

# Delivering for the Long Haul

FY2016 Sustainability Report





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# Welcome to Aurizon

Aurizon is a top 50 ASX listed company, with over 6,400 employees, offering rail-based transport and infrastructure services across Australia.

Our aspiration to deliver world-leading performance is underpinned by our three sustainability commitments:

- We're committed to building a long-term sustainable business that delivers lasting value for our shareholders, customers, employees and communities.
- We aim to take the safest, most efficient and least resource-intensive approach to the services we provide.
- We apply a balanced view when assessing risk and making decisions, taking into account social, environmental and economic considerations.

## OUR SUSTAINABILITY SCORECARD

Metric	FY2011	FY2015	FY2016	FY2016 vs. FY2015	Aspiration targets	Target year
Total Recordable Injury Frequency Rate (TRIFR)	22.3	2.4	4.2	76% ↑	0	Ongoing
Notifiable environmental incidents	4 <sup>#</sup>	2	1	50% ↓	0	Ongoing
Return on Invested Capital (ROIC)	4.4%	9.7%	8.6%	1.1ppt ↓	10.5% (Avg)	FY2016-2018
Operating Ratio (underlying)	88.0%	74.3%	74.8%	0.5ppt ↑	70%	FY2018
Workforce availability	95.8%	96.0%	96.1%	0.1ppt ↑	>97%	End of 2019
Percentage of female employees	11.7%	15.3%	17.4%	2.1ppt ↑	30%	End of 2019
Greenhouse gas emissions intensity (kgCO <sub>2</sub> e/000GTK)	9.9	8.6	8.1	6% ↓	7.2	FY2020

Note: Metrics without long-term targets have not been included above. <sup>#</sup>FY2011 incidents data not available (FY2014 data shown).

Legend: ■ Improvement in metric performance ■ Decline in metric performance



# Sustainability highlights

## Safety

### Zero LTIs

(Lost Time Injuries) in FY2016.

## Business Model

Weighted average remaining coal contract length of

### 10.5 years.

## Future of Coal

Australia became the world's largest coal exporter in 2015.



## Community Engagement

### ×2

Doubled social return on investment in our Indigenous pre-employment training program.

Please visit our online [Sustainability Highlights](#)

## Operational Efficiency

Locomotive productivity increased

### 11%



and surpassed the US Class 1 railroad average for the first time.

## Customer Partnerships

Above and below rail coal rate per tonne dropped by 7% in real terms since FY2012.

### 7%



Coal rate per tonne

## Governance

We have voluntarily adopted the

### Tax Transparency Code

and demonstrated our commitment to paying our fair share of tax.

## Organisational Capability

Improved female participation from 15.3% to 17.4% at 30 June 2016 and Indigenous employees increased from 3.3% to 4.3%.

### 17.4%



Female participation

## Regulatory Environment

### 36%



increase in volumes for the CQCN since FY2012, demonstrating the benefits of an optimised supply chain.

## Environmental Management

### 15%



GHG emissions intensity reduction target established. (from FY2015 baseline).



# Managing Director & CEO message



**Lance Hockridge**  
Managing Director & CEO  
Aurizon

Welcome to Aurizon's FY2016 Sustainability Report (Report). This Report discusses the resilience of Aurizon, its customers and its communities, as well as the demand for the commodities we haul.

We see sustainability as key to our business. It is central to finding new ways of doing business, developing commercial solutions for customers, and creating value for shareholders.

We continue to recognise the need to improve productivity and to ensure the competitiveness of Australian rail supply chains. Our transformation also involves ongoing investment in organisational capability, the building of greater diversity across our workforce, and the nurturing of innovation and technology-enabled improvements.

## INVESTING IN THE FUTURE

Some recent examples of what we have done to invest in the long-term future for our business include:

- the rail haulage contract extension for BHP Billiton's Mount Arthur mine to 2028, supporting a high-quality thermal coal mine by providing an efficient, cost-effective and safe service
- investment in our new Enfield intermodal terminal is improving our ability to service national customers with longer trains, shorter transit times and an environmentally sustainable container supply chain
- the reduction in fuel consumption across our train fleet through technology and operational improvements, enabling our commitment to a GHG emissions intensity reduction target of 15% by 2020 (FY2015 baseline).

## OUR COMMITMENT TO SAFETY

Commitment to our values does not waiver. How we go about our day-to-day work and ensure the safety of our employees is as important as our operational metrics and financial results. In the 2016 financial year Aurizon achieved 12 months without a Lost Time Injury (LTI). This compares with 92 LTIs in FY2010.

While this is an unprecedented result, we readily acknowledge that safety performance requires relentless effort and focus. For example, while our Total Recordable Injury Frequency Rate (TRIFR) remains below the average of the North American Class 1s, it increased to 4.2 in FY2016.

## KEY CHAPTERS

I would like to direct your attention to three key chapters in this, our third Sustainability Report. Firstly, the **Business Model** chapter demonstrates the resilience of Aurizon's business and the ongoing strength of our markets of operation. Secondly, the **Operational Efficiency** chapter highlights many examples of how technology is transforming our business and will continue to drive our competitive position. Thirdly, in the **Future of Coal** chapter, we provide new insights into how changes in steel flows affect demand for metallurgical coal and review the potential implications of climate change policy for Australia's thermal coal exports.

## OUR SUSTAINABILITY REPORTING JOURNEY

Since we commenced sustainability reporting in November 2014, we have measured our performance through engagement with internal and external stakeholders. In the last 12 months we're delighted to have received recognition from the Australian Council for Superannuation Investors (ACSI) in their 'Leading' category, gained acceptance to the FTSE4Good sustainability index and improved our MSCI ESG rating from A to AA.

In January 2016 Aurizon also committed to the UN Global Compact (UNGC). We support the 10 principles of the UNGC on human rights, labour, environment, and anti-corruption; this Report plays a key role in demonstrating our Communication of Progress towards the UNGC. I was also honoured this year to receive, on behalf of Aurizon, the UN Women's Empowerment Principles — CEO Award for Cultural Change for Empowerment.

We continue to seek ways to improve our Report and I encourage you to take the time to provide your comments and ideas to us at [sustainability@aurizon.com.au](mailto:sustainability@aurizon.com.au) ➤➤

# Sustainability at Aurizon

At Aurizon we formally integrate sustainability into our key decision making processes. As a consequence, we treat sustainability as a lens through which to consider the long-term strategy of our business.

The strategic relevance of sustainability to Aurizon is clear — it reinforces the importance of our social licence to operate and helps us identify the longer-term risks and opportunities that affect our business and the global economy. This gives us a broader perspective which allows us to think creatively and challenge ourselves. As you'll see, while we discuss our historical performance, we also focus on future risks and opportunities that inform our business strategy. For us, sustainability is about looking out and reflecting inwards.

The involvement of the Aurizon Board is also central to advancing our sustainability efforts. Each year we present our material sustainability priorities, that were identified through stakeholder engagement, to our Board. We then identify how these topics are to be covered in our Sustainability Report, which is approved by our Board prior to release. This enables the commitment of the Aurizon Board to effective risk management as a key element of business success and sustainability. >>

We have received the following recognition for our sustainability reporting efforts:



MSCI



"I see a critical role for this Sustainability Report, and our sustainability strategy more broadly, in setting the tone for good governance in our organisation.

The process of developing a sustainability report requires consideration of our business through the eyes of our stakeholders, and taking a view as to the longer-term forces shaping our industry. Such a process improves our capacity for objectivity and the evidence base upon which we make our decisions. I'm proud of the achievements cited in this Report and motivated by the areas in which we can clearly do better.

This is an important period for the resources sector and one in which the notion of sustainability, in all its dimensions, has never been more critical. I trust this Report demonstrates our commitment to sustainable business practices and working collaboratively with the various sectors and customers we serve."

**Tim Poole**  
Chairman

# Aurizon’s sustainability priorities

Sustainability is at the heart of Aurizon’s mission. We are committed to building a business that delivers lasting value for our shareholders, customers, employees and the communities in which we operate.

## APPROACH TO REPORTING

This year we again sought feedback from internal and external stakeholders on the extent to which the [FY2015 Sustainability Report](#) met their expectations. The responses reinforced the importance of sustainability and transparency to Aurizon.

## EXAMPLES OF FEEDBACK RECEIVED

Included below is a sample of feedback on Aurizon’s approach to sustainability reporting and topics contained within our [FY2015 Sustainability Report](#):

“The Aurizon team has been open and responsive to feedback. As a result, Aurizon reporting is hitting the right topics for investors — ‘Future of Coal’ scenarios and transparency on how this is analysed are key. Aurizon reporting is strategically focused and feels consistent across communications — whether financial or sustainability, it is talking about the same business. The Report is a good platform from which management can monitor and drive sustainability performance, as well as communicate about it.”

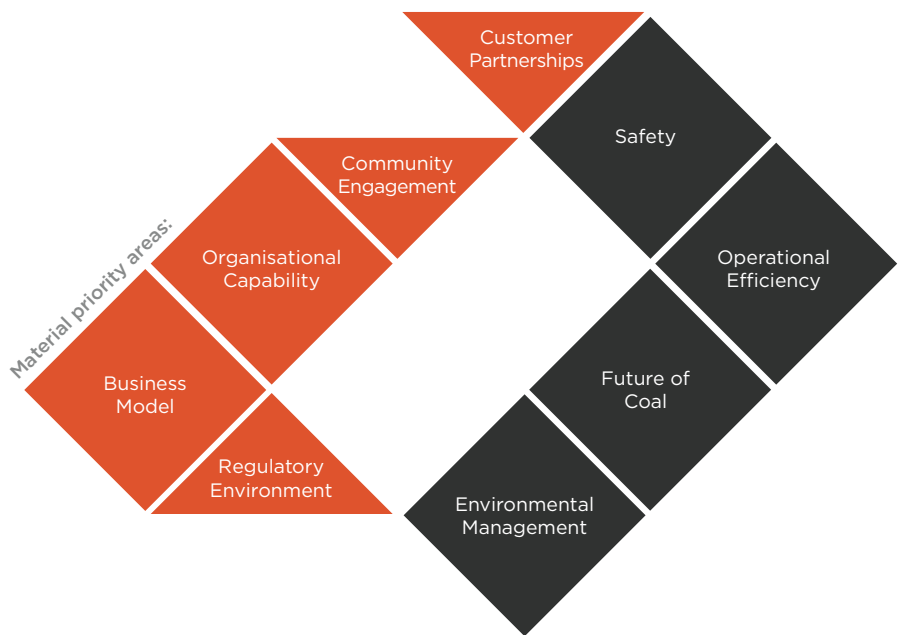
**Alison George,**  
Head of Governance, Regnan

“ACSI congratulates Aurizon Holdings on achieving a Leading rating in this year’s ACSI research. A rating of Leading demonstrates to investors that the Company takes these issues seriously and gives investors valuable information to better inform their investment decision. We commend you and your Board’s efforts to grow the company in the interests of all shareholders.”

**Louise Davidson,**  
CEO, Australian Council for Superannuation Investors  
(From an ACSI letter notifying Aurizon of its Leading status.)

“I acknowledge the efforts of Aurizon to prepare the Report, and the Company’s commitment to corporate sustainability reporting. I note Aurizon has engaged with various stakeholders in identifying Aurizon’s priority areas including safety, environmental management and operational efficiency. In particular, I commend Aurizon’s attention to organisational capability, with a focus on workforce diversity, especially by increasing female representation and the number of Aboriginal and Torres Strait Islander employees.”

**Hon. Curtis Pitt,**  
Queensland Treasurer,  
Minister for Aboriginal and Torres Strait Islander Partnerships & Minister for Sport



**Figure 1:**  
Our material sustainability priorities (see following page for further discussion).

We have prepared this Report with reference to the Global Reporting Initiative's (GRI) G4 'Core' Guidelines, encompassing governance, economic, environmental and social performance. Our approach takes into consideration the GRI's principles for informing Report content: materiality, completeness, sustainability context and stakeholder inclusiveness.

## HOW HAVE WE RESPONDED TO FEEDBACK?

We have incorporated the feedback we received on last year's Report to make improvements wherever possible, including:

- **Providing greater focus** on our Network business throughout the Report.
- **Business Model** — articulating how we integrate consideration of future risks and opportunities in decision making.
- **Future of Coal** — demonstrating how we analyse future trends in coal markets, including impacts on our assets, our customers and Australia's export competitiveness.
- **Operational Efficiency** — highlighting how we use technology and continue our transformation journey.
- **Customer Partnerships** — demonstrating how we collaborate with customers and enhance resilience of our rail Network infrastructure.

This year we have also voluntarily adopted the Tax Transparency Code to demonstrate our commitment to paying our fair share of tax and providing information on our tax affairs. Please refer to the Governance at Aurizon chapter for more information.

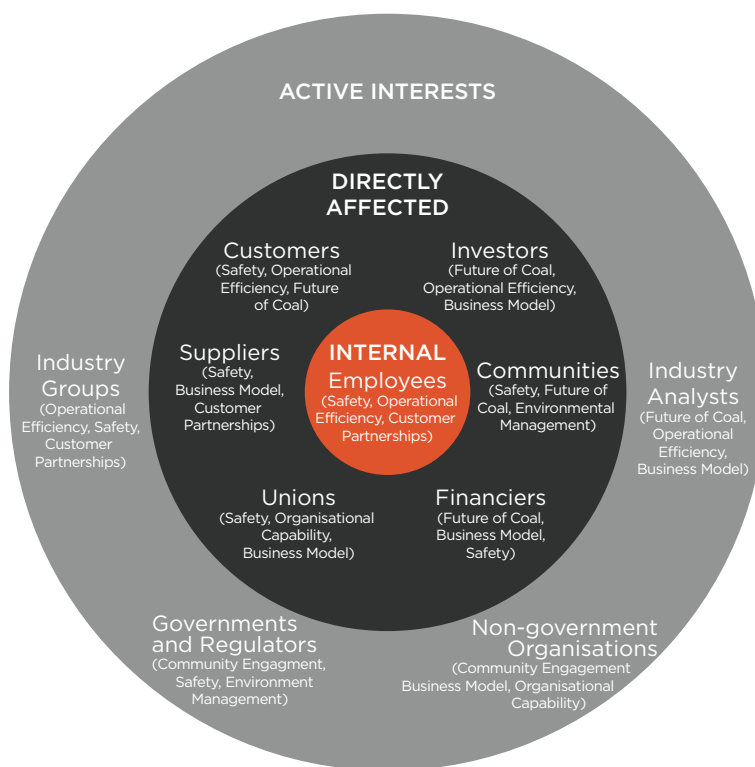
## MATERIALITY AND STAKEHOLDER INCLUSIVENESS

At the core of the GRI G4 guidelines is the principle of materiality. Our material priorities reflect those that have potential to impact Aurizon's business and are important to our stakeholders.

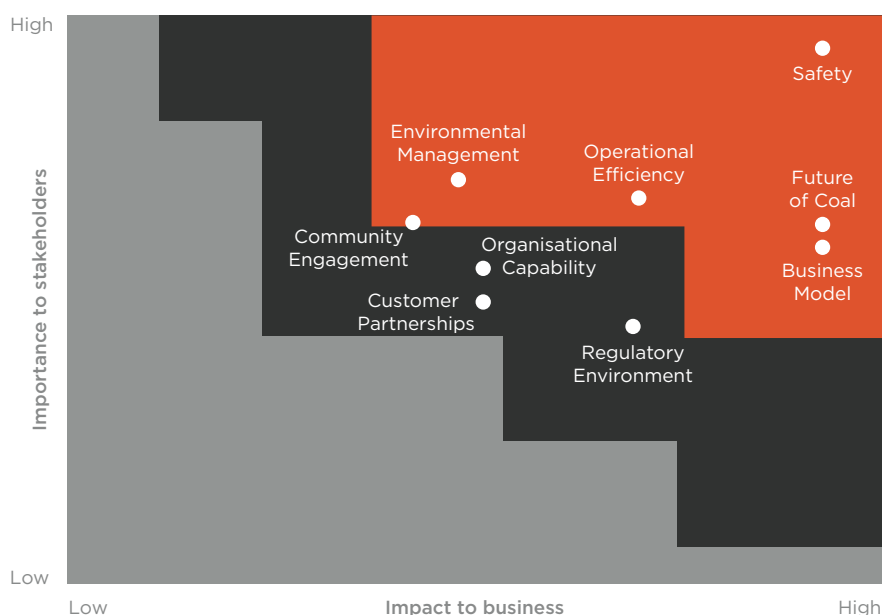
As in prior years, we conducted an annual materiality assessment by consulting internal and external stakeholders to prioritise and capture emerging issues. This involved interactive discussions with over 600 employees, issuing over 160 questionnaires to our stakeholder groups, and a number of follow up one-to-one meetings.

Figure 2 shows the top three issues that were important to each of the stakeholder groups.

We weighted the feedback from each stakeholder group equally and identified nine areas in Figure 3 that are priorities for Aurizon.



**Figure 2:**  
Aurizon stakeholders with their top three important issues listed.



**Figure 3:**  
FY2016 material priorities.

The nine material priorities remained the same as compared with FY2014 and FY2015. Safety continues to rank as most important, and continues to remain at the core of Aurizon's values.

Although no material priorities have changed since FY2015, our stakeholders have placed stronger importance on our business model. We attribute this to the importance of our ability to effectively plan and respond to challenging commodity market and general freight conditions.

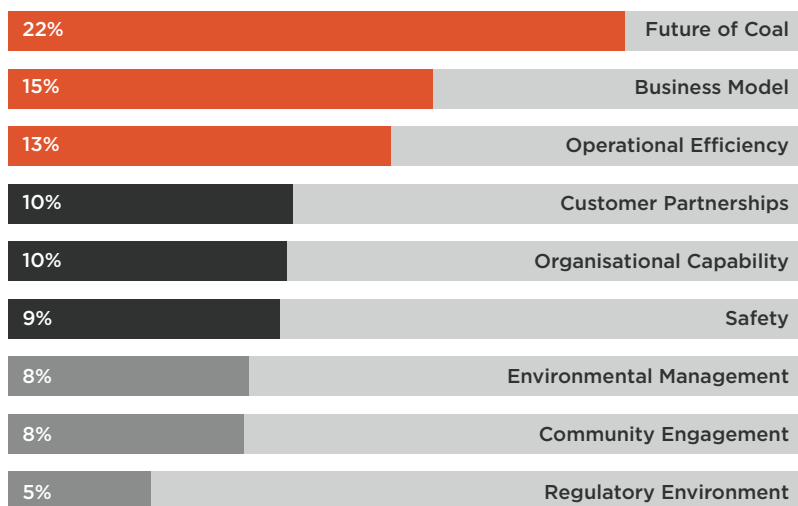


## IDENTIFICATION OF MATERIAL TOPICS

To understand which chapters are of most interest to readers we tracked website downloads of our FY2015 Report to 30 June 2016.

Figure 4 indicates that online readers are most interested in the Future of Coal, Business Model and Operational Efficiency chapters of the Report. We have therefore continued to focus on these chapters to ensure they meet stakeholder expectations.

While the nine material priority areas have not changed over the past three years, two themes have emerged that continue to remain relevant to our stakeholders: innovation through technology and climate change. We have provided an introduction to these topics below and referred to relevant examples within this Report.





**Figure 4:**  
FY2015 Report downloads of individual chapters (by percentage).

## INNOVATION THROUGH TECHNOLOGY


Like most asset intensive businesses, access to technology is a key capability that defines how Aurizon innovates and operates. Implementing innovative technology solutions provides better customer outcomes, enhanced productivity and enables future growth.


Technology complements our commitment to sustainability as it is applied through long-term planning to deliver lasting value. This Report also demonstrates how technology is contributing to safety, efficiency gains and supporting our ability to make informed decisions with social, environmental and economic considerations. The following examples show how technology is used to deliver sustainable value:


 **Safety** — ability to reduce or avoid safety risks with monitoring systems on vehicles and on our track.

 **Business Model** — as a distinctive capability to underpin competitive advantage.

 **Future of Coal** — potential of more efficient coal-fired generation technology in Asian countries to reduce greenhouse gas (GHG) emissions.

 **Operational Efficiency** — faster, more responsive planning and scheduling of trains.

 **Customer Partnerships** — new customer portals delivering real-time and tailored information online.

 **Environmental Management** — [interactive calculator](#) to estimate GHG emissions savings from using rail as opposed to road.



**Community Engagement** — opacity monitoring used to detect levels of coal dust in the Central Queensland Coal Network (CQCN).



**Organisational Capability** — using Aurizon's Change practices to manage the impact of new technology on people.



**Regulatory Environment** — achieving regulatory policy that enables investment in transformative technology to increase infrastructure capacity.

We also recognise that the ability for technology to deliver lasting value relies on our organisational capability to plan, implement, operate, support and maintain new technology. As such, we provide further insight this year in our Operational Efficiency chapter regarding our Enterprise Technology Roadmap and how technology will drive us towards the digital railway of the future.

## CLIMATE CHANGE

Since our inaugural Report we have sought to provide stakeholders with information about our position on climate change and how we are managing associated risks. These risks relate to future demand for the thermal coal we haul, regulation of our direct GHG emissions and physical impacts on our assets and people.

We acknowledge the strong scientific consensus that climate change is occurring and support the objective of the Paris Climate Agreement to find a pathway to limiting global warming to two degrees. We understand this task will not be easy, but what is certain is that effective policy will be needed to mitigate GHG emissions and adapt to a changing climate.

Aurizon's climate change risks and opportunities are disclosed annually in our submission to the CDP (previously Carbon Disclosure Project) and are also reflected in this Report. In particular, we draw attention to the following examples of how climate change consideration is integrated into our business in the following chapters:



**Business Model** — understanding policy and its potential to impact our business long-term.



**Future of Coal** — GHG emission reduction benefits from Australia's high-quality thermal coal.



**Operational Efficiency** — our progress in reducing locomotive energy use and associated GHG emissions.



**Environmental Management** — the monitoring, reporting and regulation of our direct GHG emissions.



**Customer Partnerships** — preparing for, and adapting to, extreme weather events that impact our Network and rail haulage business.



**Regulatory Environment** — GHG emission reduction benefits from moving freight from road to rail.

Of most interest to our stakeholders is our perspective on climate change implications for long-term seaborne thermal coal demand. This part of our business has experienced increased attention in the context of climate change policy, particularly following the Paris Climate Agreement. In response to stakeholder feedback, we discuss climate change policy implications for Australia's thermal coal exports in the Future of Coal chapter of this Report. ➤

# Safety

At Aurizon the safety of ourselves and others is our number one priority. It is at the core of everything we do as we commit to **ZERO**Harm.

## SAFETY PRINCIPLES

We have five Safety principles:

- 1. Safety is the core Aurizon value.
- 2. All injuries can be prevented.
- 3. Management is accountable for creating and maintaining a safe workplace.
- 4. We are all responsible for preventing injuries.
- 5. Working safely is a condition of employment.

## OUR SAFETY STRATEGY

We have made significant progress in our journey to **ZERO**Harm since we started the safety cultural change in FY2009. At that point in time Aurizon was recording 12 Lost Time Injuries (LTIs) per month. In FY2016, we recorded zero LTIs per month. As we continue our relentless pursuit of world-leading safety performance, we recognise that additional safety gains may become

more challenging, especially during the current period of organisational change and transformation.

Regardless, we will maintain our focus on safety as it increases morale, wellbeing and motivation for our employees. It also improves productivity through higher worker availability, less turnover and reduced costs for workers compensation and litigation.

Aurizon renews its Safety Strategy annually to ensure we keep a forward-looking focus in our drive towards **ZERO**Harm. The key safety initiatives over the next five years include:

- embedding a culture of “Safety by Choice”
- sharing lessons learnt across regions
- empowering individuals to identify and implement safety initiatives
- adapting processes that eliminate or reduce exposures to safety hazards
- streamlining and simplifying processes to ensure consistency and reduce costs.

The following sections highlight our safety performance, community safety and the safety related recognitions we have received during FY2016.

## FY2016 SAFETY PERFORMANCE

### EMPLOYEE SAFETY

For the first time in our history we recorded a LTI-free 12 months to November 2015. As at 30 June 2016, we remained LTI free and have continued this world-leading performance until the time of this Report. Figure 5 illustrates our journey of employee safety improvement from FY2011 to FY2016.

As illustrated in Figure 6, while our Total Recordable Injury Frequency Rate (TRIFR) remained below the comparable Class 1 average, our TRIFR did increase to 4.2 in FY2016.

At Aurizon we constantly analyse our safety performance data to identify opportunities for continuous improvement. To that end, we monitor injuries by type (see Figure 7), adapt processes, improve equipment and work environments, and communicate with employees about relevant risks and how to eliminate them.

