

## GHG Emissions

	UNIT	FY12	FY13 <sup>a</sup>	FY14 <sup>b</sup>
<b>Total direct and indirect GHG emissions</b>	<b>tonnes CO<sub>2</sub>-e</b>	<b>160,216</b>	<b>142,159</b>	<b>121,463</b>
Scope 1	tonnes CO <sub>2</sub> -e	143	147	149
Scope 2	tonnes CO <sub>2</sub> -e	59,111	57,348	57,053
Scope 3	tonnes CO <sub>2</sub> -e	100,961	84,664	64,261
<b>Customer travel</b>	<b>tonnes CO<sub>2</sub>-e</b>	<b>661,280</b>	<b>677,082</b>	<b>703,149</b>

<b>FY14</b>	UNIT	CITYLINK	HILLS M2	ED	LCT	495 EXP	M5	HILLS M2 UPGRADE	M5 WIDENING	I95 UPGRADE	CORPORATE OFFICES	TOTAL
<b>Total direct and indirect GHG emissions</b>	<b>tonnes CO<sub>2</sub>-e</b>	<b>32,550</b>	<b>5,479</b>	<b>7,139</b>	<b>19,716</b>	<b>1,766</b>	<b>1,505</b>	<b>1,914</b>	<b>29,449</b>	<b>20,474</b>	<b>1,471</b>	<b>121,463</b>
Scope 1	tonnes CO <sub>2</sub> -e	51	10	0	0	0	84	4	0	0	0	149
Scope 2	tonnes CO <sub>2</sub> -e	27,656	3,881	5,713	15,699	1,411	1,021	98	316	0	1,258	57,053
Scope 3	tonnes CO <sub>2</sub> -e	4,843	1,588	1,426	4,017	355	400	1,812	29,133	20,474	213	64,261
<b>Customer travel</b>	<b>tonnes CO<sub>2</sub>-e</b>	<b>272,772</b>	<b>144,222</b>	<b>45,664</b>	<b>20,917</b>	<b>26,247</b>	<b>193,327</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>703,149</b>

## Significant Air Emissions

<b>CITYLINK AIR EMISSIONS</b>	UNIT	FY12	FY13	FY14
NOx (oxides of nitrogen)	Tonnes	108	105	105
CO (carbon monoxide)	Tonnes	212	201	223
PM10 (fine particles <-10 microns) <sup>c</sup>	Tonnes	7	7	6
PM 2.5 (fine particles <-2.5 microns)	Tonnes	5	5	4

<b>LANE COVE TUNNEL</b>	UNIT	FY12	FY13	FY14
NOx (oxides of nitrogen)	Tonnes	49	44	46
CO (carbon monoxide)	Tonnes	112	97	91
PM10 (fine particles <-10 microns)	Tonnes	2	1	2
VOC (volatile organic compounds)	Tonnes	51	47	44

## Energy Consumption

	UNIT	FY12	FY13	FY14
<b>Total direct and indirect energy consumption</b>	<b>GJ</b>	<b>217,504</b>	<b>222,346</b>	<b>221,849</b>
<b>Direct</b>	<b>GJ</b>	<b>2,147</b>	<b>2,219</b>	<b>2,371</b>
Natural gas	GJ	500	519	821
Fuel (petrol)	GJ	1,647	1,699	1,029
Diesel	GJ	0	0	509
LPG	GJ	0	0	12
<b>Indirect</b>	<b>GJ</b>	<b>215,357</b>	<b>220,127</b>	<b>219,478</b>
Electricity (coal) <sup>d</sup>	GJ	206,100	210,852	210,619
Electricity (green power)	GJ	9,257	9,276	8,859

<b>FY14 ONLY</b>	UNIT	CITYLINK	HILLS M2	ED	LCT	495 EXP	M5	HILLS M2 UPGRADE	M5 WIDENING	CORPORATE OFFICES <sup>e</sup>	TOTAL
<b>Direct</b>	<b>GJ</b>	<b>951</b>	<b>144</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,213</b>	<b>63</b>	<b>0</b>	<b>0</b>	<b>2,371</b>
Natural gas	GJ	821	0	0	0	0	0	0	0	0	821
Fuel (petrol)	GJ	130	24	0	0	0	875	0	0	0	1,029
Diesel	GJ	0	120	0	0	0	326	63	0	0	509
LPG	GJ	0	0	0	0	0	12	0	0	0	12
<b>Indirect</b>	<b>GJ</b>	<b>85,097</b>	<b>16,058</b>	<b>23,641</b>	<b>73,821</b>	<b>10,371</b>	<b>4,225</b>	<b>403</b>	<b>1,306</b>	<b>4,556</b>	<b>219,478</b>
Electricity (coal)	GJ	85,097	16,058	23,641	64,962	10,371	4,225	403	1,306	4,556	210,619
Electricity (green power)	GJ	0	0	0	8,859	0	0	0	0	0	8,859

