



## Overview

The *NSW Government Resource Efficiency Policy (GREP)* requires agencies to implement programs that drive resource efficiency in three main areas (energy, water, and waste) and to reduce air emissions from government operations.

In accordance with GREP reporting requirements, this Statement of Compliance has been prepared to report Roads and Maritime Services (Roads and Maritime) annual performance against the GREP measure's for 2017-18.

The scope of this report is limited to the performance of Roads and Maritime directly and does not include the performance of our contractors unless explicitly stated. It also excludes energy, water, and waste performance data for Roads and Maritime properties as these properties are managed by Transport for NSW (TfNSW) and included in the TfNSW GREP Statement of Compliance<sup>1</sup>.

Further information to support the initiatives in this Statement of Compliance can be found in Roads and Maritime Sustainability Performance Reports as published on the Roads and Maritime internet at <http://www.rms.nsw.gov.au/about/environment/sustainability/index.html>

## Policy Measures

### Energy

#### E1: Targets to undertake energy efficiency projects

All clusters will undertake energy efficiency projects at sites representing 90 per cent of their billed energy use by the end of 2023–24, with an interim target of 55 per cent for Health and 40 per cent for other clusters by the end of 2017–18.

Energy efficiency projects should produce a minimum 10 per cent saving in billed energy and deliver an internal rate of return of 12 per cent over the life of the project.

While GREP targets are set at the cluster level, Roads and Maritime is applying these same targets to its own energy accounts. This enables effective tracking of our performance and contribution to the overall Transport cluster energy savings.

Our energy performance as reported is limited to trends in electricity usage as LPG and natural gas make up about one per cent of Roads and Maritime overall energy consumption.

#### Electricity consumption and cost

Electricity consumption and cost for 2017-18 and comparison with the previous four years are shown in Figure 1 and Figure 2.

<sup>1</sup> The Transport Shared Services (TSS) group within Transport for NSW provides property asset management services to properties across the Transport cluster including administration of facilities management contracts and procurement of all energy, water, and waste services.

Overall there was a 9.3 per cent decrease in electricity usage in 2017-18 compared to the previous year. Initiatives contributing to these reductions are as outlined in Table 1.

Electricity costs for 2017-18 was \$12.95 million. This is an increase of about 13 per cent compared to the previous year, even with the 9.3 per cent reduction in electricity usage. This increase is attributed to a significant rise in the contracted electricity prices over the last financial year. Since the baseline year of 2013-14 there has been a 16% reduction in the total cost of electricity which is attributed to a reduction in electricity use over the last 5 years.

