Coal operations can provide a foundation to support Bulk's growth ambition to service the demand for commodities (metals and fertilisers) essential for decarbonisation, infrastructure, urbanisation, population growth and rising standards of living (see the Future of commodities we haul chapter).

Our strategy reflects the importance to reduce the net overall emissions footprint where fossil fuels continue to be utilised. This report displays our commitment to being transparent around our emissions footprint and forward plan. We also recognise that as the export profile shifts, there will be a need to retrain and support those in the communities in which we operate for the further development and growth of regional areas.





### How Aurizon creates value

We create tangible and sustainable value for our primary stakeholders, including our employees, customers, communities, and investors (figure 7).

**FIGURE 7** HOW AURIZON CREATES VALUE

Stakeholder	Description	Value created in FY2022
<b>Employees</b>	We provide stable employment and rewarding career development in a safe and high-performing work environment, as well as the opportunity to contribute to the economic prosperity of Australia.	<ul style="list-style-type: none"> <li>— More than 5,000 people employed.</li> <li>— \$853 million in wages and benefits paid.</li> </ul>
<b>Customers</b>	We deploy our significant asset base, capital investments and industry-leading expertise to provide reliable, safe and efficient bulk transport solutions for our customers.	<ul style="list-style-type: none"> <li>— 245 million tonnes of bulk commodities transported at an estimated value of over \$65 billion for our customers<sup>11</sup>.</li> </ul>
<b>Community</b>	Our key role in bulk supply chains enables economic prosperity and growth for all Australians. We help sustain regional communities by providing employment and economic benefits in areas where we operate.	<ul style="list-style-type: none"> <li>— Approximately 85% of our employees reside in regional areas.</li> <li>— \$387 million in taxes collected and paid<sup>12</sup>.</li> <li>— \$1.2 billion spent with suppliers.</li> </ul>
<b>Investors</b>	Our integrated business model provides a defensive stream of earnings from our regulated track infrastructure (the CQCN), while our rail haulage business is leveraged to the export of Australia's bulk commodities.	<ul style="list-style-type: none"> <li>— Strong shareholder distributions of over \$4.8 billion in the past seven years (dividends and buybacks).</li> </ul>

4 For further information, see our Investor Day presentation from June 2021, available on the Aurizon website.  
 5 Geoscience Australia, *Australia's Identified Mineral Resources 2020*  
 6 *Australian Crop Report*, Australian Bureau of Agricultural and Resource Economics and Sciences (December 2021)  
 7 South Australian Government, *SA Magnetite Strategy (December 2017)*  
 8 Geoscience Australia, *Australia's Identified Mineral Resources 2020*  
 9 Geoscience Australia, *Australia's Identified Mineral Resources 2020*  
 10 Geoscience Australia (*website*)  
 11 Estimated value of customers' product, as calculated by Aurizon.  
 12 Excludes PAYG income taxes included in wages and benefits paid.

# HOW WE OPERATE

Our business model supports sustainable business practices and enables us to operate efficiently and effectively.

We have worked hard to build a stronger, more sustainable business in recent years, and are committed to being open and transparent on the environmental, social and governance (ESG) aspects of our business. We aim to continuously improve and ultimately create value for the benefit of our employees, customers, communities and investors.

## United Nations Sustainable Development Goals

In 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development, which includes the Sustainable Development Goals (SDGs). The 17 goals and related targets act to address significant ESG issues across the globe. We began mapping our operations against the SDGs in our 2018 Sustainability Report. Acknowledging that our business contributes to some SDGs more than others, we continue to focus on the five goals that are most aligned to our business, our values, and our operational environment.

**GOAL 3**  
Good health and well-being



We continue to develop and adopt safe practices, enabling us to build a resilient operation, an adaptive workforce, and agile systems of work to deliver safer outcomes. We will continue to make sure we are well placed to work with our people, our customers, and the communities in which we operate, providing safe and reliable operations now and into the future. During FY2022, we have continued the roll out of our award-winning safety leadership program 'Leading for Safety', and implemented our new Health, Safety and Environment Reporting System, Beakon. This has improved our understanding of how controls are being operated in our business. After organisation-wide consultation in FY2021, we have developed our Mental Wellbeing Strategy. As part of this strategy, we have continued to focus on the mental health of our employees. During the year, we have further expanded our Peer Support Network. Through collaboration with external providers, we developed short, focused mental health training for our frontline leaders.

**GOAL 5**  
Gender equality



We continue to increase the diversity of our workforce, recognising diversity is a lever for better business performance and growing our business sustainably. Our current female representation is 23% and we have fallen short of this year's target of 24%. In part, this can be attributed to the shift in workforce composition due to our recent acquisitions of road and port services organisations. While it is disappointing, we are confident we will progress and embed our gender balance initiatives in the newer parts of our business over the coming years.

We continue to drive change across our business with our Gender Balance Action Plan and we remain focused on closing the gender pay gap. Our data-driven approach to talent, coupled with our focus on mentoring and development, has supported the promotion of women, with female promotions doubling since last year. However, we have not met our representation target for women in senior executive roles. Throughout FY2023, we will continue our focus on developing our high-performing women into senior roles.

## Our approach to sustainability

### Our approach to reporting

We keep stakeholders informed of our corporate governance and financial performance via announcements to the Australian Securities Exchange (ASX) and our website. Investors can access copies of announcements to the ASX, notices of meetings, annual reports, policies, investor presentations, webcasts, and transcripts of those presentations on our website. In addition to the above disclosures, we take a direct approach to reporting ESG disclosures to our stakeholders with the publication of our annual Sustainability Report.

We recognise that our climate change disclosures are one of the key interests to stakeholders. Since 2017, we have aligned our climate-related disclosures to the Task Force on Climate-related Financial Disclosures (TCFD) as recommended by the Financial Stability Board. This framework enables consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders. Our response to climate-related risks is outlined within the Governance and risk chapter of this report.

In FY2021, we published our Climate Strategy and Action Plan (CSAP). The strategy builds on our existing work in reducing our carbon footprint, as detailed in our Sustainability Report each year since 2014. We recognise that we all have a responsibility to act on climate change – government, business, and the general community – so we can achieve an effective transition to a low-carbon future.

As Australia's largest rail freight operator, we can have a significant and positive influence on the decarbonisation of Australian rail freight supply chains, as supported by our target of net-zero operational emissions by 2050. Progress on our emissions reduction efforts is outlined in our Climate change chapter. The greenhouse gas (GHG) emissions data (Scope 1, 2 and 3) provided in the chapter has also been independently assured, and a statement of limited assurance is included in this report.

During FY2022, Aurizon has elected to participate in the Australian Government's Corporate Emissions Reduction Transparency Pilot, demonstrating our commitment to

**GOAL 8**  
Decent work and economic growth



With the acquisition of One Rail Australia, our operational footprint now spans all Australian states and territories (except Tasmania), with the majority of our staff living and working in regional centres across QLD, NSW and WA. Strong and economically stable communities are the backbone of a healthy regional Australia, and we are committed to continuing to develop strong local relationships with businesses and suppliers across our regional footprint. In FY2022, we have spent approximately \$1.2 billion with suppliers from across our operations. This figure, however, does not consider the further economic benefits of our workforce living and working in regional communities.

**GOAL 9**  
Industry, innovation and infrastructure



As a capital-intensive business, we aim to ensure our assets and infrastructure are high quality, reliable, sustainable, and resilient. Our CSAP is underpinned by a range of targeted initiatives and investments to build supply chain resilience, decarbonise our operations, and contribute to a low-carbon freight transport sector in Australia. Our Fleet Decarbonisation team is making significant progress in establishing forums for collaboration with key peers, manufacturers and research organisations focused on the development, trialling, and implementation of low-carbon technologies for Australia’s heavy haul freight sector. We see collaboration and partnerships as the key to achieving step-change emissions reductions through technology investment and innovative energy pathways. In FY2022, we announced a partnership with Anglo American for the development of a feasibility study to assess the potential deployment of hydrogen-powered trains. If successful, the agreement between the two companies could be extended to further phases of collaboration, which could include detailed engineering and the development of a hydrogen-fuelled heavy haul locomotive prototype. We also continue to work on strategic technology investments designed to improve the safety and productivity of our rollingstock and people:

- TrainHealth provides Aurizon with capability to monitor performance of locomotives and train handling/utilisation in real time. Installation has been completed for the CQCN electric locomotive fleet, with installation across the CQCN diesel fleet commencing in FY2022.
- TrainGuard is a platform that uses European Train Control System (ETCS) technology to support driver decision-making, particularly in relation to speed control and signal enforcement. TrainGuard will support safer and more efficient train operations with fewer rail process safety issues and better train handling.

**GOAL 13**  
Climate action



As Australia’s largest rail freight operator, we recognise our role and responsibility in helping to reduce global GHG emissions. 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 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. We have already made progress towards reducing our operational GHG emissions, with a 20% reduction in our locomotive carbon footprint (GHG emissions intensity) since 2010. During FY2021, we published our CSAP, announcing our commitment to a target of net-zero operational emissions by 2050. Supporting this goal, we have also set an emissions intensity reduction target of 10% by 2030<sup>13</sup>, and will invest \$50 million over 10 years through our Future Fleet Fund, targeting low-carbon technologies across our operational fleet. We continue to advocate the significant role that rail contributes in the transition to a low-carbon economy (see Rail freight policy on page 18).

transparency and accountability for the actions we are taking towards operational decarbonisation.

A lower carbon future must go together with business sustainability, customer service and economic development. We are a crucial part of the supply chains for Australia’s agricultural, industrial and resource sectors.

**External participation and recognition**

With a focus on direct disclosures to stakeholders, we take a selective approach to participation in external initiatives. With an estimated 600 ESG ratings globally<sup>14</sup>, we consider each opportunity for participation, with a view to actively participate only where such initiatives significantly add value for our stakeholders. As at June 2022, we actively participate in the FTSE4Good Index Series, MSCI, and Sustainalytics ESG Ratings.

Aurizon also participates in the Workplace Gender Equality Agency (WGEA) survey in addition to modern slavery reporting requirements.

In 2022, we received a ‘Comprehensive’ rating, the highest rating for an eighth consecutive year by the Australian Council of Superannuation Investors (ACSI) for corporate sustainability reporting in Australia<sup>15</sup>.

**Material priorities and relevant stakeholders**

As part of our BAU processes, we engage directly with our key stakeholders (figure 8). Our approach to stakeholder engagement involves both formal and informal mechanisms that are tailored to our audience and the engagement outcomes being sought. Understanding our material impacts is necessary to develop our strategy and to operate sustainably. Addressing these impacts is also key in continuing to create sustainable value for our stakeholders.

We strive to ensure that our Sustainability Report reflects significant economic, environmental, and social priorities that may influence strategic decision-making and business performance. As such, we continuously assess the material issues that affect our business, our stakeholders, and our operating environment. Report content has been informed by our material priorities, as outlined in table 1.

**FIGURE 8** KEY STAKEHOLDERS

Communities
Customers
Employees
Financiers and insurers
Governments
Industry analysts
Industry groups
Investors
Joint venture partners
Non-government organisations
Rail network providers
Regulators
Suppliers
Traditional owners and custodians
Unions



TABLE 1 MATERIAL PRIORITIES

Material Priority	Description	Chapter
<b>Business model</b>	How the structure of our business supports sustainable business practices and enables us to operate efficiently and effectively.	<b>About Aurizon</b>
	How we continuously improve through technology advancements, where possible, to reduce resource use, increase productivity, and ultimately create value for the benefit of our employees, customers, communities, and investors.	<b>How we operate</b>
<b>Customers</b>	How we ensure that we are the first choice for our customers' bulk commodity transport solutions by delivering innovative, efficient, and reliable services to help our customers compete in global commodity markets.	<b>How we operate</b>
	How we aim to maintain collaborative engagement with our customers to provide competitive solutions.	
<b>Regulation and policy</b>	How we continue to manage our operations and deliver value through regulatory processes, and advocate for policy improvements in areas such as energy and emissions policies, and rail versus road access pricing.	<b>How we operate</b> <b>Governance and risk</b>
<b>Business integrity and transparency</b>	How we operate with integrity and conduct business ethically through our governance structure and Code of Conduct.	<b>Governance and risk</b>
	How we remain transparent in our interactions with internal and external stakeholders. How we promote transparency and sustainable procurement practices with our direct suppliers across our supply chain.	<b>How we operate</b>
<b>Sustainable governance and risk management</b>	How our Board provides oversight and strategic direction to sustainability through our clear governance structure.	<b>Governance and risk</b>
	How we manage risk within our strategic framework, including identification and mitigation of contemporary and emerging risks, and low-likelihood, high-impact risks.	
<b>Managing climate change impacts</b>	How we manage the climate-related risks to our business in alignment with the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) recommendations.	<b>Governance and risk</b>
	How we plan to decarbonise our operations in line with our target of net-zero operational emissions by 2050, through supporting commitments and actions.	<b>Climate change</b>
<b>Safety, health, and wellbeing</b>	How we enable a safe, healthy, and mentally well workplace for our people through our goal of protecting ourselves, each other, and the communities in which we operate – be it through injury prevention, learning from events, promoting mental health, or enabling public safety.	<b>Safety and health</b>
<b>Portfolio resilience and growth opportunities</b>	How we continually monitor and evaluate the demand for and supply of Australian commodities and key market drivers to test the resilience of our business under divergent and plausible long-term scenarios, which in turn are used to inform strategic planning.	<b>Future of commodities we haul</b>
<b>Environmental management</b>	How we effectively manage our environmental performance by maintaining air quality, avoiding or offsetting impacts on native biodiversity, and minimising noise, waste to landfill, and water use through our operations.	<b>Environment</b>
<b>Employee engagement</b>	How we promote a diverse and inclusive workforce across all management levels, strengthen organisational capability and talent acquisition and retention, and career mentoring, and invest in knowledge transfer from longstanding employees.	<b>People</b>
<b>Sustaining communities</b>	How we focus on growing regional Australia through our economic contributions and local procurement, and our role in long-term community investment.	<b>Community</b>
	How we manage our impacts on the communities in which we operate through prioritising community employment opportunities and transparent and collaborative community engagement.	

## Regulation and policy

### Rail access regulation

The policies and regulations of governments and regulatory bodies have significant impacts on the current and future development, operation, and efficiency of transport supply chains.

We engage directly with policy development processes that are relevant to our businesses and the industries in which we operate.

We also participate in the policy and regulatory work of a number of industry associations (as outlined in our Governance and risk chapter).

### Embedding of the Revised UT5 Agreement

While embedding the revised UT5 Access Undertaking, we aim to achieve stronger customer relationships and better outcomes for all stakeholders of the CQCN. These improved outcomes include a stronger linking of future investment to performance and allowing the CQCN to continue to be an efficient export supply chain while meeting future capacity requirements.

In June 2022, the Queensland Competition Authority published the Independent Expert's Annual Capacity Assessment Report, which identifies the annual deliverable network capacity of each coal system for the period FY2022 to FY2024. This was the next step in the capacity assessment process, which outlines transitional arrangements and potential capital investment. Aurizon Network is working with customers to address the capacity deficits identified by the assessment.

### Energy policy

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

We recognise cost-effective decarbonisation of the freight sector will require greater electrification of transport networks. As the proportion of renewable energy generation in QLD's electricity grid increases in line with government targets, our electrified network in Central QLD will continue to decarbonise.

In recognition of this, Aurizon is working to ensure that we can continue to leverage existing capabilities and assets, such as our electrified rail network, as we decarbonise our operational emissions.

Aurizon participates in the development of energy policy aimed at achieving an effective transition to a lower carbon future while providing reliable and cost-effective energy supply.

### Rail freight policy

We contribute to developing and advocating policy positions aimed at increasing the use of rail for freight supply chains in Australia.

Since 2021, our Managing Director and CEO, Andrew Harding has been the Chair of the Freight on Rail Group (FORG), which is an industry body representing rail freight industry businesses in Australia. As part of its advocacy, FORG is engaging with governments and regulators on benefits, such as:

- **Environment:** road freight produces 16 times more carbon pollution than rail freight per tonne kilometre<sup>16</sup>.
- **Safety:** rail transport is a far safer mode of transport than road, with the freight volume carried by one freight train equivalent to the volume carried by 150 semi-trailer trucks<sup>17</sup>. Over the course of a year, the freight task carried by one train removes the need for thousands of truck journeys on our roads, thereby reducing congestion and enhancing safety outcomes.
- **Productivity:** significant economic and productivity gains are achievable where there are large volumes of freight and/or where the freight is carried over longer distances.

Despite these important benefits, many bulk freight products, including some resources, processed minerals, and agricultural freight, have been increasingly transported by heavy road vehicles, even where a rail transport option is available.

There are different policy and regulatory approaches between road and rail freight infrastructure and operations. A number of policy settings place our business and other rail freight operators at a disadvantage when it comes to costs, infrastructure provision and regulation compared to truck operators, particularly on

key regional freight corridors where rail and road compete to transport the same products. Policy changes are required to address a number of substantial disadvantages for rail freight compared to road, including inequity in infrastructure costs, first mile barriers (including costly or inefficient links between production sites and rail infrastructure), and an inconsistent focus on enabling improvements and investment in rail freight performance and competitiveness.

Informed by these challenges, we continue to focus our policy development and engagement efforts on improving the performance and the use of rail, considering the specific circumstances and requirements of different freight corridors. This includes advocacy to improve the use of bulk freight corridors through targeted infrastructure investments or development incentives, links between rail networks and ports, and prioritising improvements to applicable national and stated-based regulatory frameworks and procedures to enable higher productivity and innovation in the rail freight industry.

We will continue to work closely with others in industry to advocate to governments the case to level the playing field for rail, to enable rail freight to increase the volumes of freight carried on key regional corridors, and to realise the benefits that rail freight offers to customers and the communities in which we operate.

### Regional policy

Aurizon is a founding member of Regional Australia Council 2031 (RAC2031) with other leading Australian companies to give a greater voice and support to the future development of regional Australia. RAC2031 is an initiative of the Regional Australia Institute. More than 85% of our employees are based in regional and remote areas.

The Regional Australia Institute is the nation's first and only independent regional economic think tank specialised in developing and communicating the knowledge, policy and practical solutions required to lift the prosperity of people in regions and Australia overall.

An important benefit of our involvement in RAC2031 is the access to and insights provided from evidence-based research. This helps member companies

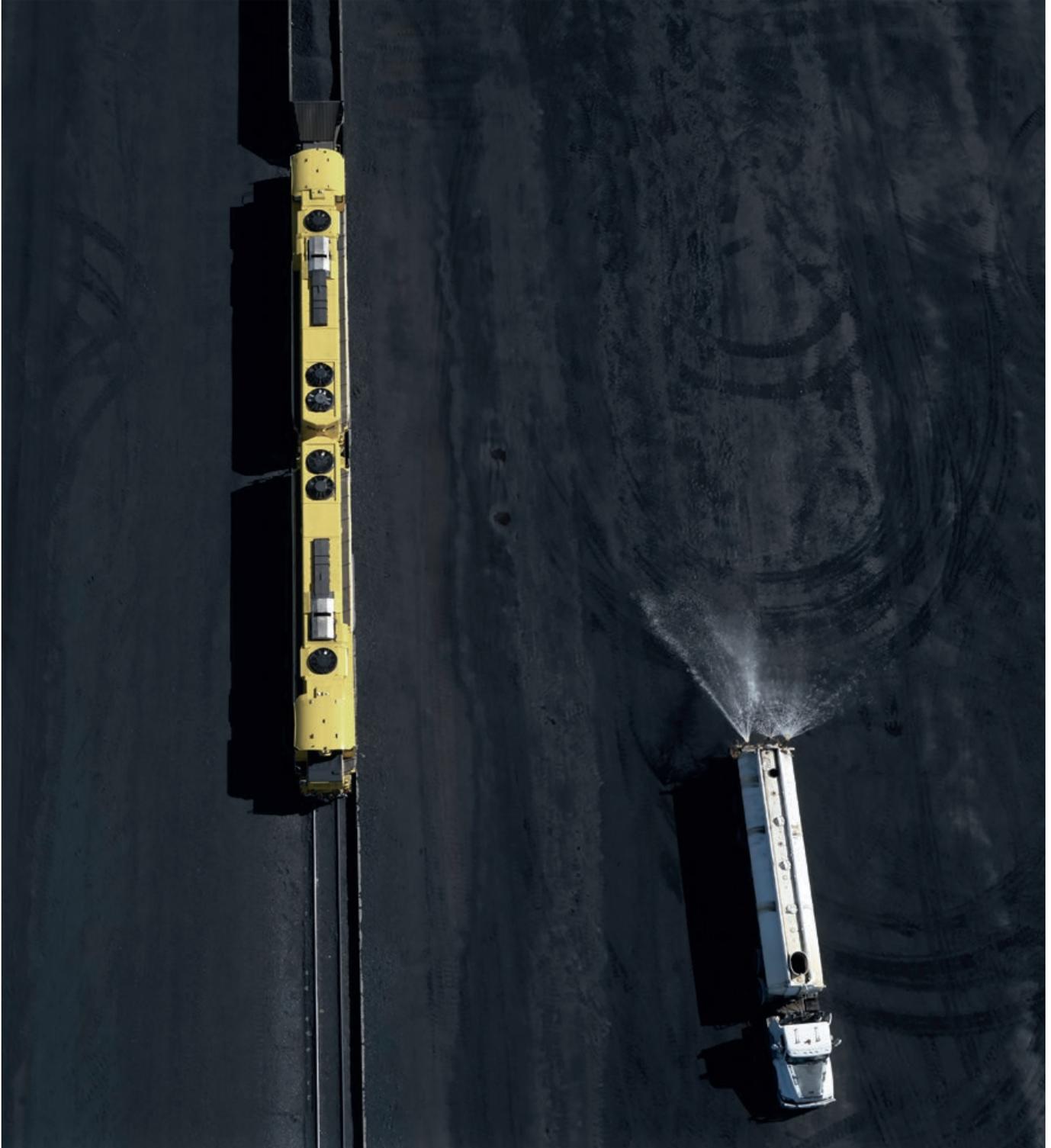
like us, as well as policy makers and the general community, better understand the drivers of regionalisation across Australia.

As a member of RAC2031, we are working to inform policy decisions

by governments to contribute to regionalisation, focusing on helping employees and their families to be able to have the services and community infrastructure they need when living and working in regional Australia. This is an important aspect of our vision to

contribute to the further development and growth of regional communities.

The research by the Regional Australia Institute will inform the policies of federal and state governments as well as future decisions of our Company.



13 From a 2021 baseline on a basis of tonnes of carbon dioxide per net tonne kilometre. Target under review following on from the acquisition of One Rail in July 2022.  
 14 SustainAbility: *Rate the Raters 2020: Investor Survey and Interview Results*, March 2020.  
 15 Australian Council of Superannuation Investors (ACSI), *ESG Reporting Trends* (June 2022).  
 16 Deloitte Access Economics 2017, *Value of Rail: The Contribution of Rail in Australia*  
 17 NSW Government: *Consultation Paper: Clean Air for NSW*, 2016

# GOVERNANCE AND RISK

We see risk management as a value-adding process for our business to sustain and enhance performance for shareholders, customers, employees, and the broader community.

This is achieved through establishing the culture, processes and structures to realise potential opportunities while managing adverse effects (figure 9). We consider a wide range of social, environmental and economic risks within our strategic planning by applying high-quality, integrated risk assessments to support informed decision-making.

**FIGURE 9** AURIZON'S COMMITTEE STRUCTURE (SOME AURIZON COMMITTEES NOT SHOWN, SEE THE AURIZON FY2022 ANNUAL REPORT)



## Effective governance for sustainability

We believe corporate governance is a critical pillar on which our business objectives and, in turn, shareholder value must be built.

The Board has adopted a suite of charters and key corporate governance documents that articulate the policies and procedures our business follows in achieving our objectives.

## Board skills and experience

Our Board is structured to include a range of optimum skills that enable the effective governance of our business. We carefully consider the character, experience, education and skill set as well as interests and associations of potential candidates for appointment to the Board, and we conduct appropriate checks to verify the suitability of candidates before their appointment. Our Board members possess a range of skills and experience across areas such as strategy, transactions, technology, sustainability, industry, government, and community relations and governance (see the Aurizon FY2022 Annual Report for more detail). Therefore, our Board is well equipped to consider a range of sustainability-related issues.

## Committees and meetings

Our Board provides oversight and strategic direction to sustainability and 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. The SHE Committee also includes several members of the Board, including the Chairman, and is responsible for reviewing and making recommendations to the Board on matters relating to safety, health, and environmental performance and policies.

The Board understands that climate change is one of the key interests for stakeholders. Following the launch of the Climate Strategy and Action Plan (CSAP) during FY2021, the cross-functional CSAP Steering Committee has continued to guide the implementation of the CSAP and to align initiatives under the three key

pillars: manage risk and build resilience; deliver decarbonisation; and create carbon abatement opportunities. Discussions across a range of sustainability-related topics, including climate change, occur frequently at Board meetings. During FY2022, the Board:

- provided guidance and approval of the Sustainability Report and the implementation of the CSAP.
- oversaw progress and implementation of the CSAP.
- were directly engaged in reviewing the scenarios for consideration under our Strategy in Uncertainty framework, as well as developing plans and initiatives to position the organisation to mitigate risks and take advantage of opportunities. This strategic process is repeated at least annually to ensure that our strategic priorities are continually updated so we can proactively respond to emerging market dynamics and opportunities.

#### Embedding sustainability into decision making

The AGRMC Charter acknowledges the need for the Board and, in turn, management to maintain effective risk management to identify and manage risks. This includes, but is not limited to, contemporary or emerging risks, such as conduct risk, digital disruption, cyber risks, and climate change and sustainability risks. A copy of the charter is available in the Governance section of our website.

In that regard, climate change risk is incorporated into our Enterprise Risk Management Framework, and is therefore specifically considered during investment decisions. Our Executive Committee and AGRMC regularly review and update the enterprise risk profile that applies the Enterprise Risk Management Framework to identify and rate enterprise-level risks for our Company.

The internal management process governing investment decisions, the Aurizon Investment Standard, has also been updated to ensure management considers climate change risk and carbon pricing on a materiality basis in decisions to recommend capital investment.

#### Managing sustainability performance through targets and monitoring

We continue to manage our progress as an organisation by monitoring our

performance against key sustainability targets and objectives. Examples include (but are not limited to):

- a net-zero operational emissions (Scope 1 and 2) by 2050 target
- an additional emissions intensity reduction target of 10% by 2030<sup>18</sup> to maintain an emphasis on using existing capabilities and assets in the near term
- two primary safety metrics to measure safety outcomes across the enterprise: Total Recordable Injury Frequency Rate (TRIFR) and Potential Serious Injury and Fatality Frequency Rate (SIFR(a+p))
- gender representation on the Board
- representation of women in senior executive roles
- representation of women in the workforce
- representation of Aboriginal and Torres Strait Islander men and women in the workforce.

