

An aerial photograph of a river scene. In the upper center, a blue Affinity Water van is parked on a grassy bank. Below it, a wooden bridge spans the river. Two workers in orange high-visibility clothing are on the bridge; one stands while the other is crouched in the water. The river is surrounded by lush green trees and vegetation. The Affinity Water logo is in the top right corner.

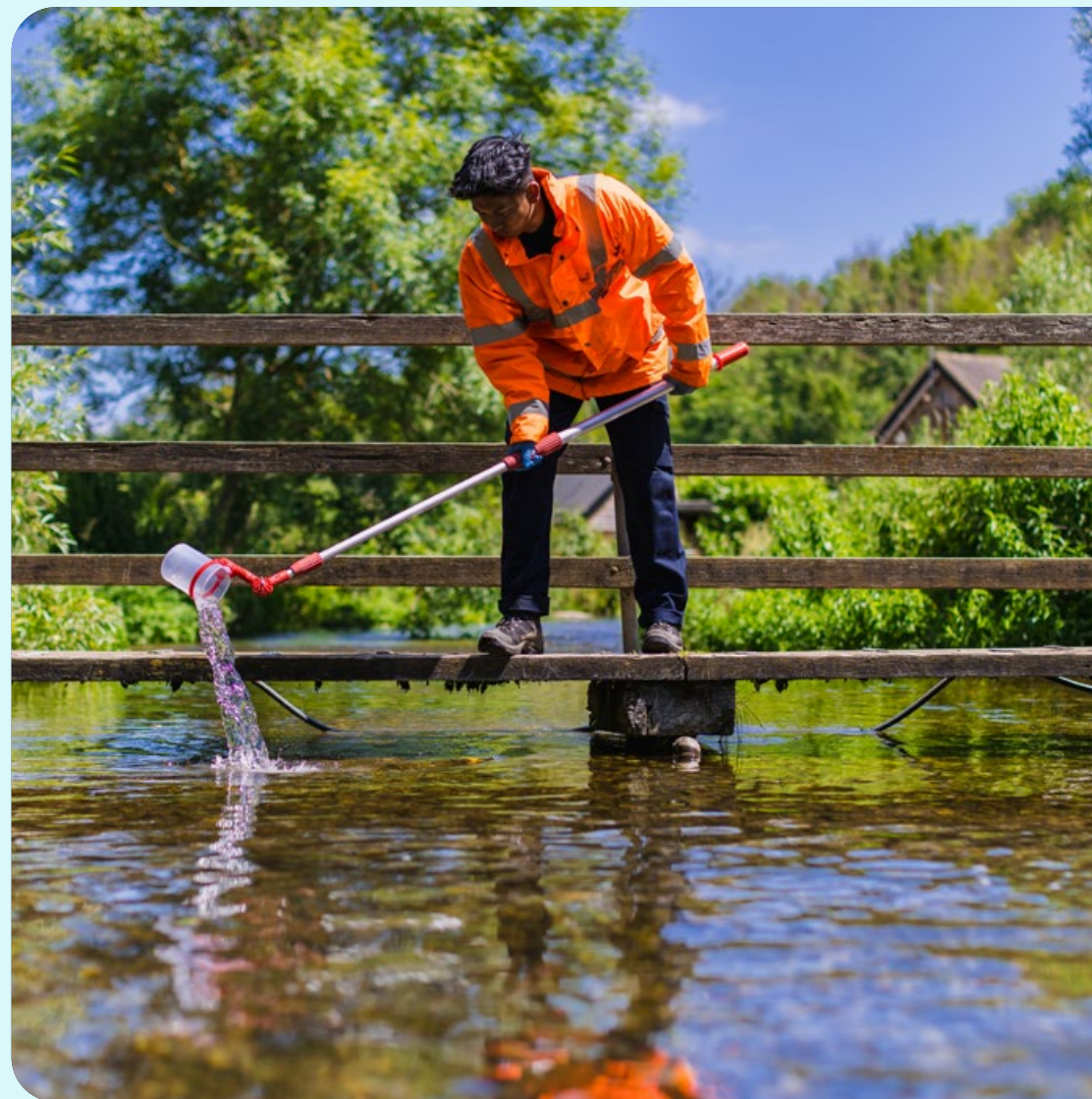
Affinity Water

Greenhouse Gas Emissions Annual Report

2023-24

Contents

Contents	2
Executive Summary	3
Introduction	5
Affinity Water's Greenhouse Gas Emissions 2023-24	6
How we estimate and report GHG Emissions	7
Affinity Water Carbon footprint	8
Capital Programme	11
Ofwat Regulatory Report Table	12
Water UK Net Zero 2030 commitment	14
Emissions Reductions during 2023/24	15