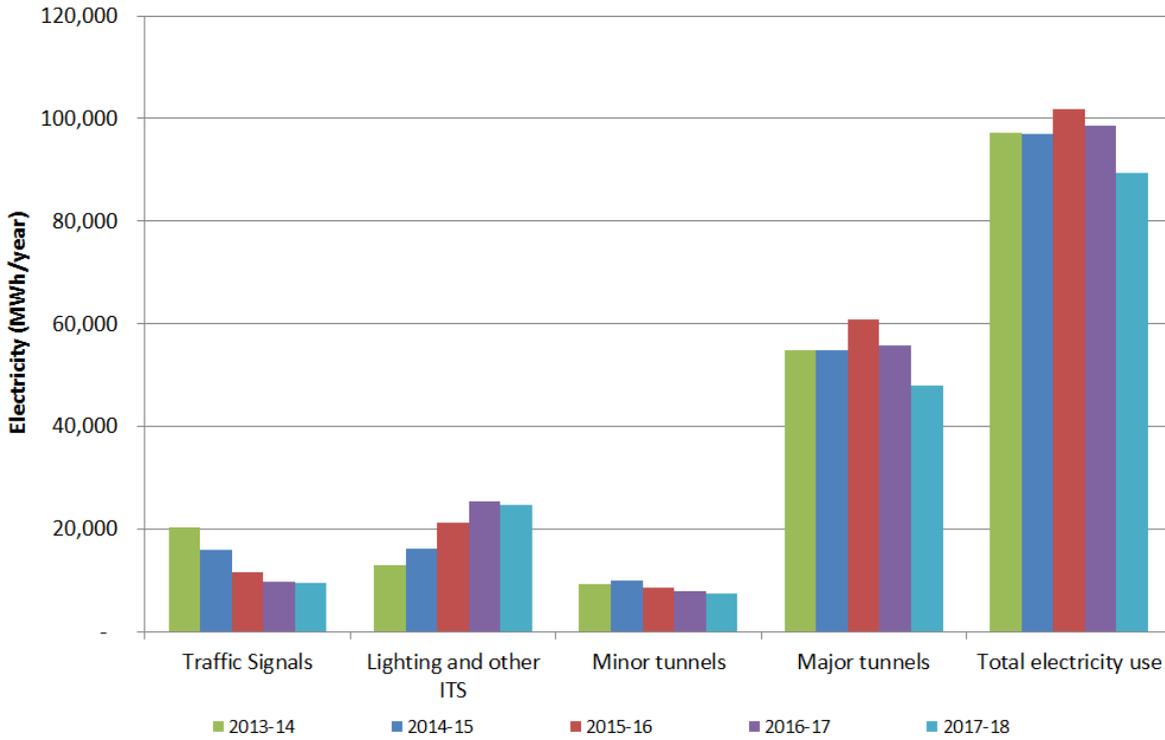


Figure 1: Total electricity consumption and comparison with past five year trend

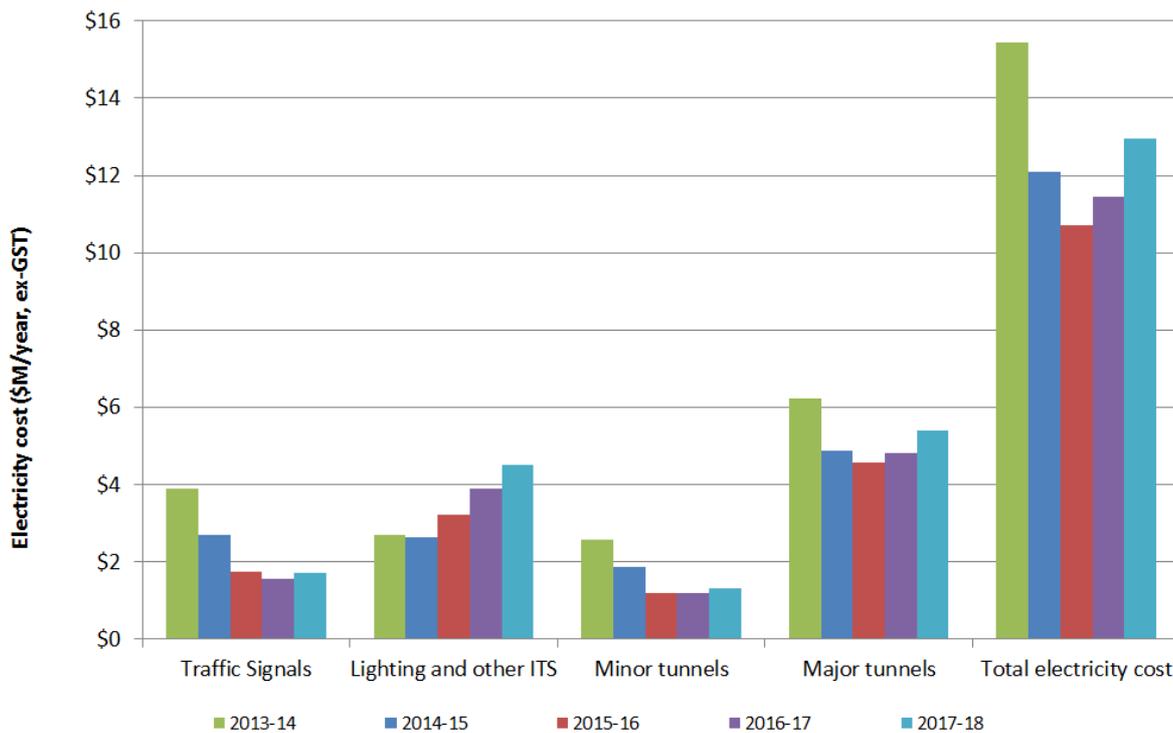


Figure 2: Five year electricity cost trend

## Energy efficiency projects

The GREP requires implementation of cost effective energy efficiency projects that produce a minimum saving of 10 per cent billed energy. Projects must be undertaken at sites representing 40 per cent of billed energy use by the end of 2017–18 and 90 per cent of billed energy use by the end of 2023–24.