At the start of the performance year, the Board determines individual strategic measures for the Managing Director and CEO. These measures are based on our strategy of continuing to optimise, excel and extend the business. Relevant measures are subsequently cascaded to the Executive Committee and throughout the organisation.

#### Government and regulatory engagement

Our Corporate Affairs Team manages a program of regular engagement with federal and state governments, federal and state Members of Parliament (MPs) (including opposition MPs), and ongoing engagement with local governments. Corporate Affairs also supports ongoing engagement between business units and regulators. This engagement program was implemented as planned over the last financial year; some engagement was modified to use video and/or teleconference in response to COVID-19 restrictions.

We made no financial contributions to political parties during FY2022, nor participated in any corporate observer programs, policy forums or events conducted by political parties that involved payment.

#### Industry association memberships

We are a member of several industry associations, and participate in some government industry forums alongside other companies.

These memberships are held for the following purposes:

- to contribute to the development and advocacy of policy and regulatory settings that promote and facilitate efficient and competitive infrastructure development, and that enable investment in new mining and resource project developments and efficient and cost-effective supply chain operations
- to enable engagement with customers and other industry stakeholders on policy and regulatory priorities
- to share updated information on emerging macroeconomic and policy issues.

We regularly review our participation in industry associations and government industry forums to ensure our involvement continues to be aligned with these purposes, and is an efficient and effective use of Company time and resources.

<sup>18</sup> From a 2021 baseline of tonnes of carbon dioxide per net tonne kilometre. Target under review following on from the acquisition of One Rail in July 2022.



**Conduct**

Our values and Code of Conduct embody what it means to work at Aurizon. We expect our employees to be fit for work, work safely, act professionally, to be lawful, ethical, and fair, and to use our systems, equipment, property and tools appropriately.

All employees are made aware of the Code before employment, and are required to complete online training modules to ensure a thorough understanding and continuous adherence.

We want to be known for how we treat each other and foster a working environment with a shared understanding of respectful behaviour, and how our people feel empowered to stand up for each other.

Our Code of Conduct has a strong link to our values of Safety, People, Integrity, Customer and Excellence. We set expectations for our employees to speak up when our values are not demonstrated. We regularly review our

policies to support our operations and how we work.

Building on our Code of Conduct, Aurizon’s Conflict of Interest Policy provides employees with more information about how to manage potential, perceived, or actual conflicts of interest at work.

We promote our Whistleblower Hotline as a confidential avenue for employees to speak up. Our Whistleblower Policy details the protections we provide whistleblowers and our strong commitment to complying with laws and to maintaining the highest ethical standards throughout all our business conduct.

This includes strict compliance with Australia’s *Criminal Code Act 1995* (Cth) (Criminal Code), Australia’s state and territory legislation, and international anti-corruption and anti-bribery standards. A copy of our Code of Conduct, Whistleblower Policy, and Anti-Bribery and Anti-Corruption Policy can be accessed on the Governance page of our website.

**How we manage risk**

**Risk management framework**

We foster a risk-aware culture through a combination of leadership focus, training and the application of high-quality, integrated risk analysis and management.

The consideration of risk features heavily in our thinking, from the framing of strategy through to informing decision-making at the front line.

Our Enterprise Risk team, together with all leaders in the business, closely monitors the environment in which we operate to ensure key risk exposures and situational developments are well understood and proactively managed. The Aurizon FY2022 Annual Report provides detail of elevated enterprise risks.

The primary focus of all key decision-making remains the welfare of our people, continuity of services to our customers, and regard to the communities in which we operate.

**We foster a risk-aware culture through a combination of leadership focus, training and the application of high-quality, integrated risk analysis and management.**

## Contemporary and emerging risks

### Data privacy and cyber security

The rapidly evolving cyber threat landscape continues to challenge industry. Malicious attacks causing business interruptions, nationally and internationally, are increasing, and we monitor these events closely. We are uplifting our capability to manage the threat landscape, making our business more robust.

We review and update our cyber security strategy and controls regularly, with a focus on cyber risk management. This includes assessing and updating preventative controls and building response and recovery capability. We will continue to develop cyber-smart people and processes to enable Aurizon to run reliable and resilient operations.

It is anticipated that the proposed changes to the *Security of Critical Infrastructure Act 2018* will result in obligations for our industry. We are working closely with state and federal governments, and our peers in the industry, to strengthen cyber risk management across the freight and logistics sector.

### Supply chain risk

Building resilient supply chains and effective inventory management is critical to ensure optimal levels of supply, minimise costs, and ensure Aurizon's operational assets are appropriately maintained to enable uninterrupted service delivery.

Several recent events have affected supply chain reliability, including the global pandemic, evolving international trade relations tensions, labour shortages, and constraints of raw materials. These risks are manifesting with increasing supply chain costs, lead times, and delays in obtaining goods and services.

Aurizon is approaching the risk by:

- engaging directly with suppliers
- diversifying supplier bases
- refreshing inventory management approaches
- strengthening inventory levels
- monitoring emerging supply chain risks.

We understand the importance of managing ESG considerations with our suppliers. Our Supplier Code of Conduct outlines our expectations of existing and future suppliers against five key principles: Safety; Business Integrity; Labour and Human Rights; Communities; and Environment. The code is available in the supplier portal on our website.

### Managing modern day slavery

Aurizon understands that modern slavery and human trafficking can occur in many forms, and recognises that we may be exposed to modern day slavery risks in our supply chain that we may not be able to fully mitigate. The Company is committed to operating responsibly and ensuring that robust standards and processes are in place to minimise and address modern slavery risks. Aurizon is also committed to providing transparency on its modern slavery risks and how they are being addressed.

More information is contained in the Modern Slavery Statement on the Aurizon website.

### Managing climate change risk

The impacts of climate change are broad and systemic. Aurizon's value chain, industry and the global economy face both direct and indirect impacts. 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, and will affect the demand for the commodities we haul or is railed across our network. Acute physical risks related to extreme weather events will also continue to affect our business through supply chain disruptions.

In the longer term, (chronic) trends, such as average summer temperature increases and extended periods of high temperature, have the potential to disrupt the supply chain through heat stress and associated precautionary measures, such as track speed restrictions.

Since 2017, we have incorporated recommendations from the Financial Stability Board's Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in our annual Sustainability Report. Table 2 describes the recommended disclosures under the TCFD framework and the respective content in this report. Table 3 and table 4 summarise our response to climate-related risks and opportunities.

During FY2021, we published our first CSAP outlining our position on climate change. It is underpinned by long-term strategies and associated actions to mitigate climate risk and take advantage of climate-related opportunities, including a target of net-zero operational emissions by 2050.

Although our business is exposed to transition and physical risks, we are also well positioned to take advantage of climate-related opportunities.

The CSAP is built on three key pillars:

1. Manage risk and build resilience
2. Deliver decarbonisation
3. Create carbon abatement opportunities.

Under the Manage risk and build resilience pillar, we commit to continually assess and enhance our processes for managing climate-related risk and leveraging opportunities in the way we manage our business and key assets by:

- continuing to develop scenario analysis for use in key decision-making processes to consider transition risks over short-, medium-, and long-term time horizons
- continuing to enhance capability to assess physical risk to key assets and operations
- embedding consideration of climate-related risk into risk frameworks and investment standards.

Scenario analysis is conducted under our Strategy in Uncertainty framework, which takes climate-related transition risks into consideration for key decisions, including around acquisitions and capital investments. The key drivers used in our scenario analysis are outlined in our Future of commodities we haul chapter. Our management of climate-related physical risks is addressed in the Climate change chapter of this report.

**TABLE 2** CORE ELEMENTS – TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

Core element	TCFD Recommended Disclosure	Index
<b>Governance</b>	Board’s oversight of climate-related risks and opportunities.	<b>Chapter: Governance and risk</b> Effective governance for sustainability (page 20)
	Management’s role in assessing and managing climate-related risks and opportunities.	
<b>Strategy</b>	Climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	<b>Chapter: Governance and risk</b> Response to climate-related risks and opportunities (page 25)
	Impact of climate-related risks and opportunities on the organisation’s businesses, strategy, and financial planning.	
	Resilience of the organisation’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	<b>Chapter: Future of commodities hauled</b> (page 34)
<b>Risk Management</b>	Organisation’s processes for identifying and assessing climate-related risks.	<b>Chapter: Governance and risk</b> Effective governance for sustainability (page 20)
	Organisation’s processes for managing climate-related risks.	<b>Chapter: Governance and risk</b> Response to climate-related risks and opportunities (page 25)
	How processes for identifying, assessing, and managing climate-related risks are integrated into the organisation’s overall risk management.	<b>Chapter: Governance and risk</b> Effective governance for sustainability (page 20)
<b>Metrics and Targets</b>	Metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.	<b>Chapter: Governance and risk</b> Response to climate-related risks and opportunities (page 25)
	Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	<b>Chapter: Climate change</b> (page 46)
	Targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	

TABLE 3 RESPONSE TO CLIMATE-RELATED RISKS

Risk	Description	Risk type	Potential impact to business	Strategic planning and risk management	Metrics
<b>Thermal coal demand</b>	Demand for seaborne thermal coal is subject to energy policy and fuel-mix decisions driven by energy costs, energy security, and regulation of GHG emissions.	Transition: Market, Policy & Legal, and Technology <b>Risk level: High</b>	Approximately one-third of Coal & Bulk revenue and around 30% of Network revenue is related to the haulage of thermal coal. <b>Time horizon: Medium to long-term</b>	<ul style="list-style-type: none"> <li>– The nature of our contracts provides greater certainty for our future revenue streams; 37% of the Coal business portfolio has a remaining contract life of 7+ years (as at 30 June 2022).</li> <li>– Continue to undertake scenario analysis for coal demand, assessing the fundamental drivers of seaborne demand for metallurgical coal and thermal coal.</li> <li>– Continue to use scenario analysis to resilience test our fleet capacity, capital investments, haulage opportunities and impairment testing.</li> <li>– Continue to develop Bulk haulage opportunities, including the identification (and execution) of fleet cascade opportunities from the Coal fleet to support Bulk growth.</li> <li>– Continue to inform on the ability of Australia's metallurgical coal to underpin global metallurgical coal supply used in steel production, essential for decarbonising global economies.</li> <li>– Continue to reinforce the importance of Australia's thermal coal, used for energy generation and contributing to a reduction in GHG emissions when compared to lower quality coal alternatives.</li> </ul>	<ul style="list-style-type: none"> <li>– Coal demand and supply projections and scenario analysis (refer to our Future of commodities we haul chapter).</li> <li>– Asian economic growth and climate policies.</li> <li>– Current and planned fleet of coal-fired generation and steel capacity in coal import nations.</li> <li>– Developments in hydrogen-based steelmaking projects (and other emerging lower carbon processes), including cost and infrastructure requirements.</li> <li>– Capital investment in Australian coal sector.</li> <li>– Development (and regulatory approvals) of new Australian coal mines.</li> <li>– Coal supply from competing nations and associated trade flows.</li> <li>– Port capacity/availability.</li> </ul>
<b>Metallurgical coal demand</b>	Demand for seaborne metallurgical coal is subject to economic development, steel-intensive growth, method of steel production (including emerging lower carbon processes), import reliance, and regulation of GHG emissions.	Transition: Market, Policy & Legal, and Technology <b>Risk level: Moderate</b>	Approximately one-third of Coal & Bulk revenue and around 70% of Network revenue is related to the haulage of metallurgical coal. <b>Time horizon: Long-term</b>	<ul style="list-style-type: none"> <li>– Continue to reinforce the importance of Australia's thermal coal, used for energy generation and contributing to a reduction in GHG emissions when compared to lower quality coal alternatives.</li> </ul>	<ul style="list-style-type: none"> <li>– Development (and regulatory approvals) of new Australian coal mines.</li> <li>– Coal supply from competing nations and associated trade flows.</li> <li>– Port capacity/availability.</li> </ul>
<b>Australian coal supply</b>	Australia's supply of metallurgical and thermal coal to seaborne export markets is subject to factors such as global competitiveness, operating coal mine production, and domestic climate policies.	Transition: Market, Policy & Legal, and Technology <b>Risk level: Low to Moderate</b>	Approximately two-thirds of Australia's coal exports using our below rail Network and/or carried by our coal business. <b>Time horizon: Medium to long-term</b>	<ul style="list-style-type: none"> <li>– Taking action, as articulated in our CSAP commitments.</li> <li>– Access a broad range of capital markets and diversify funding sources and/or extend tenure where possible.</li> <li>– Maintain open and transparent communication with stakeholders, including climate-related disclosures.</li> <li>– Continue to advocate for Australian commodities.</li> </ul>	<ul style="list-style-type: none"> <li>– Composition of Aurizon revenue (by commodity group).</li> <li>– Environmental planning approval timeframes.</li> <li>– Capital investment in mining capacity.</li> <li>– Developments in climate-related litigation.</li> </ul>
<b>Changes in investor expectations</b>	Investor concern over climate-related risks may result in: an inability for our business and customers to gain licences, funding or insurance for coal mining and transport. Increased risk of litigation/social action against our business and customers.	Transition: Reputation and Legal <b>Risk level: Moderate to High</b>	A withdrawal (or reduction) of licences, funding or insurance will limit our growth opportunities. Higher cost/time requirements associated with litigation. <b>Time horizon: Short, medium, and long-term</b>	<ul style="list-style-type: none"> <li>– Taking action, as articulated in our CSAP commitments.</li> <li>– Access a broad range of capital markets and diversify funding sources and/or extend tenure where possible.</li> <li>– Maintain open and transparent communication with stakeholders, including climate-related disclosures.</li> <li>– Continue to advocate for Australian commodities.</li> </ul>	<ul style="list-style-type: none"> <li>– Composition of Aurizon revenue (by commodity group).</li> <li>– Environmental planning approval timeframes.</li> <li>– Capital investment in mining capacity.</li> <li>– Developments in climate-related litigation.</li> </ul>

TABLE 3 CONTINUED RESPONSE TO CLIMATE-RELATED RISKS

Risk	Description	Risk type	Potential impact to business	Strategic planning and risk management	Metrics
<b>Carbon emissions management and reporting</b>	Carbon liability under GHG emissions regulation (statutory) and targets (voluntary).	Transition: Policy & Legal  <b>Risk level: Low to Moderate</b>	Safeguard baseline exceedances can necessitate offsetting with Australian Carbon Credit Units (ACCU).  Evolving GHG emissions-related policy and regulation could increase operational cost.  Inadequate strategic effort, commitment of resources, and technological challenges could impede decarbonisation progress and increase carbon liability.  <b>Time horizon: Short, medium and long-term</b>	<ul style="list-style-type: none"> <li>— Implement CSAP targets and initiatives focused on operational decarbonisation through improved operational efficiency, renewable energy integration, and adoption of low-carbon fleet technologies.</li> <li>— Support accelerated development and uptake of low-carbon fleet technologies through research, collaboration and investment.</li> <li>— Monitor and engage with government climate policy agendas, and advocate for a positive policy outcome for rail and energy-efficient freight services.</li> </ul>	<ul style="list-style-type: none"> <li>— Fleet/operational energy and emissions intensity.</li> <li>— Renewable energy penetration (grid, contracted and behind the meter).</li> <li>— Scope 1, 2 and 3 emissions.</li> <li>— Electricity consumption by source.</li> <li>— Procured goods and services.</li> <li>— Waste generation and disposal type.</li> <li>— GHG regulation.</li> <li>— Direct investment and collaboration with peers, researchers, and manufacturers on acceleration of low-carbon technology development for Australian heavy-haul freight sector.</li> </ul>
<b>Climate change resilience and adaptation</b>	Operational disruption and damage arising from more extreme weather and related events, such as flooding, erosion, bushfires and annual average summer temperature increases.	Physical: Acute & Chronic  <b>Risk level: Moderate to High</b>	<p>May result in loss of revenue due to extreme weather events affecting mining operations/production volumes, transport and port activities across the supply chain.</p> <p>May result in higher costs associated with remedial actions to ensure asset availability.</p> <p><b>Time horizon: Short, medium and long-term</b></p>	<ul style="list-style-type: none"> <li>— Continue to design infrastructure to recover quickly from extreme weather events, including positioning inventory such as ballast, flood rock, rail and formation material.</li> <li>— Annual seasonal planning for extreme weather events.</li> <li>— Localised real-time monitoring of track temperatures.</li> <li>— Use robust climate models to complete forward-looking assessment of climate-related factors to understand potential impacts of climate change on the capacity and availability of the CQCN and other fixed assets.</li> <li>— Engage policymakers regarding competitiveness of low-impact transport modes and enabling infrastructure (e.g. electrified rail) to ensure consistent treatment of transport systems within policy.</li> </ul>	<ul style="list-style-type: none"> <li>— Current/projected temperatures through our Network’s remote monitoring system.</li> <li>— Reflection of forward-looking climate models in scenario analysis (e.g. network capacity and asset resilience).</li> </ul>

TABLE 4 RESPONSE TO CLIMATE-RELATED OPPORTUNITIES

Opportunity	Description	Opportunity type	Potential impact to business	Aurizon's approach	Metrics
<b>Renewable energy and energy efficiency</b>	Alongside greater renewable energy penetration across the grid, renewable energy contracting, photovoltaic (PV) and energy capture offer cost neutral/positive decarbonisation outcomes for electrified assets.	Energy source & markets	Accelerated decarbonisation of electric fleet and fixed assets. Lower energy costs. <b>Time horizon: Medium-term</b>	<ul style="list-style-type: none"> <li>— Install solar PV arrays across our largest operational depots.</li> <li>— Identify opportunities to increase renewable energy mix within energy procurement frameworks by engaging with suppliers and project developers.</li> </ul>	<ul style="list-style-type: none"> <li>— Electricity consumption.</li> <li>— Renewable energy penetration (grid, contracted and behind the meter).</li> <li>— Operational GHG emissions (absolute and intensity).</li> </ul>
<b>Development and/or expansion of low-emissions goods, energy sources and services</b>	Our direct investment in fleet decarbonisation technologies (low-carbon energy supply, fuels, battery and hydrogen) could result in enhanced engagement and partnerships with participants across Australia's freight transport sector.	Products & services	Increased customer value proposition and alignment of supply chain decarbonisation objectives (e.g. by offering low-carbon freight transportation services). Accelerated development of low-carbon technologies for our own use and potential adoption across Australia's freight transport sector. <b>Time horizon: Medium to long-term</b>	<ul style="list-style-type: none"> <li>— Continue to implement our Tracking Towards Net-Zero Operational Emissions initiatives (supported by the establishment of a \$50 million (m) Future Fleet Fund, and the creation of forums for collaboration and partnerships to accelerate the development of low-carbon technologies).</li> </ul>	<ul style="list-style-type: none"> <li>— Operational GHG emissions (absolute and intensity).</li> <li>— Capital investment in low-carbon energy supply chains (e.g. green hydrogen) and storage (e.g. battery technology).</li> </ul>
<b>Access to new markets</b>	There are continued growth opportunities for our Bulk business in line with higher demand for the raw materials required for low-carbon, renewable energy, and storage technologies.	Markets & resilience	The global clean energy transition will continue to drive significant consequences for mineral demand over the next two decades, incentivising the development of new mines and downstream processing in Australia, creating opportunities for our Bulk business. <b>Time horizon: Short, medium and long-term</b>	<ul style="list-style-type: none"> <li>— Provide end-to-end bulk haulage services in key mineral corridors augmented by integrated port services.</li> </ul>	<ul style="list-style-type: none"> <li>— Bulk business unit growth and share of bulk market profit pool.</li> </ul>
<b>Carbon markets</b>	Carbon market growth presents an opportunity to create high-quality offsets to augment direct abatement initiatives.	Markets	Less exposure to carbon costs by augmenting direct abatement initiatives with high-quality offsets to help address hard-to-abate emissions (linked to availability of low-carbon technology for the Australian rail freight sector in the near term). <b>Time horizon: Medium-term</b>	<ul style="list-style-type: none"> <li>— Assess opportunities to build a carbon offset portfolio by engaging with project developers to either acquire or originate high-quality carbon offsets with environmental and social co-benefits aligned to key sustainability objectives.</li> </ul>	<ul style="list-style-type: none"> <li>— Regulation of GHG emissions.</li> <li>— Operational GHG emissions (absolute and intensity).</li> <li>— ACCU supply/demand.</li> </ul>

# SAFETY AND HEALTH

All our efforts support our goal of protecting ourselves, each other, and the communities in which we operate.

During FY2022, we have continued to embed our Safety Strategy through priorities focused on building and implementing simple systems and processes, understanding and controlling safety hazards, and building leadership and capability with a strong in-field presence.

FIGURE 10 SAFETY IN ACTION



## Driving Safety in Action - our strategic approach

Safety in Action is the core of our safety strategic approach at Aurizon. Our approach remained unchanged in FY2022, and moving into FY2023, we know that it resonates with our people and is improving safety outcomes.

Safety in Action (figure 10) leverages three key components that enable our people to be safe at work:

- Well-designed, planned, and resourced work
- Informed by risk
- Executed by engaged and enabled people.

Safety in Action adds value to our teams as we continue to focus on our safe systems of work and develop and adopt safe practices, enabling us to build a resilient operation, an adaptive workforce, and agile systems of work to deliver safer outcomes.

We will continue to make sure we are well placed to work with our people, our customers, and the communities in which we operate, providing safe and reliable rail operations now and into the future.

A core focus for us is engagement with our teams through the continued rollout of Leading for Safety, our award-winning safety leadership program. Leading for Safety equips operational leaders with skills to effectively lead Safety in Action, supported by an ongoing coaching phase that aims to challenge our leaders to apply their newly learned or enhanced skills to tackle a safety problem. The Rail Industry Safety Standards Board awarded Aurizon the Leadership Program Award at the 2022 annual conference for our innovative program.

In FY2022, one of the more significant changes in the Safety Strategy was the implementation of Beakon, our new Health, Safety and Environment Reporting System. Beakon has introduced a range of tech-enabled tools into the hands of our people through a mobile application. The mobile app enables in-field event reporting, documenting of safety interactions, conducting pre-task hazard assessments, and an integrated suite of assurance tools. All these modules can track actions and enable safety improvements to be managed effectively. The tech-enabled nature of

the tools has also improved our ability to understand how our controls are operating out in the business – which is analysed and made available to our leaders through interactive dashboards.

In preparation for FY2023, we have focused on the continued implementation of Safety in Action and the initiatives that will continue to enhance performance. Importantly, we know that the underlying foundations of our strategy are resonating with our people.

**A core focus for us is engagement with our teams through the continued rollout of Leading for Safety, our award-winning safety leadership program.**

## Employee health and wellbeing

### Prioritising the mental health and wellbeing of our people

The mental health and wellbeing of our employees has always been a priority for our business. In recent years, we have implemented different mental wellbeing initiatives.

To bring them all together and align them, we developed our Mental Wellbeing Strategy. In FY2021, we conducted an organisation-wide survey supported by seven focus groups and used the results to develop our Mental Wellbeing Strategy and to prioritise the initiatives. We reviewed the current initiatives in place and ensured they were further promoted. We focused on workplace psychosocial risk factors, prioritised our employees, and balanced those aspects that could not be easily modified with those that could. We ensured the strategy was based on an interdisciplinary approach, where operational and non-operational groups and different parts of the organisation were all involved.

The three pillars of our strategy are Prevent Harm, Intervene Early, and Support Recovery. As part of our strategy, we continued training volunteers on Mental Health First Aid and further expanded Aurizon's Peer Support Network.

Through collaboration with external providers, we developed short, focused mental health training for our frontline leaders. We also added the subject of 'Praise and Recognition' to our

leadership program to help our leaders have positive conversations with their teams.

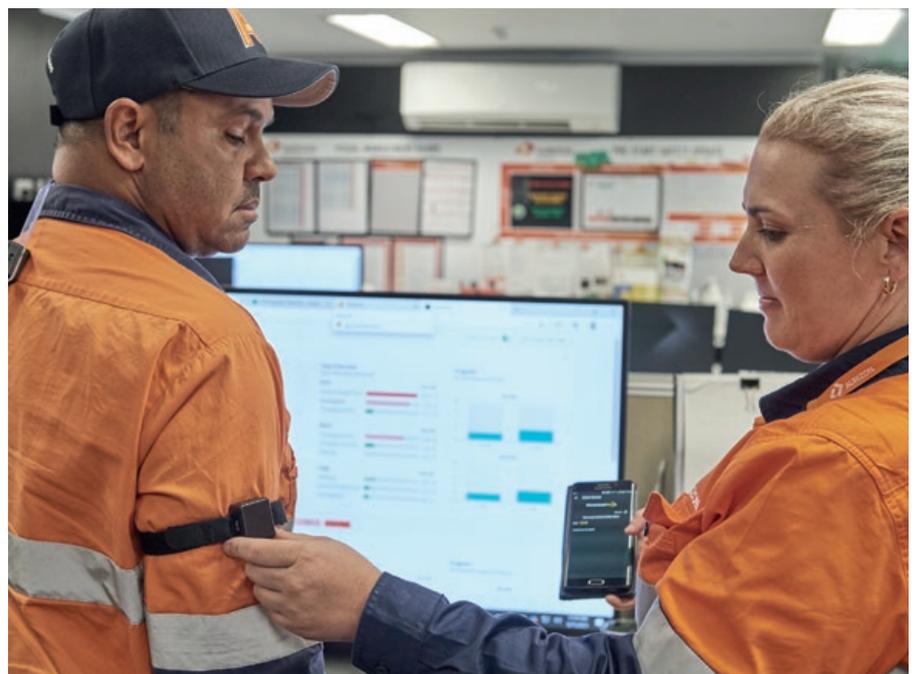
Over the next few years, we will continue to build on the program and expand it to cover all parts of the organisation.

### Proactive injury intervention program and telehealth

Because Aurizon is a geographically dispersed organisation, health services are sometimes not readily accessible in the areas in which we operate. This can potentially cause delays in providing immediate care to our injured workers. During the pandemic, many employees became familiar with telehealth services. We decided to use this opportunity and add telehealth to the services we provide to our employees. Injured workers now have the option to consult an Occupational Doctor through telehealth, which saves them from driving long distances and waiting at local hospitals or GP practices.

We also offer immediate physical and psychological support to injured workers, if recommended by the treating practitioner. This includes four sessions of physiotherapy plus four sessions of phone counselling immediately after injury and before the workers compensation claims process starts. Employees can lodge a workers compensation claim at any stage, if they choose to do so, and can continue to use the services at the same time.

This initiative is aligned with the early intervention pillar of our Mental Wellbeing Strategy.



**Managing COVID-19**

This year COVID-19 continued to present challenges to our business. It became even more of a problem when different states removed restrictions and the number of cases increased in our communities. We were faced with losing workers because they had to isolate due to illness or being a close contact.