We have examined injury data for FY2016 and found the highest numbers of TRIs were hand injuries (34%) caused by sharp objects. To improve the TRI performance we have redesigned a broad range of tasks to eliminate knife-cutting, banned fixed-blade knives and introduced concealed-blade or auto-retract blade knives. Similarly, safety interactions and Toolbox Talks have been held to inform staff of preventative benefits. With the increased focus, we have seen an encouraging trend of decreasing TRIs in the second half of FY2016.

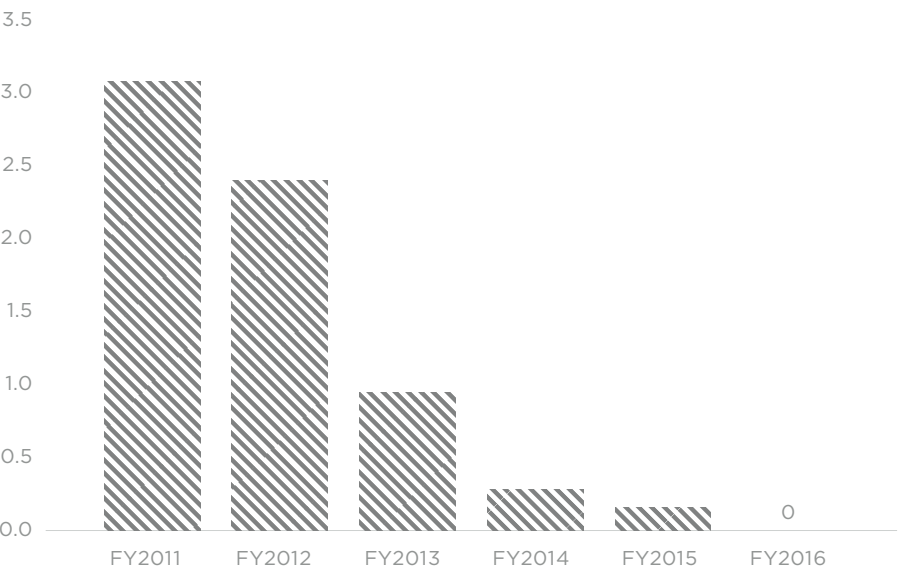


Figure 5: Historical Lost Time Injury Frequency Rates per million man-hours worked.



## OPERATIONAL SAFETY

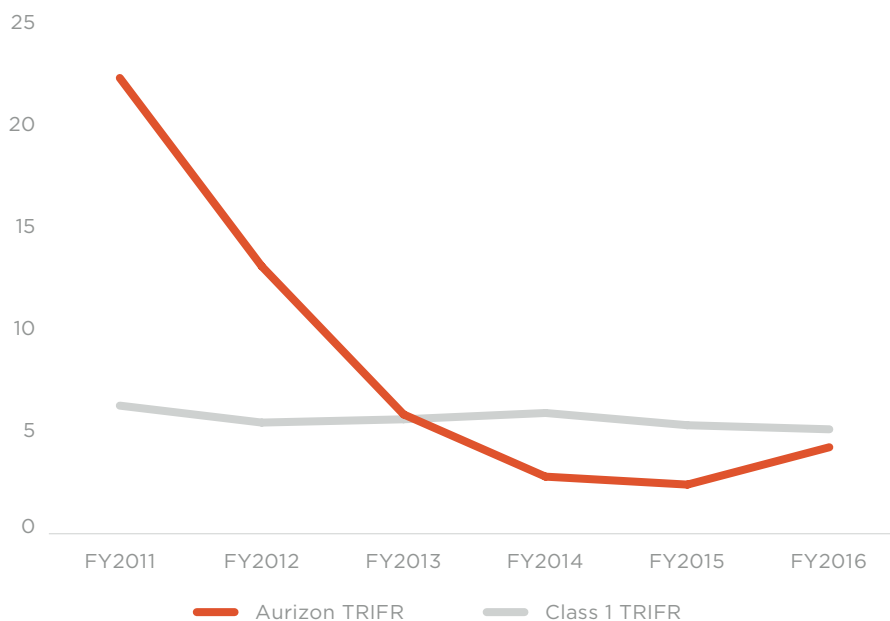
A key measure of operational safety at Aurizon is derailments per Million Train Kilometres (MTKm). In FY2016, we recorded 10 derailments (compared to 16 in FY2015), a 40% improvement which set a new record low for Aurizon.

Despite rigorous safety measures, in December 2015 a derailment resulted in a train roll-over at Julia Creek in Queensland. The derailment caused minor injuries to three of our employees as well as significant damage, cost, and loss of revenue. The Australian Transport Safety Bureau (ATSB) released its [preliminary investigation report](#) on 21 April 2016, indicating that the Aurizon train drivers operated the train in full compliance with

relevant standards and training. The ATSB is expected to publish its final report in October 2016. The incident reinforces the importance of investigating factors attributed to derailment risk.

We continue to focus on progressing the use of predictive technology to detect and pre-emptively correct track and rollingstock issues that may cause safety incidents. For example, in our Central Queensland Coal Network (CQCN), wayside Condition Monitoring technology has been a factor that has contributed to an 86% reduction in the number of serious operational incidents such as train partings. Please refer to our Operational Efficiency chapter for more information on Condition Monitoring.

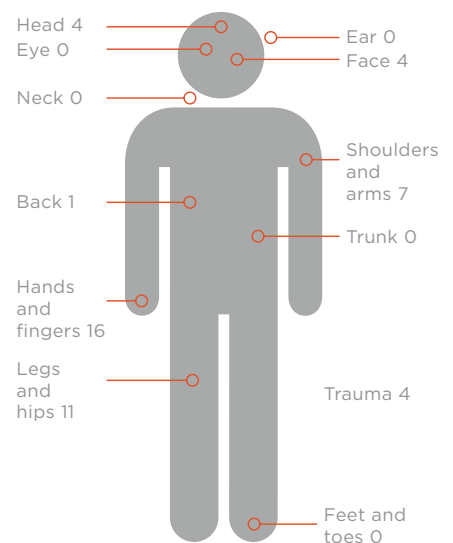
During FY2016, we achieved zero Lost Time Injuries, recorded a 52% reduction in level crossing incidents and won the Regional Asia Pacific Award for Excellence in Safety in the prestigious DuPont Global Safety & Sustainability Awards.



**Figure 6:** Total Recordable Injury Frequency Rates per million man-hours worked (Aurizon vs. Class 1\*).

\* Class 1 TRIFR is calculated by averaging TRIFRs of BNSF, Canadian National, Canadian Pacific, CSX, Norfolk Southern & Union Pacific.

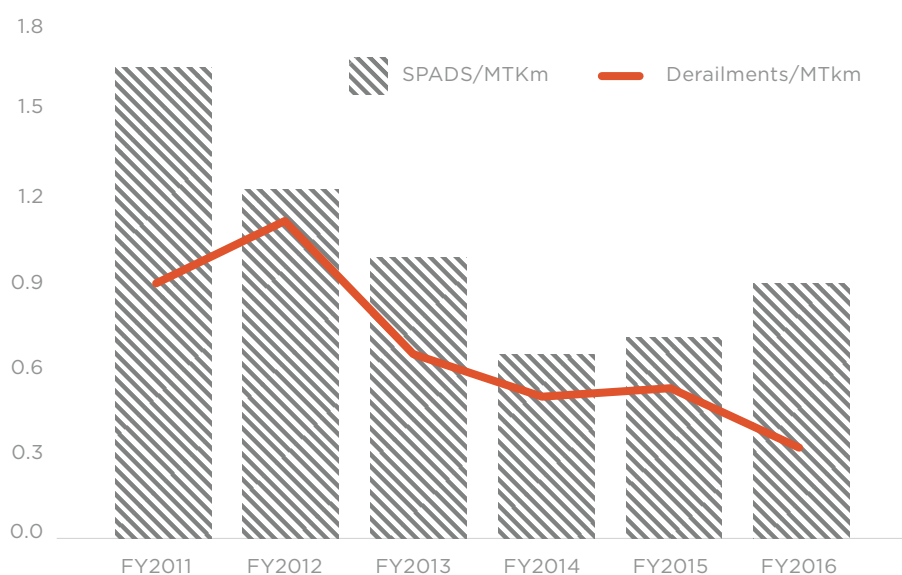
Total Recordable Injury body parts (FY2016-47) (FY2015-30)\*



**Figure 7:** FY2016 Total Recordable Injuries.

\* Note: the body part figures will not always add up to the 'all injuries' figure. This is because multiple body parts can be affected by the one injury event.





**Figure 8:**  
Historical derailments and SPADs.

Signals Passed at Danger (SPADs) are a predictive measure to improve rail safety. A SPAD reflects an instance in which a train has entered a section of the track without the correct authority, for example, passing a red signal. In FY2016 we recorded an increase on FY2015 SPADs per MTKm, from 0.71 to 0.90 (Figure 8). Our improvement strategies going forward are to ensure train drivers follow the correct driving methodologies and introducing non-technical skills training to better equip drivers.

#### DRIVE SAFE

With many of our people on the roads each day, driving vehicles remains one of the key risks in keeping our employees safe. In October 2015 we commenced installation of In-Vehicle Monitoring System (IVMS) devices into our light and heavy vehicles and prime movers, with completion expected in the first half of FY2017. The short-term objectives are to monitor and report on driver performance so we can communicate

positive driver behaviour and identify areas for improvement. Encouragingly, our managers and supervisors are proactively using IVMS to lead conversations on safe driving awareness and behaviours. In the long term, evidence suggests that IVMS contributes significantly to incident-free road safety practices.

## EMPLOYEE HEALTH

The health and wellbeing of our employees is of paramount importance to Aurizon. Our Chief Medical Officer leads the Health & Wellbeing program. We recognise the risks related to a lack of physical activity and sedentary behaviour in the workplace, especially as approximately one third of our employees are over the age of 50.

To mitigate these risks we created an enterprise-wide Health & Wellbeing strategy in FY2016. It provides an integrated and results-oriented approach, delivering tailored health solutions to improve employee and organisational health and wellbeing. The strategy considers both employee physical and mental wellbeing, as well as key determinants of health, including both personal and environmental contributors. This helps ensure that we develop healthier bodies, minds, and a culture that is supportive of these initiatives. Please see Table 1 for details.

We look forward to reporting on these initiatives in the years to come. One measure of success will be workforce availability, which has increased from 95.8% in FY2011 to 96.1% in FY2016 (with a target of more than 97% by the end of 2019).

Prevention	Response
Online health assessment, health check and coaching	Active intervention solutions that provide support for individuals with identified health risks or health conditions
Health capacity evaluations tailored to role profiles	Aurizon tobacco cessation program
Mental health promotion	Mental health crisis response training. Employee Assistance Program, including confidential counselling for employees and their family members

**Table 1:**  
Health & Wellbeing initiatives.



## COMMUNITY SAFETY

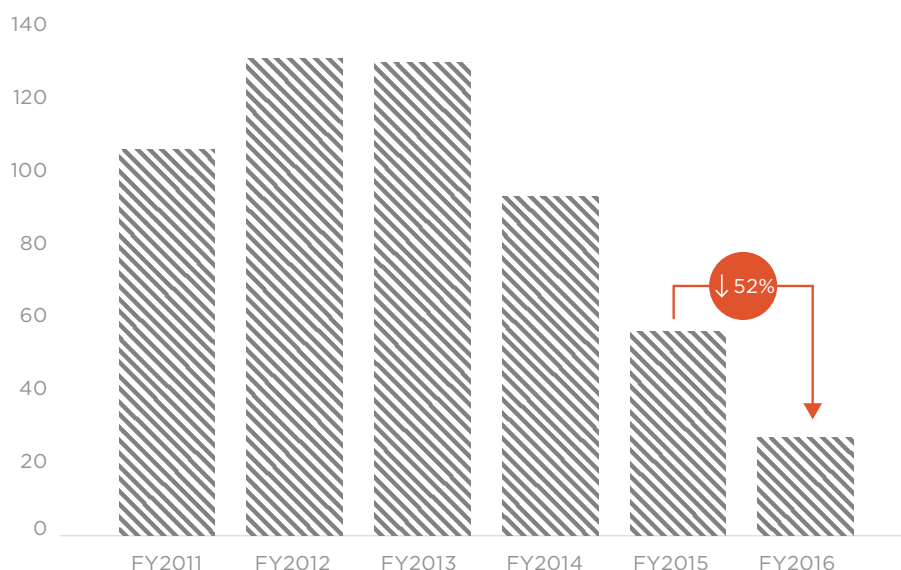
Aurizon's CQCN incorporates 765 level crossings. We also operate on many other rail networks across Australia, where some 20,000 level crossings<sup>1</sup> have passenger and vehicle traffic passing over the rail track.

We continue to work proactively with local communities, the Bus Industry Council, the Truck Association, Motoring Associations, Police and Government on a range of preventative level crossing strategies. This includes upgrading level crossing protection and closure of unnecessary crossings after consultation and collaboration processes.

In addition, to help tackle this serious community safety issue, we produced two educational online videos. Our first animated video, *Stay off the Tracks*, was hosted on Aurizon's YouTube channel and shared by the Queensland Department of Transport and Main Roads and the Queensland Police, reaching more than 45,000 people on social media. We then collaborated with the Newcastle Knights Rugby League team to record a [rail safety video](#) to speak to school children and communities about level crossing safety.

To further engage on this topic we co-sponsored trackSAFE's Australasian Level Crossing Forum in Brisbane in June 2016. This Forum brought together rail companies, police, regulators, and government representatives from Australia and overseas to identify prevention initiatives.

As a result of these proactive campaigns, we recorded a 52% reduction in level crossing incidents in FY2016. See Figure 9 for historical improvements.



**Figure 9:**  
Number of recorded level crossing incidents on the CQCN.

## RECOGNITION

Our key safety milestones in FY2016 include:

- achieving a Lost Time Injury Free financial year
- winning the Regional Asia Pacific Award for Excellence in Safety in the DuPont Global Safety & Sustainability Awards
- being a finalist for the Chartered Institute of Logistics and Transport Australia awards, which recognise organisations that have demonstrated a practical and exceptional commitment to excellence in safety. ➤➤

<sup>1</sup> Sourced from Australian Centre for Rail Innovation. [acri.net.au/rail-level-crossing-near-miss-survey/](http://acri.net.au/rail-level-crossing-near-miss-survey/)

# Business Model

Aurizon is Australia's largest rail freight company, utilising below and above rail capabilities to carry products for domestic and global consumption.

## WHAT WE DO

Each year, Aurizon transports more than 250 million tonnes of bulk and agricultural commodities, connecting miners, primary producers, and industry with international and domestic markets. We also provide containerised transport solutions across an extensive national rail and road network.

In addition, Aurizon co-ordinates operation of the Central Queensland Coal Network (CQCN), an open access network servicing multiple customers across interconnected corridors and ports. We are well positioned in all aspects of rail network design, construction, asset monitoring, maintenance and operation.

We're the only vertically integrated, multi-user heavy haul rail company in Australia.

## OUTLOOK

In FY2017 we are targeting:

- underlying Earnings Before Interest and Tax (EBIT) between \$900 and \$950 million
- revenue between \$3.35 and \$3.55 billion
- above rail haulage of 255mt – 275mt
- coal haulage of 200 – 212mt.

“Since listing on the ASX in FY2011, we have hauled 11% more tonnes, with 37% fewer locomotives and 19% fewer wagons.”

**Managing Director & CEO** Lance Hockridge

## REVENUE

- Our Network business provides a stable, defensive, regulated stream of earnings (34% of Aurizon revenue).
- For our rail haulage business, 79% of our coal volumes and 100% of our iron ore volumes are under long-term 'new form' contracts providing a 60-70% fixed-revenue stream through take-or-pay arrangements.
- No material coal haulage contracts are due to expire until FY2022, while the weighted average remaining contract length is 10.5 years for coal and 5.2 years for iron ore.

## COSTS

- We have been successful in becoming a more cost-competitive business with a stronger operational, commercial and customer focus.
- The bulk of the ongoing costs of our operations relate to labour (45%), consumables (30%), track access (15%) and fuel (10%).
- Our Operating Ratio (i.e. 1-EBIT margin) reduced from 88% in FY2011 to 74.8% in FY2016.

## ASSETS

- We have approximately 500 active locomotives and 13,000 active wagons across 28 rail depots.
- We operate and manage the Central Queensland Coal Network, 2,670 kilometres of track with a Regulated Asset Base of \$5.6 billion.

## FUNDING AND CAPITAL MANAGEMENT

- Aurizon Enterprise Value was \$13.0 billion as at 30 June 2016, made up of \$9.5 billion of equity value (market capitalisation) and \$3.5 billion of debt value.
- Aurizon seeks to create sustainable value through disciplined capital allocation which generates returns above the cost of capital.





## OUR BUSINESS STRUCTURE — BELOW AND ABOVE RAIL

Our operations fit broadly into two categories — below rail network infrastructure and above rail transport operations. An overview of our integrated set of capabilities is provided below:

### BELOW RAIL (NETWORK)



#### Operation and planning

With an average of 70 rail services on the CQCN each day, Aurizon performs all aspects of network traffic control, capacity planning, safety accreditation and day of operations planning in the CQCN. Each year since IPO in 2010, we have set new records of coal volumes hauled on the CQCN. In FY2016 the CQCN achieved another record of 226 million tonnes.



#### Maintenance and renewal

Aurizon undertakes track inspections, preventative maintenance, asset renewals, emergency repair, response and recovery. We also operate a fleet of specialised track maintenance machines and employ a sophisticated system for maintenance planning and asset management. We provide these services within the CQCN and nationally for other network providers and can scale this capability to other opportunities.



#### Design and construction

Aurizon has demonstrated experience and competency across engineering, design, project management and construction disciplines. In response to customer requests, we have completed approximately \$2.5 billion in major capital works since IPO and added 70 million tonnes of network capacity.

### ABOVE RAIL (RAIL HAULAGE)



#### Operations

Aurizon has extensive experience in transporting mining products, bulk commodities, industrial products and intermodal freight. We do this in large volumes, over long distances, in demanding environments and across complex supply chains.



#### Engineering and maintenance

Aurizon manages the majority of rollingstock and terminal equipment maintenance across the locomotive and wagon fleet.



#### Other services

Aurizon also provides a wide range of rail-based services including terminal operation, third-party provisioning and coordination of containerised pick-up and delivery.

## QCOAL — BYERWEN COAL PROJECT

The Byerwen Coal Project is located 150 kilometres west of Mackay, Queensland. Once operational, the Byerwen Mine will produce up to 10 million tonnes of metallurgical coal per year to be railed to Abbot Point Coal Terminal for export.

Aurizon is designing the signalling systems and anticipates beginning construction of the track, telecommunications and signalling infrastructure for the new mine in late September 2016.

This is the second contract we have won from Qcoal after managing the civil works contractor (Murphy Pipe and Civil) on-site.

“This has been an outstanding team effort and a clear demonstration of the results that can be achieved through the delivery of great infrastructure solutions for our customers in the industry.”

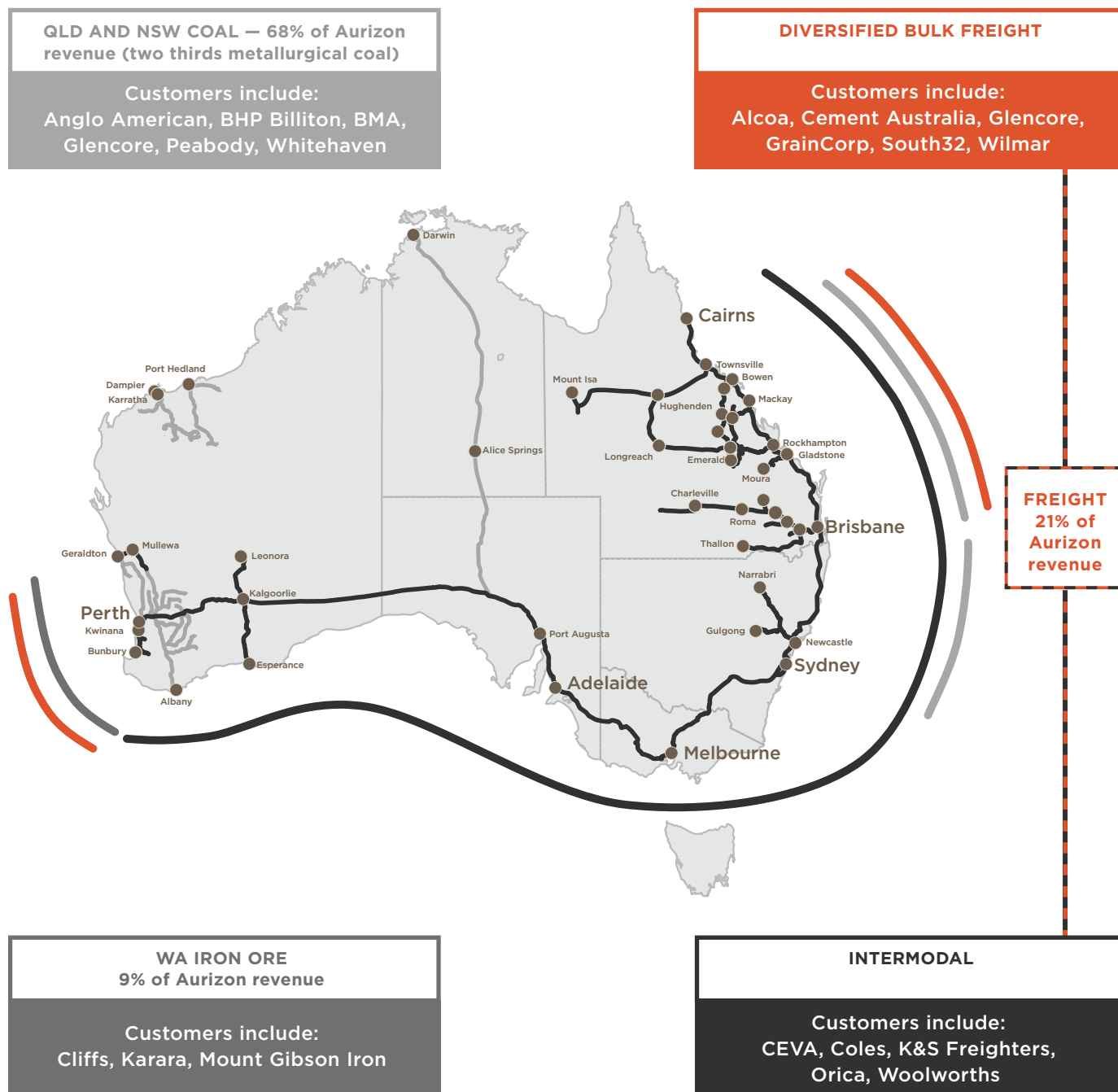
**Michael Carter**  
A/EVP Operations

## WHERE WE OPERATE

The Australian rail industry operates nationally across 33,000 kilometres of track using over 2,200 locomotives (majority of which are standard gauge). Each year the rail industry hauls over one billion tonnes of bulk and containerised freight<sup>2</sup>.

Australia has some of the best coal and iron ore reserves globally, which support its position as the largest global exporter of both coal and iron ore. Considering these commodities account for 60%<sup>3</sup> of dry bulk commodities transported by sea, we believe Australia is the best country in which to be a bulk rail operator.

As shown below, Aurizon is a significant contributor to Australian supply chains, particularly across the four markets of iron ore, coal, intermodal and diversified bulk freight. Approximately 68% of our total revenue relates to coal and is discussed in the Future of Coal chapter of this Report. Figure 10 below shows the broad geographic regions of each of our four markets, associated revenue contributions and example customers.



Other revenue from disposal of PP&E or provision of maintenance services to external customers not shown.

**Figure 10:**

Aurizon operations across four key markets.

<sup>2</sup> Sourced from FY2016 Full-year results for Aurizon, Rio Tinto, BHP Billiton, FMG and Asciano.

<sup>3</sup> Dry Bulk Magazine — Spring 2016 — Volume 1.

## OUR STRATEGY

In FY2015 Aurizon developed the Blueprint strategy and engaged with employees and external stakeholders on how this framework will create value. The strategy will be delivered through the following areas:



### Customer focus

- Aurizon is strengthening and growing our current business through a relentless focus on our customers. Aurizon has continued to work with customers in order to identify cost savings and productivity opportunities across the supply chain.
- Our investment in information and operations technology improves our customer offering, with greater transparency and consistency of information.



### Productivity improvement

- The new Enterprise Agreements, which were substantially implemented in September 2015, are a key enabler for productivity improvements and efficiencies — allowing us to consistently deliver what we promise for our customers.
- Over the next two to three years we expect stable volumes, which reinforces our commitment to transformation. Our multi-year transformation program involves identifying and implementing initiatives to create a highly focused, performance-driven culture which will reduce our cost base, drive productivity improvements and create shareholder value.
- We use world-leading Condition Monitoring technology to provide real-time and predictive data, enabling our staff to focus on fixing rather than finding maintenance issues.



