

# Environmental Sustainability

## Greenhouse Gas Emissions and Net Energy Consumption

We continue to actively seek to minimise energy use and greenhouse gas emissions, with a commitment to reduce the environmental impact of operations.

During the reporting period the corporation maintained concerted efforts to reduce annual greenhouse emissions to a maximum 4,650 t CO<sub>2</sub>-e by 2025 (this is a revised target set in 2018/19 to replace the previous target of 6,496 t CO<sub>2</sub>-e). It represents a reduction of approximately 3,600 t CO<sub>2</sub>-e from the corporation's 2011-2016 baseline of 8,272 t CO<sub>2</sub>-e.

In October 2021, the East Gippsland Water Board brought forward the target for us to achieve net-zero emissions to 2035 at the latest, with the corporation powered by 100 per cent renewable electricity by 2025.

To reduce greenhouse gas emissions, while maintaining affordable water bills for our customers, we continue to participate in an energy partnership with 12 other Victorian water corporations. The partnership was established to collectively purchase solar power from the Kiamal Solar Farm in north-west Victoria, under the umbrella organisation ZEW.

This project was officially commissioned in January 2021 and by the end of June 2022 it had provided East Gippsland Water with over 1,600 Large Generation Certificates (LGCs) to assist in meeting our annual emissions targets. Ongoing, it will enable us to purchase up to 1.24 GWh of renewable energy – equivalent to a reduction of approximately 22 per cent in our annual energy needs.

Other initiatives implemented and/or advanced during 2022/23 included:

- The installation of a 99kW ground mounted solar array at our Painesville Water Recycling and Reuse Plant. This our largest single solar installation to date, commissioning a total of 366kW of solar systems across 19 sites in recent years
- Commissioning of a new 80kW Combined Heat and Power Biogas engine at our Bairnsdale Water Recycling Plant
- Planning and design work for a large-scale solar installation at our Wy Yung Storage
- Actively participating in an ongoing project through VicWater for water industry carbon offsets
- Actively engaging and collaborating with other water corporations, industry bodies, community networks and external agencies to pursue best practice in energy management and greenhouse gas reduction.

Importantly, we recorded net greenhouse gas emissions of 7,443 t CO<sub>2</sub>-e for 2022/23 specifically, which was eight per cent below the targeted maximum of 6,870 t CO<sub>2</sub>-e for the 12 months, but was nearly five per cent lower than our 2021/22 result and our lowest recorded emissions ever. This result equates to 0.29 t CO<sub>2</sub>-e per customer.

This decrease from last year was primarily due to reduced volumes of recycled water compared to previous wet years. The increased penetration of renewables into the Victorian electricity grid also assisted in lowering our reportable emissions.