To ensure we did not introduce the virus into our workplaces, we implemented different preventative strategies, depending on the local situation and relevant state health advice, including rapid antigen testing, and contact tracing technology. This helped with continuing our operations and avoiding shortage of our workforce.

As dealing with COVID-19 becomes part of our daily routine, we continue to stay vigilant to be able to respond accordingly and keep our operations productive while looking after the health and wellbeing of our employees.



**SAFETY METRICS: DEFINITIONS**

**Serious Injury and Fatality (SIF)**

A work-related actual incident or near miss with potential to result in a fatality, a life-threatening, or life-altering physical injury or illness.

**Total Recordable Injuries (TRI)**

The sum of Lost Time Injuries, Medical Treatment Injuries, and Restricted Work Injuries sustained by employees and contractors.

**Total Recordable Injury Frequency Rate (TRIFR)**

The number of instances of Lost Time Injuries, Medical Treatment Injuries, and Restricted Work Injuries sustained by employees and contractors per million hours worked.

**Rail Process Safety (RPS)**

The cumulative number of SPAD, derailments, and rollingstock-to-rollingstock collision incidents, per million train kilometres.

**Recording our safety performance**

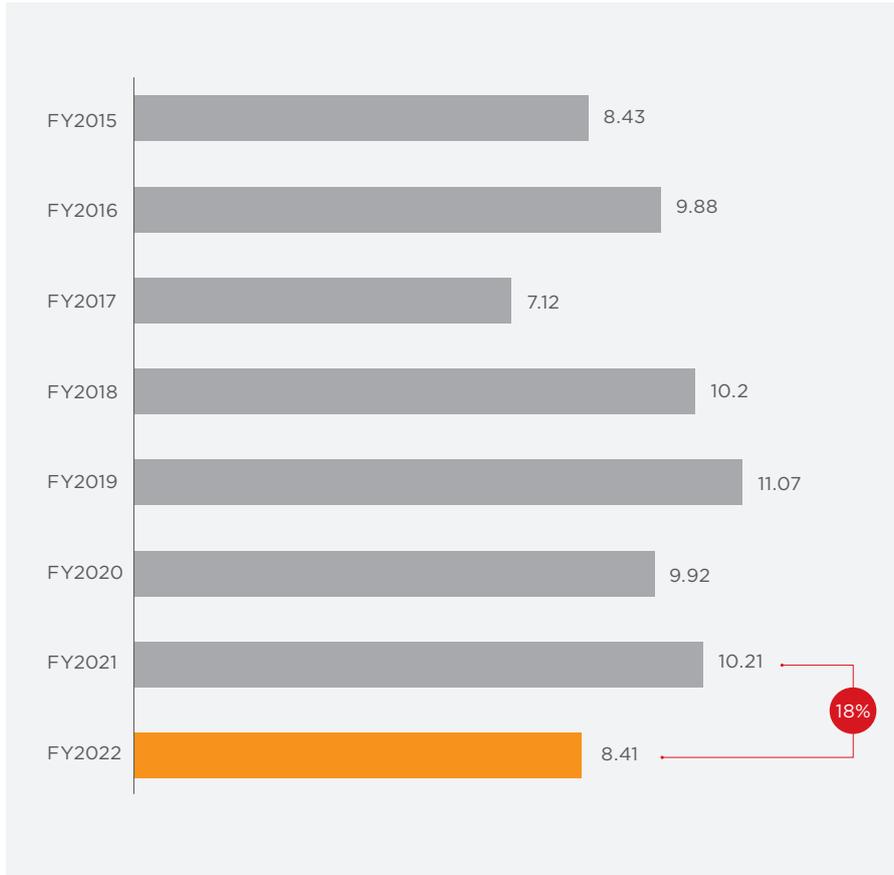
We record and investigate safety events to help us learn and improve. Our key operational safety metrics in FY2022 included:

- Serious Injury and Fatality (SIF) incidents, both actual SIF events and events with SIF potential
- Total Recordable Injury Frequency Rate (TRIFR)
- Rail Process Safety (RPS).

**Serious Injury and Fatality (SIF)**

To focus on managing what matters, we identify and learn from events that have the potential for SIF. During FY2022, Aurizon reported no SIF actual events and 66 SIF potential events. These are the events we want to and do talk about – promoting a learning culture and reducing the risk of harm.

**FIGURE 11** TOTAL RECORDABLE INJURY FREQUENCY RATE (TRIFR)



**Total Recordable Injury Frequency Rate (TRIFR)**

In FY2022, our TRIFR was 8.41 injuries per million hours worked, which is an improvement of 18% on FY2021 (figure 11).

Incident severity continues to reduce, with soft tissue injuries (low severity body strains) being the most common. In FY2022, there were 82 recordable injuries, against 101 reported in FY2021. There has been an increase in the form of Lost Time Injuries (LTIs), with a 15% increase compared to FY2021.

Supporting our focus on reducing injuries, several local-led injury prevention and management initiatives have continued to be delivered.

Moving to FY2023, we will continue to focus on embedding our enhanced injury management program holistically to improve our proactive and reactive injury management strategies.

**Rail Process Safety (RPS)**

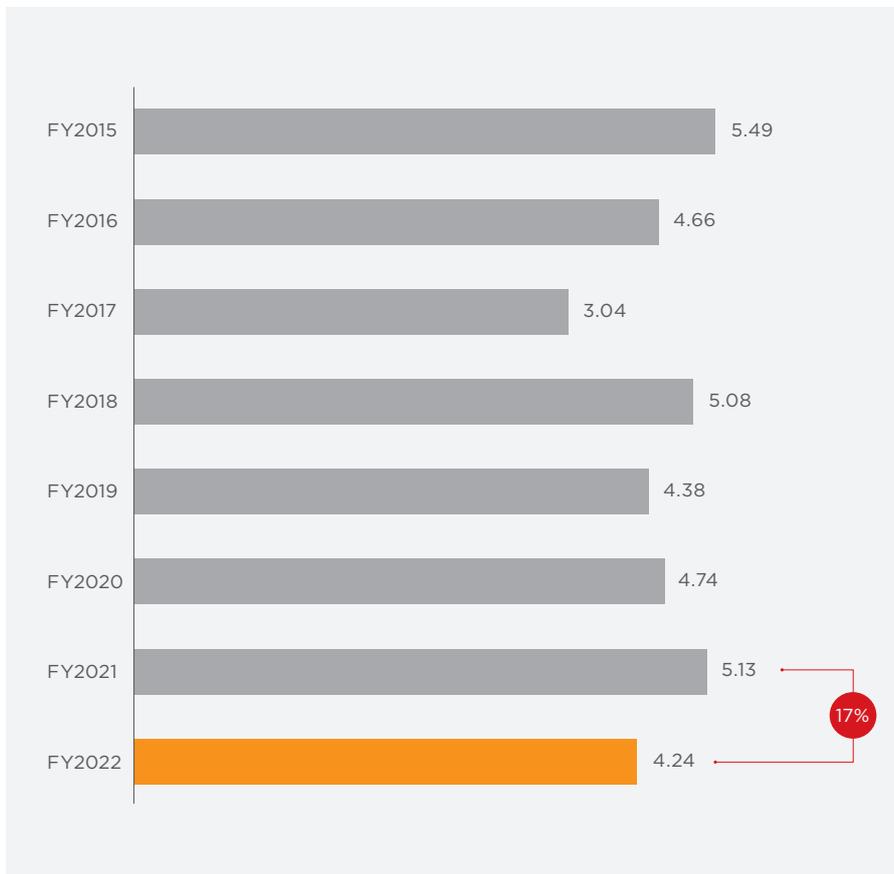
RPS, which measures operational rail safety, including derailments, signals passed at danger and rollingstock-to-rollingstock collisions, improved by 17.3%. In FY2022, the RPS result was 4.24 incidents per million train kilometres travelled (figure 12).

The significant contributor to RPS continues to be low-speed yard derailments. While these incidents are undesirable, and we are working to eliminate them, they typically do not create SIF potential.

In FY2022, we have focused on reducing yard safety incidents through the Yards and Safety Interfaces initiative integrated into the Safety Strategy.

Aurizon continues to progress several strategic initiatives, including TrainGuard, to strengthen safety performance for Aurizon Operations in Central QLD, along with improving yard safety interfaces.

**FIGURE 12** RAIL PROCESS SAFETY



**Monitoring safety performance in FY2023**

In FY2023, Aurizon is changing its key operational safety metrics consistent with our half year results. The measure change is important for Aurizon because it recognises our significant growth and operational diversification. The way in which we measure safety performance needs to reflect the context of our changing operation.

The guiding principles are core to these changes. We want our measures to:

- provide insight over the severity of the event, so we can focus on the events that have the greatest consequence.
- reflect our broader non-rail operating environment and the associated safety risk this poses.

In summary:

- TRIFR will be maintained as currently reported.
- RPS as a consolidated frequency rate measure will be removed, with management and operational leaders continuing to manage and monitor sub-component parts.
- from July 2022, Aurizon strengthened its reporting of Serious Injury and Fatality by introducing a SIF Rate, including both actual and potential events.

While similar to RPS, SIFR(a+p) is a more encompassing measure across all aspects of our operations – including rail, ports, terminals, road transport and broader infrastructure. The measure will continue to direct our efforts at preventing SIF events across all of Aurizon’s operations, including higher severity rail process events.

**Keeping our communities safe**

At Aurizon, our safety goal is to protect ourselves, each other, and our communities.

In FY2022, we continued to actively participate in industry-wide efforts to help reduce rail safety incidents, including through our participation in the Rail Industry Safety and Standards Board’s development, consultation, and working groups.

We also acknowledge and respect our responsibility to improve level crossing safety for everyone in the many communities in which we operate. In FY2022, we continued to attend quarterly meetings of the Queensland Level Crossing Safety Group, which are organised and chaired by the Department of Transport and Main Roads (DTMR). Aurizon also attends the Operational Railway Crossing Protection Sub-Committee meetings facilitated by Main Roads WA. At these meetings, various road and rail safety initiatives are considered and developed.

During FY2022, Aurizon as a member of the Freight on Rail Group (FORG) participated in the Freight Train Visibility review by the Australasian Centre for Rail Innovation (ACRI). Working with other FORG members, Aurizon has committed to undertaking several trials in response to the review to determine whether the proposed opportunities identified by the review improve train visibility.

Aurizon is fully supportive of visibility enhancements as part of an overarching improvement to the broader level crossing interface with road vehicles. This will be as part of iterative trials with other rail operations and the rail regulator (Office of the National Rail Safety Regulator) to make meaningful changes to how train visibility is approached. We are providing regular updates to our FORG members and the rail regulator as part of a consolidated stakeholder feedback loop.





### **CASE STUDY: TRAIN VISIBILITY TRIAL IN WA**

In response to the ACRI Freight Train Visibility Review, Aurizon has actively worked with our customer, Cooperative Bulk Handling (CBH) in WA, to trial visibility enhancements to CBH's rollingstock fleet (which is operated and maintained by Aurizon).

To date, we have trialled LED headlights and flashing LED ditch-lights on CBH locomotives with the intent to implement and trial flashing beacon lights on a locomotive. Each of these features will be actuated by the claxon horn, which is sounded on approach to a level crossing.

The trials are currently underway, with further enhancements to be trialled throughout 2022. Other trial focus areas with FORG members will include a livery review (noting Aurizon is currently already transitioning to high-contrast livery), LED lighting (underway), LED ditch-lights, LED marker lights, and Beacon lighting trials, and passive lighting enhancements to improve overall visibility.

# FUTURE OF COMMODITIES WE HAUL

Our business is linked to the demand for and supply of Australian commodities, almost entirely destined for export markets in Asia.

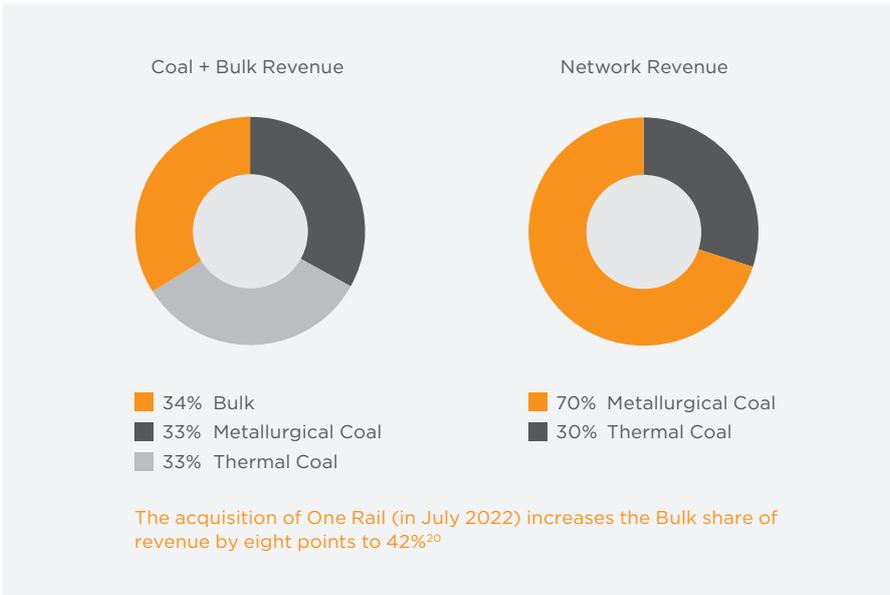
We draw upon scenario analysis to test market drivers and evaluate capital, fleet and haulage opportunities.

## Commodities we haul

About half of our earnings and assets belong to the Network business, which is our regulated infrastructure in Central QLD. The CQCN is critical infrastructure supporting around 90% of Australian metallurgical coal export volume. The other half of the group is the sum of our Coal and Bulk businesses operating across Australia. Outside of metallurgical and thermal coal, we haul iron ore, bauxite, alumina, base metals, grain and fertiliser-related products.



**FIGURE 13** AURIZON'S REVENUE BY COMMODITY GROUP (FY2022)<sup>19</sup>



**The CQCN is critical infrastructure supporting around 90% of Australian metallurgical coal export volume, primarily used to produce steel.**

**FIGURE 14** EXPORT DESTINATIONS FOR SELECTED AUSTRALIAN COMMODITIES (FY2022)<sup>21</sup>

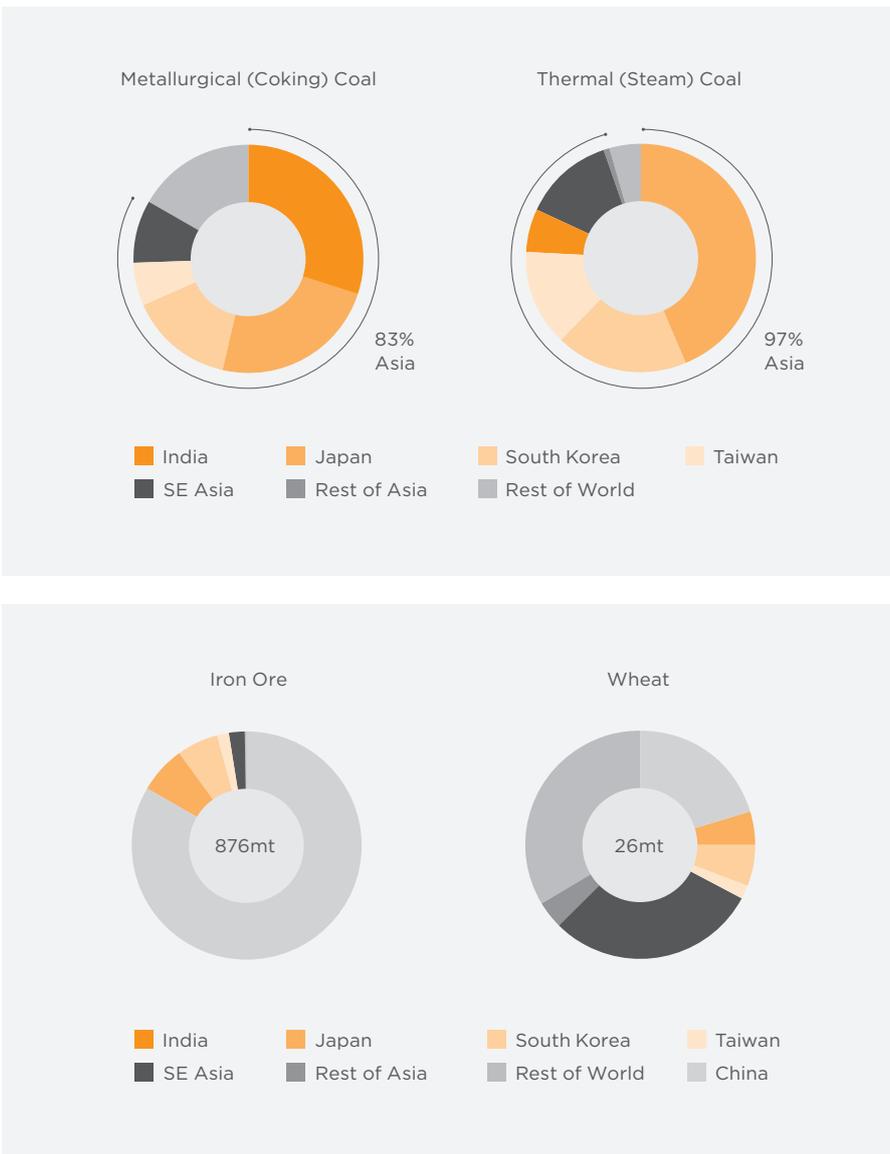
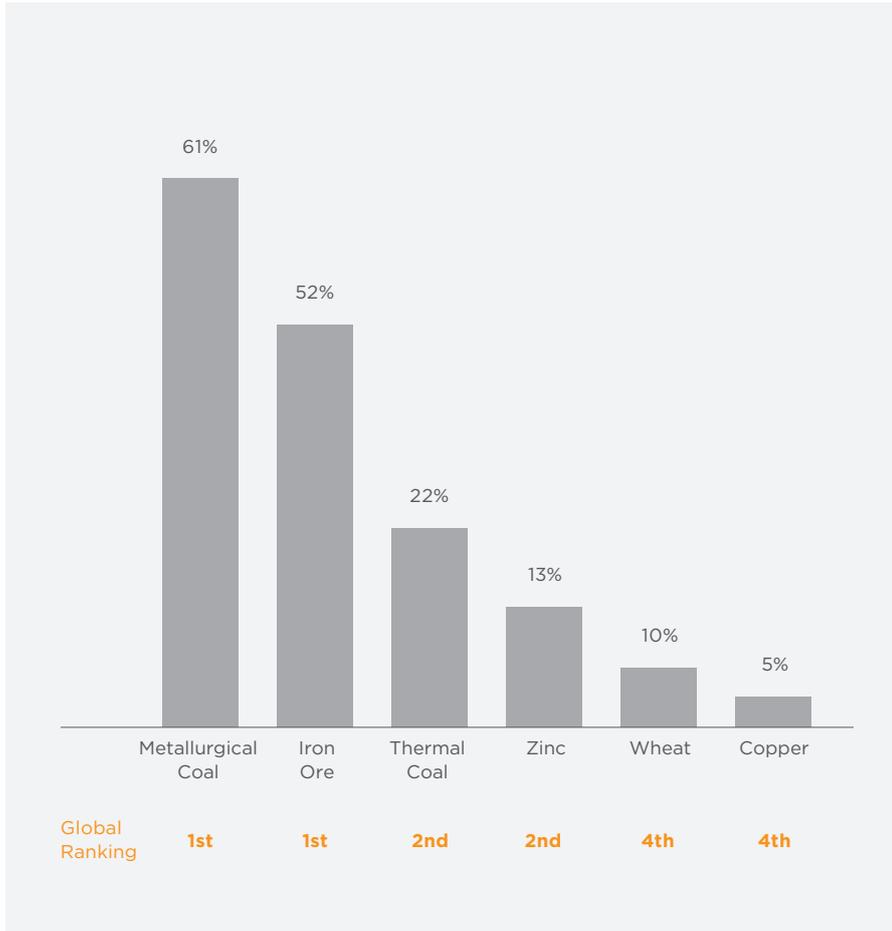


FIGURE 15 SHARE OF AUSTRALIAN COMMODITIES IN GLOBAL TRADE<sup>22</sup>



**Australia holds a 61% share of the seaborne metallurgical (steel-making) coal market.**

**Coal**

We play a significant role in Australia's coal supply chain, with approximately two-thirds of Australia's coal exports using our below rail Network and/or hauled by our Coal business.

With 84% of Australian coal production exported<sup>23</sup>, it is global seaborne trade markets that drive current (and future) demand for Australian product. Australia holds a 61% share of the seaborne metallurgical coal market and 22% share of the seaborne thermal coal market<sup>24</sup> (figure 15). In FY2022, 90% of Australian coal exports were destined for Asia<sup>25</sup>.

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

**COAL TYPES**

**Metallurgical coal (or coking coal)** is primarily used to produce steel, an integral link with economic development driving construction of urban infrastructure. Crude steel is produced primarily in blast furnace-basic oxygen furnaces (BF-BOF), which accounted for 1.4 billion tonnes of crude steel production (71% of total global crude steel production) in 2021<sup>26</sup>.

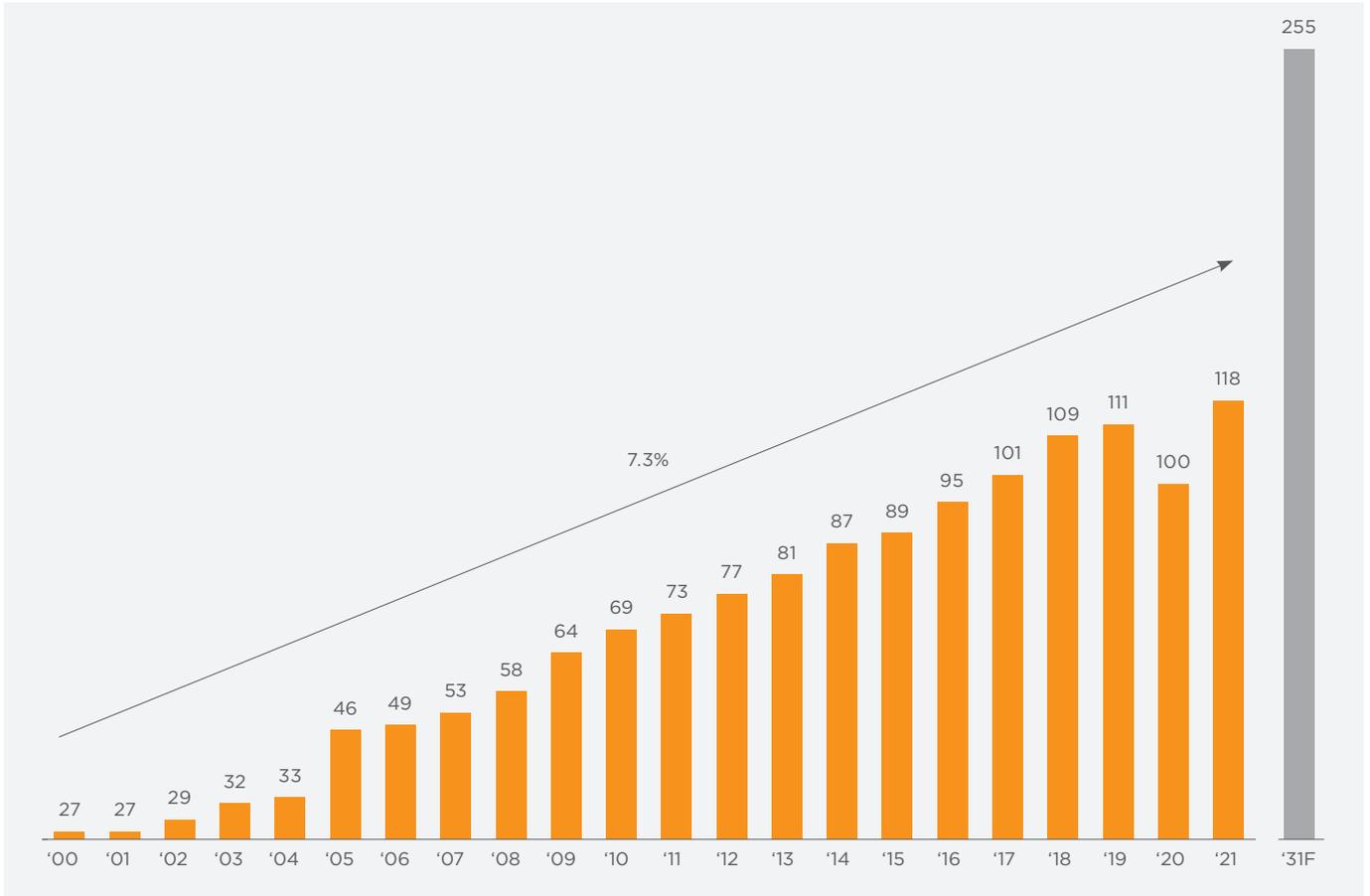
In this process, metallurgical coal is used to make coke, which is subsequently added to the blast furnace (along with iron ore) in the production of steel.

Metallurgical coal is generally subdivided into hard coking coal, semi-hard coking coal, semi-soft coking coal, and pulverised coal injection (PCI), the latter injected directly into blast furnaces. It takes about three-quarters of a tonne of metallurgical coal to produce one tonne of crude steel<sup>27</sup>.