### Growth opportunities

- We explore growth opportunities that are aligned to our Blueprint and leverage our capabilities.
- We develop innovative solutions to attract new customers in existing intermodal and bulk markets.
- We will continue to seek opportunities that utilise our capacity to support existing and emerging coal producers.

## OUR ROADMAP FOR THE LONG-TERM FUTURE OF THE NETWORK

The [Aurizon Network Technical Strategy](#) (Technical Strategy) will be published annually and complements the [Network Development Plan](#), by defining those opportunities that can facilitate growth at the lowest cost.

The Technical Strategy also provides a detailed means of articulating a future vision for operating the Network centred on customer focus and productivity improvement.

Network improvement opportunities are considered using the following principles:

- An integrated system approach is facilitated.
- There is potential to reduce the total cost of transport.
- Innovation is promoted.
- Sustainability goals are achieved.
- Renewals investment is leveraged.

The inaugural version of the Technical Strategy includes information regarding the following opportunities:

- Network upgrades to facilitate heavier trains.
- Improved IT systems for train scheduling and management.
- Modelling tools to optimise timing of maintenance and renewals.
- Expansion of wayside Condition Monitoring capability.
- Purchase of mechanised track maintenance equipment.

For example, above rail operators have expressed a need to understand what rollingstock could be utilised on the Network in the future. In our inaugural Technical Strategy we evaluated the potential upgrade of infrastructure for heavier trains, including above and below rail cost implications. This evaluation was conducted using two scenarios for tonnage growth in the CQCN, 1% and 3% per annum over 25 years.

The results indicated that upgrading the infrastructure for heavier trains is currently not viable, but a future tonnage growth rate above 3% per annum could alter this initial assessment. The evaluation also revealed that the next iteration of the Technical Strategy should consider infrastructure upgrades which facilitate heavier locomotives (with current wagons) and facilitate higher wagon overload limits.



## GLOBAL FACTORS INFLUENCING OUR FUTURE

Over our 150-year history Aurizon has witnessed considerable change. It is in this context that we have every confidence in our continued resilience and, where necessary, ability to adapt to changing market conditions. Our views on several key drivers of uncertainty and opportunity relating to our business are as follows:

- **Urbanisation and development in Asia:** Asia, including the Indian sub-continent, is currently undergoing a major urban transformation with an additional one billion people forecast to move to cities by 2050. We pay close attention to this trend given urbanisation requires infrastructure investment and drives associated demand for steel. We see this as a key driver for the future of seaborne metallurgical coal and iron ore demand, given steel is predominantly produced using these bulk commodities.
  - **Climate change:** Discussed extensively throughout this Report, the physical impacts and potential policy responses relating to climate change will continue to be a long-term strategic consideration for Aurizon and our customers. In the short term we have set targets to reduce our direct carbon emissions, however, our main focus is to monitor emissions reduction commitments in key thermal coal import countries in Asia. Aurizon believes that if emissions reduction mechanisms are implemented in these countries it could direct more finance towards high-efficiency coal-fired generation. For Aurizon, there is also a strong relationship across Asia between increased adoption of high-efficiency generation technology and coal quality, which could provide an advantage for high-quality Australian coal.
  - **Trade liberalisation:** Australia is well connected to the world economy through a flow of people, goods, services and capital. There are currently a record number of free trade agreements under negotiation, or recently signed, providing significant opportunities for Australian companies such as Aurizon and our customers. We must also ensure that, at the same time, trade protectionism is not used to protect unsustainable industries to the detriment of competitive global supplies. We see this as a key driver for the future of Australian export commodity demand.
- The importance of the factors described above are further discussed in our Future of Coal and Regulatory Environment chapters.

## OUR SCENARIO PLANNING APPROACH

To Aurizon, sustainability means building a resilient business to manage long-term trends. This requires foresight to monitor key factors with the potential to impact customers, communities and the commodities we haul.

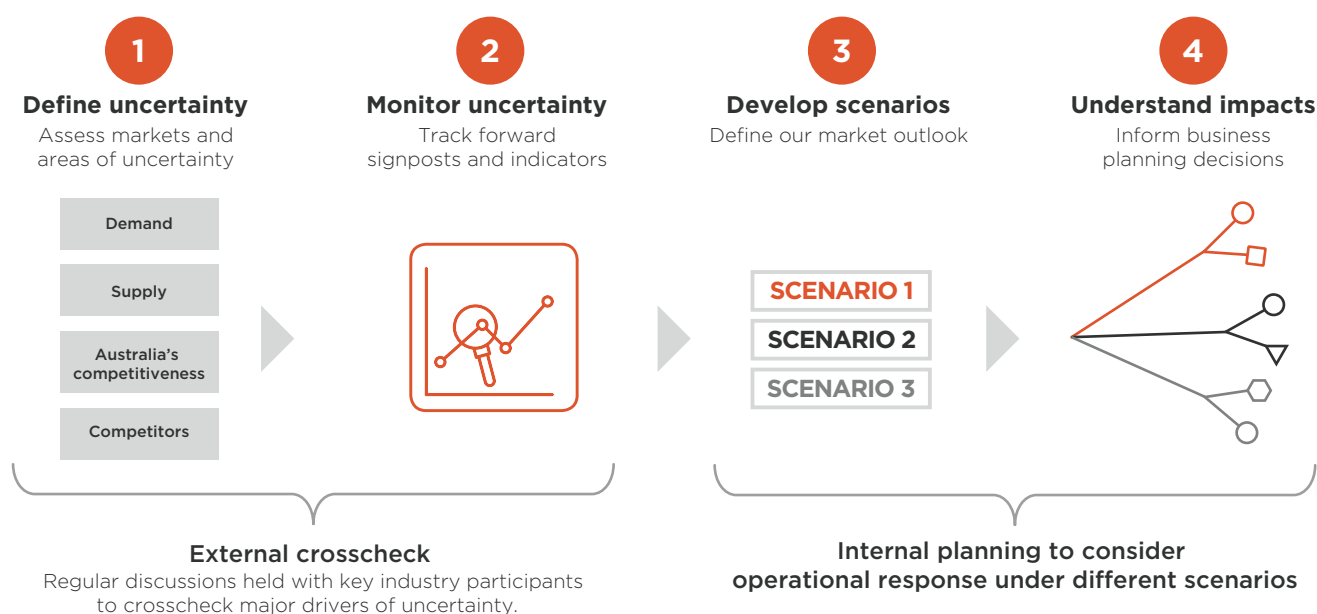
To ensure our continued success we regularly undertake scenario planning focussed on assessing risks and opportunities. A key component of this assessment is consideration of future commodity demand and supply scenarios driven by economic indicators, emerging technologies and policy in domestic and international markets.

We believe that Australia is well placed to make the most of the opportunities in our region. Aurizon in particular will play a key role in this due to our central position in Australia's globally competitive export supply chains.

Our business strategy makes use of scenario development to inform business decisions. We monitor the external environment using signposts or lead indicators to ensure we are able to identify when to implement adaptive strategies. As the market and government regulatory environments are not static, this analysis is regularly updated to ensure the most

relevant information is at hand to inform major investments in long-life assets.

The diagram below illustrates the high level approach used. Ultimately this approach provides consideration for our business model and forecasts. In this context we specifically note that on 15 August 2016, Aurizon announced that a performance review is underway. The aim of the review is to determine options to achieve appropriate risk-adjusted returns across our intermodal and diversified bulk freight businesses.



**Figure 11:**  
Key elements of Aurizon's scenario planning approach.



# Future of Coal

Our ongoing business success is linked to the future demand for the commodities we transport for our customers.

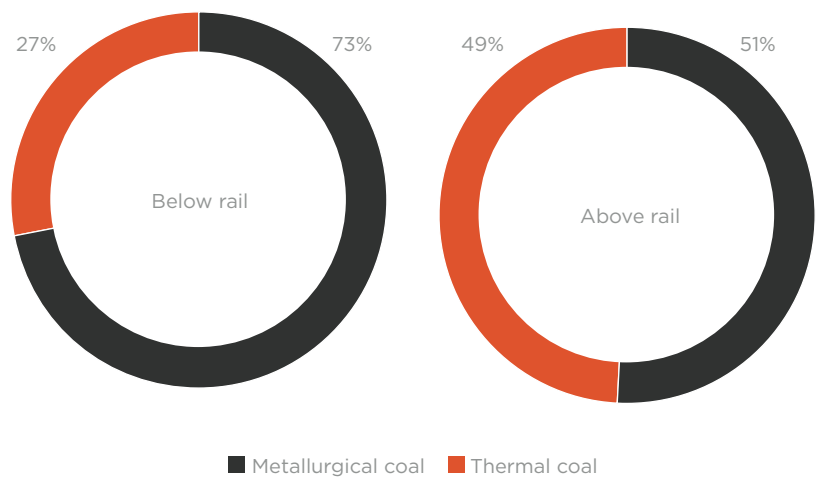
Following release of our FY2014 Report, Aurizon stakeholders called for a wider discussion on the differentiation of coal types. We undertook this through our FY2015 Report, which outlined that the vast majority of coal can be divided into two types: metallurgical and thermal.

Metallurgical coal is used to produce steel while thermal coal is primarily used to produce electricity. Metallurgical coal is relatively scarce and Australia's cost competitiveness and export infrastructure are key drivers that underpin its dominance in the seaborne market. Meanwhile, the future of thermal coal lies in using high-quality coal and high-efficiency low-emissions (HELE) technology to provide reliable baseload power while reducing carbon emissions.

In this year's Report we continue this conversation, as coal will remain important for both our haulage and network businesses. In this chapter we specifically draw attention to the role Australia plays in global coal supply in light of becoming the largest global coal exporter in 2015. We also provide new insight into seaborne metallurgical coal supply and the diversification of end use of steel through international supply chains. Finally, we review the implications of climate change policy for seaborne thermal coal following commitments from major thermal coal importing countries in Asia.

## IMPORTANCE OF COAL TO AURIZON

Approximately 68% of Aurizon's revenue is derived from coal. As a result, we closely analyse Australia's role in the global coal export markets. This requires two distinct areas of analysis to separately consider — metallurgical coal and thermal coal. While both commodities are important to Aurizon in FY2016, metallurgical coal underpinned 73% of our network revenues and 51% of our (coal-related) rail haulage revenues (Figure 12).



**Figure 12:**  
Aurizon's coal-related revenues.

Source: Coal types: Wood MacKenzie Coal Supply Service (July 2016) and AZJ actual railings (by haul). The Aurizon coal revenue split is based on estimated product split at serviced mines by volume.



**Figure 13:**  
Aurizon's role in Australia's coal exports.

Source: Port and terminal data, Aurizon analysis.



## AURIZON'S ROLE IN AUSTRALIA'S COAL EXPORTS

In FY2016 Australia exported record-high coal volumes to Japan (thermal), South Korea (thermal) and India (metallurgical). Australia also became the world's largest coal exporter accounting for 66% and 23% of seaborne metallurgical and thermal coal supply respectively, as illustrated in Figure 14. Aurizon's participation in the global seaborne market is also significant as over two-thirds of Australia's coal exports either use our Network or are carried by our above rail (haulage) business, as illustrated in Figure 13.

Australia's supply position is differentiated by high-quality coal mines, which are operated by major diversified miners such as BHP Billiton Mitsubishi Alliance (BMA)

and Glencore (who are the largest global exporters of metallurgical and thermal coal respectively). As such, Australia has an enviable position that is unmatched globally.

The following sections set out the inherent drivers that underpin Australia's role in both global metallurgical and thermal coal supply. We believe Aurizon's assets are well placed to serve the continued demand for Australian coal as demonstrated by the steady increase in Australia's coal exports since 2010.

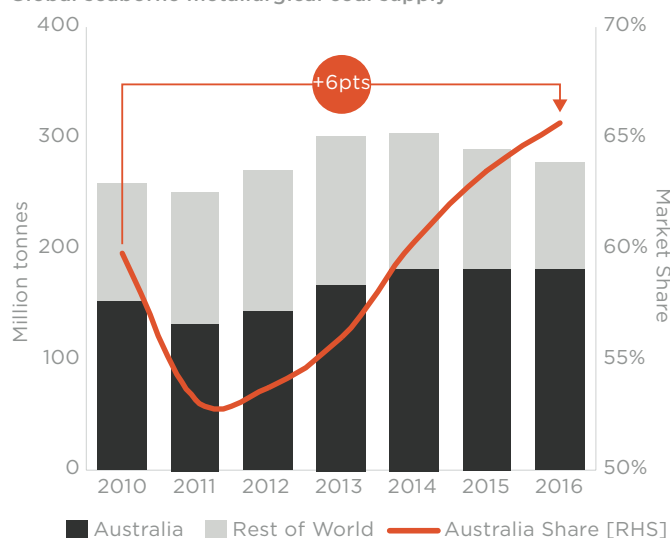
## DEMAND FOR SEABORNE COAL IN KEY EXPORT MARKETS

While much of the current public dialogue regarding coal tends to consider it in singular terms, thermal and metallurgical coal have significantly different uses and

substantially different exposures to political, economic and environmental factors that affect their demand.

Another consideration is the location of demand for thermal coal. While demand for thermal coal is flat or declining in North America, Europe and potentially Australia, over 85% of the coal Aurizon transports is exported to Asia and the Indian sub-continent. Therefore, the following sections set out the inherent drivers underpinning demand in developed Asian economies such as Japan, South Korea and Taiwan (that have historically provided a reliable source of demand) and developing economies including China and India (that have driven significant growth in the last decade). Figure 15 illustrates the key export destinations for Australian coal.

Global seaborne metallurgical coal supply



Global seaborne thermal coal supply

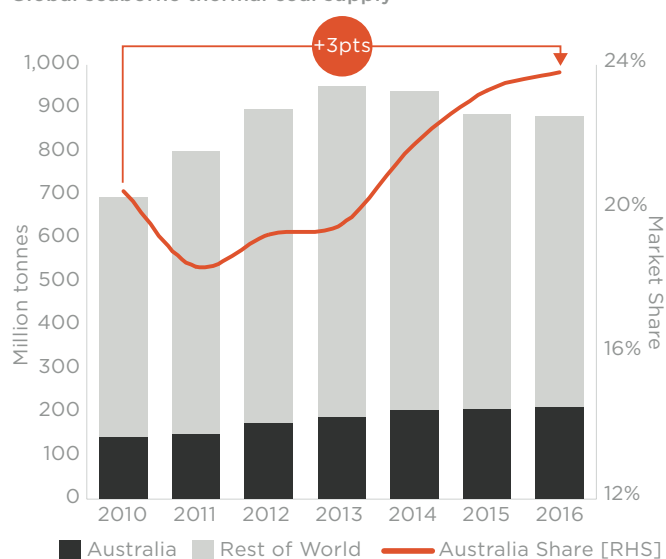
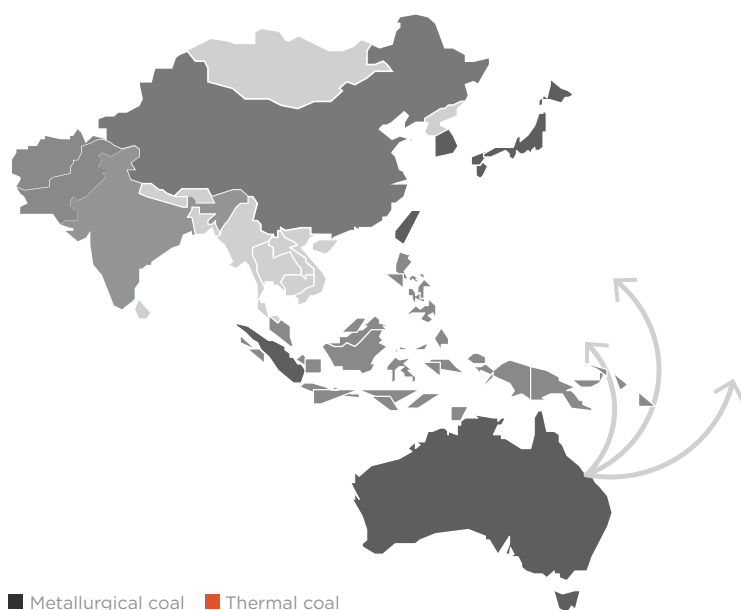
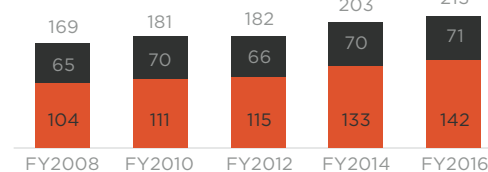


Figure 14: Australia's share of global seaborne coal supply.

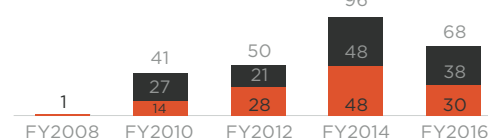
Source: Wood Mackenzie Global Coal Markets Tool (1H 2016).



Japan | South Korea | Taiwan



China



India

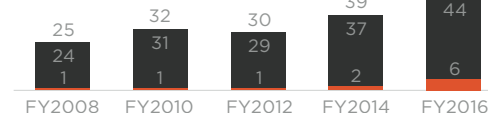


Figure 15: Key export destinations for Australian coal (million tonnes per annum).

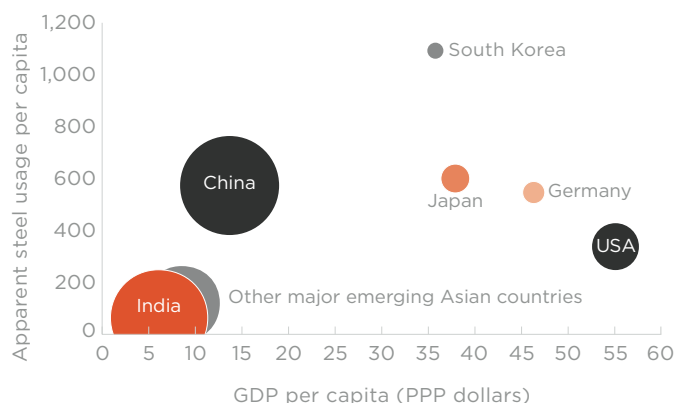
Source: Australian Bureau of Statistics. Numbers may not add up due to rounding.

## THE FUTURE OF SEABORNE METALLURGICAL COAL

Also referred to as 'coking coal', metallurgical coal (used to produce steel) is a fundamental input into the modern built environment — enabling the production of buildings, infrastructure, cars and consumer goods. Listed below are the four key drivers that continue to underpin Australia's success in the global seaborne metallurgical coal market.

### 1. INCREASING GLOBAL DEMAND FOR STEEL

Considering the historical relationship between economic growth and steel demand, India and other major emerging Asian economies are entering a highly steel-intensive period, as highlighted in Figure 16. China, Japan and South Korea are also expected to maintain a high level of steel consumption driven by more consumer intensive manufacturing and export.

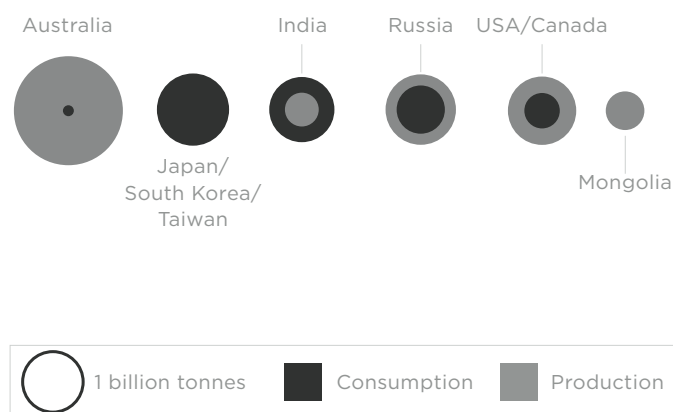


**Figure 16:**  
Per capita steel usage versus per capita income by key countries.

Source: World Bank (GDP and population data), CEIC (steel data) and Aurizon analysis

### 3. SCARCITY OF METALLURGICAL COAL

China is the largest metallurgical coal producer but consumes all of what it produces and still requires imports. As shown in Figure 18, most other steel producing countries, meanwhile, rely almost entirely on imports to meet their needs due to lack of reserves. As a result, over 30% of global demand is met through international trade, over half of which is carried by Aurizon's Central Queensland Coal Network (CQCN).

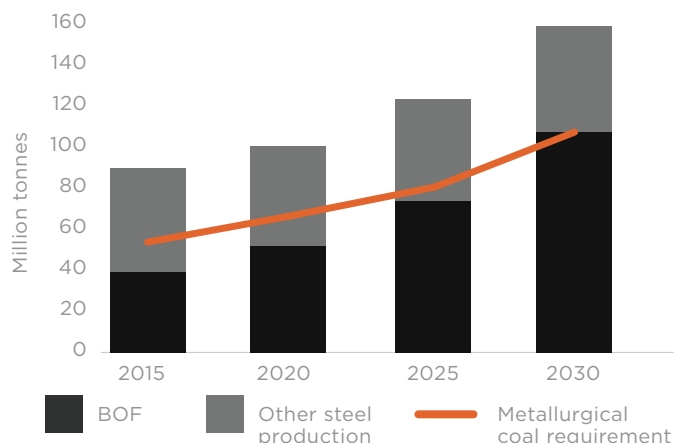


**Figure 18:**  
Outlook for seaborne metallurgical coal demand and supply to 2030 by key countries (excluding China).

Source: WoodMac Global Coal Markets Tool.

### 2. LIMITED SUBSTITUTES IN STEEL PRODUCTION

Metallurgical coal has no substitute in the 'Basic Oxygen Furnace' (BOF) method of steelmaking, which represents 70% of global steel production. Resource analysts, Wood Mackenzie, forecast that metallurgical coal will still be required for the majority of steel production in 2030 and will almost double in India (Australia's largest metallurgical coal export destination) by 2030 as indicated in Figure 17.

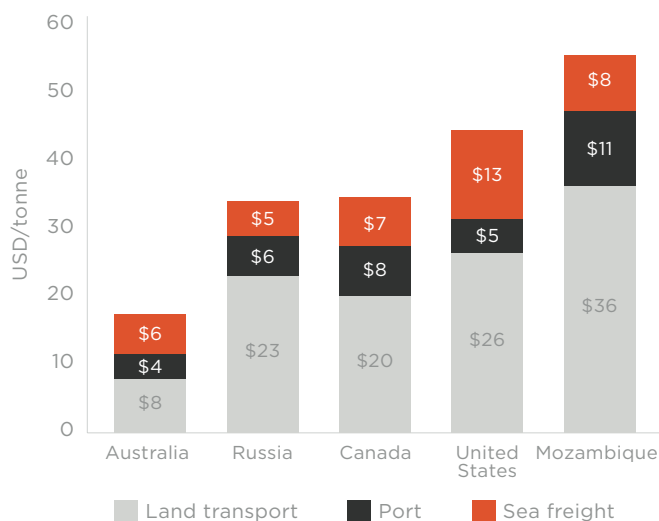


**Figure 17:**  
Indian steel production and metallurgical coal demand.

Source: WoodMac Global Coal Markets Tool.

### 4. AUSTRALIA'S EXPORT INFRASTRUCTURE ADVANTAGE

As illustrated in Figure 19, Australia has the lowest average transportation and port costs compared to other significant metallurgical coal exporting nations. Australia's advantage is underpinned by an established heavy haul coal network, and a small number of large port terminals. Australia also has deep-water ports and close proximity to key Asian economies (which reduces sea freight costs).



**Figure 19:**  
Land transport, port and sea freight costs from major metallurgical coal export countries to India.

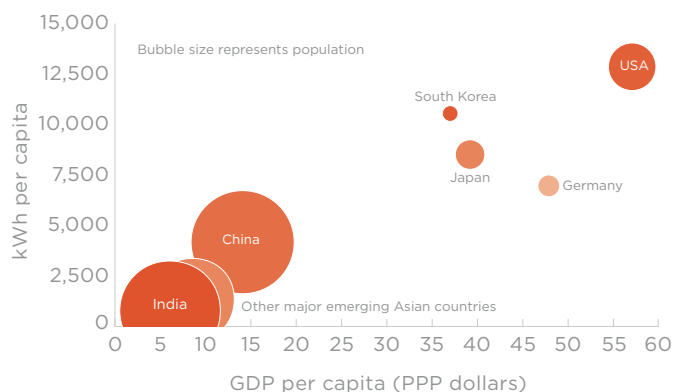
Source: Wood Mackenzie Coal Costs Benchmarking May 2016.  
Freight: Wood Mackenzie Global Coal Tool (1H 2016), arrival India.  
Australia: Hay Point, United States: Hampton Roads, Canada: West Coast.

## THE FUTURE OF SEABORNE THERMAL COAL

Thermal coal is used to produce electricity and consequently it supports the provision of affordable and reliable energy for households, business and industry, including lighting, heating, cooling, cooking, refrigeration, communications and industrial processes. The four key drivers that continue to underpin Australia's success in the global seaborne thermal coal market are listed below.