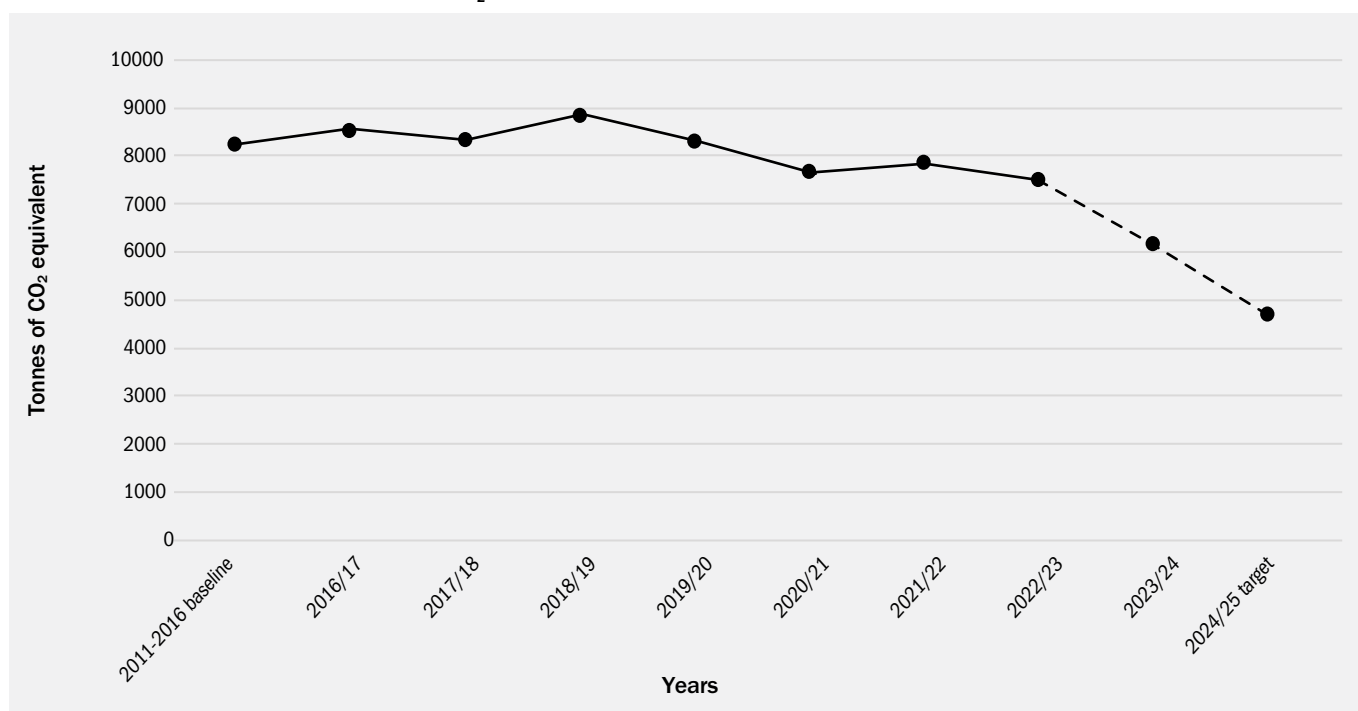
Our involvement with the Kiamal Solar farm continued to provide us with access to LGCs. In 2022/23, we voluntarily surrendered 586 LGCs, which enabled us to report an extra 586MWh of renewable electricity consumption and reduce our emissions accordingly.

We are continuing to progress a more concerted business-wide approach to emissions reduction going forward, looking at data analytics and monitoring the performance of systems.

## Greenhouse Gas Emissions

Service Delivery Category	Greenhouse gas emissions in tonnes of CO <sub>2</sub> -e				Variance (%)	Commentary
	2021/22 Total Emissions	2022/23 Result				
		Scope 1 emissions	Scope 2 emissions	Total emissions		
Water treatment and supply	2,310	24	2,123	2,148	-7.0	Electricity usage was consistent with previous years but increased solar output and a decreased grid emission factor helped lower the overall emissions. We voluntarily surrendered 583 Large Generation Certificates received from the IWN Large Scale Renewable Project on 30 June 2023. This resulted in a decrease of approximately 496 tonnes CO <sub>2</sub> -e.
Sewage collection, treatment and recycling	5,070	2,126	2,739	4,865	+4.1	There was a 7% decrease in the volume of recycled water treated in 2022/23. This resulted in a decrease in Scope 1 emissions. Scope 2 emissions also decreased but primarily due to a reduction in grid emission factors.
Transport	347	340	0	340	-2.0	We saw a slight decrease in vehicle usage resulting in lower emissions.
Other	98	0	93	93	-4.8	This decrease is primarily due to a decreased grid emissions factor.
<b>Total emissions</b>	<b>7,825</b>	<b>2,490</b>	<b>4,955</b>	<b>7,446</b>	<b>-4.9</b>	<b>The decrease in emissions from the previous year was mainly due to recycled water flows returning to more average conditions following previous wet years. The grid emissions factor also moved significantly this year which lowered our electricity emissions.</b>