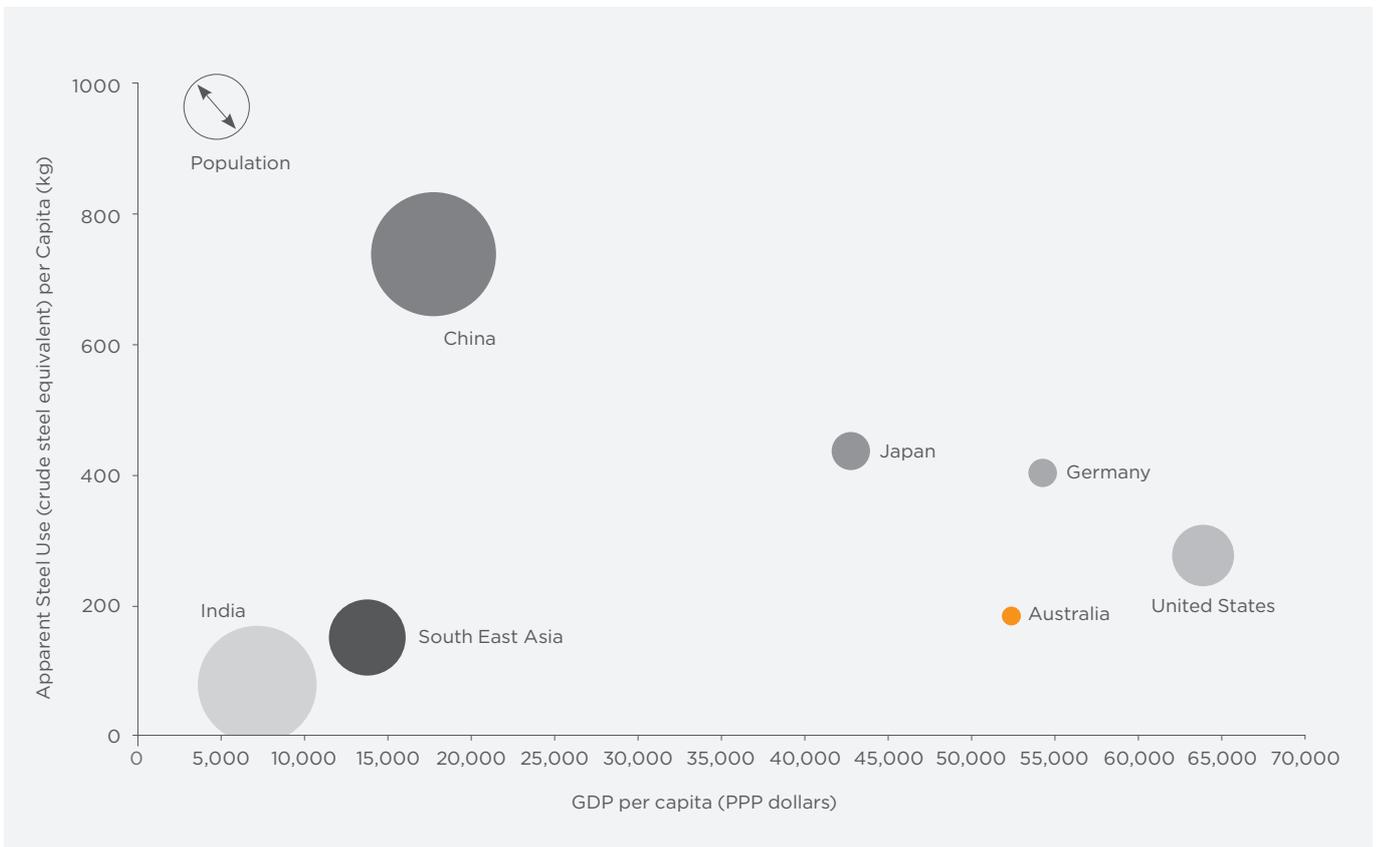
Steel-intensive growth in India is expected to be the largest driver of seaborne trade demand over the coming decades. Despite already being the world's second largest steel producer (behind China) with production of 118 million tonnes in 2021, India is considered to be at an early stage of development. In 2021, India's apparent steel use per capita was 76 kilograms (kg) against a global average of 233 kg<sup>28</sup>.

Faced with a deficiency of high-quality metallurgical coal, India turns to the seaborne market (and primarily Australia) for over 90% of demand<sup>29</sup>. India is already Australia's largest metallurgical coal export nation with export volume of 49 million tonnes in FY2022, representing 30% of total trade<sup>30</sup>.

**FIGURE 16** INDIA CRUDE STEEL PRODUCTION<sup>31</sup> AND INDIAN GOVERNMENT TARGET<sup>32</sup> (MILLION TONNES)



**FIGURE 17** APPARENT STEEL USE (CRUDE STEEL EQUIVALENT) PER CAPITA | GDP PER CAPITA<sup>33</sup>



**Thermal coal (or steam coal)** is primarily used as a heat source for energy generation, holding a 35% share of global generation in 2020<sup>34</sup>. Around 300,000 tonnes of coal equivalent are required per terawatt hour of generation<sup>35</sup>. Beyond energy generation, thermal coal is also a vital raw material in chemical and construction industries.

Coal is used as a source of energy in cement production, where about 200 kg of coal is needed to produce one tonne of cement<sup>36</sup>.

For thermal coal, it is recognised that global consumption (2021: 6.3 billion tonnes<sup>37</sup>) will reduce in the decades ahead. However, rather than global consumption, the demand for Australian coal is dependent on the seaborne trade market that is 16% of global consumption<sup>38</sup> and is increasingly dominated by Asian trade, which accounts for 84% of global seaborne import volume<sup>39</sup>. Against an expected retirement age of 40 years<sup>40</sup>, the average age of coal-fired generation capacity in Asia is just 14 years<sup>41</sup>.

Finally, the quality of thermal coal is an important consideration. On average, Australia's export thermal coal has higher energy content and relatively low ash content, when compared to most other major sources of seaborne thermal coal. Such characteristics result in less coal consumption per kilowatt hour (kWh) of power station output, which reduces carbon dioxide (CO<sub>2</sub>) emissions in comparison to lower quality coals.

Beyond coal quality, the International Energy Agency (IEA) notes that out of the 10 largest coal-producing countries, Australia had the second lowest emissions intensity regarding the extraction and transportation of coal.

This is less than half of Russia's emissions intensity, and about one-third lower than the United States<sup>42</sup>.

**Around 300,000 tonnes of coal equivalent are required per terawatt hour of generation.**

**FIGURE 18** AVERAGE AGE OF COAL-FIRED ELECTRICITY CAPACITY<sup>43</sup>

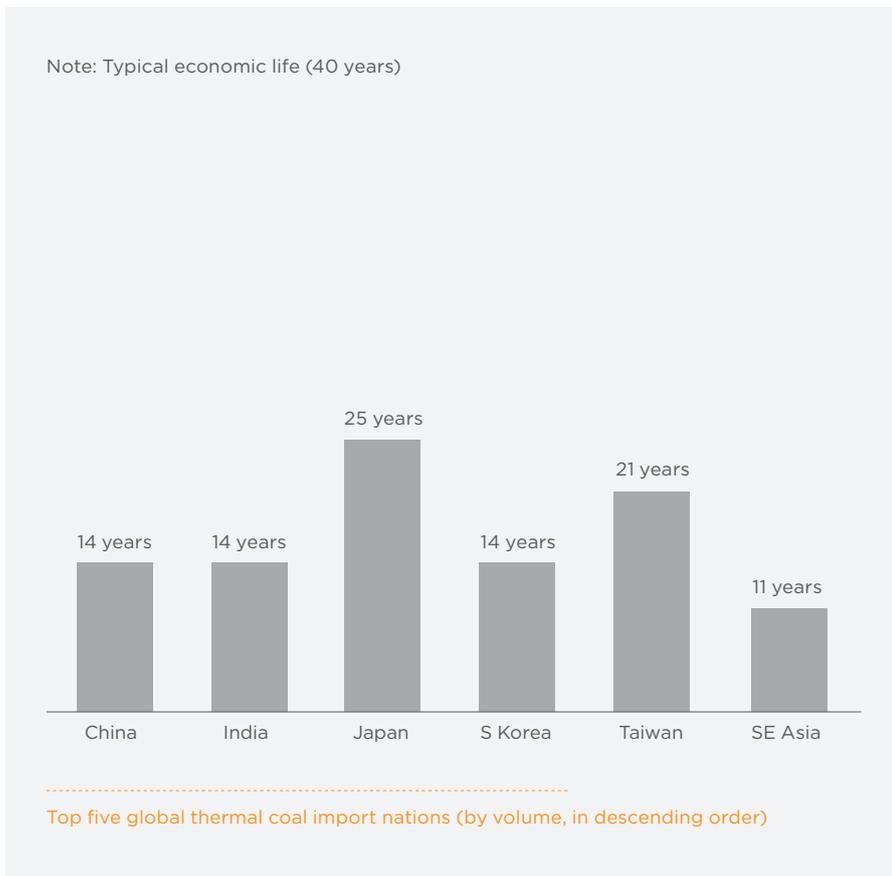
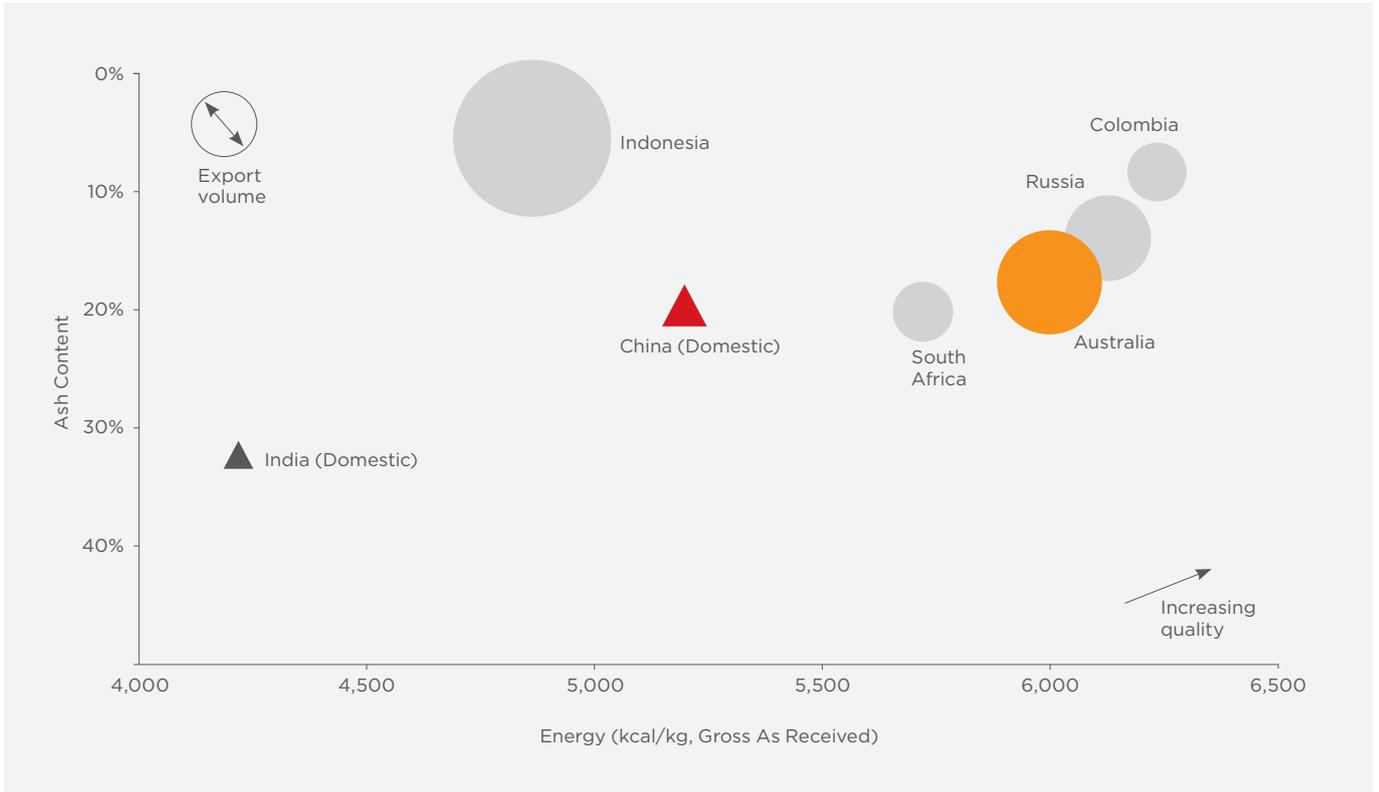


FIGURE 19 THERMAL COAL ENERGY AND ASH CONTENT<sup>44</sup>



## Alternatives to metallurgical coal in steel production

There are two primary methods for producing steel:

1. The BF-BOF method draws upon metallurgical coal; it held a 71% share of total global crude steel production in 2021<sup>45</sup>. The global blast furnace capacity is only about 13 years old (including the last major refurbishment)<sup>46</sup>, with an estimated replacement value ranging from US\$1.5 trillion to US\$2.0 trillion<sup>47</sup>, with over half of installed capacity in emerging countries.
2. The electric arc furnace (EAF) method draws upon direct reduced iron (DRI) or recycled (scrap) steel; it uses less (or no) metallurgical coal. This method held a 29% share of total global crude steel production in 2021<sup>48</sup>.

Globally, steel production based on the EAF method using recycled steel is expected to increase share in future decades but is limited by the availability of scrap material. Of the total global steel production in the last 120 years, over a quarter was produced within the last decade<sup>49</sup>; the average life for steel products is about 40 years<sup>50</sup>.

Longer term, the steel industry is anticipated to decarbonise through increased efficiency, maximised use of scrap, and a breakthrough low-carbon steel-making technology<sup>51</sup>.

In relation to breakthrough technology, carbon-free hydrogen (in addition to molten oxide electrolysis) is currently seen as the most viable. Although not yet operating on a commercial scale, the process uses hydrogen as either an alternative injection material to PCI or as a reductant to produce DRI. In addition to an abundance of carbon-free hydrogen, the decarbonisation of the steel industry needs capital for electrolyser capacity, replacement/conversion of BF-BOF capacity and hydrogen transport.

Furthermore, DRI production generally requires the highest quality iron ore, in the form of lump or pellets, which is likely to require new deposits to be developed and pellet plant capacity to be built. To produce (just) two million tonnes of hydrogen-based steel, McKinsey & Company estimates<sup>52</sup> that 144,000 tonnes of carbon-free hydrogen is needed, combined with 900 MW of electrolysis capacity, which is six times the size of the largest current operational carbon-free hydrogen plant<sup>53</sup>.

Carbon capture (and subsequent storage or use) has the potential to have a critical role in decarbonisation generally, given the ability for the technology to be applied across multiple industries. The process requires the capture of CO<sub>2</sub> and subsequent transport to a suitable storage and/or utilisation location. Although considered a proven technology<sup>54</sup>, it is noted that further research is taking place to more efficiently extract CO<sub>2</sub> directly from the air<sup>55</sup>.

It is noted that major subsidy programs and policies are currently being put in place globally to accelerate decarbonisation. Most recently, the United States' *Inflation Reduction Act 2022* included investment in clean energy production and tax credits aimed at reducing carbon emissions.

The impact of the above indicators, and other factors that may emerge, on the uptake of alternative methods of steel production is uncertain. Consequently, there is a risk (both upside and downside) to metallurgical coal demand.

For more information about this risk, see Table 3: Response to Climate-Related Risks.

## Bulk

The Bulk business contributes a third of our revenue (excluding Network) from the haulage of a range of bulk commodities and supply chain services to customers, including ballast cleaning, hook-and-pull, and port services.

Demand for bulk commodities will continue to be driven by infrastructure development; however, growth opportunities are emerging from new economy markets and increasing global food consumption. Summarised below are key bulk commodities required and Australia's position to meet this demand.

### Infrastructure development

**Iron ore:** Iron ore is a bulk commodity that is key to the production of steel. Steel is largely used within the construction, machinery and automotive sectors, but also plays a critical role in clean energy technology. China represents over two-thirds of global iron ore trade<sup>56</sup>. Australia is the largest exporter of iron ore<sup>57</sup> and also the lowest cost (on average) export nation on a delivered basis to China<sup>58</sup>.

**Aluminium and bauxite:** Due to its light weight, aluminium is ideal for transport applications. Bauxite is the primary mineral for alumina and, ultimately, aluminium production. Australia is the world's largest producer<sup>59</sup> of bauxite and is ranked second for bauxite resources (behind Guinea)<sup>60</sup>.

### New economy markets

**Copper, nickel, cobalt and lithium:** The use of copper and nickel is currently supported by demand from the automotive, technology, and infrastructure sectors. The greater uptake of electric vehicles (EVs) is expected to expand the use of these commodities as well as cobalt and lithium. The IEA projects global sales of EVs to grow from almost seven million vehicles in 2021, to over 30 million in 2030 (Stated Policies Scenario)<sup>61</sup>. Australia is well positioned to supply this emerging mineral demand, ranking in the top two countries globally for the largest resources in copper, nickel, cobalt and lithium<sup>62</sup>.

**Rare earth elements:** Rare earth elements, such as praseodymium (Pr) and neodymium (Nd), are growing in importance in many domestic, medical, industrial and strategic applications. Rare earth elements can be used in applications, including EVs, wind

turbines, smartphones and computer components. Australia is ranked sixth in the world for rare earth resources, and fourth in production<sup>63</sup>.

The IEA projects total mineral demand from clean energy technologies to double by 2040 in the Stated Policies Scenario, and to quadruple in the Sustainable Development Scenario from current demand (2020)<sup>64</sup>. Minerals include cobalt, copper, lithium, nickel, and rare earth elements (figure 20).

**Global food consumption**

The United Nations estimates that the world population will increase from 7.7 billion in 2019, to reach 9.7 billion by 2050<sup>65</sup>.

Food consumption is expected to increase as a result of this absolute growth in population and the impact of growing income, which leads to more calorie-intensive diets (figure 21). Australia’s agriculture industry contributes to global food demand, with around 70%<sup>66</sup> of total agricultural produce exported.

Combining domestic and exports markets, Australian farmers produce enough food to feed an estimated 80 million people<sup>67</sup>.

**Crops:** On average, Australia has produced 43 million tonnes of crops per annum over the past two decades; about 60% of this volume was exported<sup>68</sup>. WA and NSW are the two largest crop-producing states (around one-third share, respectively)<sup>69</sup>. Over the same period, wheat was Australia’s dominant crop – an average annual production of 24 million tonnes, of which about 70% was exported, representing about 10% of global trade<sup>70</sup>.

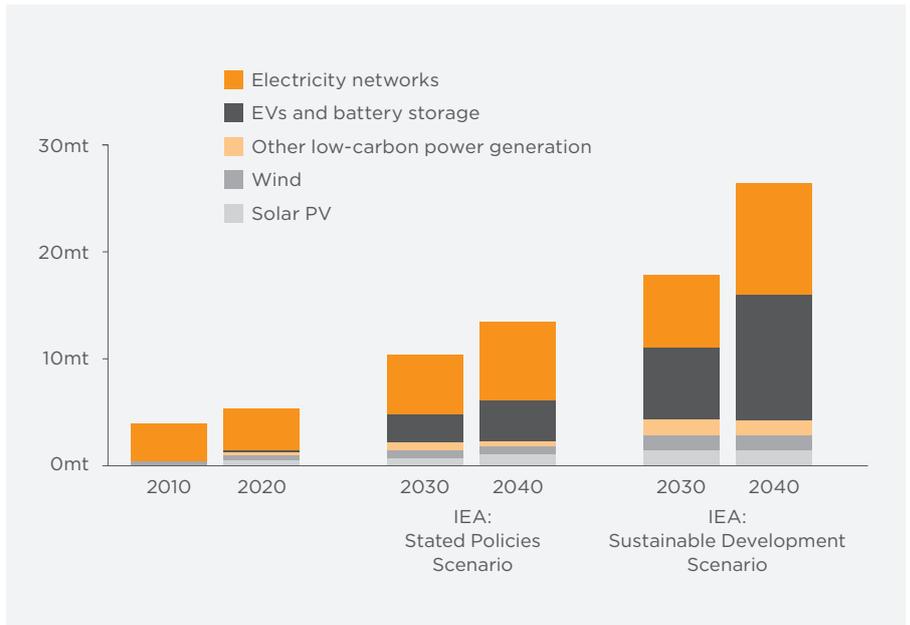
**Fertilisers:** In response to limited growth in arable land, global fertiliser consumption (kilogram per hectare of arable land) has increased by 32% over the past two decades<sup>71</sup>, driving future opportunities for phosphate and potash deposit development in Australia.

**Australian commodity export volume growth**

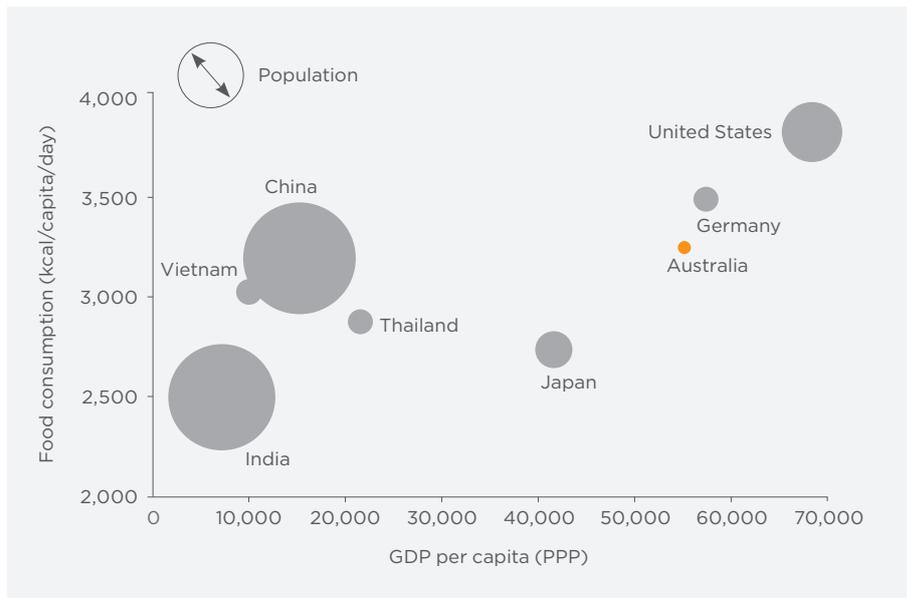
In addition to projected export volume growth of key Australian commodities (figure 22), the Australian Government (Office of Chief Economist) holds a list of 214 major projects<sup>72</sup> (resource commodities, excluding coal and uranium), of which 93 are at the feasibility stage and 47 are committed, which supports Australian

**Growing exposure to crops**  
 In August 2022, Aurizon and Australia’s largest grain co-operative, CBH Group, signed a long-term rail haulage and maintenance contract covering all rail requirements for CBH’s WA grain harvests.  
 The agreement has an initial term of six years, with options to extend to 10 years.

**FIGURE 20** TOTAL MINERAL DEMAND FROM CLEAN ENERGY TECHNOLOGIES<sup>75</sup>



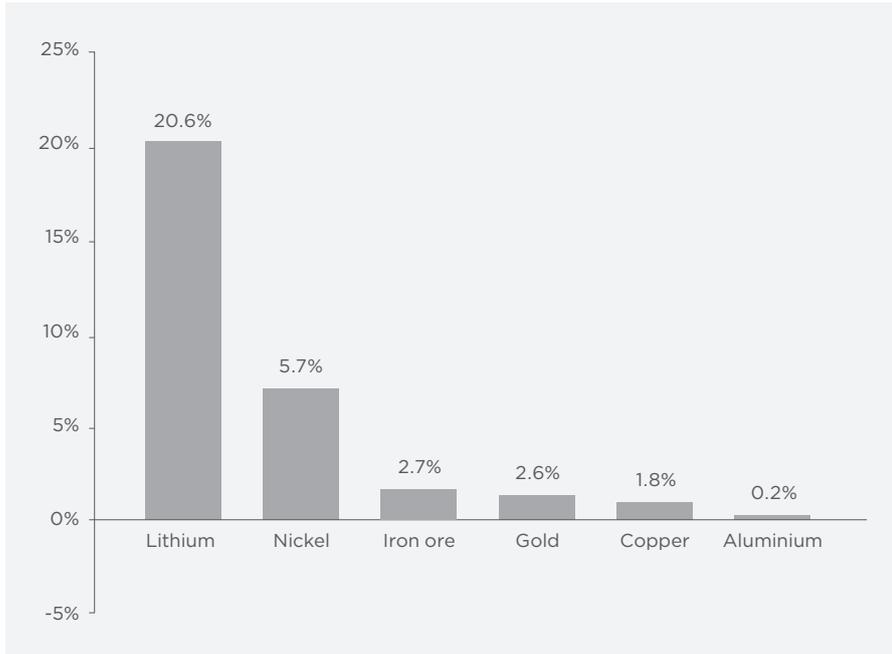
**FIGURE 21** FOOD CONSUMPTION (CALORIE CONSUMPTION PER CAPITA)<sup>76</sup>



supply growth in the longer term. Further supporting resource project development, in 2021, Australian exploration expenditure for base

metals reached an all-time record of \$860 million<sup>73</sup> and Australian capital expenditure for metal ores was \$20 billion, an eight-year high<sup>74</sup>.

**FIGURE 22 AUSTRALIA SUPPLY GROWTH (CAGR 2020-2026), SELECTED COMMODITIES<sup>77</sup>**



**Enterprise strategic planning**

As part of our Strategy in Uncertainty framework, we undertake scenario analysis to enable the business to evaluate capital, fleet and haulage opportunities, and importantly, sustainability in the context of climate change risks (figure 23). A key component of this analysis is

understanding the drivers of demand and supply for the commodities we haul. This process considers opportunities and risks that emerge over the medium to long term, where the timing and magnitude is less certain. In addition to the fundamental drivers of Australian coal and bulk commodities (figure 24), we also consider more subjective factors, such

as government policy and trade considerations.

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 at least annually to ensure that our strategic priorities are continually updated to proactively respond to emerging market dynamics and opportunities. The most recent scenarios for coal export volumes are shown in figure 25, including the presentation of a new scenario Russia Outperformance. Although noting the application of sanctions during 2022, this long-term scenario considers the historical market share gain Russia has made in metallurgical and thermal traded markets and the associated infrastructure investment made, particularly in eastern Russia, enabling higher export volume to Asia. The scenario projects a continuation of such market share gains with a resultant downward impact to Australian export volume across the period.

Focusing on the first 10 years of the scenario projection period, under all but one scenario, there is flat to moderate growth in coal export volume. However, there is naturally

**FIGURE 23 WHERE WE USE STRATEGY IN UNCERTAINTY SCENARIOS**



greater divergence in the second decade – export volumes fall under three of six scenarios over that 10-year period.

**Financial application of scenarios**

In June 2021, we held an Investor Day that included the modelled free cash flow under the six Strategy In Uncertainty scenarios from 2021, and highlighted the levers available to preserve free cash flow under volume downside scenarios:

- operating expenditure efficiency
- capital expenditure optimisation
- incremental free cash flow via fleet cascade opportunities
- asset disposal.

The flexibility of our fleet capacity enables our business to respond to shifting market dynamics and supports our focus on capital productivity and free cash flow. Modelling of our scenarios at a detailed coal type, mine and rail corridor level enables us to stress test key decisions. The modelled cash flow scenarios indicated resilience across the business over the 20-year period, and identified the opportunity for the Bulk business to target new markets and expand across supply chains, including port and terminal services. Under scenarios where decarbonisation is accelerated, the clean energy technology required in this transition will increase demand for Bulk commodities, such as iron ore, cobalt, copper, lithium, nickel, and rare earth elements.

The Investor Day presentation, transcript and webcast are available on the Aurizon website.

**External scenarios**

As well as developing our own long-term outlook for seaborne coal demand, we consider scenarios developed by external organisations, such as the IEA.

One recommended disclosure from the Task Force on Climate-related Financial Disclosures (TCFD) is to consider different climate-related scenarios, including a 2°C or lower scenario.

Although the Task Force does not recommend the use of a specific scenario, we continue to draw upon the best known and most widely used scenarios produced by the IEA in the annual release of the *World Energy Outlook (WEO)*.

This is used for comparison with our internal scenarios. In addition to the (central) Stated Policies Scenario, the IEA also published the Sustainable Development Scenario (SDS) – a ‘well below 2°C pathway, the SDS represents a gateway to the outcomes targeted by the Paris Agreement’.