Roads and Maritime has set 2013-14 as the baseline year as this timeframe corresponds with the release of the GREP. Traffic signal and lighting and ITS accounts have been grouped for the purposes of reporting as a 'site'. These may be split in future reporting years to identify the causes of variations in energy consumption.

Table 1 summarises the change in current billed energy cost and consumption compared to the baseline year. The change in consumption is a better reflection of energy efficiency improvements compared to costs as it removes the impact of fluctuating electricity prices on calculated savings.

**Table 1: Summary of current consumption and cost compared to the 2013-14 baseline**

Asset group	% of baseline billed energy	Billed energy cost (\$M ex-GST)			Energy consumption (MWh)		
		2013-14	2017-18	% change	2013-14	2017-18	% change
Traffic Signals	25%	\$3.90	\$1.70	-56%	20,240	9,470	-53%
Lighting and other ITS	18%	\$2.71	\$4.52	67%	12,820	24,610	92%
Minor tunnels	17%	\$2.59	\$1.32	-49%	9,340	7,490	-20%
Major tunnels	40%	\$6.24	\$5.41	-13%	54,900	47,830	-13%
<b>Total</b>	<b>100%</b>	<b>\$15.44</b>	<b>\$12.95</b>	<b>-16%</b>	<b>97,300</b>	<b>89,400</b>	<b>-8%</b>

The number of assets contributing to energy use in Roads and Maritime is increasing as the road network expands and develops. The number of assets included in the current reporting year (2017-18) is greater than the number of assets reported on in the baseline year for all asset categories, with the exception of the major tunnels category, which consists solely of the M5 East tunnel. This is particularly relevant for the 'lighting and other ITS' asset category as there has been concentrated effort to create a consolidated inventory of lighting and ITS assets across the organisation and improve the capture of energy data with additional accounts being included in the 2017-18 data compared to the 2013-14 baseline.

Table 2 summarises energy efficiency projects completed or in currently in progress for each asset category.

**Table 2: Energy efficiency projects**

Asset group	Energy efficiency projects	Status	Estimated / realised energy savings (based on kWh)
Traffic Signals	LED traffic signal replacement project.	Ongoing	53 per cent energy reduction since 2013-14 baseline year.
	Negotiated traffic signal load table adjustments to reflect use of more energy efficient technology <sup>2</sup> .	Complete	
	Adjustment of traffic signal energy billing arrangements (from 1 July 2015) to include a correction factor for night-time dimming (previously unrealised).	Complete	

<sup>2</sup> Street lighting and traffic signals are unmetered connection points that are classified as market loads. NSW has produced Load Tables for devices (luminaires, controllers, etc) used in street lighting and traffic signals. These load values are utilised as a reference to calculate interval metering data, required for billing purposes. The load values are obtained from load and power consumption tests and are agreed by the Australian Energy Market Operator (AEMO), participants in the national electricity market and other relevant parties.