### 1. INCREASING GLOBAL ELECTRICITY DEMAND IN ASIA

Global electricity demand will be driven by economic development in China, India and other emerging Asian economies. In particular, over one billion additional people will gain access to electricity by 2040 while an additional two billion will double their current levels of per capita consumption (Figure 20).

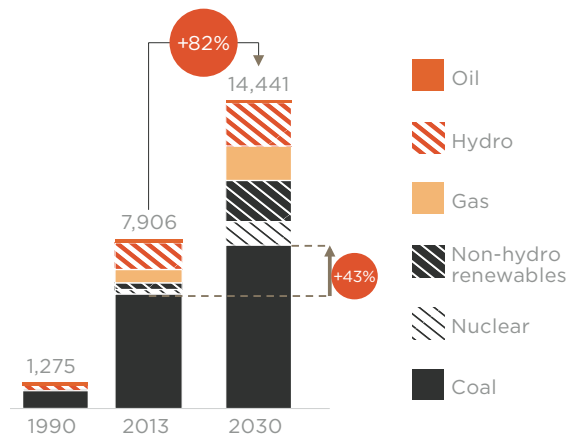


**Figure 20:**  
Per capita electricity consumption versus per capita income by key countries.

Source: World Bank (GDP, population and electricity data) and Aurizon analysis.

### 2. INCREASING DEMAND FOR THERMAL COAL POWER GENERATION

Demand for electricity in non-OECD Asian economies is expected to almost double by 2030. While a greater share of investment will be directed towards renewable energy capacity, coal-fired power generation is still expected to increase 43% in absolute terms to 2030 (Figure 21).

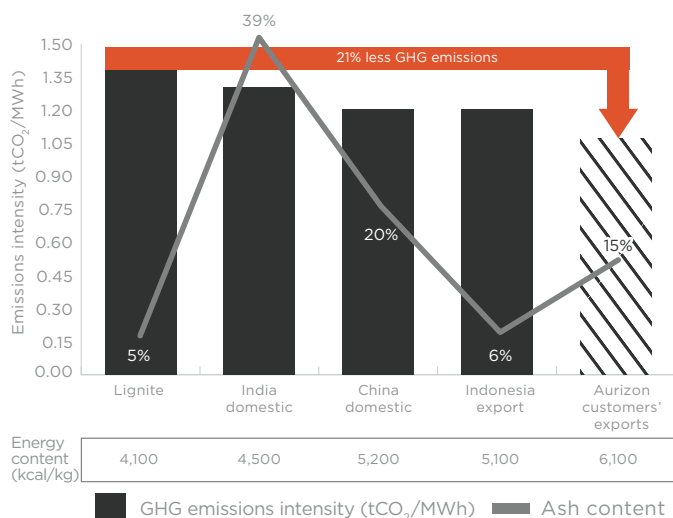


**Figure 21:**  
International Energy Agency (IEA) outlook for electricity generation in non-OECD Asia by source (TWh, share).

Source: IEA World Energy Outlook, New Policies Scenario 2015.

### 3. IMPORTANCE OF HIGH-QUALITY LOWER-EMISSION COAL

Continued dependence on coal for affordable and reliable power means it is important that the highest quality coal is used to reduce greenhouse gas (GHG) emissions. On average, Aurizon customers' coal has the highest energy content and relatively low ash content when compared to most other major sources of thermal coal. For example, as Figure 22 shows, compared to lower quality coal, it can produce 21% less emissions per megawatt hour (MWh) of electricity.

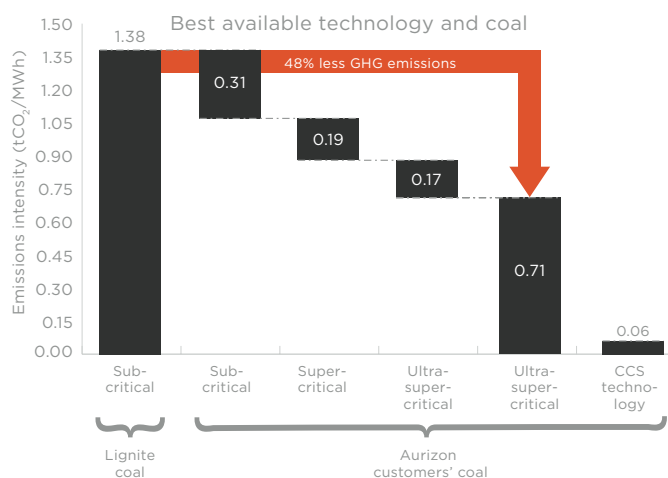


**Figure 22:**  
Carbon emission intensity and ash content.

Source: India: India Ministry of Coal, Coal Statistics 2014-2015, China: Wood Mackenzie, China Coal Supply Service 2014, Indonesia: Wood Mackenzie Coal Cost Service May 2016, Aurizon: Wood Mackenzie Australia Supply Service June 2015.

### 4. ADOPTION OF EFFICIENT GENERATION TECHNOLOGY

Recognising that a large number of coal-fired power plants will be built in Asia and the Indian sub-continent over coming decades, it is important that the most efficient technology is used to reduce GHG emissions. Currently, when ultra-super critical coal technology is used with high-quality coal, it can reduce emissions by 48% compared to sub-critical plant technology using lower coal quality (Figure 23).



**Figure 23:**  
Electricity sector emissions abatement potential.

Source: Department of Energy Resources and Tourism Australia, A Cleaner Future of Power Stations, 2013.

## CASE STUDY

# Global steel flows and implications for Australia's metallurgical coal exports.

The ultimate driver of demand for Australian metallurgical coal exports is not only where it is exported (and steel is produced) but also where the steel is finally consumed. Based on EY analysis<sup>4</sup> on global flows of steel produced using Australian metallurgical coal, three key insights can be drawn:

**1. Australian metallurgical coal is used to produce steel consumed across a range of sectors and geographic regions.**

From 2005 to 2015, 20% more sectors and 61% more end consumers were estimated to be using over one mtpa of steel-based products produced using Australian metallurgical coal.

While only 11% of Australian metallurgical coal was directly exported to the USA and EU in 2015, they consumed an estimated 18% or 44.6mt of steel produced using Australian metallurgical coal. This amount is greater than India's (42.1mt) or Japan's (24.4mt) estimated consumption of steel produced using Australian metallurgical coal.

**2. Transport and Electrical & Machinery are key export sectors for steel produced in Asia.**

Construction is currently the leading driver of domestic steel demand in many Asian countries that import Australia's metallurgical coal. However, in countries that import steel-based products that rely on Australian metallurgical coal, Transport and Electrical & Machinery sectors are key drivers of demand.

For example, these sectors account for almost half of all steel-based products consumed in the USA and EU, yet produced using Australian metallurgical coal.

**3. The amount of Australian metallurgical coal in steel consumed in key end markets is increasing.**

In the USA between 2005 to 2015 it is estimated that steel used in the transport sector (e.g. motor vehicles and parts) fell from 44.7mt to 38.8mt. Despite this, USA transport sector consumption of steel produced using Australian metallurgical coal increased from 4.6mt to 4.9mt.

In India between 2005 to 2015 it is estimated that steel used in the electrical and machinery sector (e.g. computers and televisions) grew by over 50%. In comparison, this sector's consumption in India of steel produced using Australian metallurgical coal doubled to 8.6mt.

While more steel is being produced in Asia, it is increasingly exported to a range of sectors and customers globally. Given the international competitiveness of steel production, it is essential that steel producers can access low cost, high-quality inputs (including metallurgical coal). For example, in coastal regions of China, we understand that Australian metallurgical coal is up to 20% cheaper than domestic Chinese supply. It is therefore not surprising that the OECD has identified a shift in steel production towards coastal areas in China<sup>5</sup>. Particularly as these coastal steel mills are mostly designed to produce steel used in the Transport and Electrical & Machinery sectors.

### Top twenty flows of steel produced using Australian metallurgical coal in 2015



<sup>4</sup> EY conducted the analysis based on the EORA Multi-Regional Input Output database using 2015 Australian metallurgical coal export data from IHS.

<sup>5</sup> Organisation for Economic Co-operation and Development (OECD) Capacity Developments in the World Steel Industry, 2015.



## CASE STUDY

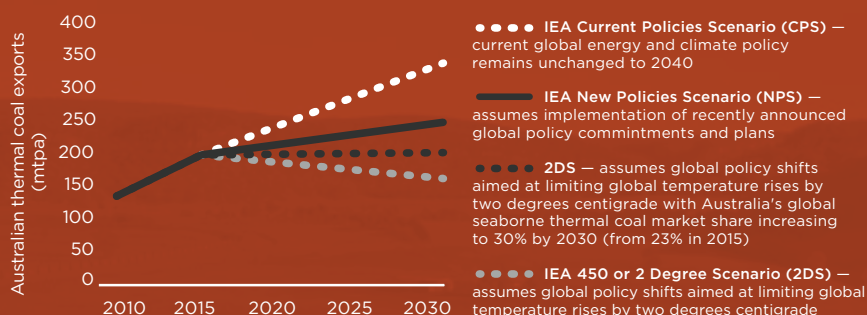
# Climate change policy implications for Australia's thermal coal exports.

In the lead up to the Paris Agreement in December 2015, Australia's key thermal coal export destination countries updated emission reduction pledges or Nationally Determined Contributions (NDCs).

These NDCs identify how each country will voluntarily reduce greenhouse gas emissions from 2020 to 2030<sup>6</sup>. Contrary to the common perception that coal-fired generation has a limited role to play in a low-emissions future, the NDCs in Japan, South Korea, India and China all include plans to continue using coal through the adoption of more efficient power generation technologies. Relevant highlights from NDCs are summarised below:

- **Japan:** expects coal to provide over 25% of electricity needs through to 2030, and has recently set new efficiency standards for coal-fired power that mandate ultra-supercritical plants.
- **South Korea:** forecasts an increase in the share of electricity from coal from 28% to above 30% by 2030.
- **India:** has "mandated to use the highly efficient super-critical technology" and expects "coal will continue to dominate power generation in future" — it also identifies research on low emissions coal technology as "an urgent necessity".
- **China:** has pledged "to lower coal consumption of electricity generation of newly built coal-fired power plants to around 300 grams coal equivalent per kilowatt-hour" — this plan requires a combination of efficient coal-fired generation technology and higher coal quality.

The International Energy Agency (IEA) provides forecasts based on the government measures announced in the NDCs. This outlook is referred to as the IEA New Policies Scenario (NPS). At present, NPS suggests that thermal coal demand in Asia will slow but still increase in absolute terms. This corresponds to a 25% increase in Australia thermal coal exports by 2030, as shown above<sup>7</sup>.



While we adopt the NPS as our primary reference point given that it broadly serves as the IEA's 'baseline scenario', we continue to monitor other demand factors. These factors include technology costs, economic reform, trade policy, foreign exchange rates, energy prices and urban air quality standards.

The IEA also provides two other policy scenarios, referred to as the Current Policies Scenario (CPS) and 450 or 2 Degree Scenario (2DS), which are also shown above. We believe that any deviation towards the CPS is an unlikely outcome based on current momentum from the Paris Agreement. We also anticipate that any shift towards 2DS will be gradual as new policy commitments are considered in the context of the Paris Agreement.

To illustrate the differences in these scenarios, we have excluded Australian metallurgical coal exports from the diagram above and assumed Australia's pre-existing share of the global seaborne thermal coal market remains constant at 23% to 2030. However, we have confidence in the following market outcomes, which should also be considered:

- We expect metallurgical coal exports will increase under all scenarios — as climate change policy is not a key driver of metallurgical coal demand for steel consumption; and

- Australia's share of the global seaborne thermal coal market would more likely increase under 2DS. For example, it is possible under 2DS that Australia could sustain or increase coal exports beyond 2015 levels if its share of the global seaborne thermal coal market reached 30% before 2030 — this likelihood is based on Australia's ability to supply Asia's needs of high-quality coal to reduce emissions per unit of energy generated, particularly in high-efficiency coal-fired power plants. It is also supported by Australia's recent increase in global seaborne market share from 20% in 2013 (23% in 2015).

It will be a matter for individual key thermal coal export destination countries as to how they reduce emissions. However, we believe flexible market-based mechanisms will inevitably lower the cost of their transition. If these mechanisms are globally or regionally linked, it may also help drive electricity sector emissions reductions through finance of High Efficiency Low Emissions (HELE) coal-fired generation technologies. We support the constructive consideration of how such mechanisms could be best developed in support of affordable and reliable energy access.

<sup>6</sup> Intended Nationally Determined Contributions (INDCs) as communicated by Parties (as communicated by 1 October 2015).

<sup>7</sup> Aurizon analysis of the IEA World Energy Outlook 2015: "Coal trade by Region in the New Policies Scenario", "Coal demand, production and trade by scenario".

# Operational Efficiency

Aurizon is committed to taking the least resource-intensive approach to our operations to deliver long-term productivity improvement.

At Aurizon we measure our operational efficiency via three key metrics:

- **Network availability** — measured by CQCN closures and below rail cancellations.
- **Asset productivity** — measured by net tonnes carried multiplied by distance travelled (NTK) per active locomotive or wagon.
- **Energy productivity** — measured by litres of diesel (L) or kilowatt hours (kWh) per thousand gross tonne kilometres (GTK).

Table 2 below highlights our recent operational efficiency performance according to these metrics.

## NETWORK AVAILABILITY

The CQCN set a new railings record of 226mt in FY2016. This highlights the efficiency of our network planning, scheduling systems, as well as the benefits of our proactive maintenance program. Highlights include:

- 0.7% reduction in system closure hours and a 35% reduction in below rail cancellation impact.
- 62% reduction in the number of below rail train cancellations since FY2013 (against a 24% increase in railings).

In multi-user rail networks, initiatives to improve services for one operator provides benefits to all operators. In this way the operational performance improvement in the CQCN has delivered benefits to all participants in the supply chain. As volumes have increased, closure hours have also reduced.

Key to our below rail (network) maintenance and renewal strategy is enhanced capabilities. Our CQCN is progressing on a journey to automated track inspections and has implemented a number of improvements that exploit deep analytical capability to identify complex patterns in data to predict faults, optimise the maintenance response, and improve reliability. These include:

1. Reducing the frequency of manual rail inspections from four days to eight days for selected track sections.
2. Use of remote monitoring to extend inspection periods.
3. Introduction of remotely controlled rail lubricators contributing to a reduction in rail and wheel wear.
4. Use of aerial drones for inspection of electrical overhead and bridge structures.

Avoiding traditional techniques for inspecting these assets removes or reduces the need for closing sections

“We are focused on improving those things within our direct control — our operations, our systems and support costs, and technology. We must change and innovate, do existing things in new ways, and stop doing the stuff that adds little value.”

**Lance Hockridge**  
Managing Director & CEO

of the network for physical inspections, while also reducing worker exposure to hazardous environments (particularly substituting working at heights for drone inspection).

Aurizon has the aspirational goal to remove the need for all physical inspections, thus removing staff from the rail corridor for the purposes of inspections. Achieving this goal would enable Aurizon Network staff to shift from ‘finders of faults’ to ‘fixers of faults’.

Measure	Metric	FY2016	FY2015	Change
Network availability	System closures (hours)	1,018	1,025	0.7% ↓
	Below rail cancellation impact*	1.1%	1.7%	35% ↓
Asset productivity	Wagons (NTK per active wagon, daily)	14.7	14.3	3% ↑
	Locomotive (NTK per active locomotive, daily)	375.7	339.5	11% ↑
Energy productivity	L/000GTK	3.10	3.19	3% ↓
	kWh/000GTK	9.3	10.6	12% ↓

Legend ■ Improvement in metric performance ■ Decline in metric performance

Table 2:  
Key operational efficiency improvements.

\* Number of above rail services cancelled due to a below rail cause as a percentage of weekly agreed orders.

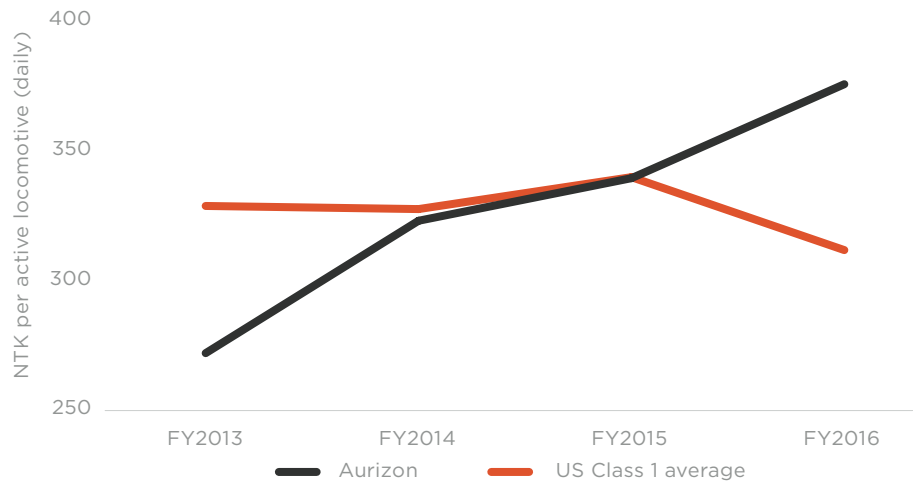
## ASSET PRODUCTIVITY

Asset productivity has been a key area of focus for Aurizon. In 2013 Aurizon began adding wagons to coal trains in order to maximise locomotive hauling capacity. Across the Central Queensland Coal Network (CQCN) this initiative has resulted in a 5% increase in train lengths and 4% increase in payload. By comparison, if train lengths had not increased over this period, 743 more trains would need to be passing through our communities to move the same volume of coal as was hauled in FY2016 (Figure 25).

Higher train utilisation also enables us to reduce the size of our locomotive and wagon fleet. As a result we have 3% more NTK per active wagon and 11% more NTK per active locomotive compared to FY2015. While there are many contributing factors, we note that we have improved locomotive productivity significantly and now sit above the US class 1 average, as shown in Figure 24.

We have also deliberately started to standardise our fleet. This has resulted in 37% fewer wagons and locomotive classes remaining in operation (compared to FY2012), as illustrated in Figure 26.

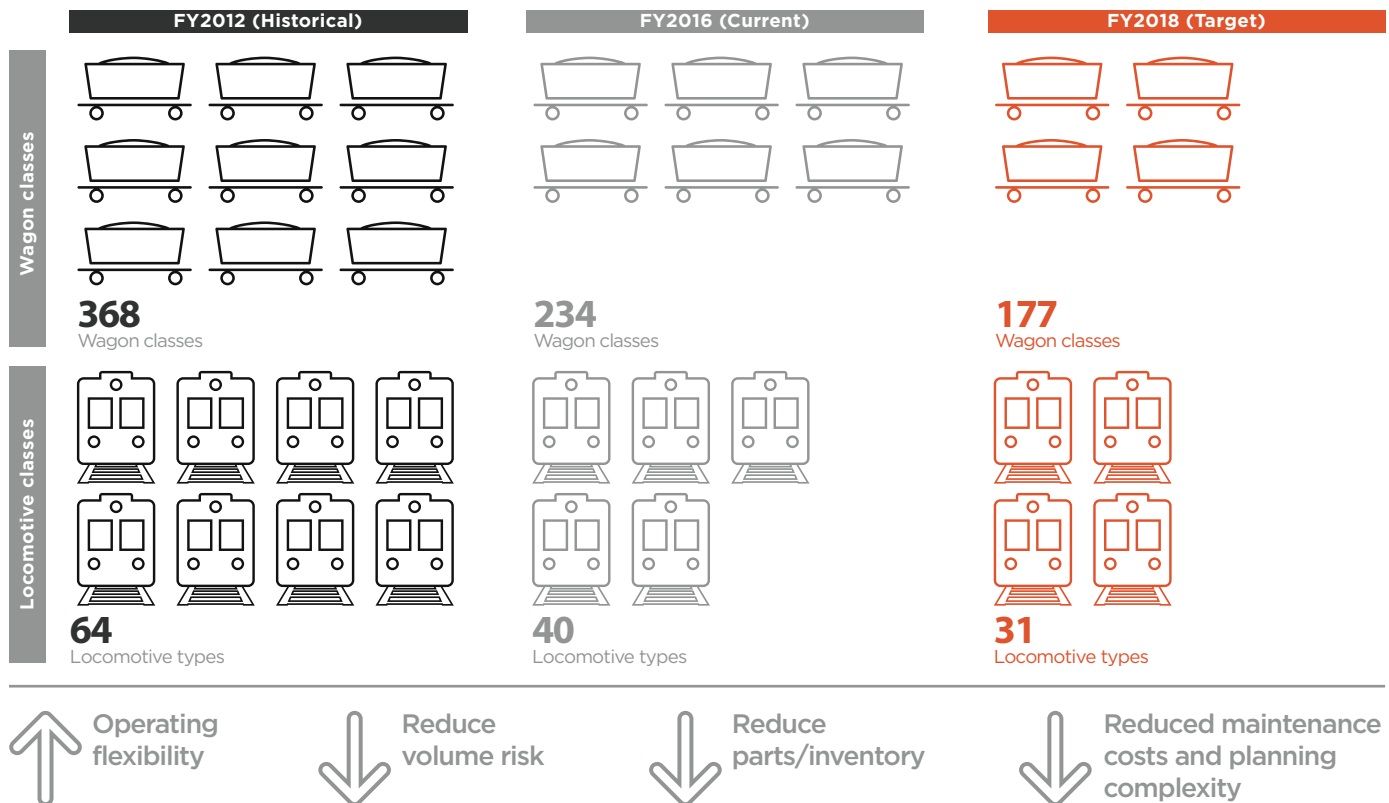
By FY2018 we expect to halve the number of wagons and locomotive classes (compared to FY2012).



**Figure 24:**  
Locomotive productivity – Aurizon and US Class 1's average.



**Figure 25:**  
Longer and heavier trains result in fewer trains.



**Figure 26:**  
Reduction in wagon and loco classes from FY2012 to FY2018.

## RELIABILITY AND AVAILABILITY

The key dimensions of asset productivity are reliability and availability. To sustainably improve these operational metrics we have implemented Condition Monitoring systems to predict faults, reduce frequency of inspections required and avoid cancellations through unscheduled maintenance.

Our rollingstock maintenance strategy uses sensors to deliver information in order to understand and maintain condition, predict the issues that impact safety and reliability, reduce unscheduled maintenance events, and decongest our busy rail yards. Our technology investments have yielded significant reliability and availability improvements through both condition-based and predictive maintenance techniques.

In the FY2015 Sustainability Report we highlighted the implementation of our condition monitoring program and the expected performance we hoped to deliver. The first phase of this program began in 2014 with the following outcomes delivered in the CQCN to date:

1. Contributed to a 51% reduction in wheel usage (FY2015 as compared to FY2016), as illustrated in Figure 27.
2. 86% reduction in the number of serious operational incidents such as train partings (FY2013 as compared to FY2016).
3. Increased the wagon inspection cycle from one to two years.
4. Automated fault detection of doors, draft gear, couplers, axles, wheels and brake systems.

## ENERGY PRODUCTIVITY

Locomotive diesel and electricity usage is a focus at Aurizon as it contributed 10% of our expenditure and 92% of our greenhouse gas (GHG) in FY2016. Since FY2015, we have reduced diesel and electricity consumption per GTK by 3% and 12% respectively through more efficient rollingstock, technology, redesigning operations and introducing longer trains.

We are committed to reducing GHG emissions by 15% per GTK by FY2020 and we are delivering significant cost savings as well as outcomes for the community and the broader environment.

A key way to reduce energy consumption is through improved train handling, as it can dramatically affect the amount of energy consumed over a specific route. One study in the Blackwater Coal System showed diesel consumption could vary by up to 10% or 2000 litres across the same route with different drivers.

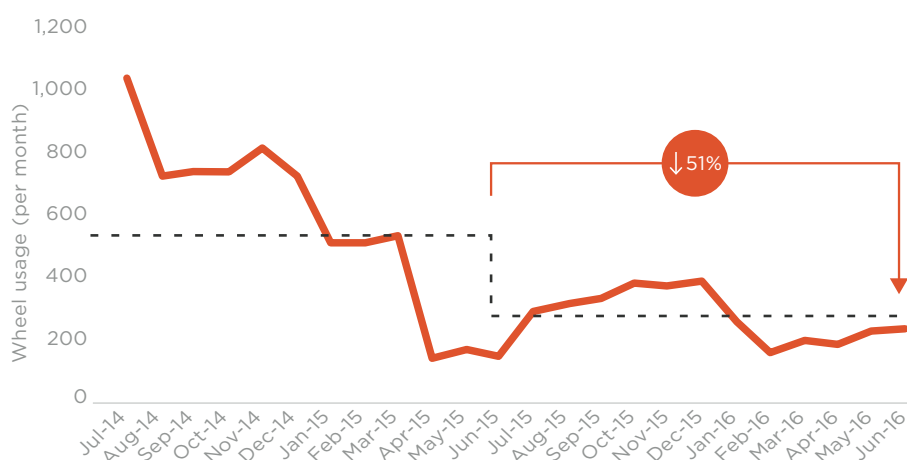
By working with drivers to document and educate best practices, Aurizon is seeking to have all drivers operate trains in the most energy-efficient manner. While training can progressively change driver behaviour, Aurizon has found providing dynamic advice onboard in 'real-time' to be more effective.