In the WEO 2021 Sustainable Development Scenario, the IEA projects global coal trade to reduce by 60% in 2050 compared with 2020, representing a compound annual growth rate of -3.0% across the period. Based on our modelled application of this scenario for Australia, export volume would reduce by 53% in 2050 compared to 2020, representing a

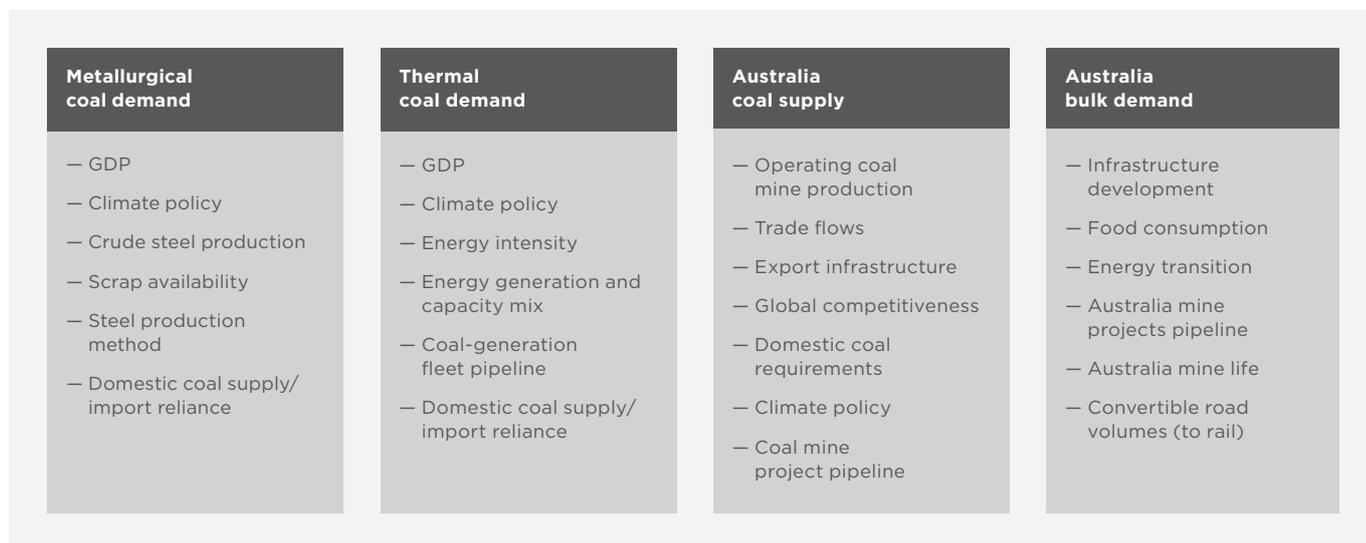
compound annual growth rate of -2.5%<sup>78</sup>. This scenario would align between our Mine/Regulatory-Constrained Australia and Rapid Decarbonisation scenarios.

However, it is recognised that there is no single pathway in reaching a decarbonised future. For example, the IPCC produced a report in 2018 projecting 90 pathways with at least a 50% chance of limiting warming to 1.5°C in 2100, each with different implications for global coal consumption<sup>79</sup>.

In addition, in May 2021, the IEA published a net zero emissions by 2050 report<sup>80</sup>. Included in this scenario was a global phase-out of unabated coal power plants by 2040, with the remaining coal plants still in use being retrofitted with technology such as carbon capture, utilisation, and storage (CCUS).

The IEA report notes the following: *The steel industry remains one of the last sectors using significant amounts of coal in 2050, primarily due to its importance as a chemical reduction agent, albeit mostly in conjunction with CCUS. The technology has the potential to facilitate the emissions reductions of existing assets within the harder-to-abate industry sectors, extending the useful life of younger facilities and reducing stranded assets under a 1.5°C scenario.*

**FIGURE 24 STRATEGY IN UNCERTAINTY KEY DRIVERS**



**FIGURE 25 STRATEGY IN UNCERTAINTY COAL VOLUME SCENARIOS**



- 19 Revenue is the sum of the Coal and Bulk business units (excluding track access) and excludes the Network business unit
- 20 Based on FY2022, using (unaudited) One Rail Bulk revenue for the 12 months to June 2022. Revenue is the sum of the Coal and Bulk business units (excluding track access) and One Rail Bulk (which includes South Australia/Northern Territory Infrastructure) and excludes Network.
- 21 Australian Bureau of Statistics
- 22 Metallurgical and Thermal coal – International Energy Agency, *Coal 2021*, Iron ore – Office of the Chief Economist (2021 data, *Resources & Energy Quarterly*, March 2022 – Forecast data), Zinc & Copper – Office of the Chief Economist (2020 data, *Resources & Energy Quarterly*, March 2022 – Report, Wheat – International Grain Council (2012/13-2020/21 average).
- 23 Department of Industry, Science, Energy and Resources, Commonwealth of Australia, *Resources and Energy Quarterly* (March 2022)
- 24 International Energy Agency, *Coal 2021*
- 25 Australian Bureau of Statistics
- 26 World Steel Association, *World Steel in Figures 2022*
- 27 World Steel Association, *Steel and Raw Materials* (Fact Sheet)
- 28 World Steel Association, *World Steel in Figures 2022*
- 29 India Ministry of Coal, *Coal Directory of India (2020-21)*. Wash domestic coal (only) used in calculation.
- 30 Australian Bureau of Statistics
- 31 World Steel Association
- 32 Indian Government: National Steel Policy (2017)
- 33 GDP (Purchasing Power Parity; international dollars) – World Bank (2021). Population – World Bank (2021). Apparent Steel Usage & Apparent Steel Use per Capita – World Steel Association (*Steel Statistical Yearbook 2021*). South East Asia (Select nations): Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
- 34 International Energy Agency, *World Energy Outlook 2021*
- 35 Based on Japan in 2020, International Energy Agency, *World Energy Outlook 2021*
- 36 World Coal Association, *Basic Coal Facts*
- 37 International Energy Agency, *Coal Information* (July 2022)
- 38 International Energy Agency, *Coal Information* (July 2022)
- 39 International Energy Agency, *Coal Information* (July 2022)
- 40 International Energy Agency, *World Energy Investment 2018*
- 41 S&P Global Market Intelligence World Electric Power Plants Database (March 2022) as at 2022, capacity weighted.
- 42 International Energy Agency, *World Energy Outlook 2019*
- 43 S&P Global Market Intelligence, World Electric Power Plants Database (March 2022) as at 2022, capacity weighted. South East Asia excludes Indonesia. Economic life sourced from International Energy Agency, *World Energy Investment 2018*.
- 44 Wood Mackenzie, India Ministry of Coal (*India Coal Directory 2020-21*)
- 45 World Steel Association, *World Steel in Figures 2022*
- 46 International Energy Agency, *Iron and Steel Technology Roadmap* (October 2020)
- 47 L.E.K., *Low Emissions Manufacturing: Australia's Opportunities* (March 2022)
- 48 World Steel Association, *World Steel in Figures 2022*
- 49 World Steel Association, annual production data
- 50 World Steel Association, *Steel Facts*
- 51 World Steel Association, *Climate change and the production of iron and steel*
- 52 McKinsey & Company, *Decarbonisation challenge for steel* (June 2020)
- 53 Baofeng Energy Group, Ningxia Hui Autonomous Region, China
- 54 Carbon capture and storage: one tool, many opportunities, <https://ecos.csiro.au/carbon-capture-and-storage-one-tool-many-opportunities/>
- 55 Geoscience Australia: What is CCS, <https://www.ga.gov.au/scientific-topics/energy/resources/carbon-capture-and-storage-ccs/what-is-ccs>
- 56 Office of the Chief Economist, *Resources and Energy Quarterly* March 2022
- 57 Office of the Chief Economist, *Resources and Energy Quarterly* March 2022
- 58 Minerals Council of Australia, *Australian Iron Ore: Where Quality Meets Opportunity* (February 2021)
- 59 Geoscience Australia, *Australia's Identified Mineral Resources 2021*
- 60 Geoscience Australia, *Australia's Identified Mineral Resources 2021*
- 61 International Energy Agency, *Global Electric Vehicle Outlook 2022*
- 62 Geoscience Australia, *Australia's Identified Mineral Resources 2021*
- 63 Geoscience Australia, *Australia's Identified Mineral Resources 2021*
- 64 International Energy Agency, *The role of critical minerals in clean energy transition* (May 2021)
- 65 United Nations, Department of Economic and Social Affairs: *World Population Prospects 2019: Highlights*.
- 66 Department of Agriculture, Fisheries and Forestry, *Delivering Ag2030* (April 2022)
- 67 Department of Agriculture, Fisheries and Forestry, *Delivering Ag2030* (April 2022)
- 68 Department of Agriculture, Water and the Environment, *Crop Report* (March 2022) and *Agricultural commodities* (March quarter 2022)
- 69 Department of Agriculture, Water and the Environment, *Crop Report* (March 2022) and *Agricultural commodities* (March quarter 2022)
- 70 Department of Agriculture, Water and the Environment, *Crop Report* (March 2022) and *Agricultural commodities* (March quarter 2022), International Grain Council
- 71 The World Bank Data (Food and Agriculture Organization), Years: 1997 to 2018.
- 72 Office of the Chief Economist, *Resources and Energy Major Projects Report* (December 2021)
- 73 Australian Bureau of Statistics. Selected base metals includes copper, silver, lead, zinc, nickel and cobalt
- 74 Australian Bureau of Statistics. Metal ore mining commodities includes iron ore, bauxite, copper, gold, mineral sands, nickel, silver-lead-zinc and other metal ores.
- 75 Total mineral demand from clean energy technologies: International Energy Agency (IEA) – *The role of critical minerals in clean energy transition*. Key minerals included: cobalt, copper, lithium, nickel and rare earth elements.
- 76 GDP (Purchasing Power Parity; current international dollars): World Bank (2021 data). Population: World Bank (2021 data). Food Supply: Food & Agriculture Organisation of the United Nations (kcal/capita/day, 2018 data).
- 77 Office of the Chief Economist – *Research and Energy Quarterly* (March 2022)
- 78 Australian export volume has been calculated by holding the 2020 market share constant (for both metallurgical coal and thermal coal) and applying to the respective net trade projections. Volume has then been calculated using the 2019 market share (by coal type) before applying a market share gain, aligned with IEA's Stated Policies Scenario. Finally, mtce is converted to mt based on IEA *Coal Information 2019*.
- 79 Intergovernmental Panel on Climate Change (IPCC), *Special Report on Global Warming of 1.5°C* (2018)
- 80 International Energy Agency (IEA), *Net Zero by 2050: A Roadmap for the Global Energy Sector* (May 2021). According to the IEA, achieving net-zero CO<sub>2</sub> emissions from the energy sector by 2050 is consistent with around a 50% chance of limiting the long-term average global temperature rise to 1.5°C without a temperature overshoot.

# CLIMATE CHANGE

As Australia's largest rail freight operator, we have a pivotal role to play in contributing to the ongoing resilience and decarbonisation of the supply chains we support.

This chapter outlines our response to climate change and our greenhouse gas emissions profile, following the establishment of a net-zero operational emissions target by 2050 as set out in our Climate Strategy and Action Plan (CSAP)<sup>81</sup>.



## Climate Strategy and Action Plan

As outlined in our Governance and risk chapter, our CSAP provides a foundation for our long-term response to climate change, and identifies actions to mitigate risk and take advantage of climate-related opportunities.

Decarbonising our operations and achieving net-zero operational emissions by 2050 is being pursued through a range of initiatives and investments set out in our CSAP, including:

1. leveraging our existing energy efficiency capabilities and assets, such as electrified rail in the CQCN
2. investing in development and adoption of low-carbon technologies through our \$50 million Future Fleet Fund
3. integrating renewable energy into our current energy mix
4. using carbon offsets through project development/investment and/or purchase where required to meet our decarbonisation goals.

To support our net-zero ambitions, we have set an interim 10% operational emissions intensity reduction target by 2030<sup>82</sup>, after reducing emissions intensity by 20% between 2010 and 2020. In FY2022, we made significant progress towards identifying our key decarbonisation levers and are putting them into action. These efforts have been supported by a dedicated Fleet Decarbonisation team and a cross-functional Steering Committee responsible for guiding the implementation of the CSAP.

**FIGURE 26** FLEET DECARBONISATION ROADMAP

Aurizon is committed to deploying current and near-term solutions to reduce our carbon footprint while advancing the research necessary to deliver on our 2050 net zero emissions target.

**Emission Reduction**

These deliver immediate, high local-impact emission reductions for our customers.



**Reduce idling**

Deployment of Auto Engine Start Stop systems will prevent extended engine use due to prolonged periods of idling by up to 50%.



**Zero carbon drop-in fuels**

Exploring the use of zero carbon drop-in fuels. Fuels containing renewable diesel or synthetic diesel could quickly and dramatically reduce carbon emissions by 20-25%.



**Train Energy Management**

Deployment of Train Energy Management solutions will deliver the consistency needed to optimally drive the new generation of battery electric locomotives but in the short term this same technology can deliver over 10% emissions reduction.

**Zero Emission Vehicles**

Our 2050 net zero end-state solution is made up of three types of vehicles. We will develop, build and trial prototypes to prove technology solutions are fit for purpose, gain experience with the required infrastructure, and progress these prototypes into solutions for our operational business.



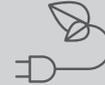
**Battery Electric Locomotive (BEL)**

Platform provided by existing OEMs with pantograph charging system and lithium-ion battery technology providing tractive effort and capturing regenerative braking energy.



**Battery Electric Tender (BET)**

A battery on wheels, provides additional battery capacity to the BEL, extends range for the mid-range haulage tasks, which account for about 50% of our operations.



**Hydrogen Electric Tender (HET)**

Hydrogen storage and fuel cell charger on wheels, charges BEL during operation, extending range for the longest haulage tasks with the highest energy demands.

**Tracking towards net-zero**

Fleet decarbonisation represents Aurizon’s primary decarbonisation lever. Under our Fleet Decarbonisation Program and Future Fleet Fund, we have progressed several initiatives and partnerships to accelerate Aurizon’s drive towards achieving net-zero operational emissions (figure 26).

An update on progress towards our key Fleet Decarbonisation initiatives is provided in the following section.

**Fleet decarbonisation research in action**

Our Fleet Decarbonisation Program is supported by an ongoing technical research program in partnership with both the University of Queensland (UQ) and the Central Queensland University (CQU). As we progress towards operational trials, an overview of our key findings to date is provided, as follows. Diesel-electric locomotives (DEL) originate tractive energy to drive locomotive wheels from electricity generated by an onboard diesel engine. When a train needs to slow down or is travelling downhill (particularly when it is fully loaded), the DEL’s dynamic braking system is applied, generating electricity that is dissipated as heat and therefore lost. Our analysis shows that the electrical energy generated from locomotive dynamic braking is significant because most hauls travel downhill from mines to ports when loaded and then return empty. If the dynamic braking energy could be captured and stored in a battery, it would significantly reduce the remaining energy required to operate the haul. The remaining or net tractive energy must be stored onboard, either in batteries charged with green electricity or from green hydrogen with fuel cells to eliminate emissions. This net tractive energy requirement needs new charging or hydrogen refuelling infrastructure.

Our findings indicate that a small regenerative braking battery could reduce emissions by up to 55% under certain conditions; however, much larger batteries would be needed to eliminate remaining emissions from net traction. The challenges with larger batteries are mass and volume constraints within the locomotive to store the energy required. Our research program with UQ has helped us better understand battery technology and the compromises needed with different operating environments. For example, batteries with high energy density, such as those used in electric vehicles, allow us to carry more energy onboard but typically have a short cycle life in a heavy haul environment (nickel manganese cobalt – NMC). Conversely, batteries with high cycle life tend to have low energy density (lithium titanate – LTO). Modelling of different battery technologies across our operations shows that lithium iron phosphate (LFP) is the most likely candidate, with a moderate energy density and good cycle life. Based on energy requirements, mass and volume constraints within our locomotives, and the fungibility of our fleet, we have identified three potential key platforms to decarbonise our rail operations (figure 27). The Battery Electric Locomotive (BEL) is at the core of our decarbonisation platform. By comparing future capacities of the end-state platforms with the energy storage requirements for each of the corridors on which we operate, we have identified platforms needed for a range of corridors. For corridors with low energy requirements, one BEL is expected to be sufficient to replace one DEL. For corridors with moderate energy requirements, a BEL coupled with a Battery Electric Tender would be needed to replace a single DEL. Our findings indicate that corridors with high energy requirements due to distance and terrain could be augmented with a Hydrogen Electric Tender (HET) coupled to a BEL (refer to the Anglo American and Aurizon H2 Feasibility Study). Aurizon and UQ have contributed to a joint research paper, which has been submitted for publication, and we look forward to announcing its publication in due course.

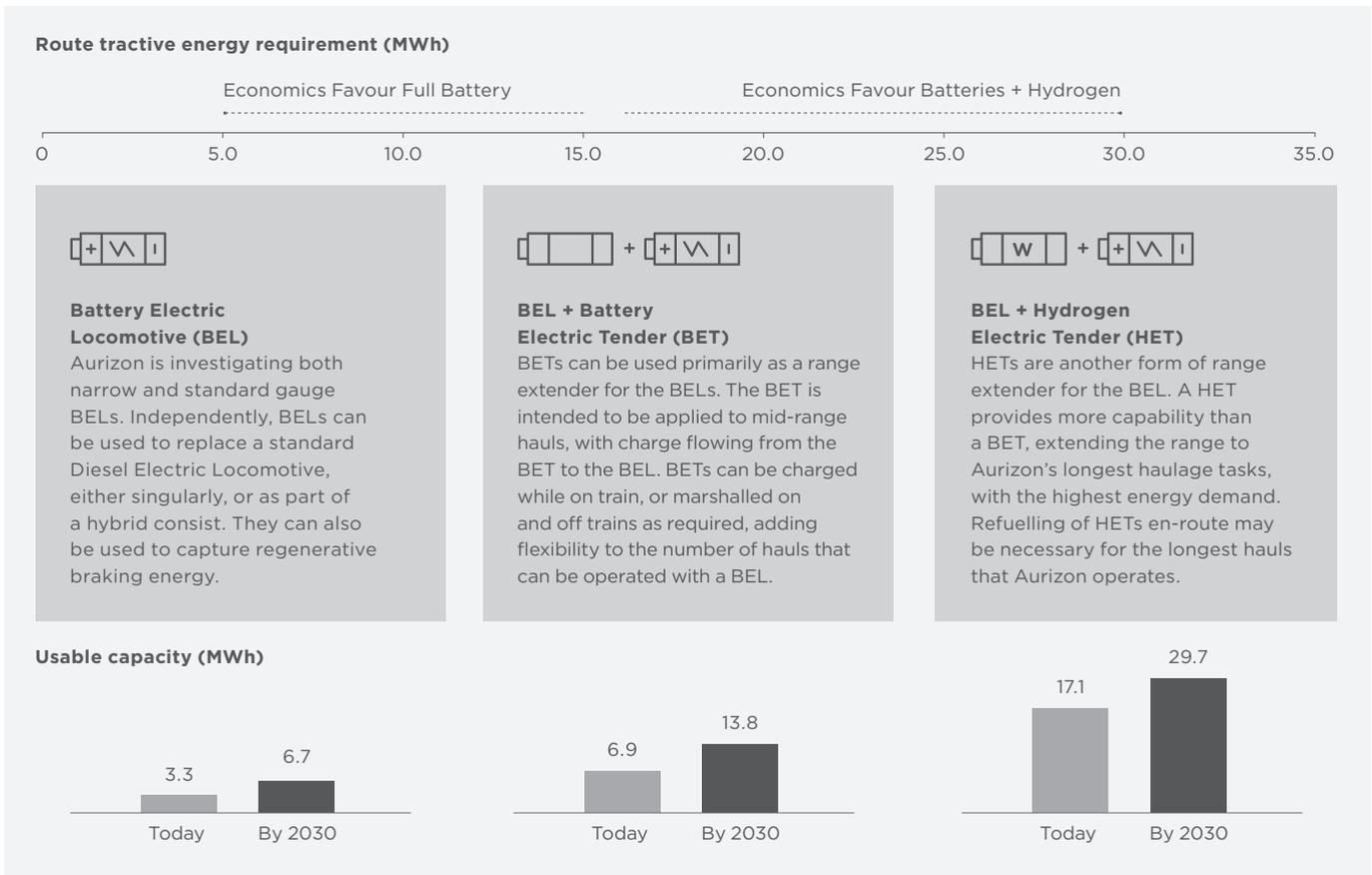
**Renewable energy integration**

Aurizon has entered into an Energy Supply Agreement (ESA) with QLD’s clean energy generator and retailer CleanCo Queensland. Under the ESA, Aurizon Network’s electricity will be sourced from CleanCo’s low-emissions portfolio, which includes large-scale solar and wind generation, hydroelectricity and gas. Over the course of the ESA, 25% of Aurizon Network’s electricity and associated large-scale generation certificates will be sourced from three renewable energy projects (solar and wind) as they come online, including:

- Western Downs Green Power Hub, a solar farm near Chinchilla, QLD (from January 2024)
- Kaban Green Power Hub, a wind farm near Ravenshoe, south-west of Cairns (from January 2024)
- Dulacca Renewable Energy Project, a wind farm west of Miles in southern QLD (from July 2025).

From 2024, the ESA with CleanCo will result in an approximate 5% reduction in Scope 2 emissions, benefitting

**FIGURE 27** POTENTIAL END-STATE PLATFORMS AND CAPACITIES



electric locomotive operations across the CQCN<sup>83</sup>.

We acknowledge that we need to balance integration of low-carbon supply options with cost-efficiency and, following a rigorous assessment of alternative supply options and providers, we believe the CleanCo ESA achieves these goals. Maintaining cost-competitiveness of our electricity supply will support the ongoing utilisation of electric traction across the CQCN and the associated decarbonisation.

The second largest contributor to Aurizon’s Scope 2 emissions profile is linked to consumption of purchased electricity at our operational facilities and depots. Under our Facilities Sustainability Roadmap, we have continued to install solar arrays and to upgrade yard lighting with LED technology to improve energy efficiency. In aggregate, the initiatives progressed over the past year will reduce our Scope 2 emissions by just under 900 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>-e).

**Nature-based solutions pilot**

Our carbon abatement initiatives are centred around energy and fleet decarbonisation; however, we acknowledge the role that high-integrity carbon offsets will play in the medium term in helping to address hard-to-abate emissions.

Following the completion of an initial phase, broadscale assessment of our land asset portfolio, over the past year we progressed a second phase detailed study of carbon abatement potential at sites with high ecological value and restoration potential within the Great Barrier Reef catchment of Central QLD. Outcomes of this study will inform Aurizon’s approach to nature-based carbon offsetting. Our focus remains on identifying high-integrity projects that deliver carbon sequestration and biodiversity improvement.



**Anglo American and Aurizon H2 Feasibility Study**  
 In December 2021, Aurizon and Anglo American entered into an agreement to conduct a feasibility study exploring the application of Anglo American’s proprietary hydrogen fuel cell and hybrid battery power units in heavy haul freight operations. Anglo American and First Mode have developed a hydrogen-based powerplant module to displace diesel engines across its mining haul fleet. Aurizon have performed detailed analysis on the energy requirements of its hauls and performed the techno-economic modelling feasibility of the three end-state platforms for Aurizon’s business, including the Hydrogen Electric Tender concept that is tethered to a Battery Electric Locomotive to extend its range. Using First Mode’s modelling and simulation tools applied to Aurizon’s Moura corridor and the Mt Isa corridor, the Anglo American, First Mode and Aurizon feasibility study has confirmed the technical viability of the Hydrogen Electric Tender (HET) option. The solution would be developed by First Mode, and comprise a system including fuel cells, fuel cell cooling systems, and hydrogen tanks either in gaseous or liquid form to extend range in high-energy haulage applications.

**Building resilience**

In early 2022, record rainfalls and flooding in South-East QLD and Northern NSW devastated local communities. In some parts of Australia, these issues were compounded by supply chain constraints due to the combined effects of road and arterial rail closures. Aurizon operates across multiple networks, which exposes our operations to infrastructure and supply chain disruptions associated with severe weather events.

In February 2022, Linfox’s North Coast Line freight service (undertaken by Aurizon on Queensland Rail track) derailed near Traveston in South-East QLD after entering an area of track that had been washed out by floodwaters after intense rainfall – more than 300 mm over six hours. In total, the incident required a two-week recovery effort due, in part, to ongoing and difficult weather conditions. Incidents such as the Traveston derailment bring to light the importance of considering and

building climate-related infrastructure resilience across the Australian rail sector.

As indicated in our FY2021 Sustainability Report, the key regions in which Aurizon operates may experience increasingly severe weather events under multiple climate change scenarios. To this end, we continue to build our understanding of climate models and exposures to augment our existing adaptive design approach for our fixed network assets. As outlined in our CSAP, our goal is to leverage the best available information to build capability, and continually improve our understanding of the potential impacts of climate change under multiple scenarios for our business, supply chains, and the communities in which we operate. Furthermore, we acknowledge that building climate resilience is a shared challenge and, aligned to the objectives of our CSAP, we continually seek to engage in forums to build a shared knowledge base across the supply chains we support.



**Greenhouse gas emissions**

In FY2022, our total GHG emissions (Scope 1 and 2) were 835 kilotonnes of carbon dioxide equivalent (ktCO<sub>2</sub>-e), representing a 1.5% decrease from the previous reporting period (figure 28). Over the same period, Aurizon’s operational emissions intensity increased by 2.8%. This change was driven by slightly reduced coal haulage tonnes and a moderate shift towards more emissions-intensive rail services in non-coal markets, such as grain haulage in WA. The integration of One Rail is also likely to moderately increase Aurizon’s overall emissions intensity. These impacts will be given further consideration as part of Aurizon’s ongoing fleet decarbonisation program.

In conjunction with Aurizon’s target of net-zero operational emissions by 2050, we also disclose market-based emissions accounting in our Sustainability metric table towards the end of this report. This will enable Aurizon to consider purchases of renewable energy and associated

Scope 2 emissions reductions<sup>84</sup>. We also calculate 83 ktCO<sub>2</sub>-e of Scope 3 emissions. Given the nature of our business, these emissions predominantly relate to supplier activity that our business does not own or control, and are not related to products hauled for our customers.