Asset group	Energy efficiency projects	Status	Estimated / realised energy savings (based on kWh)
Lighting and other ITS	<p>The baseline number of assets for Lighting and ITS in the 2013/14 reporting period was 459 billed asset groups. The total number of billed asset groups for this reporting year is 674, which is a 47% increase in the number of billed assets.</p> <p>In response to the increase in ITS and Lighting asset installations, Roads and Maritime Services published specifications (TSI-SP-041 published November 2015 and TSI-SP-065 published February 2016) that allow the installation of energy efficient lighting technology such as LED for street, tunnel and underpass lighting. Since the introduction of these specifications, the energy usage has decreased, even with an increase of 38 billed asset groups in the reporting period.</p> <p>Installation of LED lights in new projects and upgrades of existing lighting is being undertaken on a case by case basis considering the existing surrounding lighting and site requirements.</p> <p>LED installations are now in place at locations including updating the streetlights on the heritage approach spans of the Sydney Harbour Bridge (50% complete).</p> <p>Smart control systems are being trialled on the Hawkesbury River Bridge with the potential, if proven successful, to reduce energy consumption even further than switching luminaire technology alone.</p>	Ongoing	> 10 per cent per street lighting installation
Minor tunnels	Electrical and mechanical system upgrades for Mascot Tunnel and Domain Tunnel.	Ongoing	To be determined during upgrade planning and commissioning <sup>3</sup> .
	Review and improvements to operating practice for the Patrick Street bus tunnel ventilation system. The Patrick Street bus tunnel makes up about 11 per cent of the overall current minor tunnel electricity demand (1 per cent of overall electricity) but it was not included in the 2013-14 baseline.	Complete	There has been a 20 per cent reduction in energy usage from the baseline year
Major tunnels	After the review of the ventilation system operation mode for the M5 tunnel, it was identified that there were opportunities to modify the fan system to reduce energy consumption and maintain tunnel air quality. On 1 <sup>st</sup> February 2018 a trial commenced which has resulted in a 13% energy reduction over the 2017-18 period.	Ongoing	To be determined during ventilation system trial period. Currently there has been a 13% reduction since baseline.

## E2: Minimum NABERS Energy ratings for offices and data centres

Large owned and leased office buildings will achieve and maintain a NABERS Energy rating of at least 4.5 stars by June 2017. All data centres will achieve a minimum infrastructure and IT equipment NABERS Energy rating of 4.5 stars by June 2017.

The performance of Roads and Maritime offices against this measure is being reported by TfNSW in its GREP Statement of Compliance. Roads and Maritime does not operate any data centres.

<sup>3</sup> The primary objective of the upgrade is to increase the performance of electrical and mechanical systems. Thus, whilst the upgrade will incorporate energy efficient products and equipment the net impact on overall energy demand is yet to be determined.

### **E3: Minimum standards for new electrical appliances and equipment**

All new electrical equipment purchased by government must be at least the market average star rating. In categories where no star ratings are available, equipment purchased should be recognised as high efficiency either by being ENERGY STAR® accredited, in a high efficiency band under Australian Standards or being above-average efficiency of Greenhouse and Energy Minimum Standards (GEMS) registered products.

Roads and Maritime has incorporated GREP requirements in the Roads and Maritime Procurement Manual, including requirements relating to new electrical equipment and appliances. These requirements have also been incorporated in a TfNSW guidance document developed for facilities management.

Roads and Maritime supported the development of a Transport cluster wide Sustainable Procurement Policy for Goods and Services. The Policy was endorsed 30 March 2016. It requires consideration of the emissions, pollutants, energy and water required at all stages of the life cycle of the product or service.

### **E4: Minimum standards for new buildings**

All new office buildings and fitouts will be designed and built to a predicted performance of at least 4.5 stars NABERS Energy rating. For other building types, new facilities with project costs over \$10 million should be designed and built so that energy consumption is predicted to be at least 10 per cent lower than if built to minimum compliance with National Construction Code requirements.

Roads and Maritime offices and associated refurbishments are managed by Transport Shared Services on behalf of Roads and Maritime.

All new fit-outs for offices of more than 2,000m<sup>2</sup> are currently designed to meet 4.5 NABERS tenancy rating. Guidelines have been developed for both conventional and Activity Based Working (ABW) office fitouts to ensure compliance.

Compliance with this measure for our property portfolio is therefore being reported by TfNSW on behalf of Roads and Maritime in its GREP Statement of Compliance.

### **E5: Identify and enable solar leasing opportunities**

Small government sites will self-assess their suitability for solar leasing by July 2015.

