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 $ktCO_2e$, 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_2e 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 ($ktCO_2e$)	657	693	**-5.3%**
Scope 2 ($ktCO_2e$)	435	429	**1.3%**
Total emissions	1,091	1,122	**-2.8%**

Legend: ■ Improvement ■ Decline

Table 3:
Aurizon's GHG emissions profile.

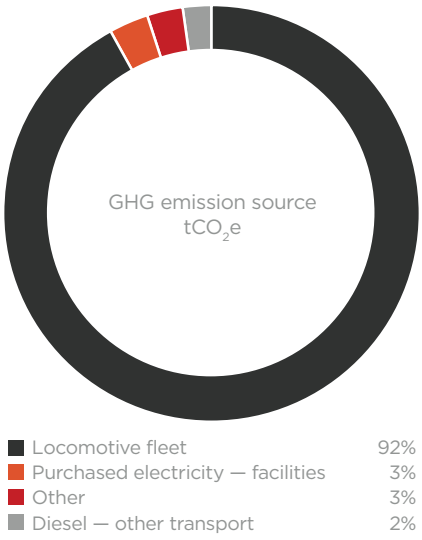


Figure 31:
Aurizon's GHG emission sources.

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.

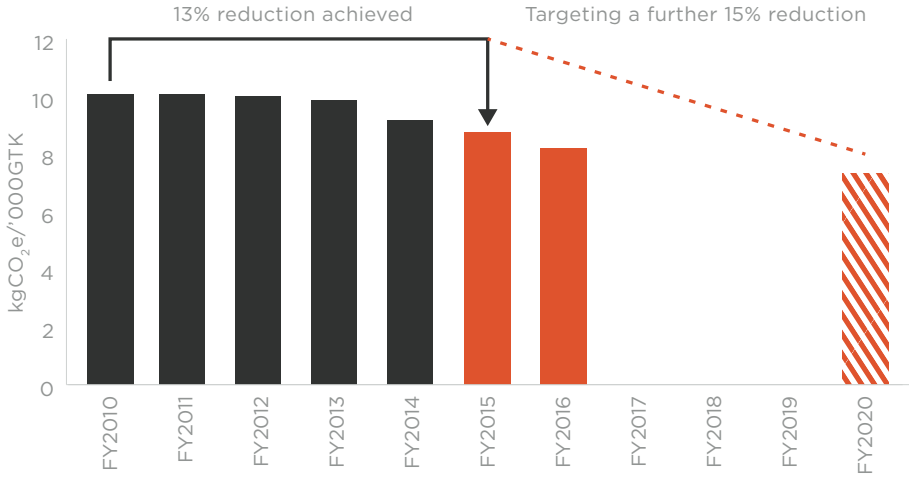
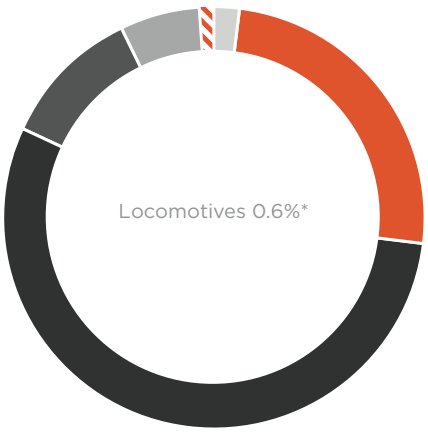


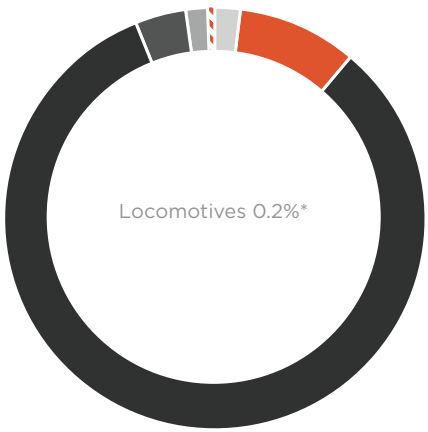
Figure 32:
Historical and targeted GHG emission intensity reduction.



Commercial	2.2%
Domestic-commercial	24.7%
Industrial	55.3%
Off-road mobile	10.8%
On-road mobile	6.5%
Locomotives	0.6%

Figure 33:
$PM_{2.5}$ in NSW GMR (2008)

Sources of $PM_{2.5}$ GMR 2008[8].



Commercial	2.2%
Domestic-commercial	9.1%
Industrial	81.3%
Off-road mobile	4.0%
On-road mobile	3.1%
Locomotives	0.2%

Figure 34:
PM_{10} in NSW GMR (2008)

Sources of PM_{10} GMR 2008[8].

[8] 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.

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.

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.

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. »