A significant proportion of our Scope 3 emissions is linked to fuel- and energy-related sourcing and supply activities. A breakdown of our calculated Scope 3 emissions is provided in our Sustainability metrics table towards the end of this report. Our Scope 3 emissions reporting boundary and identification of relevant activity sources have been informed by the Greenhouse Gas Protocol’s Corporate Value Chain (Scope 3) Accounting and Reporting Standard, and received external assurance (a statement of limited assurance covering our Scope 1, 2 and calculated Scope 3 emissions is available at the end of this report). Over the coming year, we will complete an exercise to evaluate and deploy methodologies to improve our understanding of Scope 3

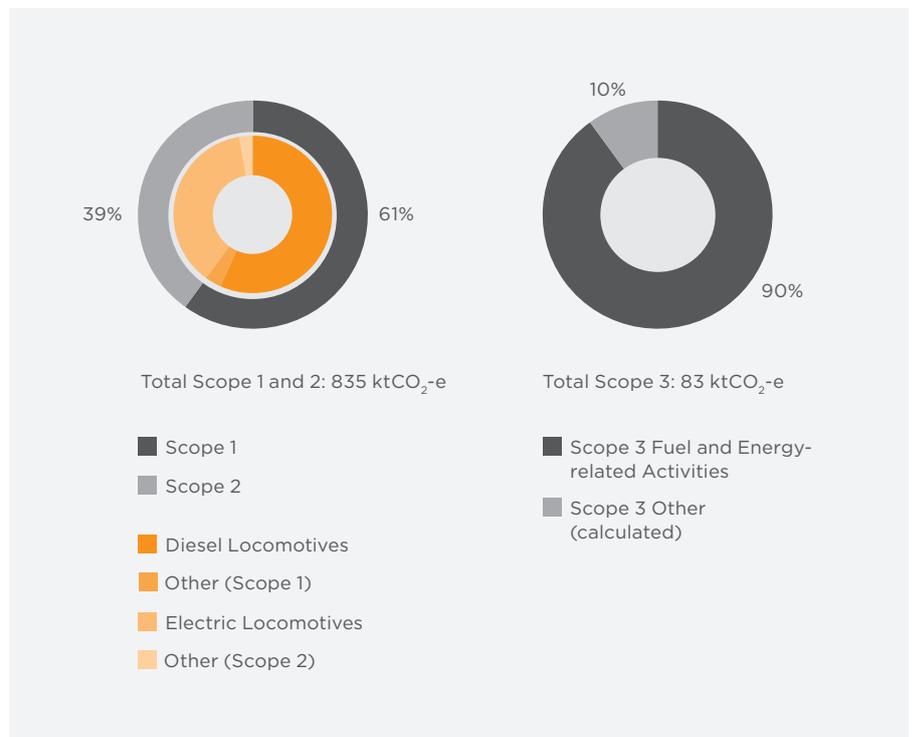
emissions associated with the goods and services we procure. This exercise is intended to help identify and assess opportunities to decarbonise our upstream supply chain through supplier engagement.

Under the Australian Government’s Safeguard Mechanism, we are incentivised to keep emissions below baseline. In March 2022, the Clean Energy Regulator released results for the compliance period to 30 June 2021.

We remained below our respective safeguard baselines (three in total) and were not required to purchase and retire any ACCUs to meet our obligations. Incoming changes to Australia’s climate policy and regulatory framework have potential to give rise to uncertainty in the near term. To this end, we will continue to engage with the Australian Government to advocate for fair and equitable treatment of rail under the Safeguard Mechanism, given its inherent characteristics as the least emissions-intensive form of land-based bulk freight transportation.

**Under the Australian Government’s Safeguard Mechanism, we are incentivised to keep emissions below baseline.**

**FIGURE 28** AURIZON’S GREENHOUSE GAS PROFILE (FY2022)



81 Aurizon’s Climate Strategy and Action Plan, released in October 2020, is available on our website.  
 82 From a 2021 baseline on a basis of tonnes of carbon dioxide per net tonne kilometre. Target under review following on from the acquisition of One Rail in July 2022.  
 83 The 5% reduction is derived from the application of market-based accounting of grid-sourced electricity under the ESA.  
 84 Aurizon’s Scope 2 emissions are calculated using a location-based method as required under the *National Greenhouse and Energy Reporting Scheme* and a market-based method.

# ENVIRONMENT

We recognise that we are responsible for helping our local communities and supply chains to deliver environmental value through effective management of environmental risks and improved enterprise environmental performance.

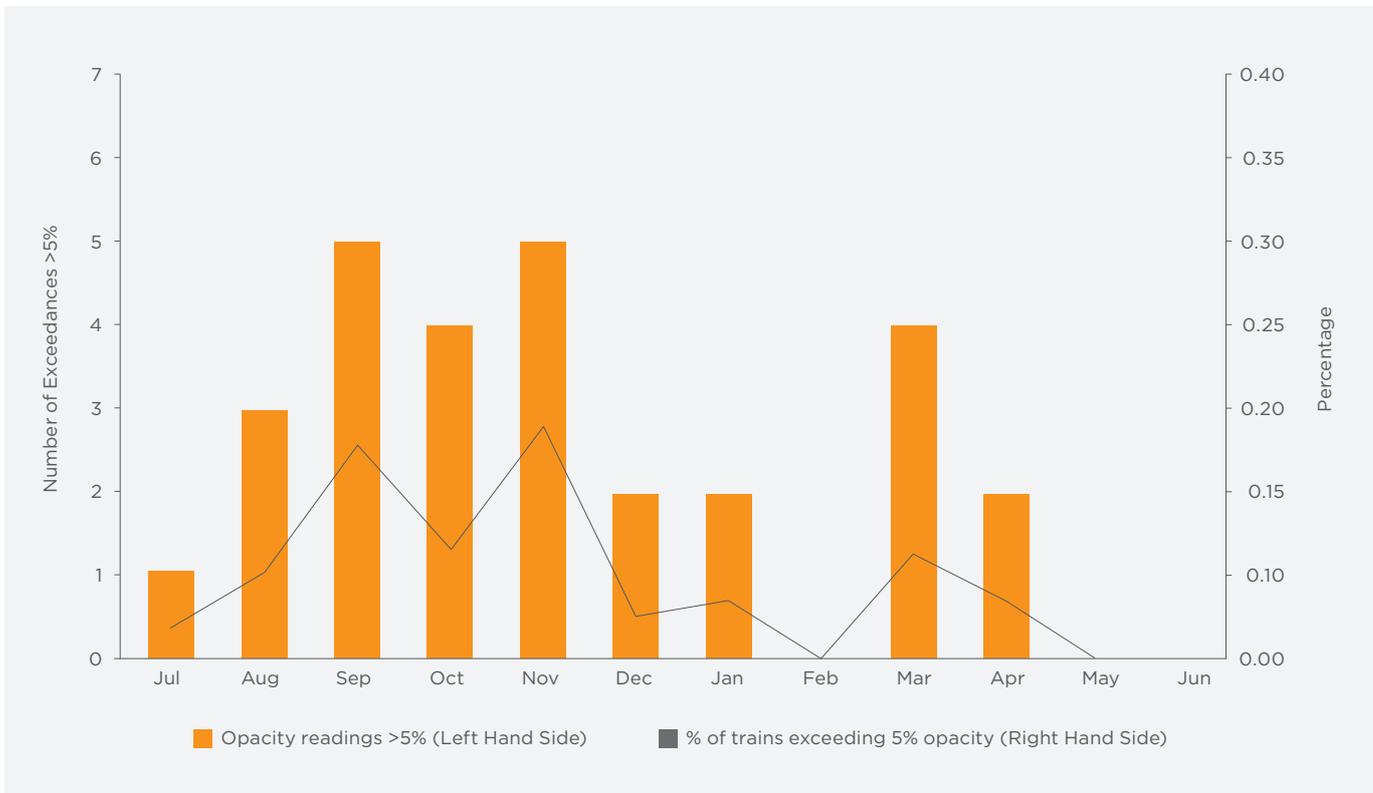
We employ proactive and evidence-based management measures covering key environmental issues, such as climate change, resource use, and clean air.

## Clean air

### Diesel locomotives

As Australia's largest rail freight operator, with a sizeable diesel locomotive fleet, we recognise the responsibility to ensure our operations contribute to maintaining and improving our country's world-leading air quality. One way we seek to achieve this is by using short-term emission reduction strategies, such as enabling widely used Automatic Engine Stop Start (AESS) technology on our extensive fleets

**FIGURE 29** PERCENTAGE OF VALID AURIZON TRAIN SERVICES EXCEEDING 5% OPACITY ON THE CQCN (FY2022)



of diesel electric locomotives (DEL) to reduce unproductive idling. In the past, successful use of AESS has been challenged by the poor reliability of lead-acid batteries. In 2021, a trial of a DEL class identified an average of 1,095 idle hours per annum at an idle diesel burn rate of 16 litres per hour. The introduction of lithium-ion (Li-ion) battery technology has presented a pivotal improvement in battery reliability, enabling the reliable use of AESS on 4000/4100 class locomotives. Successful AESS trials demonstrated a reduction of almost 50 litres of diesel fuel per day. Aurizon has now progressed beyond trials, having begun installing the Li-ion batteries on 4100 class locomotives at our Callemondah

Yard in Gladstone, QLD. When the lead-acid batteries fail, Li-ion batteries will be fitted on the remaining 4000/4100. It is expected that the observed diesel reduction will increase as the fleets transition to wider AESS adoption. As well as cutting diesel emissions, Li-ion batteries have other benefits:

- they extend operational battery life to 10 years, compared to 3-5 years for lead-acid batteries.
- they cut waste because of fewer changeovers on locos (each loco has eight lead-acid batteries).
- they have no equivalent chemical exposure (e.g. sulphuric acid in

lead-acid batteries) during maintenance, which reduces potential safety risks.

- they have significant manual handling advantages: lifting points and 145 kg (Li-ion), compared to 928 kg (lead-acid).
- they have enclosed terminals, which improves electrical safety on locomotives.
- their battery management system isolates the battery if a fault is detected.

**Coal dust**

We continue to work collaboratively with our supply chain partners across our operations to minimise coal dust emissions from our coal haulage.

As part of this approach, we focus on maintaining world-leading solutions tailored to suit the unique needs of each coal supply chain. In FY2022,

the CQCN supply chain continued its strong performance by implementing effective key controls, as documented in the CQCN Coal Dust Management Plan (CDMP). The CDMP recognises that each part of the supply chain has a role to play in minimising emissions, including load profiling and veneering of coal wagons before haulage on the CQCN to port.

We continue to monitor opacity (a measure of air quality) on each of the four rail systems in the CQCN, and actively track opacity trends, including investigating any exceedance of the Department of Environment and Science’s agreed 5% opacity threshold. In FY2022, the number of validated exceedances recorded on the CQCN increased slightly from 24 (FY2021) to 28 (FY2022). This represents 0.08% of approximately 40,155 coal train movements in FY2022.

As a member of other regional coal supply chains, Aurizon continues to collaborate with respective stakeholders in implementing controls directed at improving air quality. On the South-West System (QLD), the results of monitoring by the Department of Environment and Science continue to demonstrate rail transport (including coal haulage) along the system complies with air quality criteria (PM2.5, PM10, TSP and dust deposition).

In the Hunter Valley (NSW), Aurizon has maintained its focus on complying with the requirements of its Environment Protection Licence for rollingstock operation on licensed rail networks to minimise the generation of dust.



The project team taking delivery of a Li-ion battery before installation, allowing reactivation of AESS technology on one of our diesel electric locomotives.

**Noise**

In FY2022, Aurizon participated in the Development Group in preparing the Rail Industry Safety and Standards Board’s (RISSB) Rail Traffic Horn Use Code of Practice (the CoP). The CoP aims to standardise and, where possible, minimise use of rail traffic horns and, where opportunity exists, minimise noise impact of rail traffic horns on the community. In NSW, Aurizon is implementing low-tone horns to minimise noise impacts on sensitive receivers. Such horns have been fitted in accordance with Assets Standard Authority RSU 350 for locomotives and the requirements of our Environment Protection Licence for rollingstock operators.

Aurizon submitted its Annual Rolling Stock Performance Report to the NSW EPA, confirming all locomotives that had major engine overhauls in 2021 complied with required noise thresholds, and that all Aurizon freight wagons in operation complied with specifications for Angle of Attack (a key contributor to wheel squeal).

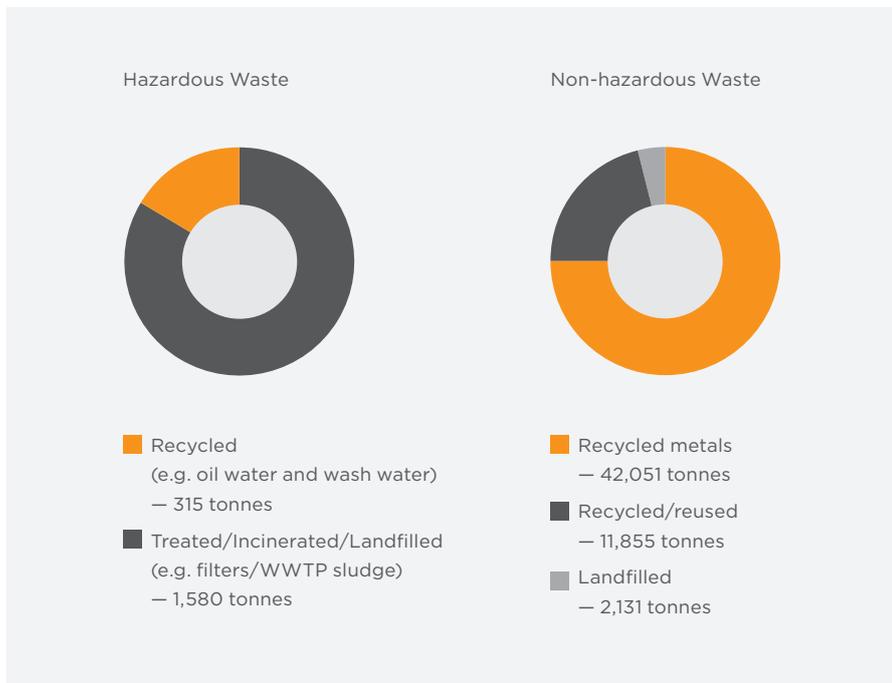
**Waste and resource management**

At Aurizon, we continue to seek opportunities to improve operational efficiency, including the resources we consume and the waste we produce. Figure 30 shows our FY2022 waste output, including landfill, recycled, treated and incinerated wastes (excluding ballast (aggregate)).

In FY2022, Aurizon used ~158 megalitres of potable water nationally. This is equivalent to the annual water consumption of about 833 Australian households. Although the transport sector is not as water intensive as the supply chains it supports, it is acknowledged that Aurizon has a role to play in reducing water stress and preventing pollution.

**In NSW, Aurizon is implementing low-tone horns to minimise noise impacts on sensitive receivers.**

**FIGURE 30** AURIZON’S FY2022 WASTE PROFILE (TONNES)



**Embedding circular economy principles in our operations**

We recognise that embedding the principles of a circular economy across our operations has the potential to transform the way our business considers the consumption of resources and materials. It has co-beneficial outcomes for the environment, cost reduction and our decarbonisation journey.

**Circular economy in our operations**

We recognise that embedding the principles of a circular economy across our operations has the potential to transform the way our business considers the consumption of resources and materials. It has co-beneficial outcomes for the environment, cost reduction and our decarbonisation journey. Aurizon uses a wide variety of materials and components in our operations, and generates regular waste streams across our sites. The primary objective of a circular economy program in Aurizon is to reduce waste to landfill and reduce environmental impact by reusing and recycling materials within local communities and local industries. Aurizon engaged a leading circular economy consultancy team to advise on industry practices to progress Aurizon towards a circular economy by diverting waste from landfill.

**Understanding our waste streams**

Material flow analysis (MFA) was conducted to identify types and volumes of material and component flows in and waste streams generated from our day-to-day operations. This analysis helps us to explore how these wastes could be reused and recycled in local communities and industries. Many waste streams have already been collected and recycled, such as metal wastes via a third-party company. Timber, cardboard and other general waste are sorted into different waste categories, which a third-party company collects; 73.8% was recycled and the rest went to landfill.

**Material flow analysis**

During 2021, we completed a pilot MFA at our Callemondah depot in Central QLD. We have now applied the key learnings at three more of our largest operational facilities. This exercise has improved our understanding of the material resource flows, inputs and waste outputs associated with our day-to-day operations. This analysis will enable us to target materials ending up in our waste streams that could be diverted for beneficial reuse (such as rail ballast and concrete sleepers) or recycled (such as scrap steel and timber pallets).

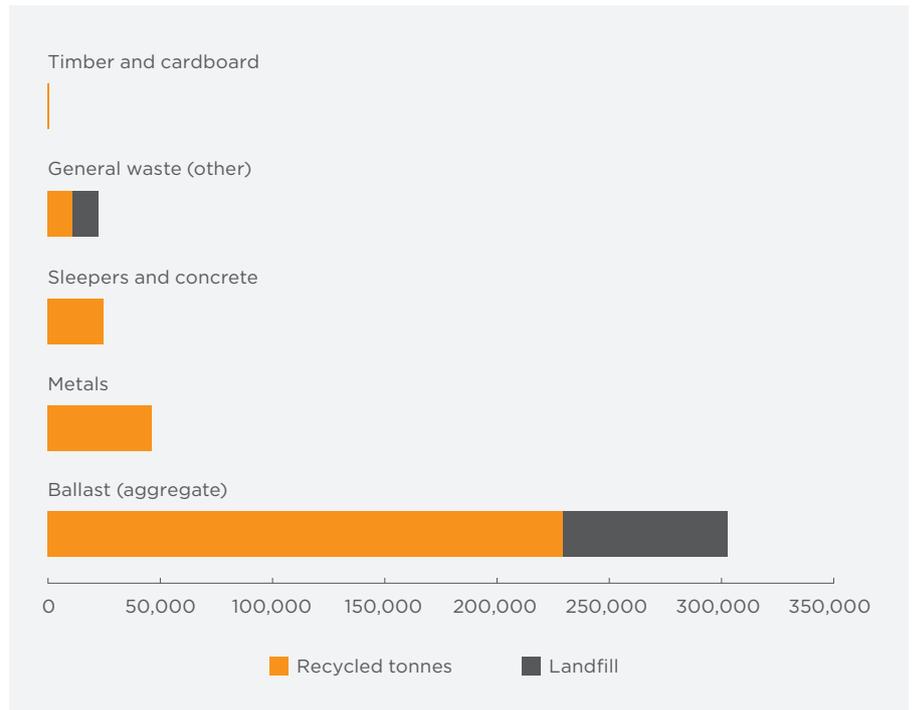
**Identify to reuse or recycle our wastes**

Since March 2021, we have engaged with various local landowners, local industry groups and companies to reuse a significant volume of used ballast, sleepers and timber pallets.

This resulted in more waste streams being recycled to local economies:

- approximately 100% metal waste (~42,000 tonnes) collected and recycled
- approximately 87% used ballast (~230,000 tonnes) transferred to local landowners, quarries and local construction companies
- approximately 100% concrete sleepers (~10,000 tonnes) crushed and reused by local construction companies
- approximately 100% cardboard and timber (~620 tonnes) collected and recycled
- some timber pallets also collected and reused by local companies.

**FIGURE 31** AURIZON'S TOTAL RECORDABLE WASTE STREAMS IN FY2022 (TONNES)



### Biodiversity stewardship and the Stuart yard development

Aurizon operates a rail yard in Stuart, an industrial hub in Townsville, Far North QLD. Comprising about 82 hectares (ha) of a 172 ha site, the rail yard is in the Medium Impact Industry Precinct of the Townsville State Development Area. The other 90 ha of the site is undeveloped, but has been heavily disturbed through historical land clearance and weed infestation. It adjoins part of a regionally important ecological corridor and Stuart Creek nature refuge. A single historical record of the Black-Throated Finch has been reported from within the nature refuge. The Bare Rump Sheath-Tailed Bat is known to forage in the undeveloped portions of Aurizon's site and is believed to roost in the nature refuge. Under the EPBC Act, both species have an Endangered status.

Aurizon obtained approvals from the Queensland Co-ordinator General under the EPBC Act to develop part of the site's disturbed area to support an industrial subdivision. Key to both approvals was Aurizon's commitment to preserve and enhance almost 40 ha of the site (including preserving a 200-400 metre riparian buffer to the Stuart Creek nature refuge), by removing invasive species, establishing native grasses known to be forage resources for the Black-Throated Finch, and planting tree species that may provide other foraging habitat for the Bare Rump Sheath-Tailed Bat additional to that maintained on site. By rehabilitating habitats within the site, increasing their connectivity to the adjacent nature refuge, and staging the development over 7-10 years, Aurizon will deliver a net positive outcome consistent with the principles of ecologically sustainable development and will create better biological and ecological outcomes for the two endangered species.





**Compliance reporting**

In FY2022, Aurizon Holdings Limited (including its subsidiaries) did not incur any fines or sanctions for non-compliance related to environmental harm. Three notifiable environmental incidents, all in QLD, were required to be reported to the Department of Environment and Science.

The most significant notifiable occurrence related to a derailment of an Aurizon service on Queensland Rail track, due to a track washout, of a

freight service at Traveston in February 2022 resulted in a loss of about 13,000 Litres (L) of diesel and 2,500 L of oil from the lead locomotives. Most of this was lost to floodwaters during the widespread devastating flooding of parts of Australia’s east coast.

An estimated 1,500 L of hydrocarbon was able to be recovered from banded areas downstream of the incident. None of the incidents caused ongoing harm to people or the environment, nor have required ongoing remediation.

**TABLE 5** NOTIFIABLE INCIDENTS IN FY2022

Location	Volume/Extent	Material
Charters Towers, QLD	35 tonnes	Prilled sulphur
Dumgree, QLD	7,500 litres	Hydrocarbon
Traveston, QLD	15,500 litres	Hydrocarbon

# PEOPLE

At Aurizon, our people are our greatest asset. We have approximately 5,000 employees, with around 85% living and working in regional Australia.

Our purpose – growing regional Australia by delivering bulk commodities to the world – is underpinned by a workplace culture of connection to enable great outcomes. Through our commitment to safe and efficient delivery for our customers, we are building our workforce for the future. This includes investing in our people and partnerships and creating an inclusive workplace.

**People insights survey**  
 In 2021, we surveyed our people about their experiences of working at Aurizon to help shape our future. The responses gave us valuable insights into what is working for our people and where we could improve. Our people told us they wanted more development, they wanted to better understand their performance and to take control of their careers.

From this feedback, we:

- improved our leadership development program, focusing on improving how our leaders communicate and manage change
- expanded our career development program, so that more employees can experience career coaching and capability expansion
- implemented *myAcademy* for online learning and flexible learning
- consolidated all temporary and permanent vacancies as well as development opportunities on *myCareer*.

The survey was conducted again in mid-2022 to track our progress and to continue to improve our people’s experience at Aurizon. In this survey, 40% of Aurizon people participated, with results indicating we have made good progress on our four dimensions (People, Safety, Culture and Leadership) and paved the way for work throughout FY2023, including Aurizon’s Employee Value Proposition.

While we have made progress on our four cultural dimensions, we recognise a need to better understand some areas of our culture. We are currently seeking to hear more about the things that we do well, and also the things that we need to improve.

## Developing our people

We strive to create a culture where people live our values and are engaged and enabled to do their best work. We are passionate about developing all our people and recognise that meaningful development comes in many different forms.

### Development programs

Our development programs have become part of the way we operate at Aurizon. Targeted leadership programs, such as Leading for Results and Leading for Safety, ensure leaders at all levels have the skills to support their teams to perform at their best, now and in the future. In addition to leadership development, we have identified new programs to develop the capability we need for the future. Programs such as Careers in Action support recent graduates and those transitioning to the rail industry.

Our Rail 101 program stitches our diverse organisation together to demonstrate to participants of all experience levels how their role contributes to the bigger picture. During FY2022, 250 of our people participated in these programs.

### *myAcademy* online learning

This year Aurizon rolled out *myAcademy*, an online learning platform that offers thousands of learning activities from more than 160 education and training providers. It allows our people to complete self-paced development when it best suits them. Courses range from computer skills to soft-based skills, such as coaching and emotional intelligence, enabling employees to select activities that align to their current role or to their career aspirations. Since the program went live in September 2021, over 1,040 employees have accessed *myAcademy*, completing 12,000 learning items.

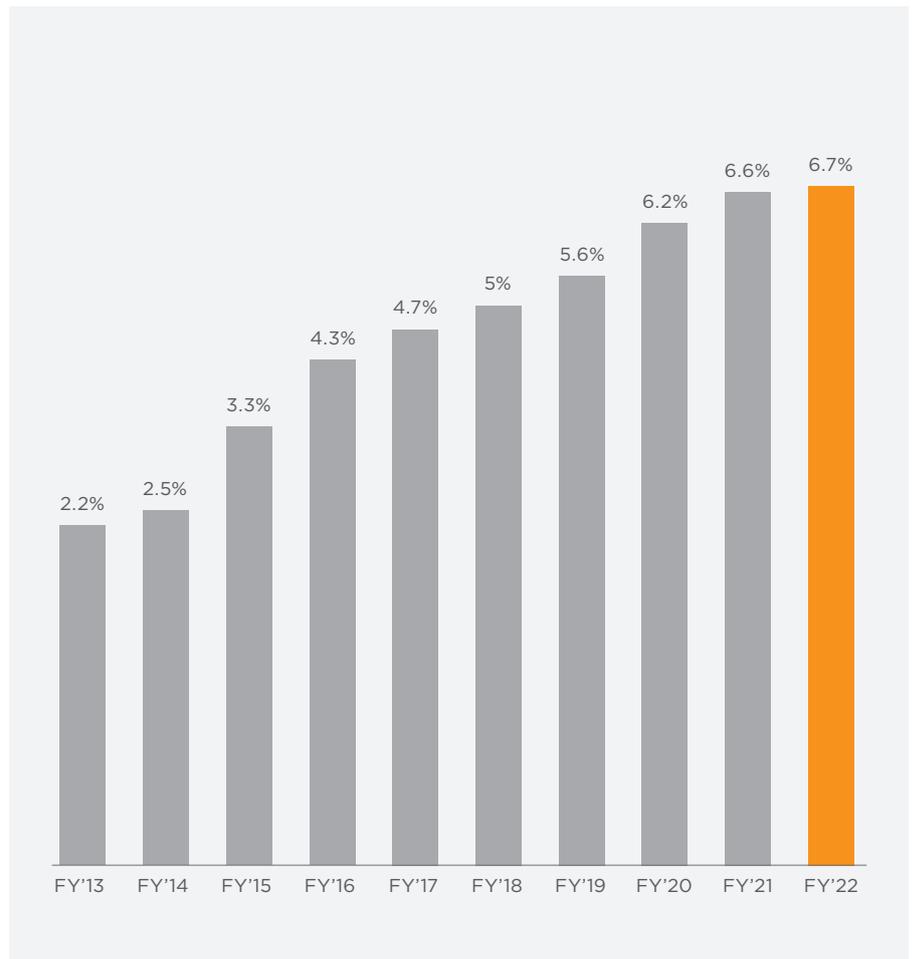
### Inclusion

At Aurizon, inclusion is centred on the premise that human connection enables us to deliver great outcomes. Our strength lies in our diversity, underpinned by an inclusive culture that helps us achieve better business outcomes and positively engage our employees. We have continued to strive towards creating an inclusive environment by creating awareness and driving action around inclusion through employee representative groups across gender, Aboriginal and Torres Strait Islander, and LGBTQIA+ inclusion.