Each site on Contract 776 – Supply of Electricity – Small Sites will self-assess the suitability for solar leasing. Suitability is determined by the following factors:

- sites that are likely to be owned or leased by the Government for the next 10 years
- sites that are operational throughout daylight hours for a least 45 weeks of the year
- sites with at least 100m<sup>2</sup> of unshaded northerly aspect roof (to ensure there is sufficient space for a solar PV system with a 10 kWp capacity)
- sites with average electricity consumption greater than 45 MWh per annum (to ensure that solar PV systems are designed to deliver around 30% of the sites annual consumption).

Agencies will collate a list of their sites suitable for solar leasing and provide this to the Office of Environment and Heritage by July 2015.

The installation of solar PV systems is voluntary. Agencies may choose whether to engage a solar leasing or Power Purchase Agreement provider to install a solar PV system through an outright purchase not to install a solar PV system.

## Properties

Roads and Maritime properties that meet these criteria are under the management of Transport Shared Services (part of TfNSW). Compliance with this measure for our property portfolio is therefore being reported by TfNSW on behalf of Roads and Maritime in its GREP Statement of Compliance.

## Operational assets

Roads and Maritime undertook preliminary site assessments and completed the Office of Environment and Heritage's online solar checklist for a number of sites that form part of the M5 East operations. Based on the preliminary assessment, two sites were identified as potentially suitable for solar leasing opportunities.

Other sites under the 776 and 777 contracts relate to street lighting, traffic signals, ITS, and other traffic facility assets. These sites are considered not suitable for the installation of directly connected solar PV due to size and safety constraints.

### E6: Minimum fuel efficiency standards for new light vehicles

Improve minimum fuel efficiency standards for new light vehicles so that the average NSW Government purchase is at least the market average fuel efficiency by vehicle category by July 2017.

This measure is to be implemented by State Fleet amending the pre-qualification criteria in the Supply of Motor Vehicles to NSW Government (SCM0653) contract each year to improve fuel efficiency via reductions in the maximum allowable greenhouse gas emissions per kilometre per vehicle category.

Roads and Maritime, via Transport Shared Services (at TfNSW), use the standard contract for selection and purchase of operational vehicles

### E7: Purchase 6 per cent GreenPower

Purchase a minimum of 6 per cent GreenPower.

Roads and Maritime purchase electricity to power its operational assets from the whole of government Contract 776 – Supply of Electricity – Small sites and Contract 777 – Supply of Electricity – Large Sites. These contracts include purchase of 6 per cent GreenPower.

## Water

### W1: Report on water use

All agencies will report on water use.

Water use and cost data for Roads and Maritime operational properties is shown in Figure 3 and Figure 4. The change in reported water use was contributed to by improved reporting practices which cease extrapolation of water usage data for leased sites not directly receiving water invoices.

Further information on the performance of our operational properties against this measure is being reported by TfNSW on behalf of Roads and Maritime in its GREP Statement of Compliance.