Executive Summary

Affinity Water has been monitoring and reporting its greenhouse gas emissions for several years. As part of our journey to improve the quality and transparency of our reporting we have for the second year produced a dedicated greenhouse gas (GHG) emissions report covering our full carbon footprint. This year our GHG emissions [carbon] footprint can be summarised as:

Scope 1

Direct emissions

4,995 tCO₂e

Scope 2

Indirect emissions from
purchased electricity

39,500 tCO₂e
[Market Based]

45,053 tCO₂e
[Location Based]

Scope 3

Indirect emissions from our value chain

108,598 tCO₂e

To evaluate our progress in reducing emissions it is helpful to understand the activities which have led to GHG emissions arising. The total energy consumption used in our greenhouse gas emissions calculation has decreased by 5.7% from 243,026,864 kWh in 2022/23 to 229,143,027 kWh in 2023/24. This has resulted in a 13% reduction in scope 1 emissions compared to 2022/2023.

13%



reduction in scope 1 emissions
compared to prior year

Although we used 3.7% less electricity in 2023/24 compared to 2022/23, we have recorded an increase in both location-based and market-based emissions. We have also recorded an increase in scope 3 emissions compared to 2022/23. Scope 3 category 1 (purchased goods and services) emissions increased due to improved data collection and accounting rather than a change in our operations.

3.7%



decrease in electricity used in 2023/24

Scope 3 category 2 (capital goods) emissions increased due to spending more on emission-intensive goods such as civil buildings and pumps than in 2022/23.

Category 5 emissions (waste generated from operations) increased by 33% from 2022/23, driven mainly by a 23% increase in the total tonnage of waste. The amount of water treatment waste we produce is driven by a variety of factors including demand for water and changes to river water quality (which is typically influenced by the prevailing weather conditions).

We have estimated that the emissions associated with the delivery of our capital programme in 2023/24 were 13,301 tCO₂e, an increase from last year's estimate of 8,465 tCO₂e. This is primarily due to the scope of projects included being significantly greater- we estimated the emissions associated with 227 projects in 2023/24 compared to 47 in 2022/23.

The energy intensity of our operations improved this year, averaging 606kWh per Ml of water into supply compared to 629kWh per Ml of water into supply in 2022/23. During the year, we implemented 14 energy efficiency schemes through our pump replacement programme, which are expected to save around 1.2GWh per year. Our solar installations continued to provide renewable energy to our sites at Chertsey and Walton generating a combined 1.6GWh, similar to the amount generated 2022/23. We also undertook construction of two new sites which will increase our generating capacity to around 4GWh per year.



Introduction

This report is the annual greenhouse gas (GHG) emissions inventory report for Affinity Water Ltd. The purpose of this report is to provide a quantification of the emissions which are attributable to the organisation's operations within the declared boundary for the reporting period.

This report supports our regulatory reporting undertaken through our annual performance report (APR) and statutory reporting to Ofwat.

The intended users of this report are Affinity Water employees and key stakeholders who require an understanding of:

-  Affinity Water's emissions,
-  progress made in relation to emission reduction targets and,
-  key activities undertaken to reduce emissions.

This report has been prepared in accordance with the requirements of the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard [2004] and 14064-1:2019 "Greenhouse gases. Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals".



Affinity Water's Greenhouse Gas Emissions 2023-24

Organisational Boundary

We have included emissions within the regulated activity of Affinity Water.

Reporting Period

This report covers emissions which have arisen during the period 1st April 2023 – 31st March 2024. Financial year 2022/23 provides our baseline year as this was the first full year calculation of our full footprint.

Reporting Boundary

For 2023/24 we have reported emissions from the following sources which are considered material to our company and the service we provide.

Scope 1 - direct emissions



Fuel



Fleet



Process and fugitive

Scope 2 - emissions arising from purchased electricity



Purchased electricity

Scope 3 – indirect emissions



Purchased goods & services



Capital goods



Energy & fuel related



3rd party transportation



Waste



Employee commuting



Business travel

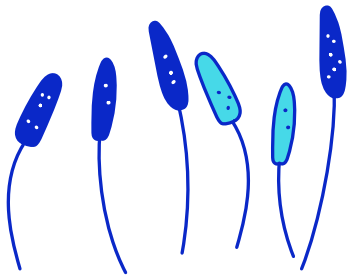


Leased assets

How we estimate and report GHG Emissions

Our carbon footprint is calculated by converting the main GHGs into a carbon dioxide equivalent (tCO₂e). Emissions are categorised into scopes (based on the GHG Protocol) as follows:

- Scope 1 emissions (direct emissions) are those from activities we own or control, including those from our treatment processes, company vehicles, and burning of fossil fuels for heating.
- Scope 2 emissions (indirect emissions) result from purchased heat and electricity.
- Scope 3 emissions (indirect emissions) arise from activities we do not own or control, but which we can influence. These include from the products and services we buy.