The next evolution of technology is to standardise train handling with GE's Trip Optimiser software (TO), which is comparable to 'cruise control' for train driving. While the driver maintains control, through the ability to intervene, TO will run the train according to a predefined driving methodology. This technology has been used in North America for over a decade, resulting in fuel savings of 3% to 10% depending on-train configuration and topography.

Early runs in our first TO corridor between Melbourne and Adelaide have confirmed these fuel savings figures. Aurizon will complete TO roll out in three more corridors in FY2017. »

"A more sustainable approach to asset maintenance will result in efficiencies for the Company over the next 10 years and improved operational performance for our customers, especially if we can intervene before an asset fails."

Alex Kummant,  
EVP Network



**Figure 27:**

Aurizon's historical wheel usage on the CQCN (benefits of condition monitoring and predictive maintenance).



## CASE STUDY

# Towards the digital railway of the future.

As illustrated in this chapter and throughout this Report, technology has been identified as a key component of our competitive advantage.

As Aurizon's operational efficiency improves, technology will be relied upon even more to identify productivity opportunities and achieve sustainable benefits. To give affect to this advantage, we have developed a five-year technology roadmap encompassing information and operational technology that is closely aligned to our strategy to deliver real business benefits.

### WHAT DOES THIS MEAN FOR OUR BUSINESS?

- Data from monitoring equipment provides deeper insight and greater control of business operations and assets.
- Insightful operational analytics from real-time information that drives faster and better business decisions.
- Automating simplified, standardised processes to unlock safety, service quality and efficiency opportunities.
- Technology-enabled workforce to improve individual productivity and job satisfaction and increase collaboration.
- Digital channels deepen customer relationships and connect supply chains.

### POSSESSION ALIGNMENT AND CAPACITY EVALUATION (PACE)

PACE gives us foresight into all track access requirements for maintenance and renewals. The evaluator allows optimisation of throughput, reliability and cost, so that we can meet capacity requirements at minimum cost. It does this by helping to smooth and reduce capacity impacts and associated costs rather than concentrating capacity impacts that lead to closures.

### INTEGRATED OPERATING PLAN (IOP)

The IOP is a technology-enabled, enterprise-wide approach to continuous improvement. By applying the service design principles below, with safe work practices, Aurizon operates longer, heavier and faster trains with fewer assets and resources. As illustrated below, the IOP targets improvement opportunities in every aspect of our operations.

### ADVANCED PLANNING AND EXECUTION (APEX) OPERATIONAL TECHNOLOGY

Implemented in FY2016, APEX allows us to adapt planning and scheduling of trains from two years out to 'Day Of Operations' through faster, more responsive modelling of future scenarios. This represents a step change improvement, replacing manual (paper) processes with automated (digital) processes. It has the potential to increase network capacity by 856 paths.

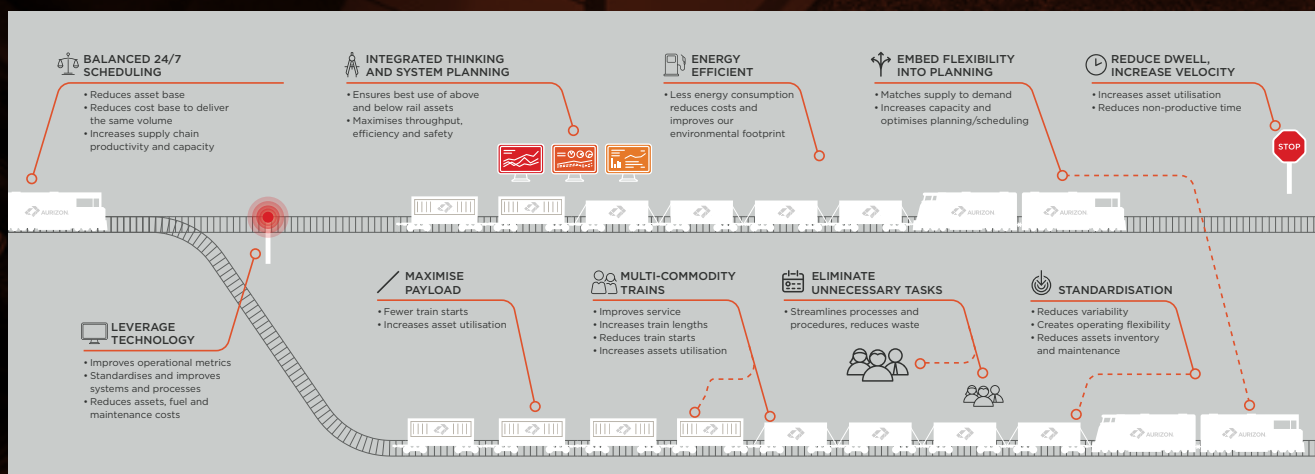
"We continue to benchmark ourselves against relevant world-leading peers and partner where appropriate to access new technology and capabilities. We're mindful of where technology could take us in the future and undertake integrated enterprise planning with strong governance processes to ensure that we can unlock benefits."

**Steve Mann**

VP Technology Transformation

### FREIGHT MANAGEMENT TRANSFORMATION (FMT)

Last year we provided a case study into the continued deployment of the Freight Management Transformation (FMT) program. This has involved delivery of re-engineered customer ordering, pricing and invoicing functions, as well as enhanced reporting and analytics tools.





“To help our customers remain competitive in the global market, we are proactively working with them in delivering efficient services at competitive prices.”

**Mauro Neves**  
EVP, Customer  
& Strategy



# Customer Partnerships

Helping Aurizon's customers to prosper and grow is our priority. Indeed, it is essential if we are to do the same.

At Aurizon we provide rail transportation services to a wide variety of customers across the country. We also operate and manage the Central Queensland Coal Network (CQCN) and service the needs of other rail operators and their respective customers. For many of our customers, global commodity market price reductions have increased pressure on their profitability, making it more important than ever for us to collaborate to improve supply chain efficiency and reduce costs.

A key focus of our Blueprint strategy is customer focus which means deeper relationships, great service and innovative commercial approaches.

## WORLD-LEADING SERVICE

As outlined in the Future of Coal chapter, Australia has a globally competitive position in coal export infrastructure. This has been underpinned by a 10.4% decrease in the average above rail rate per tonne for our coal customers in the CQCN since FY2012 (in real terms). Our Network business has supported many of the above rail productivity improvements for the CQCN through increased capacity, availability and reliability while also enabling a 2.4% decrease in the average below rail rate per tonne since FY2012 (in real terms). This represents an overall above and below rail rate reduction of 7% from FY2012 to FY2016, as shown in Figure 28. A key driver of the above and below rate reduction is a number of operational (e.g. longer trains) and technology improvements that facilitate increased volume on the CQCN.

While the cost of our service is important to our customers, other factors such as reducing their costs of planning, ordering and managing supply chains are also relevant. We therefore seek to provide reliable services, flexibility to increase tonnes where available and tailored information via [customer portals](#), including live train and container tracking.

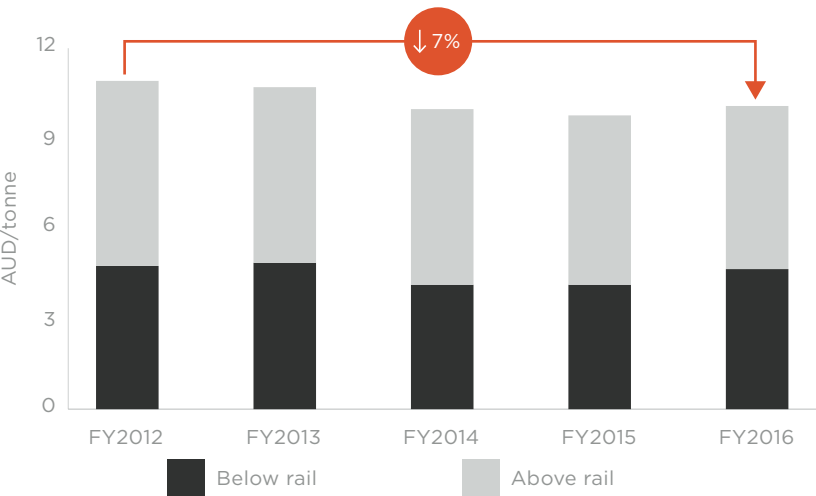
We also recognise the need to listen, act and respond to customer feedback. In the first quarter of FY2016 we undertook a Customer Pulse survey for this reason. An independent company facilitated a phone survey with our 50 largest customers across all of our business segments. The survey was repeated in the last quarter of FY2016 and encouragingly reflected a 6.3% uplift in the scores received. This external survey complements our monthly monitoring of supply chain performance metrics.

Finally, we cannot overstate the importance of our efforts to ensure our safety and that of our customers. We know that some of our customers have alternatives to using rail transport and we encourage them to choose the safest mode of freight transport in rail. To that end, we continue to improve our own safety performance, recording 12 months Lost Time Injury (LTI) free across our business and eight years LTI free in our Intermodal business through to FY2016.

## PARTNERING WITH CUSTOMERS

We continue to build strong relationships with new and existing customers and contribute on matters affecting their industries. In particular, we are members of the Australian Logistics Council, Queensland Resources Council, NSW Minerals Council and World Coal Association. Through these industry associations we are able to better appreciate issues affecting our customers and the broader industry.

Our Network business also actively participates in the Capricornia Coal Chain Steering Committee, Integrated Logistics Group and Abbott Point User Group to improve supply chain performance.



**Figure 28:** Average above and below rail coal rates per tonne in the CQCN (\$June 2016 real).

Source: Aurizon analysis. Nominal (\$A converted into June 2016 \$A using CPI as sourced from the Australian Bureau of Statistics).

## INNOVATIVE CUSTOMER SOLUTIONS

Greater understanding of our customers and innovation in supply chain operation allows us to enhance the customer experience with mutual benefit.

### COAL

Aurizon is not alone in its need to transform its business. The coal sector has decreased employee numbers and some mines have closed. In this context, we strive to be more flexible, effective and innovative. In FY2016 we sought to deepen relationships with our coal customers through a number of contract extensions in the CQCN and the Hunter Valley, including:

- BHP Billiton (BHPB) — Mt Arthur mine
- Yancoal — Cameby Downs and Duralie mines
- Vale — Carborough Downs mine
- Sojitz — Minerva mine.

A number of innovative partnership solutions incorporated in these contracts are highlighted below.

#### Mt Arthur Mine

The Mt Arthur mine is the biggest coal mine in Australia, producing high-quality thermal coal. Balancing BHPB's requirement for flexibility with Aurizon's need for certainty, our teams worked together to agree an extension of the existing contract for the coal mine from 2020 to 2028. The haulage contract now includes flexibility to deliver under different future production scenarios, including increased volumes from 18 million tonnes per annum (mtpa) to 26 mtpa. The extension of this long-term contract demonstrates clear commitment and confidence by Aurizon and BHPB in the local coal industry.

#### Minerva Mine

Sojitz Coal Mining and Kores Australia Mining own the Minerva mine, which is connected to the Blackwater Rail System via the 40 kilometre Minerva branch line. To enable the operation of the branch line, Aurizon undertook significant infrastructure renewal and worked with Sojitz to optimise capital costs while still providing a safe and reliable network.

### IRON ORE

Our iron ore customers are pursuing aggressive cost reduction programs in light of lower commodity prices. We continue to work with them to identify cost saving and productivity opportunities throughout the supply chain. For example, we implemented driver-only operations with Karara Mining Ltd in FY2016 to improve productivity and reduce costs.

### DIVERSIFIED BULK FREIGHT

Lower commodity prices and greater competition from road have challenged the sector in the last 12 months. Against this backdrop, our strategy of introducing performance-based contracts remains, and we are on track to meet our target of 80% of bulk volumes on new form contracts by FY2017. Some recent contract wins include BHP Nickel West, Australian Gold Reagents and Cockburn Cement Limited. The key to winning these contracts has been collaboration and innovation with customers.

We continue to work with customers and innovate within their supply chains, as we demonstrated with our partnership with BHP Nickel West. Previously Aurizon only provided rail haulage for nickel dry concentrates. Under the new five-year contract Aurizon now operates an integrated supply chain of road haulage, silo operation and maintenance, as well as the rail haulage. This sees Aurizon take full control of the supply chain to increase efficiency and deliver new safety initiatives (by installing auto-roof hatches on road tankers, preventing people from climbing on top for loading).

### INTERMODAL

While conditions in the Queensland market remain difficult, there was solid growth through the Melbourne to Brisbane intermodal corridor. Volume growth of 9% was supported by 175 new Aurizon intermodal wagons and opening of our Enfield depot in Western Sydney (pictured below). We recently announced a five-year contract with K&S Freighters as a foundation customer of the Port Botany rail shuttle service that will move imports daily from the Port to Enfield via rail. We also continue to pursue Beneficial Freight Owners such as Woolworths and Coles for our interstate intermodal services, with these customers now representing approximately three quarters of our intermodal revenue.



The new Aurizon Enfield depot in Western Sydney.

Increased competition from road, however, has restricted growth in the Intermodal rail market. We believe it is critical for the sustainability of freight transport within Australia to encourage the complimentary relationship between rail and road to improve freight transport efficiency. This is to cope with the growth in the national land freight task and also to limit the associated impacts from transport on the environment and society, as outlined in the Regulatory Environment chapter.

### BUILDING RESILIENCE

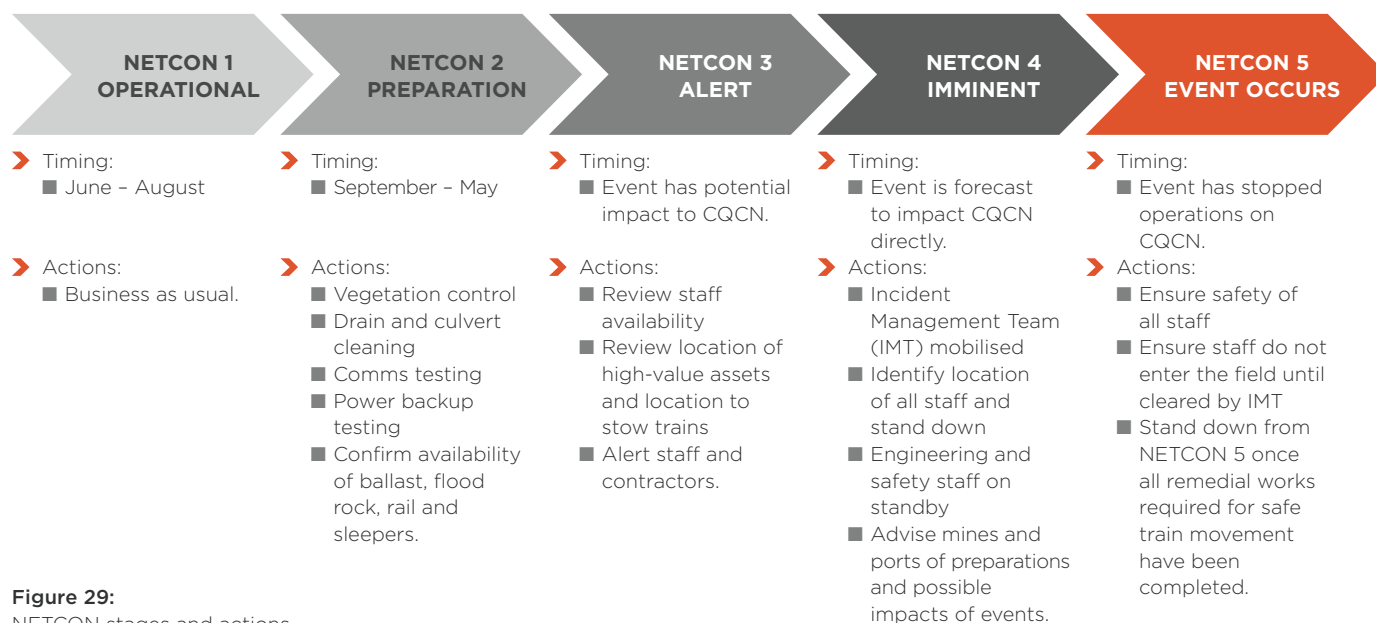
The first priority of our customers, after safety, is getting their product to port. The costs of interruptions can escalate quickly and in a region where there are more frequent and extreme severe weather events, our actions to improve resilience to these events are of significant potential benefit to Aurizon and our customers.

Central to the resilience of Aurizon's CQCN is implementation of a Network Condition (NETCON) program. In our FY2014 Sustainability Report we outlined how we design (and construct) assets to minimise disruptions and financial loss to us and our customers. In this FY2016 Report we focus on the preparation and monitoring for severe weather events. Figure 29 illustrates the stages and relevant actions under NETCON.

The following systems in the rail network provide data and protection during extreme weather events:

- Slip detection monitors measure the slope stability above the track section and warn of landslide or significant rockfall.
- Flood monitors provide early warning and measure flood height progression over time giving a prediction as to when waters will affect the operation of the railway.
- Automated power shut-off systems isolate equipment from power if water reaches signal control rooms to help recovery post a flood event.





**Figure 29:**  
NETCON stages and actions.

## NETWORK HEAT MAP

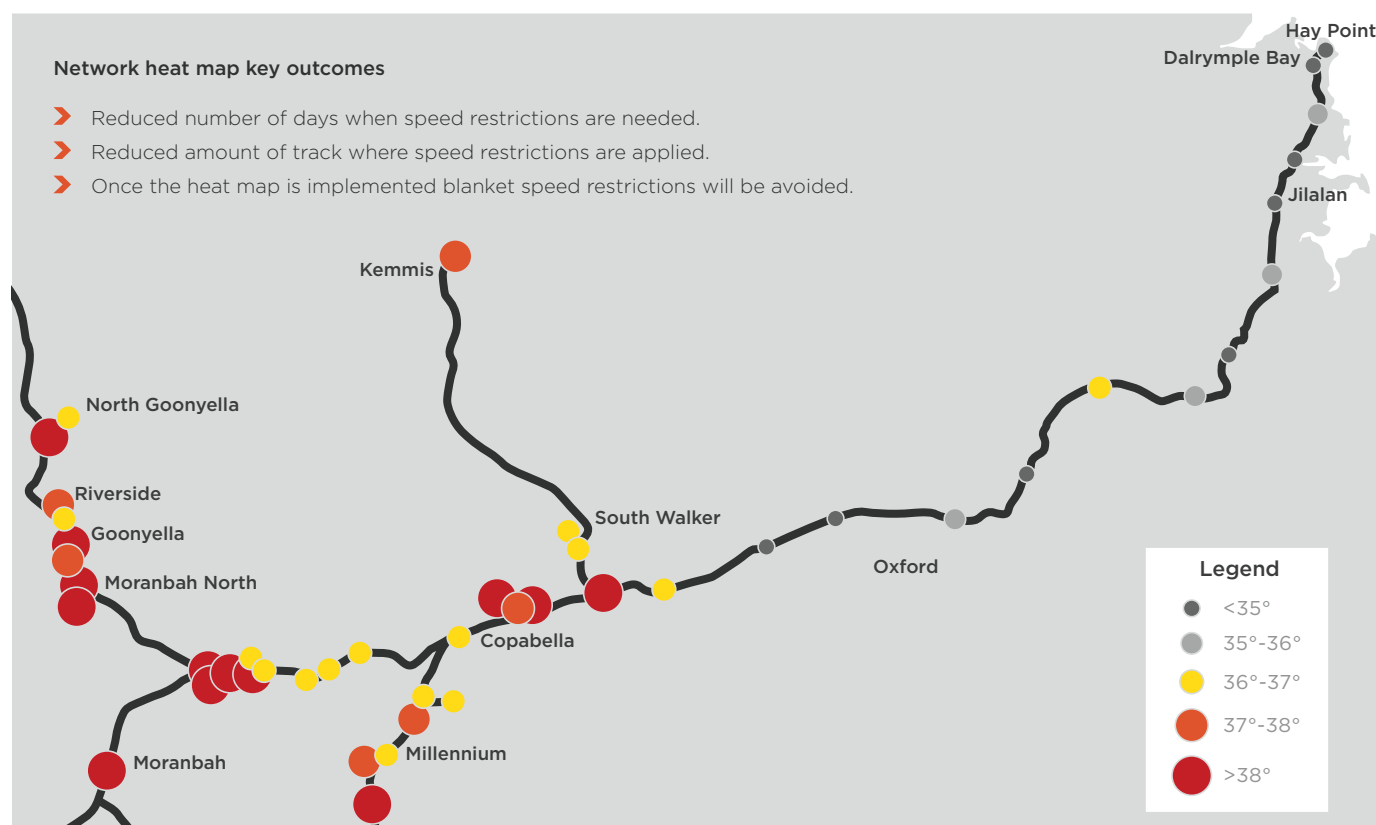
Aurizon Network has estimated the financial implications of extreme temperatures in Central Queensland that have contributed to track buckling, broken rails, pull aparts and cracked rails being in the order of \$4-5 million per annum. These cost estimates are principally associated with train delays and cancellations. Additionally, it is estimated that the impact on Aurizon's above rail business of speed restrictions placed on locomotives relating to high temperatures is \$6-10 million per annum.

Recognising that rail infrastructure is vulnerable to extreme temperatures, Aurizon has recently invested in real-time data heat monitoring in our CQCEN. Figure 30 illustrates this 'heat' map, which can be used to apply targeted heat restrictions to track sections affected by extreme heat, thus reducing the application of blanket system heat restrictions.

The temperature standard states that blanket temporary speed restrictions (TSRs) are to be applied to the full maintenance district when temperatures exceed 35 degrees.

However, with the heat map, we're able to limit the boundaries of the TSRs to only those that are above 38 degrees. Additionally, TSRs can be wound back as individual sites fall below 38 degrees.

There have been increasing days of extreme heat and our view is that this trend is likely to continue. As a result, the 'heat' map has the potential to reduce the weather impact on the Company and the associated costs to our customers. >>



**Figure 30:**  
Network heat map.

# Environmental Management

Our goal is to take the safest, most efficient and least resource-intensive approach to how we deliver our services.

## OUR ENVIRONMENT STRATEGY

Our Environment Strategy focuses on six material areas: greenhouse gas (GHG) emissions, diesel emissions, coal dust, biodiversity, waste and noise. This chapter focuses on greenhouse gas emissions, diesel emissions, biodiversity and waste. The Community Engagement chapter provides information on community interest areas of coal dust and noise.

Environmental regulations evolve with new information and changing societal attitudes. Our environment strategy comprises much more than regulatory compliance, with our environmental performance principles including:

- using an **evidence-based approach** to deliver the most effective environmental outcomes
- **working with key stakeholders** to develop an enterprise-wide position on our material environmental issues
- **proactively managing** our environmental issues while **supporting business continuity** and sustainable outcomes
- **integrating environmental considerations** into relevant policies and procedures.

Aurizon monitors and minimises impacts on the communities and ecosystems in which we operate by increasing operational efficiency and offering sustainable transport options.

## MINIMISING EMISSIONS

**We seek to reduce the emissions intensity of our operations by investing in energy efficiency initiatives.**

As outlined in Table 3, in FY2016 Aurizon's total Scope 1 and 2 GHG emissions equalled 1,091 ktCO<sub>2</sub>e, representing a 2.8% reduction from the previous year.

As illustrated in Figure 31, approximately 92% of Aurizon's total GHG emissions relate to the operation of our locomotive fleet.

In FY2016 we established a new target of 15% reduction in the GHG emissions intensity of our locomotive fleet by 2020 (using FY2015 as baseline). So far we have achieved a 6% reduction in our GHG emissions intensity since FY2015. Looking forward, if we achieve our 15% target, it will result in a reduction to the GHG emissions intensity of our locomotive fleet by almost 30% in our first decade since Initial Public Offering (IPO) in 2010.

By systematically reducing Aurizon's GHG emissions, we are delivering significant cost savings for our business, as well as bringing benefits to our customers, the community and the environment.

We have also been preparing for the introduction of the Emissions Reduction Fund (ERF) Safeguard Mechanism. This requires Aurizon to keep covered facilities' emissions below a baseline set by the Regulator. We currently have three facilities that are subject to the safeguard threshold of 100,000 tCO<sub>2</sub>e of Scope 1 emissions.