Total use in kL

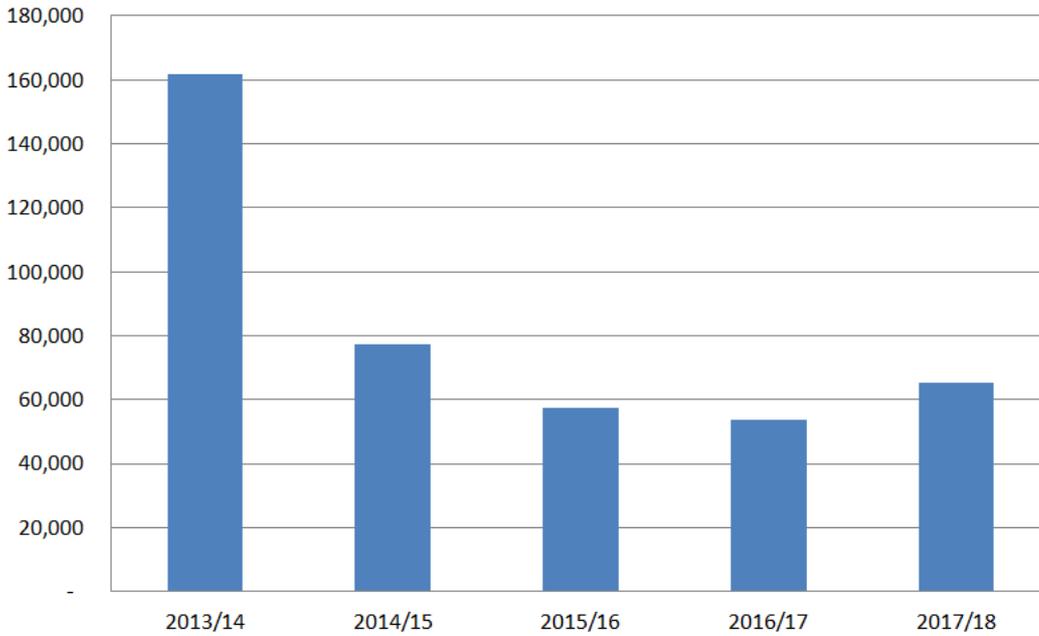


Figure 3: five year water use\*

Water cost per year

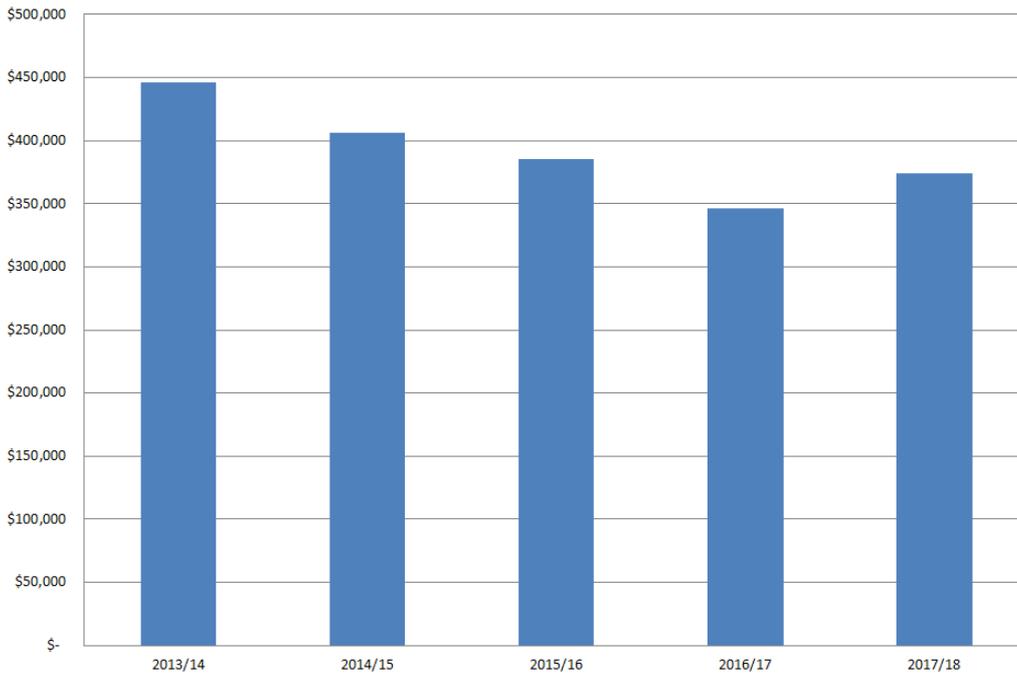


Figure 4: five year water cost trend\*

\* 2013/14 water data includes an estimate of water used in leased buildings (kL) based on consumption rates for similar buildings but does not include an estimate of water costs for these same buildings.

## W2: Minimum water standards for office buildings

All new and refurbished owned office buildings and leased office buildings with a net lettable area of over 2000 m<sup>2</sup> will achieve a whole building NABERS Water rating of 4 stars where cost-effective.