## Net greenhouse gas emission (tonnes of CO<sub>2</sub> equivalent)



# Environmental Sustainability

## Progress Towards the Greenhouse Gas Emissions Target for 1 July 2025

### Total Electricity Consumption

Service Delivery Category	2021/22 Result (MWh)	2022/23 Result (MWh)	Commentary
Water treatment and supply	3,107	3,292	Increased water consumption by our customers resulted in higher electricity consumption from pumps.
Sewage collection, treatment and recycling	2,980	3,278	There has been a significant increase in the mechanical treatment requirements at our water recycling plants.
Other (office, workshops, depots, etc)	148	173	
<b>Total (source below)</b>	<b>6,235</b>	<b>6,774</b> (24,276,752 MJ)	<b>An increase from last year, primarily due to the increased treatment requirements and changes in technology.</b>
Purchased directly through an electricity retailer	6,048	6,499	
Not directly purchased but sourced from outside the organisation	0	0	
Corporation led/self-sourced activities and initiatives	187	244	

### Renewable Electricity

Renewable electricity consumption categories	2021/22 Renewable electricity consumption (MWh)	2022/23 Renewable electricity consumption (MWh)	2022/23 Renewable electricity consumption (% of total consumption)	Variance between current and previous year (MWh)	Commentary
<b>Total renewable electricity consumption from grid-sourced electricity East Gippsland Water reported because of the Commonwealth Government's LRET</b>					
Total Grid-sourced: Mandatory	1,124	1,222	18.1%	97.9	-
<b>Renewable electricity consumption as a result of corporation led/self-sourced activities and initiatives</b>					
Biogas	0	6.2	0.1%	6.2	Commissioning of the new combined heat and power unit began late in 2022/23. Next period this is expected to be significantly higher.
Hydroelectric	0	0	0%	-	-
Solar	252.5	330.7	4.9%	78.2	Slight increase in solar output due to several new projects. With several projects completed midway through reporting period this number is expected to be higher again next year.
Wind	0	0	0%	-	-
Other	560	583	8.7%	23	583 LGCs from the Zero Emissions Water Solar project were voluntarily surrendered by East Gippsland Water during the reporting period
Total Corporation led/self-sourced	812.4	919.9	13.6%	154.8	
<b>Total renewable electricity consumption</b>	<b>1,936.83</b>	<b>2141.78</b>	<b>31.8%</b>	<b>266.8</b>	

Renewable electricity source	2022/23 Total on-site renewable electricity generation capacity (MW)	2022/23 Total on-site renewable electricity generated (MWh) Renewable (small-scale) system		2022/23 Total by Source (MWh)	Commentary
		Consumed on-site	Exported		
Biogas	0.08	3.6	2.6	6.2	
Hydroelectric	0	-	-	-	
Solar	0.37	244.3	86.4	330.7	
Wind	0	-	-	-	
Others Renewable	0	-	-	-	
<b>Total (renewable)</b>	<b>0.45</b>	<b>247.9</b>	<b>89.0</b>	<b>336.9</b>	

Note: Large-scale systems and non-renewable sources are not shown in this table as East Gippsland Water currently does not have any installations that meet these classifications.

### Emissions Breakdown

	Scope 1 and 2 Emissions by greenhouse gas (in tonnes and converted to t-CO <sub>2</sub> -e)								Commentary
	Carbon Dioxide		Methane		Nitrous Oxide		Other		
	tonnes	t-CO <sub>2</sub> -e	tonnes	t-CO <sub>2</sub> -e	tonnes	t-CO <sub>2</sub> -e	tonnes	t-CO <sub>2</sub> -e	
Water treatment and supply	2147.45	2147.45	0.00	0.03	0.00	0.14	0	0	The majority of the water treatment and supply emissions are related to electricity consumption.
Sewage collection, treatment and recycling	2877.87	2877.87	53.90	1509.27	1.81	479.24	0	0	Methane and electricity associated emissions are our greatest contributor to sewerage emissions.
Transport	337.45	337.45	0.02	0.58	0.01	2.18	0	0	
Other	93.10	93.10	0	0	0	0	0	0	This category is effectively our corporate electricity consumption.
<b>Total</b>	<b>5455.87</b>	<b>5455.87</b>	<b>53.92</b>	<b>1509.88</b>	<b>1.82</b>	<b>481.55</b>	<b>0</b>	<b>0</b>	