Aurizon has undertaken a detailed sensitivity analysis to understand exposure to the ERF Safeguard Mechanism. Based on this analysis we anticipate that each facility will remain below their baselines for the foreseeable future.

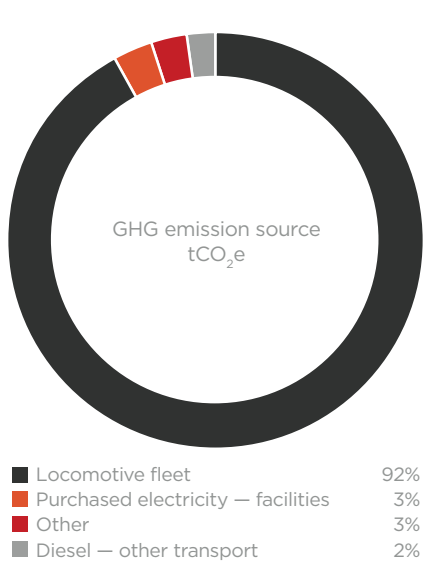
## CARBON RISK DISCLOSURE

In November 2015 we received an award for 'Best year-on-year improvement in climate performance' at the [CDP](#) (previously Carbon Disclosure Project) Australian Climate Leadership Awards. We improved our score from 81D to 95B (100A being the best) due to increased disclosure and energy efficiency initiatives.

Emission source	FY2016	FY2015	Change
Scope 1 (ktCO <sub>2</sub> e)	657	693	-5.3%
Scope 2 (ktCO <sub>2</sub> e)	435	429	1.3%
Total emissions	1,091	1,122	-2.8%

Legend: ■ Improvement ■ Decline

**Table 3:**  
Aurizon's GHG emissions profile.



**Figure 31:**  
Aurizon's GHG emission sources.



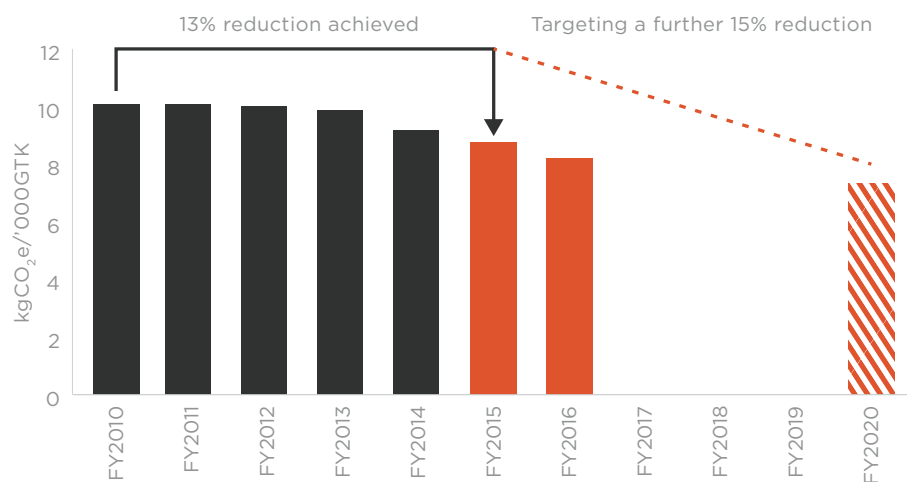
## DIESEL EMISSIONS

We seek to improve the efficiency and operations of our fleet to minimise diesel emissions at source.

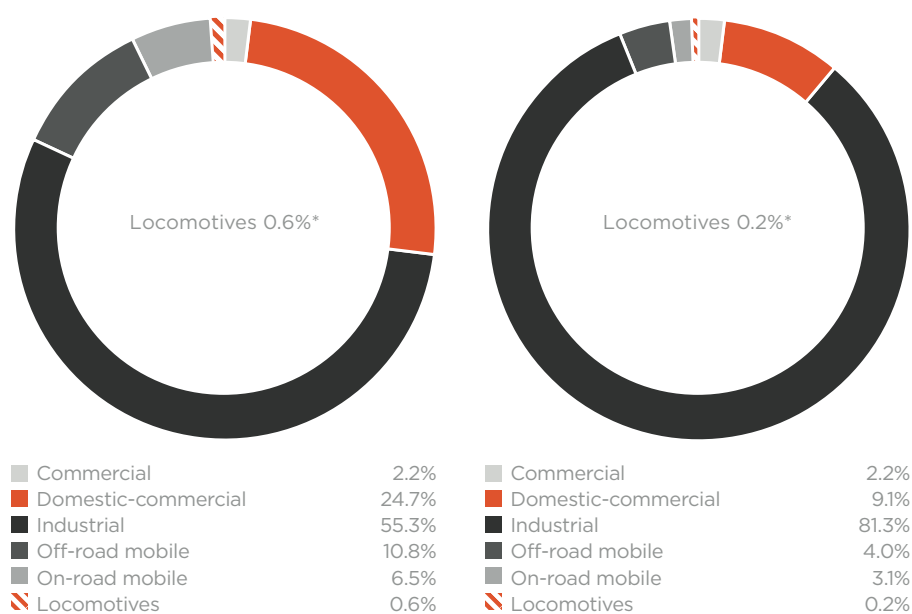
Diesel emissions from our locomotives are a key environmental focus for Aurizon and the communities we operate in. We are committed to investigating and voluntarily investing in technology, cleaner fuels and operational improvements to reduce the diesel emissions of our locomotive fleet. Further detail is outlined in the Operational Efficiency chapter of this Report.

Figures 33 and 34 show that locomotive emissions contribute less than 1% of particulate matter (PM) in the New South Wales Greater Metropolitan Region (GMR). If particulate emissions from diesel locomotives were halved (at considerable cost), this would reduce  $PM_{2.5}$  and  $PM_{10}$  emissions in the NSW GMR by approximately 0.3% and 0.1% respectively. Therefore it is Aurizon's view that regulating diesel emission reductions from locomotives delivers minimal benefit to an overall improvement in air quality for NSW, while imposing significant costs on the rail freight sector, the economy and end customers.

Aurizon is working with other rail operators across Australia to develop an industry-based voluntary initiative focussed on this complex issue, including the need for initiatives in relation to air quality to be evidence-based and proportionate.



**Figure 32:**  
Historical and targeted GHG emission intensity reduction.



**Figure 33:**  
PM<sub>2.5</sub> in NSW GMR (2008)

Sources of PM<sub>2.5</sub> GMR 2008<sup>8</sup>.

**Figure 34:**  
PM<sub>10</sub> in NSW GMR (2008)

Sources of PM<sub>10</sub> GMR 2008<sup>8</sup>.

<sup>8</sup> Adapted from NSW Air Emissions Inventory for the Greater Metropolitan Region in New South Wales 2008, Table ES 4, and Scoping Study, of Potential Measures to Reduce Emissions from New and In-Service Locomotives in NSW and Australia, ENVIRON, 2013, Table 24.

## REDUCING, RE-USING AND RECYCLING WASTE

**We seek to minimise waste from our operations by re-using and recycling waste wherever possible.**

We are currently finalising the development of a Waste Management Plan to identify further opportunities to minimise the amount of waste generated by our operations. Table 4 details the waste generated in FY2016 and the major recycling streams.

## COMPLIANCE AND REPORTING

In FY2016 Aurizon did not incur any monetary fines or sanctions for non-compliance.

### JULIA CREEK DERAILMENT.

As described in the Safety chapter, on 27 December 2015 a derailment occurred on the rail corridor 20 kilometres east of Julia Creek. The service that derailed was an Incitec Pivot Ltd (IPL) service travelling to Phosphate Hill from Townsville Sun Metals. A diesel locomotive controlled by Aurizon was hauling 26 wagons leased by IPL, on a railway line managed by Queensland Rail Limited (QR). The service was carrying approximately 819,000 litres of concentrated sulphuric acid.

The Department of Environment and Heritage Protection (DEHP) issued a joint clean-up notice to QR, IPL and Aurizon associated with the recovery and remediation of the sulphuric acid spill. An Aurizon Incident Management Team was immediately established, meeting daily to assess the situation and mobilise recovery plans that included the safety of Aurizon's people, the environment, assets and the community.

Waste source (tonnes)	FY2016	FY2015	Reasons for change
Waste generated in operations	18,615	31,307	Tail-off of concrete sleeper recycling project, and decrease in septic waste and recycled timber
Metal recycling	21,308	23,645	Lower number of rollingstock scrapped and maintenance depot rationalisation
Concrete sleeper recycling	4,396	13,444	Tail-off of concrete sleeper recycling project

**Table 4:**  
Aurizon waste and recycling data.

Location	Volume	Material
Mungunburra	Up to 180 tonnes recovered	Fertiliser

**Table 5:**  
Notifiable environmental incidents in FY2016.

A diesel spill of approximately 150 litres occurred when recovering Aurizon's locomotive. This was remediated to the satisfaction of the DEHP. Work to decant the sulphuric acid and remove the rollingstock from the derailment site was completed on 11 February 2016. Final remediation plans for the remaining work by QR and IPL were submitted to the satisfaction of the DEHP.

### ENVIRONMENTAL INCIDENTS

Environmental notifiable incidents, which are required to be reported to the regulator, are also reported to the Aurizon Board. In FY2016 we had one notifiable environmental incident (noted in Table 5), representing a 50% improvement on FY2015.

## CONSERVING AND PROTECTING BIODIVERSITY

**We adopt the principles of ecologically sustainable development for our projects and operations.**

When planning our projects and conducting our operations, we seek to avoid adverse impacts on native biodiversity. We do this through implementation of our Environmental Planning and Assessment Procedure. For example, only two years after completion of construction works for the Wiggins Island Balloon Loop project, annual monitoring of three diverted streams has already demonstrated a return to pre-construction ecological conditions. This was achieved by establishing riparian vegetation, improving fish habitat quality and preventing cattle grazing. >>



# Community Engagement

Our community engagement philosophy aims to build long-term positive relationships and legacies in the communities where we operate and where our people live and work.

## UNDERSTANDING OUR IMPACTS

We recognise that our business relies on and interacts with regional, rural and urban communities across Australia. As such, consistent and accountable feedback management continues to be an integral part of our community engagement.

In FY2016 we received a total of 218 community concerns, a decrease of 23% on FY2015. Reasons for this decrease include:

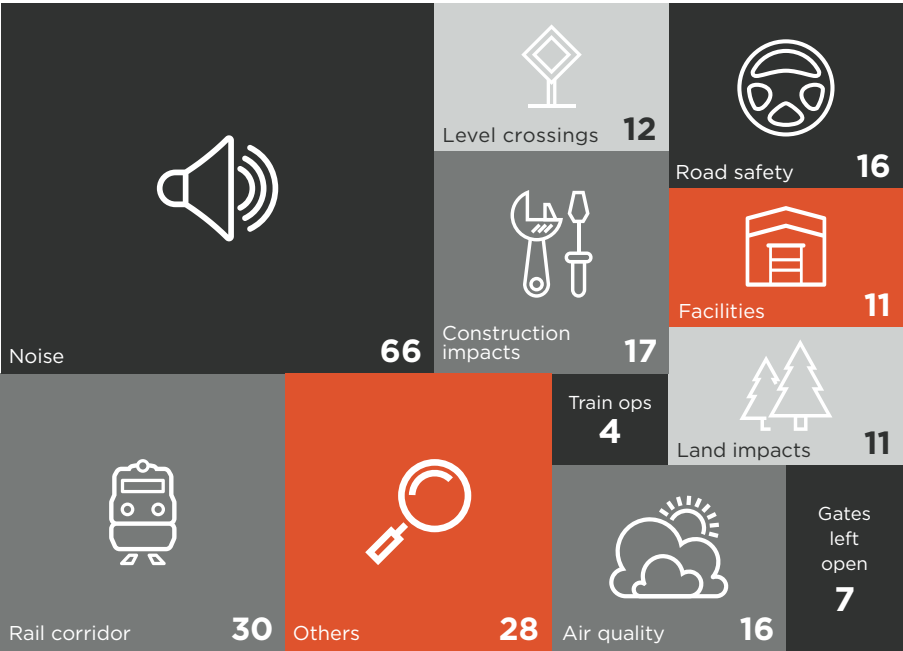
- continued emphasis on our employees being mindful of our operational impact on communities
- improved processes in our interactions with landholders
- the completion of a number of infrastructure construction projects.

We have improved our performance, with 93% of concerns resolved by the end of FY2016 (compared to 66% in FY2015). Table 6 shows the timeline for resolution of community concerns in FY2016.

As shown in Figure 35, the majority of the concerns raised in FY2016 related to:

- rail noise (mainly sounding of the klaxon or horn)
- rail corridor management (such as fencing and vegetation)
- air quality related issues (predominantly coal dust)
- on-road driver behaviour
- residual impacts from completed projects.

We outline our approach to engaging with the community on a number of these issues in this chapter.



**Figure 35:**  
FY2016 Community concerns received.

Status of enquiry	Total	1-3 days	4-10 days	>10 days	% of total
Closed	202	136	35	31	93%
In progress	16	0	2	14	7%
Total	218	136	37	45	
% of total		62%	17%	21%	100%

**Table 6:**  
FY2016 Complaints performance.



## RAIL CORRIDOR MANAGEMENT

We make continuous improvements in the CQCN rail corridor through a regular maintenance program, which seeks to improve the integrity and safety of the rail corridor. We engage with adjacent landholders to discuss and resolve issues about fencing, vegetation management, fire management and other geological impacts.

## MANAGING RAIL NOISE

**We seek to minimise noise from the operation of our rollingstock by working collaboratively with industry and government.**

Noise associated with our activities can result from railway operation, maintenance, construction and depot operations. We seek to manage noise in a way that considers community concerns and complies with legal obligations.

The use of the klaxon (also referred to as the horn or whistle) is the source of the majority of noise complaints. However, sounding the klaxon is a critical safety requirement that must be adhered to by any train service travelling on any network and applies 24-hours a day, seven days a week. It ensures people or vehicles in the vicinity of a level crossing are aware of an approaching train. This also applies to warning bells at level crossings.

To be effective as a warning, the klaxon needs to be above ambient background noise levels. The length of time that a klaxon is sounded is stipulated by rail access agreements, balancing the need for a safety warning with consideration for residents close to the rail line. Additional warning may also be required where activities are occurring on or near the rail corridor.

## What is Opacity Monitoring?

Opacity is a measure that enables the quantification of the dust emitted by a passing train. The average opacity for a single train is obtained by averaging the opacity readings over a three minute interval, starting when the first locomotive passed the monitoring station. The interval includes the time that the train takes to fully pass the monitoring station as well as time to record any residual dust.

Our train drivers are regularly monitored and assessed on these processes.

The rail regulators also undertake periodic audits of klaxon use. In addition, we investigate all concerns (complaints) received, including those relating to the usage of the train klaxon.

We also endeavour to minimise noise associated with maintenance and construction activities. In accordance with our community engagement commitment of 'no surprises', we inform impacted communities of activities that could be considered noisy. Actions taken on-site include locating noisy equipment away from residential areas, fitting of noise suppression equipment and ensuring that it is properly maintained, and coordinating activity during work hours wherever practical.

## MANAGING COAL DUST

**We seek to minimise coal dust emissions by working collaboratively with our supply chain partners.**

In FY2016 we received 16 complaints about air quality through our community contacts. Nine of these related to coal dust. In seeking to address these complaints we have implemented a number of world-leading solutions to minimise our impact on local communities.

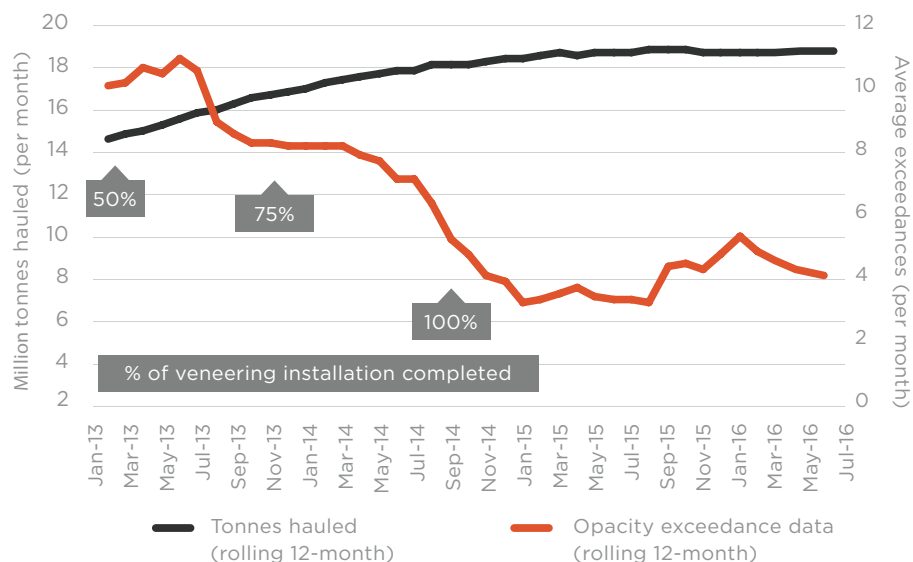
### CENTRAL QUEENSLAND COAL NETWORK (CQCN).

Aurizon operates the CQCN where we work with our supply chain partners to minimise coal dust emissions through profiling and veneering of coal on the top of wagons, improved wagon loading practices and coal dust monitoring systems. While the impact of these mitigation practices is dependent on factors such as coal type and climatic conditions, through the implementation of these monitoring and mitigation practices, the coal supply chain has reduced airborne coal dust emissions by up to 75%<sup>9</sup>.

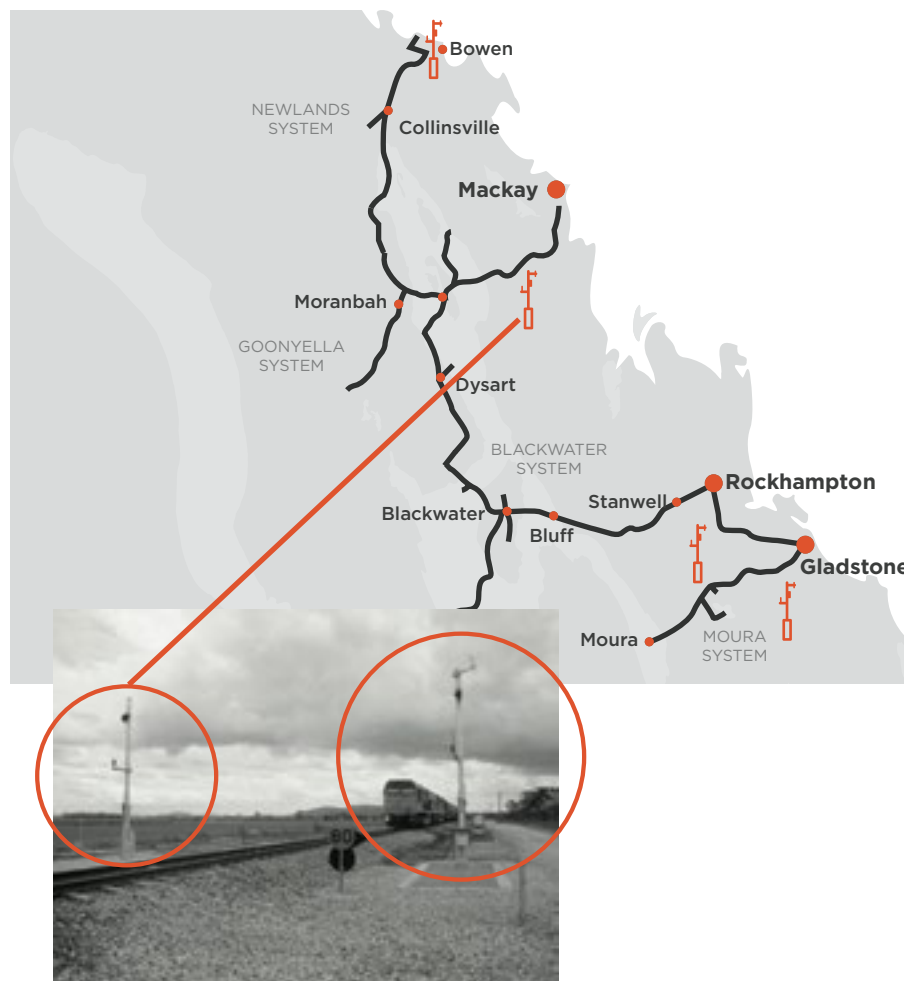
<sup>9</sup> Connell Hatch, [Final Report, Environmental Evaluation of fugitive dust emissions from coal trains Goonyella, Blackwater and Moura Coal Rail Systems](#).

As part of our ongoing commitment to minimise coal dust emissions, we installed an opacity monitoring point on each of the four rail systems in the CQC in agreement with the Queensland Department of Environment and Heritage Protection (DEHP) (see Figure 37). The DEHP and Aurizon jointly agreed a three minute average reading of 5% opacity as the threshold level at which a passing train emits visually noticeable dust. The threshold of 5% opacity represents a measurable parameter that triggers an action to be taken to investigate and improve airborne dust emissions.

Figure 36 shows the rolling 12-months opacity data (exceedances) for the CQC versus coal hauled. Despite record tonnes on the CQC, exceedances of the 5% opacity level have declined significantly since veneering was completed on all loading stations by mid-2014. Despite this excellent performance we are committed to investigating each exceedance of the agreed DEHP opacity reading and working with our supply chain to understand why this has occurred and how it can be remedied.



**Figure 36:** Opacity monitoring data vs. tonnes hauled in the CQC.



**Figure 37:** CQC Opacity Monitoring station locations.

#### SOUTH WEST SYSTEM, QUEENSLAND

The South West System (SWS) comprises the Western and Metropolitan rail lines to the Port of Brisbane in Queensland. Aurizon has committed, along with the Queensland Resources Council led South West Systems Users Group (SWUG)<sup>10</sup>, to an additional 12 months of coal dust monitoring in the SWS. This is part of SWUG's South West System Coal Dust Management Plan, which also includes all three mines in the system voluntarily introducing veneering and profiling to reduce coal dust.

This monitoring is being undertaken by independent air quality scientists at the Department of Science, Information Technology and Innovation (DSITI)<sup>11</sup>. Studies to date have demonstrated that, on average, coal makes up about 10% of black dust, which also contains soil, soot and black tyre rubber. The studies also demonstrate that coal dust emissions pre- and post-veneering were well within Queensland guidelines.

Following publication of the initial study, Queensland Health concluded that '...for people living along the corridor, the dust concentrations measured during the (2013) investigation are unlikely to result in any additional adverse health effects.'<sup>12</sup>

<sup>10</sup> The South West Users Group comprises coal companies New Hope Group, Yancoal Australia and supply chain service providers Aurizon, Queensland Rail and Queensland Bulk Handling.  
<sup>11</sup> DSITI was previously called the Department of Science, Information Technology, Innovation and the Arts (DSITIA).  
<sup>12</sup> Western – Metropolitan Rail Systems Coal Dust Monitoring Program, Final Report, October 2013. DSITIA.

## HUNTER VALLEY, NEW SOUTH WALES

We continue to work with our coal supply chain partners on coal dust management improvements associated with the haulage of coal on rail in New South Wales (NSW). This has included working with other operators to provide voluntary reports to the NSW Environment Protection Authority (EPA) on coal wagon doors and the associated design of coal wagons.

Aurizon was also an industry representative on the Lower Hunter Reference Group which released its final report in April 2016<sup>12</sup>. This study was initiated by the NSW EPA in response to concerns about visible dust in the Lower Hunter. The dust deposition study focussed on identifying the major sources and composition of larger dust particles, visible to the human eye.

Sampling was completed over a 12-month period by AECOM, which found that deposited dust measured at 12 sites in the Lower Hunter region was below EPA criteria levels. Analysis of 72 dust samples found that soil or rock was the primary component, averaging 69%. Other components were coal 10%, rubber 4% and soot 3%<sup>13</sup>.

The EPA also released the findings of another major study which complemented the dust deposition study. This [Particle Characterisation Study](#) sampled fine particulates at four key sites and coarse particulates at two sites in the Hunter over a 12-month period. The findings of this study included:

- All sites had similar levels of particles across the year except Stockton which had higher levels of fine and coarse particles.
- Coarse particles were found to be highest at Stockton due to the fresh sea salt and further investigation is being undertaken to clarify the contribution of coal, which appears to contribute up to 10% of coarse particles.

Taken together, the studies show that levels of air particles and dust in the Lower Hunter region are good by world standards, but occasionally particle levels will spike as a result of industrial or seasonal weather patterns. The NSW EPA Chief Executive, Barry Buffier said that the findings were “a great outcome for the community”<sup>14</sup>.

We recognise our impacts extend beyond the physical influence of our operations and that we contribute by employing local residents, and purchasing goods and services from local suppliers (as described by our regional Economic Contribution Analysis published in our FY2015 Sustainability Report). We also seek to invest in the long-term future of communities with funds and information campaigns.