Fit-outs for the refurbishment of the Roads and Maritime offices located at Argyle Street, Parramatta and Morgan Street, Wagga Wagga were completed in 2015-16. The fit-outs were managed by Transport

Shared Services on behalf of Roads and Maritime. The design specifications included a number of environmental sustainability performance requirements, including water efficient appliances.

TfNSW is developing guidelines for refurbishment projects with a net lettable area of over 2,000m<sup>2</sup> to meet 4 star NABERS Water rating where cost effective.

### W3: Minimum standards for new water-using appliances

All new water-using appliances, shower heads, taps and toilets purchased by agencies must be at least the average WELS star rating by product type.

Appliances and equipment in the following categories with star ratings under the Water Efficiency Labelling Scheme (WELS) must have at least the following star ratings:

- showerheads – 3 stars
- toilets and urinals – 4 stars
- washing machines – 4 stars
- dishwashers – 4 stars
- taps and flow controllers – 4.5 stars.

Star rating benchmarks will be evaluated over a two-year cycle to ensure the policy keeps pace with market improvements.

Roads and Maritime has incorporated GREP requirements in the Roads and Maritime Procurement Manual, including requirements relating to new water-using appliances.

Roads and Maritime supported the development of a Transport cluster wide [Sustainable Procurement Policy for Goods and Services](#). The Policy was endorsed 30 March 2016. It requires consideration of the emissions, pollutants, energy and water required at all stages of the life cycle of the product or service.

## Waste

### P1: Report on top three waste streams

All agencies will report on their top three waste streams by total volume and by total cost.

GREP requires agencies to report on the top three waste streams by volume and cost where reliable data is available, including contractor waste. Cost data has not been reported in this Statement of Compliance as waste costs are not consistently reported as a separate cost item across the organisation.

#### Waste from operational properties

Waste performance data for Roads and Maritime operational properties is included in the Transport for NSW (TfNSW) GREP Statement of Compliance. Property based waste streams are significantly less than waste generated from Roads and Maritime maintenance and construction activities.

#### Waste from construction and maintenance activities

Roads and Maritime objective of reducing waste quantities and costs, is by designing and delivering our work to reduce the volume of surplus materials and maximise re-use of materials. This is reflected in our waste recovery rates, which continue to meet or exceed the NSW Government's waste recovery targets (as per the NSW Waste and Resource Recovery Strategy 2014-21).

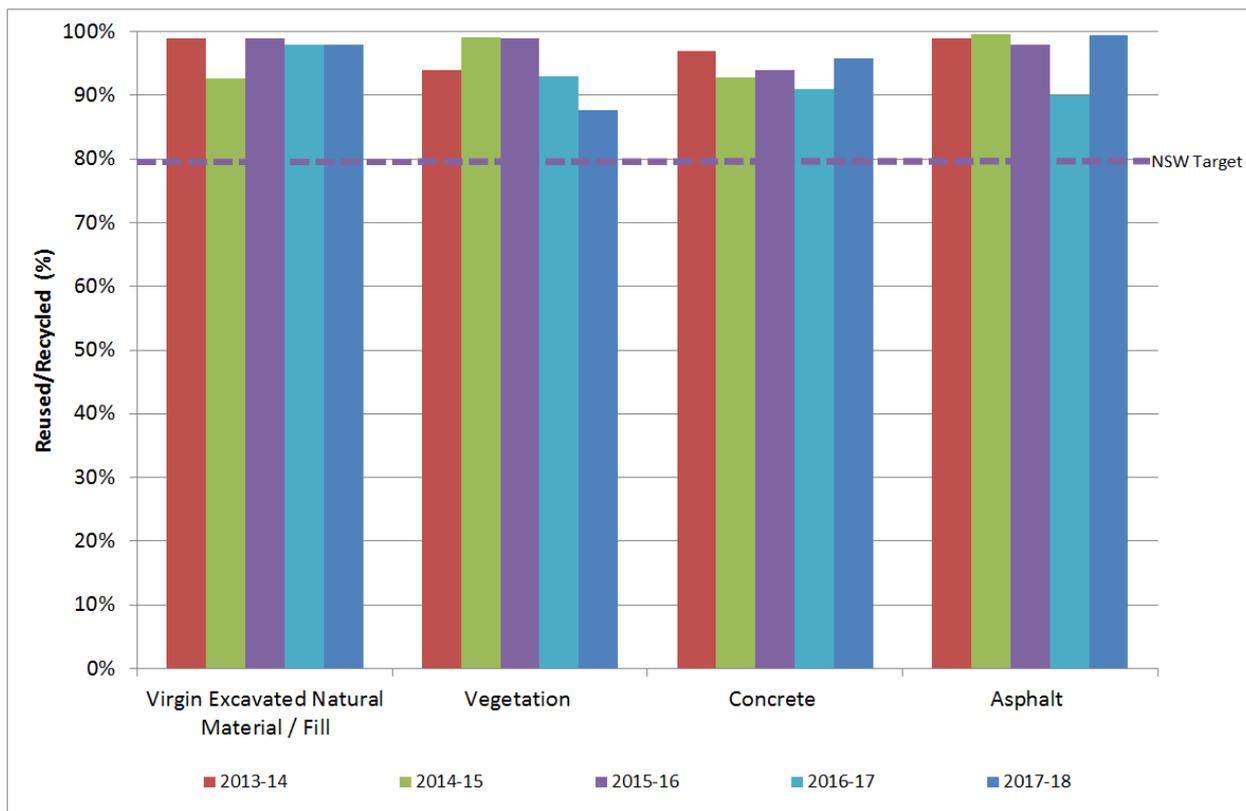
Table 3 provides the waste recovery rates for the top four waste streams generated during 2016–17. The data is shown is from the Regional Maintenance Delivery program (undertaken directly by Roads and Maritime staff).