#### Committed to our second Stretch Reconciliation Action Plan (2022-25)

We acknowledge and respect the Traditional Owners of the land and the communities where our operations are based. As a company with a large national footprint, we can contribute positively to our nation’s reconciliation efforts. We are proud to have achieved 57 of 58 deliverables for our 2018-21 Reconciliation Action Plan (RAP), our first Stretch RAP. In March 2022, we launched our second Stretch RAP, which is our third RAP since 2015. The RAP sets out the actions we will take to achieve our vision and further reconciliation in our business and in the communities where we operate. These actions, as part of our 2022-25 RAP, are created from three key pillars:

**FIGURE 32** ABORIGINAL AND TORRES STRAIT ISLANDER WORKFORCE REPRESENTATION (%)



#### Building relationships

between Aboriginal and Torres Strait Islander peoples, communities, organisations, and the broader Australian community through:

- our partnership with CareerTrackers, three interns completed placements throughout the year.
- our Community Giving Fund supporting charitable not-for-profit organisations, including Darumbal Community Youth Service; Foundation for Indigenous Sustainable Health; Waalitj Foundation; and Mudjar Aboriginal Corporation.
- our partnership in 2022 with Two Point Co. to launch our Community Engagement Framework, providing practical assistance to our leaders to build enduring relationships with local communities.

#### Fostering respect

for the world’s longest surviving cultures and communities through:

- providing opportunities for cultural awareness modules, such as online cultural awareness training, face-to-face cultural immersion activities, and holding an Aboriginal and Torres Strait Islander Film Festival during National Reconciliation Week 2021.
- reviewing and refreshing our Culture Heritage Governance Framework and supporting resources, including developing two new training modules. Since launching in April 2022, over 1,270 of our people completed these programs.

#### Growing opportunities

for Aboriginal and Torres Strait Islander peoples and communities by developing opportunities within Aurizon through:

- targeted employment strategies to actively attract, retain and develop our Aboriginal and Torres Strait Islander people. Since 2021, we have grown our workforce representation from 6.6% to 6.7% in 2022 (figure 32).
- our Indigenous Future Leaders program, where selected First Nations employees grow and develop their leadership capabilities. Participants have the option to complete a second year of the program to attain a nationally recognised Certificate IV in Leadership. This year, 12 participants commenced the program.

**Respecting and protecting cultural heritage**

In FY2022, Aurizon completed a comprehensive review of its Cultural Heritage (CH) management resources. It involved detailed gap analyses of existing CH documentation, statutory obligations, and current agreements with Indigenous parties. The analyses yielded a CH Action Plan. Specialist CH and legal consultants were engaged to advise on development of a CH Governance Framework (CHGF), with key success criteria being that it must be: (a) contemporary, enabling Aurizon to meet its regulatory obligations; (b) expanded such that it applies to Aurizon’s national operational footprint; (c) aware of both Indigenous and non-Indigenous CH; and (d) effectively communicated, practical, and simple to implement. Leading the CHGF is the CH Commitment Statement, which is ‘to minimise our impact on Indigenous and non-Indigenous cultural heritage through a framework founded on knowledge, understanding and respect’. The Commitment Statement is underpinned by an implementation framework, which:

- specifies jurisdictional requirements
- articulates organisational responsibilities and accountabilities
- through bespoke guidelines and procedures, outlines how Aurizon’s CH obligations are to be achieved during the planning and execution of work, including engagement with Indigenous parties.

Launched in November 2021, the CHGF is available to all employees and contractors. For the CQCN, the CHGF is supported by an online mapping resource that provides guidance to enable compliant interface with areas of CH value. Two online modules promote awareness of CH, provide linkages to the CHGF, and outline scenarios that demonstrate how CH values are protected during the conduct of work. The modules are mandatory for roles where there is a reasonable likelihood of encountering CH during the ordinary conduct of work.

**Continued focus on gender balance**

Last year we launched Aurizon’s first Gender Balance Action Plan to continue to drive change across our business to increase female participation in our workforce. Throughout FY2022, we have made strong progress on delivering these initiatives, with our successful Executive-Led Mentoring Program broadening scope for FY2023.

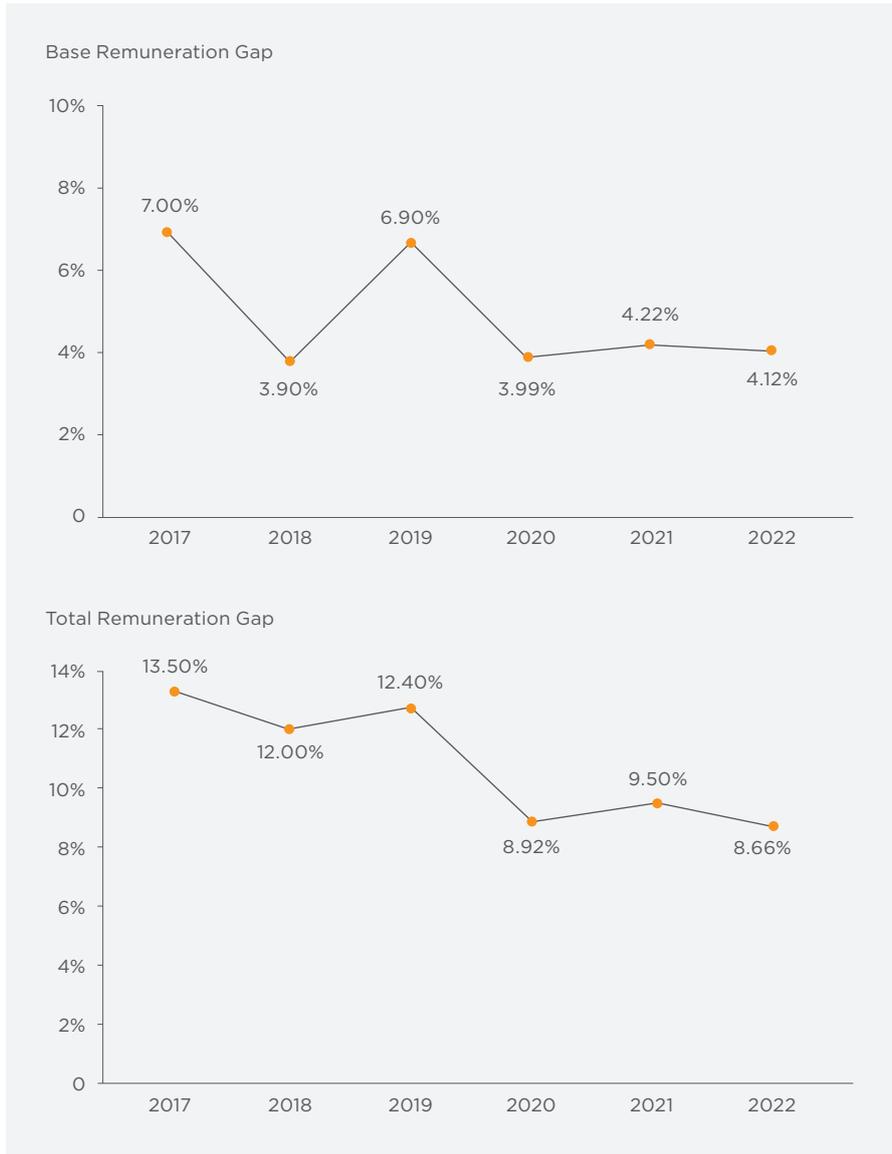
Aurizon continues to reduce our gender pay gap, with the base pay gap reducing from 4.22% to 4.12% from 2021 to 2022 (figure 33). Over the same reporting period, the total remuneration gap has reduced from 9.5% to 8.66%. Our data-driven approach to talent, coupled with our focus on mentoring and development, have supported the promotion of women. Female promotions have doubled since last year. However, we have not met our representation target for women in senior executive roles. Throughout FY2023, we will continue our focus on developing our high-performing women into senior roles.

Our current female representation is 23% (figure 34) and we have fallen short of this year’s target of 24%. In part, this can be attributed to the shift in workforce composition due to our recent acquisitions of road and port services organisations. While it is disappointing, we are confident we will progress and embed our gender balance initiatives in the newer parts of our business over the coming years.



Aurizon’s Indigenous Reference Group (IRG) with Yuggera Traditional Owner Shannon Ruska at the 2021 Annual IRG Strategy Workshop.

**FIGURE 33** GENDER PAY GAP<sup>85</sup>

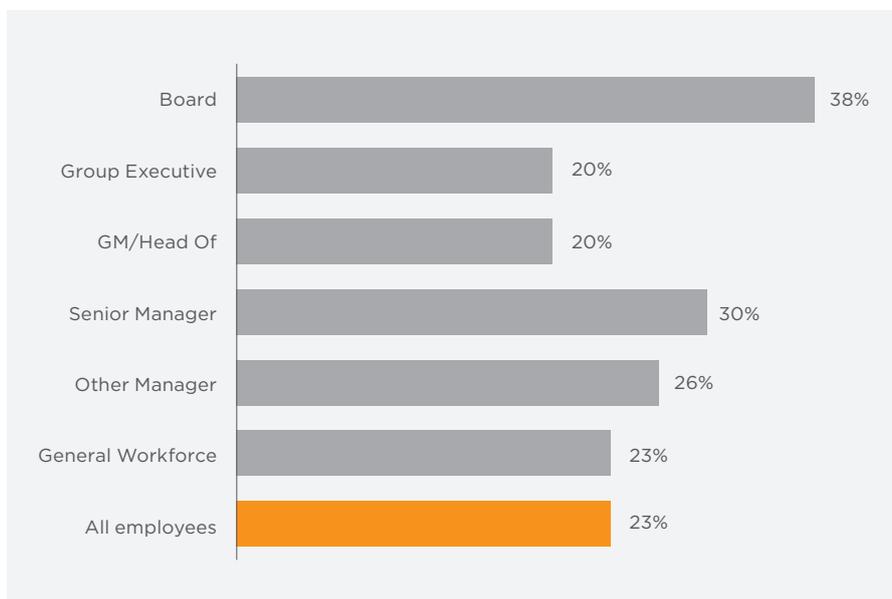


**Reinvigorating our LGBTQIA+ network, ALLin**

Our grassroots ALLin network was formed in 2015 to support our lesbian, gay, bisexual, transgender, queer/questioning, intersex, asexual (LGBTQIA+) community, together with Aurizon’s Inclusion Strategy. Since then, ALLin has played a key role in helping to create a more inclusive workplace where we can all feel comfortable to bring our whole selves to work. Throughout the year, ALLin has focused on reinvigorating the network and its strategy, welcoming new co-chairs and members in addition to holding events for key inclusion days, such as International Day Against Homophobia, Biphobia, Intersexism and Transphobia (IDAHOBIT) and Wear It Purple. Through our membership with Pride in Diversity, we have reviewed the structure and purpose of the network and are currently developing our first ALLin Action Plan in FY2023. The Action Plan will focus on the three key pillars of the ALLin Network:

- provide visibility of LGBTQIA+ issues and contribution to an inclusive and diverse workplace
- provide education for leaders and employees regarding their role in creating an inclusive workplace
- create opportunities for connection around LGBTQIA+ issues so that people feel like they are part of a broader network.

**FIGURE 34** FEMALE WORKFORCE REPRESENTATION<sup>85</sup>



### Creating the workforce of the future

COVID-19 has changed the way we work, and the way people view work. We are monitoring trends, such as 'the great resignation', to ensure we remain competitive with the expectations of our current and future workforce. For our non-operational people, we have embedded flexible work where practical to enable us to attract and retain talent, improve productivity, and consolidate an inclusive and supportive culture. For our operational workforce, we are actively seeking ways to provide flexibility. Given the type of work we do, this is a challenge; however, we know that flexibility and work-life balance are important to our people. We also recognise the importance of collaborating in person and encourage our teams to do this regularly. Coupled with this focus on adapting to societal changes, we are refreshing our Workforce Planning and Capability frameworks. These strategic data-driven pieces of work will ensure Aurizon understands its future capability requirements, where they are best located, and how we can best develop our current and future people to grow with our workforce planning strategy. We will continue to refine these frameworks over FY2023, and to present a more detailed overview in next year's Sustainability Report.

### Employee relations

Our employee relations strategy is focused on enabling the achievement of our Strategy in Action and aligning with our company values. Aurizon supports freedom of association and the effective recognition of the right to collective bargaining. Renewal of our eight enterprise agreements has been a key focus area over FY2021 and FY2022. We recognise that fostering trust with our people is a key enabler of a safety and high-performance culture that will underpin our approach to enterprise bargaining. During 2021, our employee-centred end-to-end rostering review in NSW focused on opportunities for change in our rostering practices that would improve conditions and work-life balance outcomes for our employees. The outcomes of this engagement were at the centre of the recent and successful enterprise agreement outcomes for those employees.

Over the past 18 months we have collaboratively renewed several enterprise agreements in NSW, WA and QLD, with further agreements currently in negotiations with employees and their representatives

in QLD and WA. Another area of focus has been an investment in developing and implementing Aurizon's Just and Fair methodology and tool kit. The 2021 People Insights Survey showed that we have an opportunity to improve how we approach and manage investigations. Our new tools are designed to support leaders in navigating the complexities of investigations in a considered and consistent way that emphasises curiosity and learning over blame and punishment.

Following on from an acquisition, our due diligence and post-completion processes involve a review of pay and employment conditions. This is to ensure we have effective governance control and that employees are paid consistent with their terms and conditions of employment and underpinning awards and national employment standards.

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85 Workplace Gender Equality Agency (WGEA) reporting period is from 1 April (the previous year) to 31 March (the current year). Aurizon's gender pay gap data analyses base and total remuneration for each employee, excluding the Managing Director and CEO. Employee earnings are annualised and converted to full-time equivalent. Board representation is at 30 June, all other representation figures are aligned to WGEA reporting period.



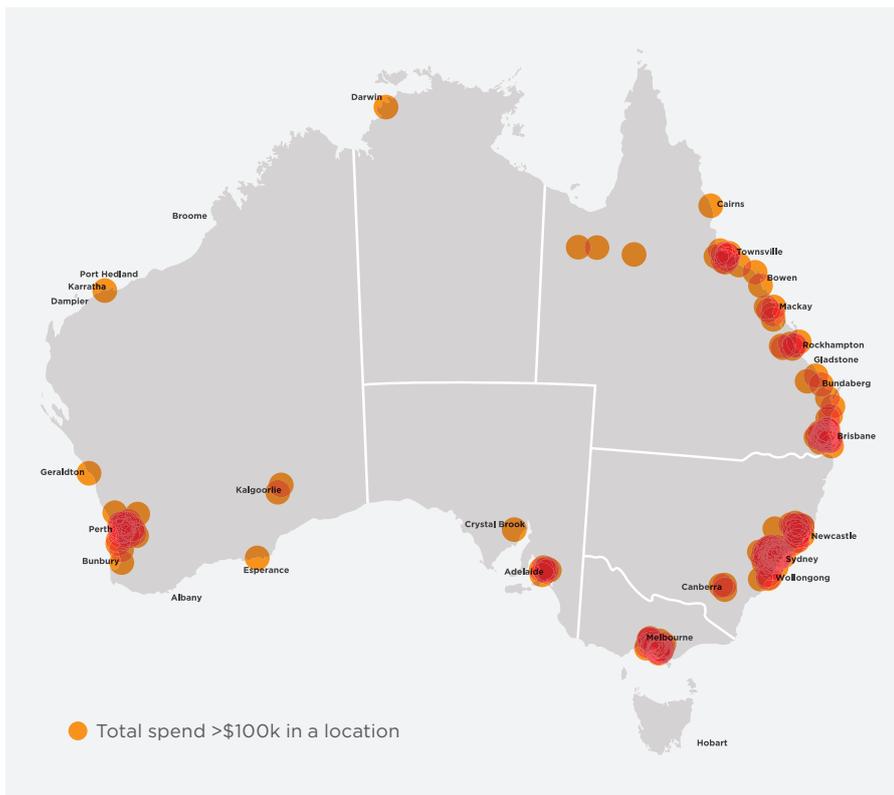


# COMMUNITY

Aurizon's operational footprint is heavily regionalised, with over 85% of employees living and working in regional Australia.

We recognise that as a business it is vitally important that we are a genuine contributor to our communities, in addition to being a local employer.

**FIGURE 35** AURIZON'S REGIONAL SPEND (FY2022)



## Regional focus

Aurizon is part of the communities in which our people live and work, where stable regional communities are grown and can thrive through strong local business. We engage with local suppliers across our operational footprint and continue to support local organisations and suppliers where we can. Our regional footprint includes many facilities and workplaces. We are committed to continuing to provide our people with safe workplaces and equipment that enable our people to do their job in the safest way possible.

### Spending in our communities

In FY2022, we have spent approximately \$1.2 billion with local suppliers from across our operations (figure 35). In addition to being a local employer, we are also a local business in many of our regional communities. We are committed to continuing relationships with our local suppliers who are key parts of our supply chain across Australia.

Increasing our spending with Indigenous businesses is one way that we can create greater social value impact and support for the communities in which we operate. As a part of our RAP, we have committed to increase Aboriginal and Torres Strait Islander supplier diversity to support improved economic and social outcomes for those organisations and Indigenous Australians. Maintaining a membership with Supply Nation, which gives us access to Australia's leading database of verified Indigenous businesses, is key to enabling us to achieve this commitment.

## Sponsorship support

### Orange Sky Australia

Our relationship with Orange Sky Australia began in April 2021 and has continued to grow throughout our first year as a national partner of this wonderful organisation. Orange Sky Australia is the world's first free mobile laundry service for those vulnerable members of our communities who are experiencing homelessness. Orange Sky began servicing the Brisbane community in 2014, and since then has grown from one mobile laundry van to a fleet of 36 vans across Australia. Orange Sky has also expanded their services to include mobile shower vans across some locations, and purpose-built vehicles to service remote Indigenous communities in the NT and WA.

Orange Sky do more than just provide clean clothes and showers; they also provide a space for vulnerable members of their communities to have meaningful non-judgemental conversations. Aurizon employees from across Australia have donated their time to volunteer with Orange Sky, as well as raise money through the annual Sudy Challenge event. Aurizon looks forward to continuing to grow our partnership with Orange Sky to help them provide vital services to some of the most vulnerable members of our communities.

### Queensland Firebirds

This year has been especially rewarding as principal partner of the Firebirds, with the team excelling not only on the court but also off it. Aurizon is

committed to continuing to foster a more inclusive and diverse team across our operational footprint, and our partnership with the Firebirds is helping us reach a new audience. Aurizon employees have also been involved in the creation of Netball Queensland's first Reconciliation Action Plan, working with Netball Queensland and the Firebirds as advisers, strengthening the relationship between the two organisations. We look forward to continuing our partnership with the Firebirds throughout season 2023, and working closely with them to further develop the relationships that we have built in our first two years as principal partner.

### Clontarf Foundation

Aurizon has been an official partner of

the Clontarf Foundation since 2015. In that time, we have worked with them to deliver on their mission, to improve the education, discipline, self-esteem, life skills and employment prospects of young Indigenous men in their academies throughout Australia.

In 2021 and 2022, this partnership has continued to deliver on this mission, with Clontarf students visiting Aurizon employees at local depots across our operations, and Aurizon employees attending Clontarf employment forums, sporting carnivals and events throughout the year.



Aurizon staff volunteering on a shift with Orange Sky, Townsville QLD



Firebirds players Lara Dunkley and Ruby Bakewell-Doran visiting Aurizon employees and families in Callemondah, Gladstone



Clontarf Townsville State High Academy students and Aurizon team members at the Clontarf Northern Rugby League Carnival, June 2022

### Aurizon Community Giving Fund

Founded in 2011, the Aurizon Community Giving Fund provides grants of up to \$20,000 to eligible charities from across our areas of operation. Since its launch, the fund has supported over 500 charities. In FY2022, we supported 43 organisations throughout QLD, NSW and WA. Some examples of the organisations and projects funded by the Community Giving Fund include the following:

#### Scott Rural Fire Brigade, North QLD

The Scott Rural Fire Brigade will use funding from the Community Giving Fund to buy and install a diesel-fuelled generator, ensuring there is always power to the station during emergency responses. As the local area is prone to flooding, the station becomes a hub for emergency response and provides amenities for the local community. With a permanent power source available at the station, the Scott Rural Fire Brigade will be able to supply potable water, cooking, refrigeration, temporary sleeping accommodation, communication, hot water, and lighting to the local community.

#### Starlight Children’s Foundation, John Hunter Hospital, Hunter Valley, NSW

The Starlight Express Room at John Hunter is an established, ongoing program. In 2022, there will be an estimated 6,700 visits to the Starlight Express Room, as well as 7,400 ward-based experiences for kids in isolation or too sick to leave their beds. Funding from the Aurizon Community Giving Fund will be used to run the daily activities program, based on fun and play supporting the wellbeing of seriously ill children and putting some laughter into their day.

#### Foundation for Indigenous Sustainable Health, South-west Region, WA

The Foundation for Indigenous Sustainable Health will use funding from the Aurizon Community Giving Fund to provide Indigenous-authored books to young people in need. The educational and culturally appropriate books curated from more than 500 titles will be delivered to selected schools, Indigenous organisations, and community groups in the south-west region of WA.

### Working together

Aurizon is committed to maintaining our cooperation with our local communities, and will continue to be a contributing member to the regions where our people live and work. Our approach to building on our history of working with our local communities is through the following:

- continuing to live by our safety value, “We know safe, we choose safe”, and that everyone who has contact with an Aurizon team or site knows that safety is always our number one priority (for more information, see the Safety and health chapter)
- continuing to regularly engage with and build on relationships with existing community stakeholders
- focusing on continuous improvement through all facets of our business with ongoing dialogue with our stakeholders
- continuing to uphold all legislative, regulatory and corporate responsibility obligations
- continuing to engage with local, state and federal government members, ministers and agencies, and advocating on behalf of the work we do in our local communities
- continuing to build our relationships with existing partners to support their objectives throughout our regions and continuing to build our support in our local communities through our Community Giving Fund.

Members of our communities can provide feedback and engage with us through the dedicated feedback channels on our website. We also encourage our communities to contact us directly if they have any concerns.

# TAX AT AURIZON

As an ASX-listed company predominantly operating in Australia, and as an industry leader, we understand the importance of tax transparency.

We continue to have a positive, open, and constructive relationship with the Australian Tax Office (ATO), and continue to voluntarily adopt the Tax Transparency Code, demonstrating our commitment to paying our fair share of tax.

**TABLE 6 TAXES COLLECTED AND PAID BY AURIZON**

\$million (\$m)	FY2022	FY2021
PAYG Withholding Taxes	232.9	218.7
Goods and Services Tax (GST) Net of Recoveries	176.6	180.6
Corporate Income Tax <sup>86</sup>	163.4	121.9
Fringe Benefits Tax	1.1	1.3
Fuel Excise Paid Net of Recoveries	(0.4)	1.6
<b>Federal Taxes</b>	<b>573.6</b>	<b>524.1</b>
Payroll Tax	43.0	41.1
Other Miscellaneous Taxes	2.9	4.6
<b>State Taxes</b>	<b>45.9</b>	<b>45.7</b>

## Taxes paid and collected

As we predominantly operate in Australia, we pay various taxes to federal and state governments, and collect various tax payments on behalf of federal and state governments. We also pay taxes in the overseas jurisdictions in which we operate and report our international activities under the country-by-country reporting regime.

As demonstrated in table 6, Australian corporate income tax represents the largest component of taxes we pay. Corporate income tax is payable in instalments throughout the income year, with a balancing payment made in December following the end of the income year to reflect the final income tax liability for that income year.

As also demonstrated in table 6, Pay As You Go Withholding (PAYG-W) taxes collected in respect of employees' salary and wages represent the largest component of taxes we collect on behalf of the Australian Government. Table 6 excludes a number of taxes that are considered immaterial for our business, including (but not limited to) customs duty, withholding taxes, taxes paid to foreign governments, and taxes paid by controlled Australian entities that do not form part of the Aurizon income tax consolidated group.

## Tax strategy, tax policy, and governance

Our tax strategy focuses on:

- providing accurate and timely tax compliance and reporting
- enhancing shareholder value through principled tax planning
- building a positive and transparent relationship with the ATO.

This strategy is implemented through our Board-approved Tax Policy and our broader Enterprise Risk Management Framework. Our Tax Team has primary responsibility for implementing our tax strategy, with oversight by the Chief Financial Officer (CFO) & Group Executive Strategy, the Audit, Governance and Risk Management Committee (AGRMC) and the Board.

### Accurate and timely tax compliance and reporting

Our Tax Team is responsible for identifying and complying with our tax obligations, including lodging returns and making tax payments on time. Confirmation of accurate and timely tax compliance and reporting is provided to the CFO & Group Executive Strategy, AGRMC and the Board. Tax compliance risks are managed through our documented tax control framework and testing plan.

### Enhancing shareholder value through principled tax planning

Our tax strategy aims to enhance shareholder value through principled tax planning. Broadly, principled tax planning includes:

- ensuring operations, transactions and funding are tax efficient

- utilising tax concessions, where available
- ensuring we make appropriate tax elections when given a choice under the tax law
- ensuring tax positions adopted by our business are in accordance with parliamentary intention and guidance provided by the revenue authorities, and do not breach published safe harbour limits.

Our Tax Policy prohibits conducting transactions for the specific purpose of obtaining a tax benefit. Our Tax Team collaborates with our business units to identify and mitigate any tax risks. Tax positions adopted by our business are considered by our in-house qualified tax professionals, with material positions verified by external independent advice.

### Building a transparent relationship with the ATO

We actively manage our relationship with the ATO to foster transparency, taking a 'no surprises' approach, and engaging with the ATO on significant tax positions and transactions.

### Income tax

The following information has been derived from the FY2022 annual financial report. Our financial report reflects our Australian corporate income tax position (applying the 30% corporate tax rate). Any income tax attributable to overseas operations is negligible.

Australian tax law and Australian accounting standards have different rules in respect of the timing of recognition of income and expenses. Under the accounting standards, differences between accounting and tax rules are classified as:

- temporary differences – which reverse over time
- non-temporary differences – which are permanent differences that do not reverse over time, or temporary differences that do not meet the recognition criteria under the accounting standards.

The accounting standards require us to calculate income tax expense, which includes a current tax component and a deferred tax component. The current tax component represents the expected tax liability for the income year. The deferred tax component represents taxes to be paid, or deductions available in future income years.

The deferred tax component is recognised as a net deferred tax asset (future deductions available) or a net deferred tax liability (future tax payable) on the balance sheet.