## COMMUNITY GIVING

The [Community Giving Fund](#) was established to provide support to our communities in the areas of Health & Wellbeing, Community Safety, Environment, and Education. This biannual round of cash grants awards deserving charities and community groups with funds of up to \$20,000 to deliver critical initiatives and projects in the areas in which Aurizon operates. Since 2011, we are proud to say that we have helped over 220 charities and community groups around Australia.

In FY2016 the fund provided grants to 40 organisations. Some of these included:

- **Orange Sky Laundry.** Funding to fit-out a mobile, self-contained, 10-foot shipping container with six commercial laundry machines which can be taken to regional areas to provide free laundering services to the homeless, those affected by natural disasters, and remote Indigenous communities which otherwise would not have access to clean clothing.
- **WetlandCare Australia.** Funding to engage the residents of Maryland, NSW, in their environmental education project regarding the protection of water quality and biodiversity at Hexham Swamp, a significant migratory shorebird habitat.
- **Esperance Care Services (ECS).** Funding to purchase a new freezer to allow ECS to accept and store donations of frozen goods to supplement their food hampers for Emergency Relief.

In addition, through our Freight Assistance Program, we have transported food, clothing and books on behalf of the Salvation Army, Red Cross, Lifeline, St Vincent de Paul, Samaritan's Purse, Food Relief North Queensland, and the Anglican Diocese who provide these items to struggling families in Queensland communities.

We also regularly donate and raise funds for charities and, as part of our community investment program, work with some great local, regional and national partners who share our commitment to community programs. These include UN Women, the Clontarf Foundation, Australia's CEO Challenge Darkness to Daylight Challenge Run, Murri Carnival and the Newcastle Knights.

## HELPING TO PUT AN END TO DOMESTIC AND FAMILY VIOLENCE

Domestic and family violence is a disturbing reality with long-lasting impacts on families, communities and workplaces. It has an estimated economic cost of approximately \$13.6 billion a year in Australia<sup>15</sup>. As a community we need to create an environment where speaking out is encouraged and viewed as the right and respectful thing to do. The size and demographic of our workforce has allowed us to inform a significant group within Aurizon and the community about the risks and consequences, and where support can be reached.

Aurizon has long been outspoken in advocating against domestic and family violence. For example, our MD & CEO is the Deputy Chair of the Queensland Premier's Domestic and Family Violence Implementation Council.



<sup>13</sup> [Lower Hunter Dust Deposition Study Final Report, AECOM, February 2016.](#)

<sup>14</sup> NSW EPA Media Release, 27 April 2016: [EPA to release findings of Lower Hunter Air Quality Studies.](#)

<sup>15</sup> [The Cost of Violence Against Women and Their Children, March 2009.](#) The Department of Families, Housing, Community Services and Indigenous Affairs.





## OUR AWARENESS OF SOCIAL IMPACT

In July 2016, Social Scaffolding, a leading Social Impact practitioner in Australia, reviewed the impact of Aurizon's Indigenous Employment and Engagement strategies.

The Indigenous Pre-Employment Program was highly successful, with 15 out of 20 of the participants securing a role with Aurizon. By investing in the program, Aurizon also delivered shared value for both the participants (through sustained employment), and for our business (through increased staff retention). Voluntary turnover for Indigenous employees has also reduced from 11.3% four years ago to 3.3% in FY2016 and is currently lower than overall voluntary turnover of 5%. As a result, staffing costs such as recruitment, training and other associated business costs should also reduce.

"Supporting 20 Indigenous people from Central Queensland to participate in a pre-employment program is not just good for these new employees and their families, but also makes good business sense for Aurizon."

**Hugh Foley**  
Social Scaffolding

## SOCIAL RETURN ON INVESTMENT (SROI)

Social Scaffolding conducted a condensed Social Return on Investment (SROI) analysis of Aurizon's 10-week Indigenous Pre-Employment Program to measure the outcomes for the participants. SROI is an internationally recognised methodology that seeks to evaluate the impact of a project, program or policy. SROI is a form of stakeholder-driven evaluation blended with cost-benefit analysis that seeks to understand and measure the value of social, economic,

## KEY SOCIAL IMPACT OUTCOMES OF AURIZON'S INDIGENOUS PRE-EMPLOYMENT PROGRAM

**Financial benefits.** Higher wages and entering a career pathway with further opportunity for promotion.

**Personal benefits.** Increased wellbeing, self-esteem and being a positive role model in the community.

**Future opportunities.** All interviewed participants stated a high regard for the program and willingness to be ambassadors to recruit others. We will continue to review future opportunities for the program where a suitable number of job positions are available and external training funding can support the program.

cultural and environmental outcomes created by an organisation and the costs of creating them.

The Pre-Employment Program, which was designed and developed as part of Aurizon's [Reconciliation Action Plan \(RAP\)](#), was undertaken in August to October 2015. The SROI was developed through interviews with employees, management, the training organisation and new Indigenous employees involved in the training. These interviews and comparative data were relied upon to estimate the impacts and outcomes associated with the program.

Aurizon's investment in this program was approximately \$120,000 and included payment of wages to participants. At completion of the program 15 Indigenous women and men were able to secure full-time permanent employment with Aurizon. These outcomes are a significant contributor to the RAP goals of Aurizon.

A total investment in the program of \$378,000 (including Aurizon and Federal Government funding) is estimated by social scaffolding to create \$795,000 worth of value over four years, resulting in an SROI ratio of 2:1:1.

Therefore, for every \$1 invested in the program, \$2.10 of social value is created. As a result, a small incremental cost for training and development has created a far larger social and economic benefit to the Indigenous community. >>

Aurizon's Reconciliation Action Plan outlines a number of strategies to promote sustainable employment opportunities for Aboriginal and Torres Strait Island People.



As at 30 June 2016, we had 6,406 employees working across rail operations (75%), Aurizon Network (15%) and support functions (10%). Their collective skills, diversity and experience are central to our ongoing transformation, allowing us to find new and better ways of doing things and enabling us to develop innovative solutions for new and existing customers.

# Organisational Capability

Our greatest asset is the collective capability of our people to safely and efficiently operate complex supply chains.

## PEOPLE

Aurizon has been active in growing the capability of our people through programs focused on leadership, people-centred change and diversity and inclusion. Following extensive consultation with employees via culture surveys (3,315 employees), leadership profiles and town hall sessions, it became clear that our people desire a values-based, performance-driven culture that focuses on strategic clarity, shared meaning and effective leadership. As such, we have sought to ensure our capability program focuses on both leadership and technical knowledge.

Examples of the enterprise-wide initiatives being implemented to address some of these findings include the following:

- **The Aurizon Way of Leadership:** A consistent approach Aurizon leaders take to lead our people and achieve their full potential.
- **People Centred Change:** Designed to effectively manage and implement change using diverse and inclusive teams.
- **Team Challenge:** Encourages employees to share ideas on reducing cost and improving the running of the business (in FY2016 it generated over 90 initiatives for localised improvements, which has led to over \$1.8 million in benefit).

## ➤ Customer Excellence:

Enhances employee awareness, understanding and connection with our customers and the role they play in helping us to deliver our Blueprint.

## EMPLOYEE RELATIONS

In 2015 the Full Bench of the Fair Work Commission decided to grant Aurizon's application to terminate 12 expired Enterprise Agreements (EAs). The Full Bench stated in the [decision](#): "Many of the provisions sought to be removed or varied are not common in most enterprise agreements... We do not think the changes proposed, objectively viewed, involve exploitation or unfairness in the terms and conditions of employment of Aurizon employees."

This decision paved the way for Aurizon's successful negotiation in FY2016 of new EAs that allow more flexible, modern and competitive work practices to deliver efficient services for customers and create value for shareholders. For example, the implementation of these EAs enables us to more readily adapt to changes in the market. This was demonstrated by our ability to right-size our workforce in response to the closure of Queensland Nickel's Yabulu refinery.

Other benefits include:

- 17% reduction in overtime spend for national train crew and 23% reduction for maintenance crew since FY2015
- 9% reduction in hours spent transferring train crew by car to train location.

Alongside these changes we are reducing management positions in our operations functions by flattening the leadership structure. This will simplify and improve service delivery and ensure accountability at the regional level.

Finally, EAs have also enabled successful transition of our employees, such as those based at our Redbank maintenance facility, which was earmarked to close in June 2017. With the support of the new EAs, we were able to sign an agreement with Progress Rail in August 2016 to ensure it would continue operating with a majority of the current workforce until October 2024. This is a great outcome for those employees, the community of Ipswich and for Aurizon.

## Team challenge — Aurizon 'Ride Share' initiative

Each week many Aurizon employees are required to travel to and from an airport to take flights as part of their job. As a part of the Team Challenge, a group of graduates developed a process for matching passengers on the same flight and auto-generating emails to encourage them to share taxis or hire cars. Employees from across the Company have embraced the 'Ride Share' concept and to date approximately 300 people are sharing transportation each month. This is a great example of how small ideas can make a big difference to the Company's bottom line.

## DIVERSITY

We believe a company should celebrate the diversity of perspectives, backgrounds and experiences of its workforce. By doing so we strengthen our organisational capability, avoid 'group think' and ensure we reflect the broader marketplace and society in which we operate. The following section includes examples of diversity and inclusion initiatives we implemented this year.

## GENDER INCLUSION

In June 2014 we announced the bold target of increasing the number of women in the workforce to 30% by the end of 2019. During FY2016 we have increased the percentage of women in our workforce to 17.4%. This is as a result of a number of initiatives, including mandating diverse candidates for short lists and has led to women accounting for approximately half of all new hires in FY2016. We have also surpassed our targets for female Non-Executive Directors (three out of eight against a target of at least one, as of 25 July 2016) and women in the Management Leadership Team (32.1% against a target of 31%). The employee datasheet contained in this Report includes detailed breakdown of FY2016 statistics on diversity profiles including age, gender, employment type and remuneration comparisons.

### STAND UP, SPEAK UP

Gender inclusion is not just about increasing the percentage of women at Aurizon, we also need to ensure we have an inclusive workplace culture. To this end we launched an internal campaign in February 2016 called 'Stand Up, Speak Up'. This campaign seeks to encourage all employees to ask 'What do you mean by that?' whenever they hear comments or see actions that demean, belittle or are disrespectful in any way, particularly in regard to gender. It is a respectful way to challenge the person who may have made the comment consciously or subconsciously, and is an immediate and constructive resolution to a potentially difficult situation.

### SHARED CARE

Launched in February 2016, [Shared Care](#) gives Aurizon families a new choice when considering who takes on caring responsibilities for their child in the first year. Shared Care provides a financial incentive based on 'half-pay' for a partner to take a leave of absence to stay at home and care for their child in their first year, allowing the mother to return to work full-time. This initiative is also available to same sex couples and single parents. The initiative is the first of its kind in Australia. We are very proud to lead by example in changing the way our society thinks about childcare and workplace flexibility. Adjacent is a collection of media coverage of the initiative's launch.

## TRANSITION TO OPERATIONS AND MD & CEO ROTATION PROGRAMS

The Transition to Operations program was developed to provide a pathway from employment in corporate areas through to roles in operational leadership. Since inception, eleven women have transitioned into Operations after rotating through various roles over an 18-month period.

To develop female leaders, the CEO Rotation program also enables high-potential women to shadow the MD & CEO for a four-month period and be part of the Management Leadership Team. The program is now in its fourth year.

## ALLin INCLUSION

ALLin is our lesbian, gay, bisexual, transgender, intersex and queer (LGBTIQ) network for employees and allied supporters. Executive Vice President Michael Carter is the executive sponsor for the network. In FY2016, ALLin undertook a number of initiatives to promote a safe and respectful workplace where everyone can bring their whole self to work, including:

- becoming a sponsor of Out for Australia, a not-for-profit organisation that seeks to support and mentor aspiring LGBTIQ professionals as they navigate their way through the early stages of their career
- rolling out 1,000+ rainbow laces to operations employees to show their visible support to the LGBTIQ community and encourage everyone to bring their whole self to work.

Aurizon Business Analyst Rhiannon Kop won OUT Role Model of the Year in May 2016 at the Australian Workplace Equality Index Awards (AWEI) for her outstanding contribution as a role model in the LGBTIQ community and in her role as chair of the ALLin Network.



## STAND UP, SPEAK UP



If you don't speak up, people assume you agree. That's why we ask everyone at Aurizon to speak up against inequality and let others know if their attitude or comments are inappropriate, offensive or simply not on. Stand Up, Speak Up for yourself and your workmates. Help us deliver a respectful, supportive and inclusive environment for all employees.

Support the campaign on My Sites #StandUpSpeakUp

An initiative of Aurizon's Male Champions of Change.

"Platinum partner Aurizon launches bold new parenting initiative."

UN Women National Committee Australia | Feb 26, 2016

"Aurizon puts women on track with paid parental leave scheme."

The Australian | Feb 27, 2016

"Is this the world's best boss? Rail company CEO vows to pay mothers 150% of their salary if their partner stays home with the kids."

Daily Mail Australia | 2 March 2016

"Australian company gives new mums 150% of their salary if their partner stays at home with the kids."

The Telegraph UK | 2 March 2016

"Rail giant Aurizon's innovative 'Shared Care' policy challenges cultural norms!"

Senator the Hon Michaelia Cash, address to the National Press Club on 8 March 2016



## INDIGENOUS INCLUSION

Indigenous economic participation remains a national challenge with Indigenous unemployment rates presently three times higher than that of non-Indigenous. It is the responsibility of all Australian companies to increase the representation and integration of Indigenous Australians in the workforce. At Aurizon we take this responsibility very seriously and we seek to build on a history of employing Indigenous Australians as we work toward reconciliation.

In the past year we recruited 52 new Indigenous employees and the percentage of Indigenous employees increased from 3.3% to 4.3% of the workforce. While we are pleased to report on this progress, like many others, we have much more work to do. Our improvements have been based on the implementation of our first Reconciliation Action Plan (RAP) in November 2015. The RAP outlines how Aurizon will contribute to Reconciliation in Australia and how we can make a tangible difference in supporting continued employment opportunities for Australia's First Nation Peoples.

### INDIGENOUS REFERENCE GROUP

Our Indigenous Reference Group (IRG) was established in July 2015. This group comprises a broad range of people from across our organisation, including Aboriginal and Torres Strait Islander employees. The group assist in shaping our Indigenous Strategy and suggests areas for improvement and new ideas. Members of the IRG also managed the Indigenous Pre-employment program referred to in the Community Engagement chapter.

### INDIGENOUS ART ON TRACK MACHINES — ROCKHAMPTON

To acknowledge the Indigenous culture of Central Queensland's Darumbal People, we commissioned Indigenous artwork to be emblazoned across Aurizon's new high-tech fleet of track machines. In May 2016, local Aurizon employees and more than 20 Darumbal elders attended a naming ceremony at Rockhampton Station where the two new track machines were on display (Figure 38).

The machines were named 'Yugu Nunthi' meaning 'water lily country'.

## AWARDS

### INTERNAL

Aurizon celebrates the achievements of its high performing individuals and teams through an Excellence Awards program each year. The Award's categories are reflective of the Company's values — Safety, People, Integrity, Customer and Excellence.

### EXTERNAL

We have been recognised with numerous diversity awards in FY2016, including:

#### August 2015

Engineers Australia —  
Most Outstanding Company  
in Gender Diversity

#### December 2015

AHRI Dame Quentin Bryce AD CVO —  
Awards for Gender Equity in the Workplace

#### March 2016

UN Women's Empowerment Principles —  
CEO Award for Cultural Change for  
Empowerment

#### March 2016

Queensland Resources Council —  
Excellence in Diversity Programs  
and Performance

#### May 2016

Queensland Reconciliation Awards —  
Business Category

#### May 2016

AWEI Bronze Tier Employer —  
LGBTI Workplace Inclusion

"Today is about reflecting on and recognising that the land on which these machines will operate is the homeland of the Darumbal People. At Aurizon we believe in the importance of respect for Indigenous history, cultures and customs, and we are committed to building stronger relationships in the local communities where we operate."

**Alex Kummant**  
EVP Network

Extract from Aurizon Media Release,  
*Indigenous culture celebrated on  
Aurizon's high-tech machines*,  
10 May 2016.



**Figure 38:**  
Track machine with Indigenous artwork.

# Regulatory Environment

We seek to play an active role in encouraging infrastructure investment and efficient use of Australia's supply chains.

## WHY IS REGULATION IMPORTANT TO AURIZON?

All of our revenue and many of our costs are directly or indirectly impacted by regulation in Australia, from economic to environmental and safety regulation. Last year we explained the major aspects of economic regulation and the expected release of the updated Access Undertaking (UT4) that determines our regulated returns for the Central Queensland Coal Network (CQCN).

In April 2016 the Queensland Competition Authority (QCA) released its Final Decision. Aurizon Network has communicated it will move forward with this decision in light of the current economic climate and in order to provide certainty for the industry and stakeholders. Notwithstanding this acceptance, Aurizon will actively seek to ensure future processes are undertaken in accordance with the original intent of the QCA Act. Aurizon believes this would result in more commercial and economic outcomes for the industry and the State. A summary of the key UT4 outcomes over the period (FY2014 – FY2017) is provided below:

- Maximum Allowable Revenue (MAR) averaging approximately \$1 billion per year.
- QCA forecast volumes averaging approximately 220 million tonnes (mt) per year.
- Weighted Average Cost of Capital (WACC) of 7.17% generating an average return on capital of approximately \$383 million per year based on forecast Regulated Asset Base (RAB) valuation.
- Revenue deferral for Wiggins Island Rail Project (WIRP) volumes not expected to rail during the period.

Since UT4, a number of customer consultations and briefings were held on UT5 (which is intended to cover the period FY2018 to FY2021). It is currently anticipated to be in place during 2017.

UT5 is expected to provide Aurizon below rail network infrastructure (Network) with an appropriate model that has the foresight to consider future risks and opportunities including:

- expected continuation of record system volumes
- continuation of sustainable maintenance and capex regimes to ensure safety compliance and improve system efficiency
- a WACC outcome that supports ongoing investment.

We believe the process of UT5 presents Aurizon with a clear opportunity to demonstrate our strength in engagement with a broad spectrum of external stakeholders. These include:

- customers requiring fair and efficient pricing
- operators who desire access to a safe and reliable rail network
- regulators supporting a transparent and timely process to determine an appropriate return reflecting costs and risks
- local and state Governments who support on-going investment and growth.

## WHY IS REGULATION IMPORTANT TO AUSTRALIA?

The regulation of the rail sector and trade underpins Australia's economic competitiveness and ability to compete globally, so it is critical that regulation supports efficiency, competition and access to export markets. As Australia has geographically dispersed population centres, and is the leading exporter globally in the two largest seaborne dry bulk markets (iron ore and coal), the cost of transport and elimination of any barriers to trade are critical to Australia's competitiveness.

For the rail sector, regulation is important where it is prohibitive to duplicate rail infrastructure and there are few alternatives. Rail is also different to other types of regulated infrastructure, for example telecommunications, as operating rail services requires the direct use of the infrastructure.

When regulation is well designed and appropriately applied it can deliver optimal supply chains for users and incentives for investment to improve supply chain capacity. Where rail competes with road, regulation is also important in achieving a balance between economic, environmental and social impacts and to enable the necessary scale to reduce transport costs. ➤➤

"Quite simply, the future of Australia's economic prosperity — and local jobs — is highly dependent on strong ongoing trading relationships."

**Lance Hockridge**  
ChAFTA forum September 2015.

## SUPPLY CHAIN INTEGRATION

While Australia's bulk supply chains are among the world's best, this advantage is subject to international competition. At a global level, most bulk rail operations are vertically integrated, which means that above and below rail work together under common ownership or control to consider joint impacts on the total cost of rail services to end customers. In Australia, it's more typical for the operation of multi-user rail infrastructure to be separated between network providers

and rail operators. Based on experience in the CQCN, Aurizon believes common operation of both above rail and below rail, with appropriate targeted regulation, can provide benefits to users.

Another key aspect of supply chain integration is coordinating transportation (track access and rolling stock availability) with port capacity to help meet demand with optimised throughput. To enable this coordination, Aurizon Network participates in supply chain groups including the Capricornia Coal Chain

Steering Committee and Abbott Point User Group, contributing its expertise to improve supply chain performance. Aurizon believes that clear communication around scheduling and planning is imperative to optimise supply chain outcomes for all users.

Since FY2012, Aurizon's productivity gains and active support of supply chain integration has contributed to a 36% increase in coal volumes and a reduction in below rail rates in real terms.

## ENABLING MODE SHIFT

Mode shift (from road to rail) is needed to cope with the growth in the national land freight task as the volume of freight is expected to grow by 80% between 2010 and 2030<sup>16</sup>.

By contrast, rail is unable to effectively compete on equal terms with road freight due to separate and inconsistent systems of regulation and disparity between road pricing and rail access charges. Rail access charges are determined on a transparent and cost-reflective basis. By contrast, the current road freight pricing regime for heavy vehicles does not provide a clear and direct relationship with the costs of allowing heavy vehicles access to major road freight routes.

To ensure sustainable transport of freight within Australia, efforts should be made to limit the associated impacts on the environment and society. Rail freight has significant potential to reduce carbon emissions, avoid higher accident costs and limit the extent of congestion in urban centres. To do this, urgent reform is also needed to help rail achieve the scale to effectively compete with road.

Aurizon strongly supports the decision of the Council of Australian Governments (COAG) to transition to independent price regulation of heavy vehicle charges by 2017-18. We are working co-operatively with Federal and State Governments, as well as key industry associations such as the Australian Logistics Council,

to develop a consistent set of economic principles to be applied to road freight charging and investment reform. The transition to competitive neutrality between road and rail is important for promoting effective competition, as well as improving productivity and innovation, and maximising consumer benefits.

In addition, Aurizon has also taken its own proactive steps to enable mode shift and the alleviation of congestion in metropolitan Sydney. In August, we ran our first port shuttle from Port Botany to our intermodal terminal at Enfield. We plan to continue to grow this rail sector for our customers, as well as for the community of Sydney.

## REDUCING BARRIERS TO TRADE

The movement of goods, services and capital has been essential for the development of Asian economies and Australian export industries. Aurizon is heavily influenced by international trade with over 90% of our transport volumes destined for export. As such, any changes to the rules and terms of trading can have a profound effect on living standards of Asian economies and Aurizon's operations.

In a period where some countries are beginning to reassess their trading relationships, Australia should be seen as a champion for the continuation of trade liberalisation. Free trade agreements (FTAs) such as those recently ratified with Japan, South Korea, the United States and China are key to providing a more competitive platform for Australian exports, better access to lower cost inputs for business and choice for consumers. Similarly, foreign direct investment has been a critical factor in expanding the productive capacity of Australian agricultural, mining and processing industries with heavy financial involvement of end customers.

The ratification and implementation of the [China-Australia Free Trade Agreement \(ChAFTA\)](#) in December 2015 was a significant achievement for advocates of free trade and facilitated the following reduction in coal import tariffs:

- Metallurgical coal: 3% tariff eliminated on 20 December 2015.
- Thermal coal: 6% tariff to be eliminated on 1 January 2017.

Agreements such as this accentuate the benefits of pursuing trade openness for Australia, and demonstrate the benefits yet to be gained through similar FTAs under negotiation with India and Indonesia.

## MANAGING ENVIRONMENT, HEALTH AND SAFETY REGULATION

Regulation is often the means by which governments consider societal expectations and industry's social license to operate. Aurizon is committed to working with governments to reduce environmental, health and safety risks to our communities, particularly coal dust, air quality, noise and level crossing incidents. The Environmental Management and Community Engagement chapters of this Report set out a number of relevant examples.

Aurizon believes that voluntary industry codes may be an appropriate first step, but recognises that in some cases regulatory action may be adopted where it is demonstrably required. While it can be an effective safety net, it should not unintentionally constrain activities or impose unnecessary costs. Regulatory decisions should be fully informed by the ability to incentivise the desired outcomes based on:

- evidence-based decision making
- being proportionate to the demonstrated risks
- delivering cost-effective outcomes for the impacted industries and the overall community.

These principles are consistent with the 2007 Council of Australian Governments (COAG) agreement on Best Practice Regulation.

Finally, when regulation is applied it must ensure national consistency of systems, standards and processes or 'harmonisation' to reduce the regulatory burden where appropriate. While progress is being made, Aurizon still encounters what it views as unnecessary regulatory differences across, and within, state boundaries in Australia that continue to create inefficiencies for the rail industry nationally.

<sup>16</sup> Freightline 1 — Australian freight transport overview, BITRE 2014.

# Governance at Aurizon

The Board and management are responsible for governance at Aurizon.

## GOVERNANCE AT AURIZON

### BOARD AND COMMITTEES

All members of the Aurizon Board are independent non-executive directors, other than the MD & CEO.