**Table 3: Waste and recycling performance**

Waste stream	Generated (tonnes)	Reused/ Recycled (tonnes)	Disposed (tonnes)	Recovery rate (%)	NSW waste recovery targets (by 2021-22)
<b>Regional Maintenance Delivery waste and recycling performance</b>					
Virgin excavated natural material and fill	166,720	163,304	3416	98%	80%
Vegetation	4248	3721	527	87.6%	80%
Concrete	14,097	13,498	599	95.8%	80%
Asphalt	81,676	81,189	487	99.4%	80%

**Five year trend for reuse and recycling for construction and maintenance activities**

GREP requires that agencies report on their waste performance over the past three years. It is important to note that reported construction and maintenance waste quantities can fluctuate significantly between reporting years as a result of varying levels of activity and task-specific factors that influence the amount of waste generated. Our five year performance has therefore been reported in terms of our overall estimated recovery rate for our major waste streams, as this measure provides an indication of the resource efficiency initiatives we have implemented to demonstrate our commitment to reducing waste disposal to landfill. Roads and Maritime have exceeded the NSW targets for recycling rates for our top waste streams.



**Figure 5: Five year waste recovery trend**

**Clean Air**

## **A1: Air emission standards for mobile non-road diesel plant and equipment**

Contractor-supplied and government-purchased equipment will comply with EU or US EPA standards.

### **Government purchased equipment**

Roads and Maritime Plant General Specification (No. GR09E) has been amended to include the requirement for minimum air emission performance standards for new mobile non-road diesel plant and equipment as per the GREP requirements.

### **Contractor-supplied equipment**

Roads and Maritime's General Specification (G36) has been amended requiring contractors to provide an annual inventory of non-road diesel plant and equipment. The requirement has been written into contracts entered into from December 2015.

## **A2: Low-VOC surface coatings**

All surface coatings will comply with the Australian Paint Approval Scheme (APAS) where fit for purpose.

Fit-outs for the refurbishment of the Roads and Maritime offices located at Argyle Street, Parramatta and Morgan Street, Wagga Wagga were completed in 2015-16. The fit-outs were managed by Transport Shared Services on behalf of Roads and Maritime. The design specifications included a number of environmental sustainability performance requirements including the GREP requirement to use Low-VOC surface coatings.

# Contact

For further information on this Statement of Compliance please contact the Roads and Maritime Environmental Officer (Sustainability):

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