### Reconciliation of accounting profit to income tax payable

Table 7 provides a reconciliation of our accounting profit before tax to income tax expense and income tax payable. Income tax expense is calculated as the accounting profit before tax, multiplied by the applicable tax rate, and adjusted for non-temporary differences.

Income tax payable is calculated as the accounting profit before tax, multiplied by the applicable tax rate, and adjusted for non-temporary and temporary differences.

**TABLE 7** RECONCILIATION OF ACCOUNTING PROFIT TO INCOME TAX PAYABLE

(\$m)	FY2022	FY2021
Current Tax	179.7	153.4
Deferred Tax	43.3	60.2
Current tax relating to prior periods	(16.3)	(31.5)
Deferred tax relating to prior periods	16.4	29.6
<b>Total Income Tax Expense</b>	<b>223.1</b>	<b>211.7</b>
Underlying Profit before tax (PBT)	750.3	772.7
Significant Items	(14.2)	169.3
Statutory PBT	736.1	942.0
Tax at Australian Tax Rate of 30%	220.8	282.6
Tax effect of amounts that are not (taxable) deductible in calculating taxable income:		
Transaction costs	2.0	—
Unrecognised deferred tax asset arising from previous impairment	—	(67.8)
Other	0.2	(1.2)
Adjustments for tax of prior periods	0.1	(1.9)
<b>Income Tax Expense</b>	<b>223.1</b>	<b>211.7</b>
<b>Temporary Differences</b>		
Property, Plant and Equipment	(48.2)	(76.3)
Provisions/Accruals	12.2	5.6
Other	(7.4)	12.4
<b>Income Tax Paid</b>	<b>179.7</b>	<b>153.4</b>

The key adjustment in our tax calculation is for temporary differences arising from the different accounting and tax treatment of fixed asset-related costs. This is because we are a capital-intensive business, with a significant portion of our asset base comprised of property, plant and equipment.

#### Effective income tax rate

The Australian accounting standards define 'effective tax rate' as the income tax expense for the income year, divided by the accounting profit before tax. Our effective income tax rate is outlined in table 8.

Our effective tax rate for FY2022 of 30.3% is more than the 30% Australian corporate tax rate. This is primarily due to non-deductible transaction costs for acquisitions.

#### ATO declaratory relief proceedings

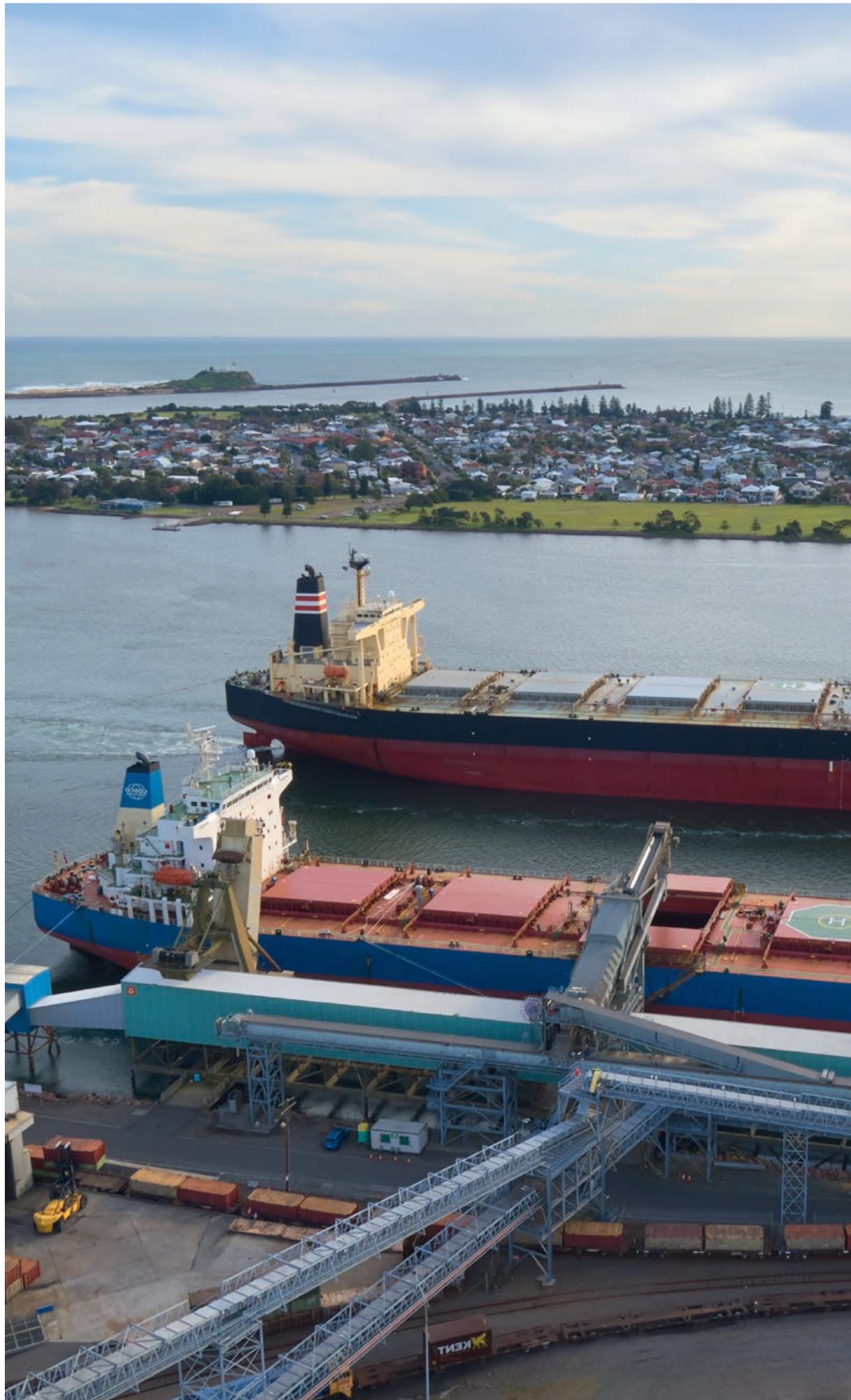
Prior to the Initial Public Offering in 2010, the QLD Government (the State) made an equity contribution to Aurizon of \$4,388.3 million. This contribution was recorded separately to issued capital, in a capital distribution account (classified as capital reserve). Following on from engagement with the ATO in relation to the technical tax treatment of the State's contribution, Aurizon commenced proceedings in the Federal Court of Australia (the Court) seeking a declaration from the Court that the capital distribution account is contributed equity for the purposes of tax law. In April 2022, the Court made a declaration that Aurizon's capital distribution account is share capital for tax purposes. The Court's declaration was not appealed by the ATO.

This decision provides Aurizon with greater certainty in relation to capital management initiatives that may be undertaken in the future, in particular the tax treatment of any future share buybacks or returns of capital.

**TABLE 8** AURIZON'S EFFECTIVE INCOME TAX RATE  
(CONTINUING AND DISCONTINUING OPERATIONS)

(\$m)	FY2022	FY2021
Underlying Profit before Tax (PBT)	750.3	772.7
Significant Items	(14.2)	169.3
Statutory PBT	736.1	942.0
Statutory Income Tax Expense	223.1	211.7
Statutory Effective tax rate (%)	30.3	22.5
Underlying Income Tax Expense	225.4	228.8
Underlying Effective tax rate (%)	30.0	29.6

<sup>86</sup> The corporate income tax reflects taxes paid in respect of the income year, rather than taxes paid during the income year.



# SUSTAINABILITY METRICS

Financial Results (Underlying and continuing basis)	Unit	FY2022	FY2021
Total Revenue	\$million (\$m)	3,075.3	3,019.3
EBITDA	\$m	1,467.6	1,482.2
EBIT	\$m	875.3	903.1
Income Tax (expense)/benefit	\$m	(225.4)	(224.6)
NPAT	\$m	524.9	533.2
Earnings per share <sup>87</sup>	cents per share	28.5	28.5
Return on invested capital (ROIC) <sup>88</sup>	%	10.3	10.7
EBITDA margin	%	47.7	49.1

Operating metrics	Unit	FY2022	FY2021
Coal haulage (tonnes)	million	194.0	202.1
Bulk haulage (tonnes)	million	50.8	51.1
Network (tonnes)	million	206.5	208.3
Coal Net Tonne Kilometres (NTKs)	billion	45.2	47.1
Network NTKs	billion	51.9	52.4

Safety	Unit	FY2022	FY2021
Total Recordable Injury Frequency Rate	TRIFR	8.41	10.21
Rail Process Safety	Incidents per million train kilometres travelled	4.24	5.13

Community	Unit	FY2022	FY2021
Total estimated spend with suppliers	\$b	1.2	1.2
Taxes collected and paid <sup>89</sup>	\$m	387	351
Number of supported charities	#	43	46

People	Unit	FY2022	FY2021
Full-time equivalent employees	#	4,917	4,825
Wages and benefits paid	\$m	853.4	840.7
Regional workforce representation	%	85	80
<b>Inclusion and diversity</b>			
Aboriginal and Torres Strait Islander workforce representation	%	6.7	6.6
Female workforce representation	%	23	23
Female appointees into manager roles <sup>90</sup>	%	31	35
Female promotions <sup>91</sup>	%	34	31
Parental leave uptake <sup>92</sup>	#	Managers: 30	Managers: 23
Parental leave uptake	#	Non-managers: 206	Non-managers: 178
<b>Females in senior leadership roles</b>			
Board	%	38	38
Senior executive leadership team <sup>93</sup>	%	20	20
Executive leadership team <sup>94</sup>	%	24	25
General managers <sup>95</sup>	%	27	26
Senior leadership team <sup>96</sup>	%	35	35

Environment	Unit	FY2022	FY2021
<b>Emissions<sup>97</sup></b>			
<b>Total GHG emissions (Scope 1 and 2)</b>	<b>Metric tonnes of CO<sub>2</sub>-e</b>	<b>834,848</b>	<b>847,312</b>
<b>Direct GHG emissions (Scope 1)</b>	<b>Metric tonnes of CO<sub>2</sub>-e</b>	<b>506,806</b>	<b>513,755</b>
Diesel locomotives	Metric tonnes of CO <sub>2</sub> -e	478,079	487,174
Road vehicles	Metric tonnes of CO <sub>2</sub> -e	18,023	12,819
Incidental fuel emissions	Metric tonnes of CO <sub>2</sub> -e	10,704	13,762
<b>Total Indirect GHG emissions (Scope 2) (Location-based)</b>	<b>Metric tonnes of CO<sub>2</sub>-e</b>	<b>328,042</b>	<b>333,557</b>
Electric locomotives	Metric tonnes of CO <sub>2</sub> -e	305,282	308,268
Facilities (electricity purchased)	Metric tonnes of CO <sub>2</sub> -e	22,760	25,289
<b>Total Indirect GHG emissions (Scope 2) (Market-based)</b>	<b>Metric tonnes of CO<sub>2</sub>-e</b>	<b>299,801</b>	<b>NR</b>
<b>Total indirect GHG emissions (Scope 3)</b>	<b>Metric tonnes of CO<sub>2</sub>-e</b>	<b>83,278</b>	<b>83,516</b>
Purchased goods and services	Metric tonnes of CO <sub>2</sub> -e	29	27
Fuel- and energy-related activities	Metric tonnes of CO <sub>2</sub> -e	74,707	75,373
Waste-generated	Metric tonnes of CO <sub>2</sub> -e	3,308	3,014
Business travel	Metric tonnes of CO <sub>2</sub> -e	1,234	1,131
Employee commuting	Metric tCO <sub>2</sub> -e /'000 NTK	3,999	3,924
<b>Targets (Operational Emissions Intensity)</b>			
Measure (Operational GHG emission intensity)	Kilograms of CO <sub>2</sub> -e/'000 NTK	13.96	13.58
Operational GHG emissions intensity target <sup>98</sup>	% of progress towards target	-2.8%	Year 0
<b>Energy</b>			
Total direct and indirect energy consumed within the organisation	Megawatt hours	2,412,998	2,444,939
Total direct energy consumed	Megawatt hours	2,002,311	2,032,511
Diesel (used for locomotives)	Megawatt hours	1,886,361	1,922,248
Diesel (other)	Megawatt hours	109,088	99,620
Natural gas	Megawatt hours	0	0
Other fuels (propane, gasoline, kerosene, stove oil, furnace oil)	Megawatt hours	6,861	10,643

Total indirect energy consumed - electricity	Megawatt hours	410,686	412,428
Energy intensity	Megawatt hours per million AUD of rail freight revenue	1,080	1,016
Fuel efficiency	NTK per '000 litres of fuel consumed	320,296	334,669

#### Effluents and waste

Total weight of waste generated (excl. ballast/bulk metals) <sup>99</sup>	Metric tonnes	15,659	17,242
Total hazardous waste generated	Metric tonnes	1,895	2,922
Metals	Metric tonnes	42,051	NR
Ballast (aggregate)	Metric tonnes	267,792	NR

#### Disposal methods

Landfill (excl. hazardous and ballast)	Metric tonnes	2,131	2,109
Incinerated/treated/landfilled (hazardous)	Metric tonnes	1,580	1,193
Recycled (excl. ballast and bulk metals)	Metric tonnes	11,855	13,940
Recycled (bulk metals)	Metric tonnes	42,051	NR
Recycled (ballast)	Metric tonnes	230,902	NR

#### Water

Water consumption	Million litres	158	173
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NR = not recorded

87 Calculated on weighted average number of shares on issue.

88 ROIC is defined as underlying rolling 12-month EBIT divided by the average invested capital. The average invested capital is calculated as the rolling 12-month average of net assets (excluding cash, borrowings, tax, derivative financial assets and liabilities).

89 Excludes PAYG income taxes included in wages and benefits paid.

90 Data from annual WGEA report, reporting period of 1 April (the previous year) to 31 March (the current year).

91 Data from annual WGEA report, reporting period of 1 April (the previous year) to 31 March (the current year).

92 Data from annual WGEA report, reporting period of 1 April (the previous year) to 31 March (the current year).

93 Group Executives reporting to Managing Director & CEO.

94 Includes Group Executives and direct reports to Group Executives. Excludes executive/administrative support.

95 Includes General Manager or Head of position titles only.

96 Direct reports to Head of/General Manager.

97 Aurizon's Scope 1 and 2 emissions are reported in accordance with the National Greenhouse and Energy Reporting legislation. This year's report includes a market-based Scope 2 tCO<sub>2</sub>-e figure prepared in accordance with the Australian Government's Corporate Emissions Reduction Transparency Report Guidelines. Aurizon's identification of relevant Scope 3 emissions activity sources is informed by the GHG Protocol Corporate Value Chain (Scope 3) Standard and includes: purchased goods and services (paper purchased), fuel- and energy-related activities (including consumption and upstream transportation and distribution), waste generated in operations, business travel (air and car hire), and employee commuting. The reporting boundary for the Scope 3 emissions data for the FY2022 period includes the categories listed above, with the remaining activity sources (such as, water consumption and accommodation) excluded due to current data availability issues. Scope 3 emissions from employee commuting, which represents -5% of the total reported Scope 3 emissions, have been excluded from the limited assurance over this dataset, but will be considered for inclusion in future reporting period once the methodology for calculation has been strengthened/formalised.

98 Emissions intensity reduction target of 10% by 2030, from a 2021 baseline (on a basis of tonnes of carbon dioxide per net tonne kilometre). Target under review following on from the acquisition of One Rail in July 2022.

99 As outlined on page 55, as part of Aurizon's focus on improved resource efficiency, Aurizon's Procurement Team have started improved tracking of spoiled ballast (aggregate), concrete sleepers and metals for downstream disposal or processing for recycling/reuse. Due to data and tracking limitations, the figures presented include materials processed via Aurizon's primary waste contractors and Aurizon's Disposals team and may not capture all material flows, e.g. aggregate materials that are screened and stockpiled for use within Aurizon's operational footprint.

# STATEMENT OF LIMITED ASSURANCE



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## Independent Limited Assurance Report to the directors and management of Aurizon Holdings Limited

### Conclusion

We have undertaken a limited assurance engagement on Aurizon Holdings Limited's 'Subject Matter Information' disclosed in the 2022 Aurizon Holdings Limited Sustainability Report detailed below for the year ended 30 June 2022.

Based on the procedures performed and the evidence obtained, nothing has come to our attention that causes us to believe that, the 'Subject Matter Information' is not prepared in all material respects, in accordance with the 'Reporting Criteria' detailed below for the year ended 30 June 2022.

### Subject Matter Information and Reporting Criteria

The 'Subject Matter Information' and 'Reporting Criteria' for our limited assurance engagement for the year ended 30 June 2022 is as follows:

Sustainability Performance Indicators ('Subject Matter Information')	Reporting Criteria
Total Scope 1 and 2 GHG emissions (tCO <sub>2</sub> -e)	The National Greenhouse and Energy Reporting Act 2007 ('NGER Act'), the National Greenhouse and Energy Reporting Regulations 2008 ('NGER Regulations') and the National Greenhouse and Energy Reporting (Measurement) Determination 2008 (collectively referred to as the 'NGER Legislation')
Total energy consumption (MWh)	NGER Legislation
Basis for the selection of Scope 3 GHG emissions sources (reporting boundary and identification of relevant activity sources), which include: <ul style="list-style-type: none"> <li>• Purchased goods and services: paper purchased and water consumption</li> <li>• Capital goods</li> <li>• Fuel and energy related activities, including consumption and upstream transportation and distribution</li> <li>• Waste generated in operations</li> <li>• Business travel: air and ground-based travel and accommodation</li> <li>• Employee commuting</li> <li>• Upstream leased assets</li> </ul>	The Greenhouse Gas ('GHG') Protocol Corporate Value Chain (Scope 3) Standard

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Sustainability Performance Indicators ('Subject Matter Information')	Reporting Criteria
Scope 3 GHG emissions (tCO <sub>2</sub> -e), which are comprised of: <ul style="list-style-type: none"> <li>• Purchased goods and services (Paper purchased)</li> <li>• Fuel and energy related activities</li> <li>• Business travel (air and car hire)</li> <li>• Waste generated in operations</li> </ul>	The Greenhouse Gas ('GHG') Protocol Corporate Value Chain (Scope 3) Standard and Aurizon's Scope 3 Emissions Basis of Preparation
Market-based Scope 2 emissions (tCO <sub>2</sub> -e)	Corporate Emissions Reduction Transparency ('CERT')
Emission intensity figure based on revised 2030 emissions target (kg of CO <sub>2</sub> -e per '000 Net tonne kilometres)	NGER Legislation and Aurizon's Emissions intensity Basis of Preparation

### **Basis for Conclusion**

We conducted our limited assurance engagement in accordance with Australian Standard on Assurance Engagements ASAE 3000 Assurance Engagements Other than Audits or Reviews of Historical Financial Information ("ASAE 3000"), issued by the Australian Auditing and Assurance Standards Board. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

### **Management's Responsibilities**

Management is responsible for:

- ensuring that the 'Subject Matter Information' is prepared in accordance with the 'Reporting Criteria';
- confirming the measurement or evaluation of the underlying subject matter against the 'Reporting Criteria', including that all relevant matters are reflected in the Subject Matter Information;
- designing, establishing and maintaining an effective system of internal control over its operations and financial reporting, including, without limitation, systems designed to assure achievement of its control objectives and its compliance with applicable laws and regulations; and
- the electronic presentation of the 'Subject Matter Information' and our limited assurance report on their website.

### **Our Independence and Quality Control**

We have complied with the independence and other relevant ethical requirements relating to assurance engagements, and applied Auditing Standard ASQC 1 *Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, Other Assurance Engagements and Related Services Engagements* in undertaking this assurance engagement.

### **Assurance Practitioner's Responsibilities**

Our responsibility is to express a limited assurance conclusion on Aurizon Holdings Limited's 'Subject Matter Information' as evaluated against the 'Reporting Criteria' based on the procedures we have performed and the evidence we have obtained. ASAE 3000 requires that we plan and perform our procedures to obtain limited assurance about whether, anything has come to our attention that causes us to believe that the 'Subject Matter Information' is not properly prepared, in all material respects, in accordance with the 'Reporting Criteria'.

A limited assurance engagement in accordance with ASAE 3000 involves identifying areas where a material misstatement of the 'Subject Matter Information' is likely to arise, addressing the areas identified and considering the process used to prepare the 'Subject Matter Information'. A limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.



The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion about whether the 'Subject Matter Information' has been properly prepared, in all material respects, in accordance with the 'Reporting Criteria'.

Our procedures included:

- Inquiries with Subject Matter data owners and sustainability report responsible management to understand and assess the approach for collating, calculating and reporting the respective 'Subject Matter Information' across the reporting period from 1 July 2021 to 30 June 2022
- Inspection of documents as part of the walk throughs of key systems and processes for collating, calculating and reporting the respective 'Subject Matter Information' for the 2022 Aurizon Holdings Limited Sustainability Report.
- Selection on a sample basis items to test from the selected sustainability performance indicators and agree to relevant supporting documentation.
- Analytical reviews over material data streams to identify any material anomalies for the 'Subject Matter Information' and investigate further where required
- Agreeing overall data sets for the 'Subject Matter Information' to the final data contained in the 2022 Aurizon Holdings Limited Sustainability Report.

#### ***Inherent Limitations***

Because of the inherent limitations of an assurance engagement, together with the inherent limitations of any system of internal control there is an unavoidable risk that it is possible that fraud, error, or non-compliance with laws and regulations, where there has been concealment through collusion, forgery and other illegal acts may occur and not be detected, even though the engagement is properly planned and performed in accordance with Standards on Assurance Engagements.

#### ***Restricted use***

The applicable criteria used for this engagement was designed for a specific purpose of assisting the directors and management report on the 'Subject Matter Information' presented in the 2022 Aurizon Holdings Limited Sustainability Report, as a result, the 'Subject Matter Information' may not be suitable for another purpose.

This report has been prepared for use by the directors and management for the purpose of reporting on the 'Subject Matter Information' presented in the 2022 Aurizon Holdings Limited Sustainability Report.

We disclaim any assumption of responsibility for any reliance on this report to any person other than the directors and management or for any purpose other than that for which it was prepared.

*Deloitte Touche Tohmatsu*

DELOITTE TOUCHE TOHMATSU

Chi Mun Woo

Partner

Sydney, 6 October 2022

# GLOSSARY

Some terms and abbreviations used in this document, together with industry-specific terms, have defined meanings.

These terms and abbreviations are set out in this glossary and are used throughout this document. A reference to dollars, \$ or cents in this document is a reference to Australian currency unless otherwise stated.

## **ACCUs**

Australian Carbon Credit Units

## **AESS**

Automatic Engine Start Stop

## **AGRCM**

Audit, Governance and Risk Management Committee

## **APS**

Aurizon Port Services

## **ASX**

Australian Securities Exchange

## **ATO**

Australian Taxation Office

## **AUD**

Australian Dollar

## **Aurizon**

Aurizon Holdings Limited (ABN 14 146 335 622) and, where the context requires, includes any of its subsidiaries and controlled entities

## **BAU**

Business As Usual

## **below rail**

The business unit segment of Network

## **Board**

The Board of Directors of Aurizon Holdings Limited

## **BF-BOF**

Basic Furnace – Basic Oxygen Furnace method of steelmaking

## **CAGR**

Compound Annual Growth Rate, expressed as a percentage per year

## **capex**

Capital Expenditure

## **CCUS**

Carbon capture, utilisation, and storage

## **CDMP**

Coal Dust Management Plan

## **CFO**

Chief Financial Officer

## **CH**

Cultural Heritage

## **CHGF**

Cultural Heritage Governance Framework

## **CO<sub>2</sub>**

Carbon dioxide

## **CO<sub>2</sub>-e**

Carbon dioxide equivalent

## **CQCN**

Central Queensland Coal Network

## **CSAP**

Climate Strategy and Action Plan

## **Derailment**

Derailment occurs when one or more rollingstock wheels leave the rail or track during railway operations

## **DRI**

Direct Reduced Iron

## **DTMR**

Queensland Department of Transport and Main Roads

## **EAF**

Electric Arc Furnace method of steelmaking

## **EBIT**

Earnings Before Interest and Taxes

## **EBITDA**

Earnings Before Interest, Taxes, Depreciation and Amortisation

## **ETCS**

European Train Control Systems

## **ESG**

Environmental, Social and Governance

## **EVs**

Electric vehicles

## **FORG**

Freight on Rail Group

## **FY**

Financial Year ended 30 June, as the context requires

## **GAPE**

Goonyella Abbot Point Expansion

## **GDP**

Gross Domestic Product

## **GHG**

Greenhouse gas

## **IEA**

International Energy Agency

## **kg**

kilograms

## **kWh**

kilowatt hour

## **L**

litres

## **LGBTQIA+**

Lesbian, Gay, Bisexual, Transgender, Queer, Intersex or Asexual plus

## **Li-ion**

Lithium-ion

## **LTI**

Lost Time Injury

## **m**

million

## **MD & CEO**

Managing Director and Chief Executive Officer

## **MPs**

Members of Parliament

## **mt**

millions of tonnes

## **MW**

megawatts

## **Network**

Aurizon Network Pty Ltd (ACN 132 181 116), a wholly owned subsidiary of Aurizon Holdings

## **NPAT**

Net Profit After Tax

## **ntk**

Net Tonne Kilometre, unit of measure representing the movement over a distance of one kilometre of one tonne of contents, excluding the weight of the locomotive and wagons

## **PCI**

Pulverised Coal Injection

## **QCA**

Queensland Competition Authority

**RPS**

The cumulative number of Signals Passed at Danger (SPAD), derailment and rollingstock-to-rollingstock collision incidents, per million train kilometres, over a given recording period

Note: Infrastructure-caused SPADs have been removed from the SPAD element of Aurizon's Rail Process Safety metric

**RAP**

Reconciliation Action Plan

**ROIC**

Return on Invested Capital

**rollingstock**

Equipment that provides transportation capability on our railways, such as locomotives and wagons

**SDGs**

United Nations Sustainable Development Goals

**share**

A fully paid ordinary share in Aurizon Holdings

**SIF**

Serious Injury or Fatality

**SIFRa+p**

Potential Serious Injury and Fatality Frequency Rate measures the number of incidents that had the potential to cause, or did cause, serious injury or fatality. The result is expressed per million hours worked.

**SHE**

Safety, Health and Environment

**SPAD**

Signals Passed at Danger, reflects an instance in which a train has entered a section of the track without the correct authority

**TCFD**

Task Force on Climate-related Financial Disclosures

**tonne**

one metric tonne, being 1,000 kilograms

**tonne kilometres**

the product of tonnes and distance

**TRI**

Total Recordable Injuries

**TRIFR**

The cumulative number of Lost Time Injuries, Medical Treatment Injuries, and Restricted Work Injuries sustained by employees and contractors, per million hours worked, over a given recording period

**UT5**

Aurizon Network Fifth Access Undertaking

**WGEA**

Workplace Gender Equality Agency





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