## Water Consumption

### POTABLE WATER USE<sup>f</sup>

ASSET	UNIT	FY12	FY13	FY14
CityLink	m <sup>3</sup>	15,199	17,994	10,100
Hills M2	m <sup>3</sup>	459	521	560
Eastern Distributor	m <sup>3</sup>	758	757	691
Lane Cove Tunnel	m <sup>3</sup>	609	596	596
M5	m <sup>3</sup>	1,186	1,275	1,055
495 EXP	m <sup>3</sup>	0	295	776
Hills M2 Upgrade	m <sup>3</sup>	16,300	19,300	3,130
M5WW	m <sup>3</sup>	n/a	685	3,621
Corporate offices	m <sup>3</sup>	n/a	373	546
<b>TOTAL</b>	<b>m<sup>3</sup></b>	<b>34,511</b>	<b>41,796</b>	<b>21,075</b>

### FY14 ONLY

INDICATOR	UNIT	CITYLINK	HILLS M2	ED	LCT	495 EXP	M5	HILLS M2 UPGRADE	M5 WIDENING	CORPORATE OFFICES	TOTAL
Potable water	m <sup>3</sup>	10,100	560	691	596	776	1,055	3,130	3,621	546	21,075
Recycled	m <sup>3</sup>	186,350	0	0	0	0	0	0	0	0	186,350
<b>Total water withdrawal by source</b>	<b>m<sup>3</sup></b>	<b>196,450</b>	<b>560</b>	<b>691</b>	<b>596</b>	<b>776</b>	<b>1,055</b>	<b>3,130</b>	<b>3,621</b>	<b>546</b>	<b>207,425</b>

### CITYLINK WATER WITHDRAWAL BY SOURCE

INDICATOR	UNIT	FY12	FY13 <sup>i</sup>	FY14
<b>Total water withdrawal, of which</b>	<b>m<sup>3</sup></b>	<b>257,609</b>	<b>240,301</b>	<b>223,283</b>
Groundwater from tunnels <sup>a</sup>	m <sup>3</sup>	242,410	222,307	213,183
<b>Total potable water use, of which</b>	<b>m<sup>3</sup></b>	<b>15,199</b>	<b>17,994</b>	<b>10,100</b>
Deluge testing in tunnels	m <sup>3</sup>	1,117	522	572
Groundwater recharge <sup>b</sup>	m <sup>3</sup>	9,242	10,929	4,844
Irrigation	m <sup>3</sup>	4,840	6,543	4,684
<b>Volume of water recycled/reused</b>	<b>m<sup>3</sup></b>	<b>149,504</b>	<b>193,832</b>	<b>186,350</b>
<b>Percentage of water recycled/reused</b>	<b>m<sup>3</sup></b>	<b>58%</b>	<b>81%</b>	<b>83%</b>

### CITYLINK WATER WITHDRAWAL BY DESTINATION<sup>f</sup>

INDICATOR	UNIT	FY12	FY13	FY14
<b>Total water discharge</b>	<b>m<sup>3</sup></b>	<b>255,795</b>	<b>238,347</b>	<b>223,598</b>
Groundwater recharge	m <sup>3</sup>	158,746	204,761	191,194
Groundwater discharge to Yarra River	m <sup>3</sup>	92,906	28,475	26,833
Discharge to sewer	m <sup>3</sup>	4,143	5,111	5,571

## Spills<sup>j</sup>

### NUMBER OF SPILLS ON TRANSURBAN ROADS

ASSET OR PROJECT	FY12	FY13	FY14
CityLink	42	47	41
Hills M2	1	1	0
Eastern Distributor	0	0	0
Lane Cove Tunnel	1	0	0
M5	7	11	6
Hills M2 Upgrade	30	5	0
M5WW	0	2	0
<b>TOTAL</b>	<b>81</b>	<b>66</b>	<b>47</b>

## Waste<sup>1</sup>

### TOTAL WEIGHT OF WASTE BY TYPE AND DISPOSAL METHOD

	UNIT	FY12	FY13	FY14 <sup>k</sup>
<b>Total amount of waste by type and disposal method</b>	<b>Tonnes</b>	<b>130,618</b>	<b>227,669</b>	<b>40,583</b>
Landscaping	Tonnes	300	206	719
Landfill	Tonnes	3,169	2,101	1,700
Recycled	Tonnes	127,150	225,362	38,165

### FY14 ONLY

	UNIT	CITYLINK	HILLS M2 <sup>k</sup>	ED	LCT <sup>k</sup>	M5	HILLS M2 UPGRADE	M5 WIDENING	CORPORATE OFFICES <sup>l</sup>	TOTAL
<b>Total amount of waste by type and disposal method</b>	<b>Tonnes</b>	<b>661</b>	<b>n/a</b>	<b>65</b>	<b>n/a</b>	<b>160</b>	<b>1,668</b>	<b>38,005</b>	<b>25</b>	<b>40,583</b>
Landscaping	Tonnes	0	n/a	0	n/a	0	0	719	0	719
Landfill	Tonnes	659	n/a	58	n/a	142	502	333	7	1,700
Recycled	Tonnes	3	n/a	7	n/a	18	1,166	36,954	18	38,165