# Environmental Sustainability

## Fuel Usage and Fleet Composition

	Diesel		Petrol		LPG		Total	
	Energy (MJ)	Emissions (t-CO <sub>2</sub> -e)	Energy (MJ)	Emissions (t-CO <sub>2</sub> -e)	Energy (MJ)	Emissions (t-CO <sub>2</sub> -e)	Energy (MJ)	Emissions (t-CO <sub>2</sub> -e)
<b>Vehicles</b>								
Passenger Vehicles	48,030	4	136,659	10	0	0	184,689	14
Light Commercial	4,055,973	313	49,361	4	0	0	4,105,335	316
Heavy Vehicles	97,024	10	0	0	0	0	97,024	10
Farm Machinery	64,767	5	22,830	2	0	0	87,596	6
<b>TOTALS (vehicles)</b>	<b>4,265,794</b>	<b>331</b>	<b>208,850</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>4,474,644</b>	<b>346</b>
<b>Stationary</b>								
Generator	1,079,622	76	0	0	0	0	1,079,622	76
CHP	0	0	0	0	1,377,679	83	1,377,679	83
Forklifts	0	0	0	0	0	0	0	0
<b>TOTALS (stationary)</b>	<b>1,079,622</b>	<b>76</b>	<b>0</b>	<b>0</b>	<b>1,377,679</b>	<b>83</b>	<b>2,457,302</b>	<b>159</b>
<b>TOTAL (All use)</b>	<b>5,345,417</b>	<b>407</b>	<b>20,8850</b>	<b>16</b>	<b>1,377,679</b>	<b>83</b>	<b>6,931,946</b>	<b>506</b>

Vehicle Type	Diesel		Petrol		LPG		Total	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Passenger Vehicles	3	4%	10	15%	13	19%	184,689	14
Light Commercial	46	68%	1	1%	47	69%	4,105,335	316
Heavy Vehicles	2	3%	0	0%	2	3%	97,024	10
Farm Machinery	2	3%	4	6%	6	9%	87,596	6
<b>TOTALS</b>	<b>53</b>	<b>78%</b>	<b>15</b>	<b>22%</b>	<b>68</b>	<b>100%</b>	<b>4,474,644</b>	<b>346</b>

## Climate change adaptation

In addition to reducing greenhouse gas emissions to help mitigate climate change, East Gippsland Water continues to plan for a warmer and drier climate by:

- Water resource planning, including development of the Urban Water Strategy, using the latest DEECA Guidelines for Assessing the Impact of Climate Change on Water Supplies in Victoria
- Progressing with design of Woodglen 3 water storage as a response to climate scenarios within the UWS
- Utilising latest predictions in relation to storm intensity for planning sewer networks - ensuring compliance with EPA requirements
- Undertaking an assessment of the vulnerability of assets and business processes to climate change, and developing a prioritised action plan
- Continuing investigation into IWM to provide more climate-resilient pathways for water resources.

We continue to monitor actual and predicted impacts of climate change, and to adapt its asset management and business processes as required.

## Environmental Management System

Our Environmental Management System (EMS) (ISO 14001:2015) continues to drive environmental stewardship and performance management. It again performed consistently well in all areas during the annual external audit conducted by MSC Global in March 2023. Focus on managing incidents from the sewer network remains a high priority within the EMS such as spills and odour management at treatment plants.

The EMS is an essential tool to ensure environmental leadership and commitment is maintained. The environmental aspects and impacts remain largely unchanged however the additional focus on net energy consumption will complement the EMS over the next few years.