The Board is responsible for:

- setting strategic goals and values
- overseeing Aurizon's governance framework (including ensuring we are compliant with the ASX Corporate Governance Council's Corporate Governance Principles and Recommendations)
- monitoring performance.

The Charter of the Board, and each of the current Board Committees, is available on our website, as are Aurizon's Corporate Governance Statement, and policies and procedures on the selection and appointment of directors. These are available at: [www.aurizon.com.au/aboutus/governance](http://www.aurizon.com.au/aboutus/governance).

The Board delegates authority to the MD & CEO for the day-to-day management of Aurizon. The delegation of authority is reviewed annually and forms part of our Corporate Governance Framework.

### MANAGEMENT

The MD & CEO leads a monthly CEO Forum attended by the Executive Committee, which addresses operational and financial performance as well as any other strategic matters requiring Executive Committee attention.

The MD & CEO is responsible for:

- developing and implementing business strategies
- delivering targeted performance
- building our corporate culture to support business objectives.

## SUSTAINABILITY GOVERNANCE

### SUSTAINABILITY STEERING COMMITTEE

Aurizon's Sustainability Steering Committee provides strategic direction in relation to sustainability, assessment of key trends and risks, and ensuring appropriate sustainability reporting across the organisation. The Committee is comprised of senior executives from each of our business functions.

As the Chair of this Committee, the Vice President Strategy has overall responsibility for building a cohesive and coordinated sustainability capability across Aurizon.

### SAFETY, HEALTH AND ENVIRONMENTAL MANAGEMENT

Aurizon has a Central Safety, Health and Environment Committee (CSHE Committee) to manage and monitor Aurizon's strategy and goals for safety, health and environment. The CSHE Committee consists of management and meets monthly to review performance, policies and procedures, supported by:

- District Safety Improvement Teams
- Function and Sub-Function CSHE Committees
- Communities of Competence.

District and Local Safety Improvement Teams are established in all key regions to coordinate best practice safety initiatives, communicate lessons learnt and ensure our safety message is consistent across all levels and locations of the organisation.

Communities of Competence help to deliver effective outcomes on activities deemed critical by the CSHE Committee. In FY2016, our Communities of Competence included environment, trackside safety, road safety, isolation and lockout, derailment prevention and signals passed at danger.

### RISK MANAGEMENT

At Aurizon we promote a risk-aware culture in all decision-making through the application of high-quality, integrated risk analysis and management.

The Enterprise Risk Management Framework (Framework), which is based on the internationally recognised standard for risk management (AS/NZS ISO 31000:2009), is a critical component of this.

The Framework demonstrates the commitment of the Board and Management to effective risk management as a key element of business success and sustainability.



## OUR SUSTAINABILITY PROCESS

Our annual sustainability process sits within a cycle that begins and ends with internal and external stakeholder engagement (Figure 39):

- Engage with stakeholders through a combination of direct discussions, surveys and literature reviews.
- Identify and confirm our sustainability priorities.
- Report to the CEO Forum and Board.
- Integrate findings into our business planning processes and our implementation of initiatives which will contribute to improved sustainability performance.

Central to the sustainability process is our development of this public Report. We are committed to producing this Report on an annual basis in order to:

- define and discuss the issues we perceive as being important to long-term business sustainability
- highlight the sustainability initiatives we have undertaken and our planned initiatives to build on past performance
- provide a platform for us to engage with our key stakeholders, both during the development of the Report and as part of our ongoing engagement processes.

Stakeholder feedback provided through our stakeholder management and reporting cycle is presented to the Sustainability Steering Committee, Executive Committee and Board.

We have made some important advances in our sustainability reporting over the last few years. For example:

- our FY2014 Report was second runner-up for 'Best First Time Report' at the 2016 Corporate Responsibility Reporting Awards, the only global annual awards for sustainability reporting
- Australian Council of Superannuation Investors confirmed Aurizon as a 5/5 'leading' reporter for 2016 — the second consecutive year we have held this rating
- we were added to the Morgan Stanley Composite Index (MSCI) for sustainability in 2016 and have improved our rating from BBB to AA over the last two years
- we were also accepted in the FTSE4Good Global Index and FTSE4Good Australia 30 for the first time in 2016
- we were named an ABA100 Winner for Sustainability in The Australia Business Awards 2016.



**Figure 39:**  
Our annual sustainability process.

### APPROACH TO INVESTMENT AND CAPITAL MANAGEMENT

Aurizon's business is capital intensive and there are long lead times to procure rollingstock and develop new infrastructure. As such, a disciplined approach to investment and capital management is essential to retain our long-term financial sustainability.

The fundamentals of our investment approach did not change in FY2016. We continue to have a specific process in place to assess all potential investment opportunities. This includes assessment against our Enterprise Risk Management Framework.

Capital is deployed into long-life assets following assessment by various specialists who conduct wide-ranging research, analysis and forecasting in order to assess the opportunity and associated risks.

### EXTERNAL ASSURANCE

Aurizon's FY2016 National Greenhouse Gas and Energy Report submission to the Clean Energy Regulator, including Scope 1 and 2 emissions, was assured by GHD. A copy of the [assurance statement](#) is available on our website.

We intend to seek external assurance of our Sustainability Report on a two-year cycle, based on advice regarding best industry practice from the Australian Council of Superannuation Investors.

### UNITED NATION'S GLOBAL COMPACT

In January 2016 Aurizon [committed](#) to the UN Global Compact (UNGC). We support the 10 principles of the UNGC on human rights, labour, environment and anti-corruption.

We are committed to making the UNGC and its principles part of the strategy, culture and day-to-day operations of our company, and to engage in collaborative projects which advance the broader development goals of the UN, particularly the [17 Sustainability Development Goals](#).

We have [policies](#) that support the UNGC, including:

- Human Rights Policy
- Anti-Bribery and Anti-Corruption Policy
- Environmental Policy
- Code of Conduct.

As signatories to the principles of the UNGC, this Report serves as our active level UNGC Communication on Progress on implementation of the principles and support for its broader development objectives.

## TAX AT AURIZON

### MESSAGE FROM THE CFO

On 3 May 2016, the Federal Government released the Board of Taxation's final Tax Transparency Code.

As an ASX listed company predominately operating in Australia, and an industry leader, Aurizon understands the importance of tax transparency. Aurizon has voluntarily adopted the Tax Transparency Code to demonstrate our commitment to paying our fair share of tax and providing additional information to the public regarding Aurizon's tax affairs.

This year's Sustainability Report includes:

- a summary of taxes paid and collected
- an overview of Aurizon's approach to tax strategy, tax policy and governance
- an explanation of the tax disclosures in the financial statements.

"Aurizon has a positive, open and constructive relationship with the ATO and is now pleased to provide additional transparency to other external stakeholders to assist with their understanding of Aurizon's tax profile and how it compares to other large ASX listed Australian corporates."

**Keith Neate**  
EVP and CFO

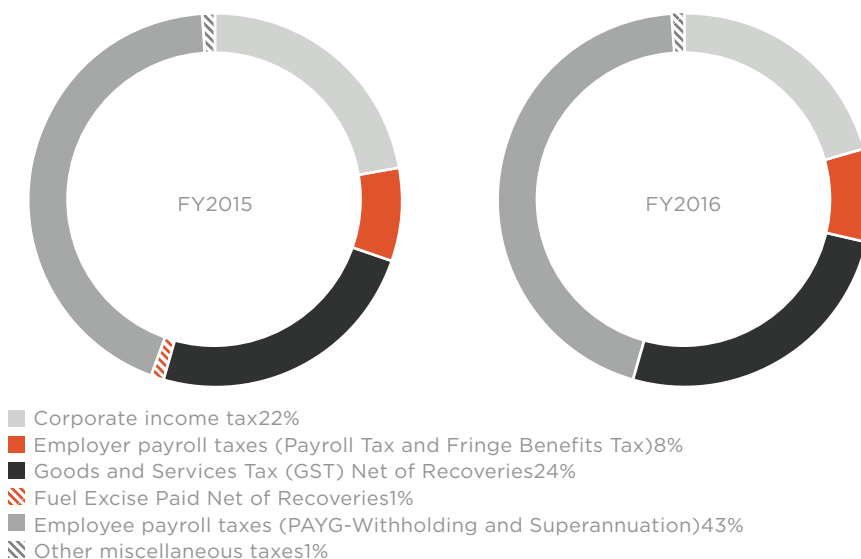
### TAXES PAID AND COLLECTED

Aurizon pays various taxes to Federal, State and local governments and collects various tax payments on behalf of Federal and State governments.

Australian corporate income tax represents the largest component of taxes paid by Aurizon. 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. The corporate income tax represented in Figure 40 reflects taxes paid in respect of the income year, rather than taxes actually paid during the income year.

As demonstrated in Figure 40, taxes collected in respect of employees represents the largest component of taxes collected by Aurizon on behalf of the Federal government. This includes Pay As You Go Withholding from employees' salary and wages and superannuation contributions for employees.

Figure 40 excludes a number of taxes which are considered immaterial for Aurizon, including (but not limited to) stamp duty, customs duty, withholding taxes, taxes paid to foreign governments, and taxes paid by controlled Australian entities which do not form part of the Aurizon income tax consolidated group.



**Figure 40:**

Taxes collected and paid by Aurizon (indicative only).

### TAX STRATEGY, TAX POLICY AND GOVERNANCE

Aurizon's tax strategy focuses on:

- 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 Aurizon's Board approved Tax Policy, CFO approved Tax Corporate Principle and Aurizon's broader Enterprise Risk Management Framework.

The Aurizon Tax Team has primary responsibility for implementing Aurizon's tax strategy, with oversight by the CFO, the Audit, Governance and Risk Management Committee and the Board.

### ACCURATE AND TIMELY TAX COMPLIANCE AND REPORTING

The Aurizon Tax Team is responsible for identifying and complying with Aurizon's 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 and Board.

### ENHANCING SHAREHOLDER VALUE THROUGH PRINCIPLED TAX PLANNING

Aurizon's 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 Aurizon makes appropriate tax elections when given a choice under the tax law
- ensuring tax positions adopted by Aurizon are in accordance with parliamentary intention, guidance provided by the ATO and do not breach published safe harbour limits.

Aurizon's Tax Policy prohibits undertaking transactions for the specific purpose of obtaining a tax benefit. The Aurizon Tax Team collaborates with Aurizon's businesses to identify and mitigate any tax risks.

Tax positions adopted by Aurizon are considered by at least two qualified tax professionals, with material positions verified with external independent advice.

### BUILDING A POSITIVE AND TRANSPARENT RELATIONSHIP WITH THE ATO

Aurizon actively manages its relationship with the ATO to foster transparency, taking a 'no surprises' approach and ensuring the ATO is aware of all significant tax positions and transactions.

Aurizon voluntarily meets with the ATO bi-annually as part of our commitment to full disclosure and building a positive, collaborative working relationship with the ATO.

## INCOME TAX

The information below has been derived from the audited financial statements prepared by Aurizon for FY2016. Aurizon's financial statements reflect Aurizon's 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 — these differences reverse over time
- non-temporary differences — these 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 Aurizon 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 Aurizon's 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, adjusted for non-temporary differences.

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

The key adjustment in Aurizon's tax calculation is for temporary differences arising from the different accounting and tax treatment of fixed asset related costs. This is primarily due to accelerated fixed asset tax depreciation and is common for entities operating in a capital intensive environment.

	FY2016 \$m	FY2015 \$m
Current tax	135	112
Deferred tax	(14)	119
Total income tax expense	121	231
Underlying profit before tax	721	835
Significant items (primarily impairments)	528	0
Statutory profit before tax	193	835
Tax at Australian tax rate of 30% (2015: 30%)	58	251
Tax effect of amounts which are not (taxable) deductible in calculating taxable income:		
- Research and development	(2)	(2)
- Other	67	(4)
- Adjustments for tax of prior periods	(2)	(14)
<b>Income tax expense</b>	<b>121</b>	<b>231</b>
Temporary differences:		
Provisions / accruals	(7)	3
Customer contracts	(13)	(13)
Property, plant and equipment	33	(119)
Other	1	10
<b>Income tax payable</b>	<b>135</b>	<b>112</b>

**Table 7:**  
Reconciliation of accounting profit to income tax payable.

	FY2016	FY2015
Underlying Profit Before Tax (PBT)	\$721m	\$835m
Significant Items (impairments etc)	\$528m	Nil
Statutory PBT	\$193m	\$835m
Statutory Income Tax Expense	\$121m	\$231m
Statutory Effective Tax Rate	62.10%	27.60%
Underlying Income Tax Expense	\$211m	\$231m
Underlying Effective Tax Rate	29.30%	27.60%

**Table 8:**  
Aurizon's effective income tax rate.

### 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. Aurizon's effective income tax rate is outlined in Table 8.

There were a number of significant items (impairments) recognised for accounting purposes in FY2016. Impairments are generally only recognised for tax purposes when Aurizon effectively disposes of the asset, and therefore normally represent timing differences between accounting and tax. Accordingly, it is necessary to calculate an underlying effective tax rate in order to 'normalise' effective tax rate.

Aurizon's (underlying) effective tax rate for FY2016 of 29.3% is less than the 30% Australian corporate tax rate. This is primarily due to the research and development tax incentive which operates to reduce the tax payable by Aurizon by 10% of the eligible R&D expenditure identified for the income year.

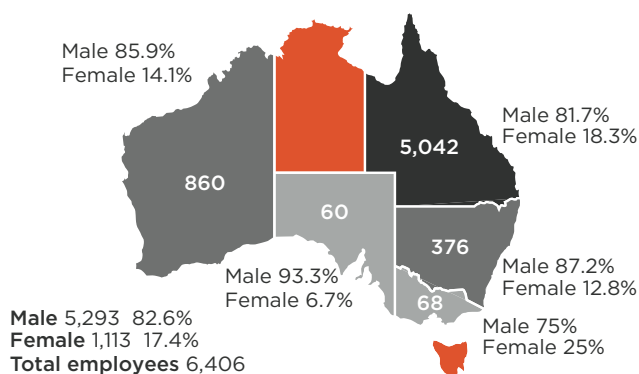
For FY2016, the statutory effective tax rate calculated is significantly above 30% due to the impairment of the Aquila investment. The impairment of the Aquila investment does not yet meet the requirements under the accounting standards for the recognition of a deferred tax asset and is currently recorded as a non-temporary difference. ➤➤

# Employee datasheet

## EMPLOYMENT PROFILE

### General workforce information.

Our total headcount as at 30 June 2016 is 6,406 employees.



## AGE PROFILE OF OUR WORKFORCE

Category	Number	Percentage
Under 30 years	891	13.9%
30-50 years	3,150	49.2%
Over 50 years	2,365	36.9%
Total	6,406	100%

Table 9: Employees by age category.

## WORKFORCE DIVERSITY

Board of Directors (incl. MD & CEO)	FY2016	FY2015
Total number	8*	9
Percentage female representation	37.5%	22.2%
Percentage over 50	62.5%	88.9%

Table 10: Board of Directors composition.

\* Ms Kate Vidgen was appointed as the eighth director on 25 July 2016.

Diversity group	FY2016	FY2015
Aboriginal and Torres Strait Islander	4.3%	3.3%
Non-English speaking background	5.8%	5.6%
Self-reported disability	2.8%	2.9%
Female representation	17.4%	15.3%

Table 11: Employees by diversity group.

## INJURY BY LOCATION

State	LTIs	TRIs*
New South Wales	0	1
Queensland	0	43
South Australia	0	0
Victoria	0	0
Western Australia	0	3

\*46 TRIs were male and 1 TRI was female.

Table 12: LTI and TRI by state and gender.

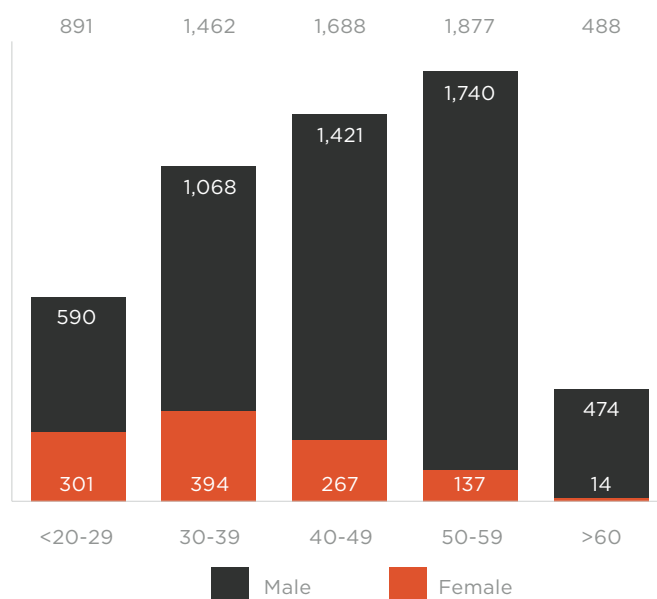


Figure 41: Workforce by age and gender.

## VOLUNTARY TURNOVER

Gender	FY2016	FY2015
Male	4.8%	5.8%
Female	6.3%	7.2%

Table 13: Voluntary employee turnover rate.



## WORKFORCE BY EMPLOYMENT TYPE

Of our 6,406 employees, 82% are covered by collective bargaining agreements.

Employment type	Male total	Total%	Female total	Total%	Total
Permanent full-time	5,014	84.8%	901	15.2%	5,915
Permanent part-time	19	17.3%	91	82.7%	110
Fixed term full-time	208	67.1%	102	32.9%	310
Fixed term part-time	4	50.0%	4	50.0%	8
Casual	49	77.8%	14	22.2%	63
<b>Total</b>	<b>5,294</b>	<b>82.6%</b>	<b>1,112</b>	<b>17.4%</b>	<b>6,406</b>

**Table 14:** Employees by employment type.

## WORKFORCE BY EMPLOYMENT CATEGORY

The Executive Committee is supported by our Executive Leadership Team (ELT) and Management Leadership Team (MLT). Collectively, these groups include all senior leaders within Aurizon. Accordingly, 'Senior management' in Table 15 below, refers to all members of our Executive Committee, ELT and MLT.

Category	Number	% Female	% Minority*	% <30 yrs	% 30-50 yrs	% >50 yrs
Senior management	85	30.6%	5.9%	0.0%	75.3%	24.7%
Management	858	16.0%	8.2%	4.5%	63.3%	32.2%
Non-management	5,463	17.4%	12.6%	15.6%	50.5%	33.9%

\*Minority includes Aboriginal and Torres Strait Islanders, employees from non-English speaking background and employees with self-reported disability.

**Table 15:** Workforce by employment category.

## REMUNERATION

Aurizon undertakes an annual gender pay gap analysis and, in accordance with the *Workplace Gender Equality Act 2012 (Cth)* (WGEA), submits a workplace profile and reporting questionnaire each year including a [report on our gender pay analysis](#). Our gender pay gap analysis is undertaken in accordance with WGEA methodology.

In addition to this report, Aurizon conducts deeper analysis where a gender pay gap exists and compares like-for-like roles based on experience, tenure and length of time in the role.

Table 16 illustrates Aurizon's gender pay gap using the remuneration ratios for female-to-male employees by employment category\*. Overall, our gender pay gap for management remained the same as last year.

The composition of our ELT (comprised of six men and one woman in FY2016) continues to have an impact on the remuneration ratio of Senior management.

A non-management ratio is also affected by an increase in the percentage of women in entry level roles, such as apprentices and junior engineers. Over time, it is expected that this pay gap will reduce as their qualifications and experience support higher levels of remuneration.

Category	FY2016 Remuneration ratio women : men	FY2015 Remuneration ratio women : men
Senior management	0.85	0.85
Management	0.96	0.96
Non-management	0.88	0.87

**Table 16:** Remuneration ratio by employment category.

\* The ratio per employee category is calculated as the annualised average full-time employee total remuneration. Total remuneration includes fixed remuneration and any additional benefits whether payable directly or indirectly, in cash or in a form other than cash, such as bonus payments (including performance pay, excluding long-term incentives), superannuation, discretionary pay, overtime and site allowance.

# Glossary

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<b>2DS</b> 2 Degree Scenario	<b>EA</b> Enterprise Agreement	<b>NDC</b> Nationally Determined Contributions	<b>Scope 2 Emissions</b> Emissions that result from the generation of purchased or acquired electricity, heating, cooling and steam consumed by the organisation
<b>Above rail</b> Rollingstock and associated parts and components	<b>EAF</b> Electric Arc Furnace method of steelmaking using electricity	<b>NETCON</b> Aurizon's network condition asset monitoring program	<b>SPAD</b> Signals Passed at Danger. Reflects an instance in which a train has entered a section of the track without the correct authority
<b>APEX</b> Advanced Planning and Execution Operational technology	<b>EBIT</b> Earnings Before Interest and Tax	<b>NPS</b> New Policies Scenario	<b>SROI</b> Social Return on Investment
<b>ASX</b> Australian Stock Exchange	<b>EBIT Margin</b> Underlying earnings before interest and tax divided by total revenue and other income	<b>ntk</b> 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	<b>TO</b> Trip Optimiser
<b>ATO</b> Australian Taxation Office	<b>EPA</b> Environmental Protection Authority	<b>Operating Ratio or OR</b> 1-EBIT Margin, expressed as a percentage	<b>TRI</b> Total Recordable Injuries
<b>ATSB</b> Australian Transport Safety Board	<b>EVP</b> Executive Vice President	<b>PACE</b> Possession Aligner and Capacity Evaluator	<b>TRIFR</b> Total Recordable Injury Frequency Rate
<b>Below rail</b> Track, electric infrastructure, signalling and associated rail infrastructure of the regulated Central Queensland Coal Network	<b>FMG</b> Fortescue Metals Group	<b>PP&amp;E</b> Property, Plant and Equipment	<b>Turnover</b> Total number or rate of employees who ceased employment with Aurizon during a specified period
<b>BOF</b> Basic Oxygen Furnace method of steelmaking requiring metallurgical coal	<b>FMT</b> Freight Management Transformation	<b>ppt</b> Percentage point	<b>TWh</b> Terawatt hour (10 <sup>12</sup> )
<b>CCS</b> Carbon Capture and Storage	<b>GHG</b> Greenhouse gas	<b>QCA</b> Queensland Competition Authority	<b>UNGC</b> United Nations Global Compact
<b>CDP</b> Carbon Disclosure Project	<b>GRI</b> Global Reporting Initiative	<b>RAB</b> Regulated Asset Base	<b>UT4</b> Draft Access Undertaking (FY2014-FY2017) currently undergoing review by the QCA
<b>CFO</b> Chief Financial Officer	<b>Gross tonne kilometres</b> The product of tonnes and distance	<b>RAP</b> Reconciliation Action Plan	<b>UT5</b> Draft Access Undertaking (FY2018-FY2021) to be reviewed by the QCA
<b>CO<sub>2</sub>e</b> Carbon dioxide equivalent	<b>HELE</b> High Efficiency Low Emission	<b>Return on Invested Capital or ROIC</b> ROIC is defined as net operating profit less adjusted taxes divided by invested capital. It is a measure of how well a company generates cashflow relative to the capital invested in the business	<b>Voluntary turnover</b> Total number or rate of employees who ceased employment with Aurizon voluntarily during a specified period
<b>CPS</b> Current Policies Scenario	<b>HCC</b> Hard Coking Coal	<b>RIM</b> Rail Infrastructure Manager	<b>WACC</b> Weighted Average Cost of Capital
<b>CQCN</b> Central Queensland Coal Network	<b>IEA CCC</b> International Energy Agency Clean Coal Centre	<b>Rollingstock</b> Equipment which provides transportation capability on our railways, such as locomotives and wagons	<b>WGEA</b> Workplace Gender Equality Act
<b>CSHE Committee</b> Central Safety Health and Environment Committee	<b>IPO</b> Initial Public Offering	<b>Safety Interaction</b> Formally recorded conversations related to safety matters between Aurizon employees	<b>Workforce availability</b> Calculated as (Employee Time Planned — Unscheduled Leave) / Employee Time Planned
<b>DEHP</b> Department of Environment and Heritage Protection	<b>IVMS</b> In-Vehicle Monitoring System	<b>Scope 1 Emissions</b> Emissions from operations that are owned or controlled by the organisation	<b>&gt;&gt;</b>
<b>Derailment</b> Derailment occurs where one or more rollingstock wheels leave the rail or track during railway operations	<b>kWh</b> Kilowatt hour (10 <sup>3</sup> )		
<b>DSITI</b> Department of Science, Information Technology and Innovation	<b>LTI</b> Lost Time Injury		
	<b>MAR</b> Maximum Allowable Revenue		
	<b>MTKm</b> Million train kilometre		
	<b>mtpa</b> Million tonnes per annum		
	<b>MWh</b> Megawatt hour (10 <sup>6</sup> )		





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