### E-TAG DISPOSAL MANAGEMENT

	FY12	FY13	FY14
e-tags issued—CityLink, Roam and Roam Express	290,205	286,939	290,931
e-tags recycled <sup>k</sup> —CityLink, Roam and Roam Express	140,233	94,884	109,892

- a Reporting commenced for the 1995 upgrade in July 2012 and for the M5WW project in October 2012. At the end of October 2012 the Capital Beltway upgrade was completed and reporting ceased. Reporting commenced for 495 Express Lanes as an asset in November 2012.
- b Total emissions are lower in FY14 due to the lack of waste data for Hills M2 and LCT which has affected Scope 3 emissions. We will attempt to report fully in FY15.
- c Data reflects customer emissions from CityLink ventilation stacks.
- d These electricity figures were materially adjusted in FY13 to represent the amount of electricity purchased to avoid misinterpretation. The previous figures significantly exceeded the amount of electricity purchased as they accounted for efficiency losses at source and distribution losses during transmission, in accordance with recommendations under the Global Reporting Initiative Indicator EN4 (G3.1 Guidelines).
- e This excludes energy used for building elevators and for heating and cooling as our current lease agreements make it difficult to accurately measure our total building emissions.
- f This was previously reported as thousands of cubic meters. To reflect a more accurate view, we have changed the unit value to just cubic meters. Historic figures have been adjusted to show a more accurate view.
- g This water is natural leakage that drains into the CityLink tunnels. Most of this water is treated at the water treatment plant and returned to the aquifers.
- h This figure comprises potable water used to clean the filters at the water treatment plant and additional recharge to the aquifers as required.
- i The 2013 total water withdrawal figure has been restated as 240,301 m<sup>3</sup>. It was mis-represented as 237,500 m<sup>3</sup> in the 2013 sustainability report.
- j Data on the number of spills and waste is not currently collated for the Sustainability Report for our US assets and projects (495 Express Lanes and 95 upgrade).
- k Waste data for Hills M2 and LCT was not available this year. This has also affected Scope 3 emissions. We will attempt to have this data in FY15.
- l The figure for recycled waste for corporate offices include recycled paper, organic waste and commingled recyclables.
- m E-tags that are returned by customers and found to not be working are returned to our supplier for proper disposal. The tags are dismantled into their separate components and are recycled or disposed of in an environmentally-friendly way.

## Data methodology

### GHG EMISSIONS

Transurban uses The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) to draw boundaries around emission sources when quantifying our Scope 1, Scope 2 and Scope 3 GHG emissions. Emission factors and calculation methodologies outlined in the Australian Government Department of Climate Change - National Greenhouse Accounts (NGA) Factors July 2012 are then applied to each data source.

For our US operations, we calculate Scope 1 GHG emissions using emission factors and calculation methodologies outlined by the US Environmental Protection Agency (EPA) for the calculation of GHG emissions from transportation and mobile sources.

The EPA's eGRID2010 Version 1.1 (May 2011) Year 2007 Summary Tables are used to calculate Scope 2 GHG emissions. Transurban applies the GHG Protocol's air travel method and emission factors to individual flight details to generate our Scope 3 emissions associated with corporate air travel.

Australian Government NGA Factors July 2012 have been used to calculate Transurban's Scope 3 emissions from waste, fuel use (for incident response and operations and maintenance vehicles), fuel refining and transport and electricity transmission and distribution losses. Emission factors for embodied energy in construction materials are sourced from SimaPro and the Australian LCA Dataset 2010.

### CUSTOMER TRAVEL

GHG emissions from our roadways were calculated using our traffic model developed in-house. The model uses traffic data that is extracted from our tolling system and represents actual trips along the roadway. The tolling system records information such as vehicle class and entry and exit points of vehicles, giving an accurate representation of vehicle types and trip lengths.

Travel speeds are an additional contributing factor in calculating GHG emissions. Our tolling systems on some of these roads time stamp each transaction, so it is possible to estimate average travel speeds for each individual trip. For roads with only single toll points – such as the Eastern Distributor – we have used surveyed average travel speeds.

Fuel type is also important in the calculation of GHG emissions. Vehicle fuel type is estimated from information on fleet mix and fuel type for each state and city documented in the 2014 motor vehicle census.

Transurban's in-house traffic model uses the above information and applies emission factors sourced from the University of South Australia that are sensitive to average travel speeds to calculate the GHG emissions from customer vehicles on the specified Australian roads.