We also report on our emissions based on whether they are considered to be 'operational' resulting from our day-to-day activities, or 'embedded' resulting from our wider activities such as the delivery of capital projects.

We use a combination of methods to estimate the emissions associated with our carbon footprint following the principles of the 2015 GHG Protocol Corporate Accounting and Reporting Standard. Where available, we use primary activity data (such as fuel consumption) in combination with emission factors to calculate emissions. We use this method for all operational emissions.

Operational emissions have been estimated using the water industry Carbon Accounting Workbook [CAW 17]. This is a tool used by water companies in the UK, which is annually updated to reflect the latest published UK emission factors.

Where primary activity data is not available, we utilise other methods of calculation which includes:

- Purchase ledger data in combination with commodity specific emissions factors from the Comprehensive Environmental Data Archive [CEDA].
- Specialist homeworking & commuting tool
- Chartered Institution of Building Services Engineers [CIBSE] Benchmarks applied to floor areas of leases assets.
- Affinity Water's bespoke asset carbon estimation tool.

Greenhouse Gas Emissions Tables

This section on the GHG Emissions report includes a series of tables reporting our emissions. We report our emissions in a number of different ways based on regulatory and stakeholder requirements and to monitor progress against targets.

Differences in methodology and emissions factors applied, particularly to scope 3 emissions, can lead to variations in estimations for similar categories of emissions. As such comparison between tables is not advised.



Affinity Water Carbon footprint

Table 1 provides an overview of Affinity Water's entire carbon footprint. Scope 1 and 2 emissions have been derived from the industry tool, the Carbon Accounting Workbook (CAW) whilst all scope 3 emissions for 2023/24 have been taken from our scope 3 inventory, developed with carbon specialists EcoAct.



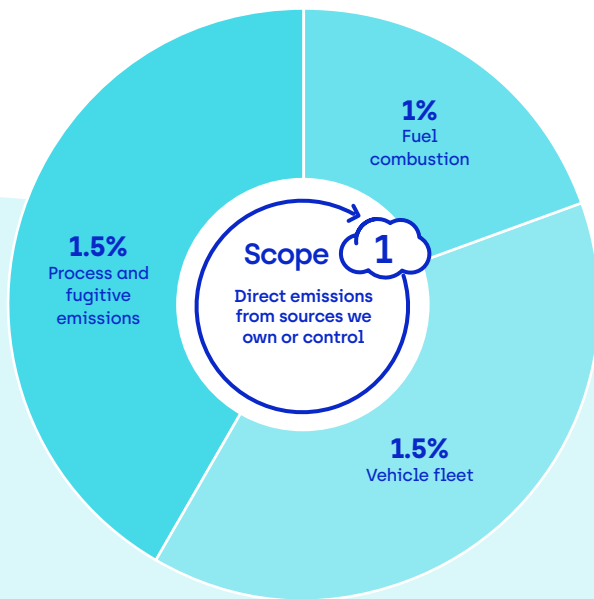
Table 1 Affinity Water Carbon Footprint

GHG Emission Source	2020/21 Gross (tCO ₂ e)	2021/22 Gross (tCO ₂ e)	22/23 Gross (tCO ₂ e)	2023/24 Gross (tCO ₂ e)
Scope 1				
Fuel combustion	683	1,870	1,578	982
Process and fugitive emissions	2,420	2,417	2,189	1,943
Vehicle fleet	1,900	1,996	2,147	2,070
Scope 2				
Purchased electricity (Location Based)	52,200	46,735	43,623	45,053
Purchased electricity (market based)	32,003	-	-	39,500
Scope 3				
Category 1: Purchased goods and services	Other- 2,627	Chemicals & GAC - 10,276 Other - 2,581	38,407	50,546
Category 2: Capital goods	Not assessed	4,350 [capital projects only]	22,173	31,236
Category 3: Fuel- and energy-related activities (not included in scope 1 or scope 2)	4,490	4,136	16,212	15,185
Category 4: Upstream transportation and distribution	Not assessed	Not assessed	238	317
Category 5: Waste generated in operations	Not assessed	2,433	7,425	10,053
Category 6: Business travel	81	109	228	227
Category 7: Employee commuting	Not assessed	Not assessed	1,064	836
Category 13: Downstream leased Assets	Not assessed	Not assessed	209	197
Nature Based Solutions (Inset)	-	-	-	-
Total gross emissions (location based)	64,401	76,902	135,493	158,645
Total net emissions (market Based)	44,204	30,167	91,870	153,092

Scope 1

Direct emissions

4,995 tCO₂e



Scope 2

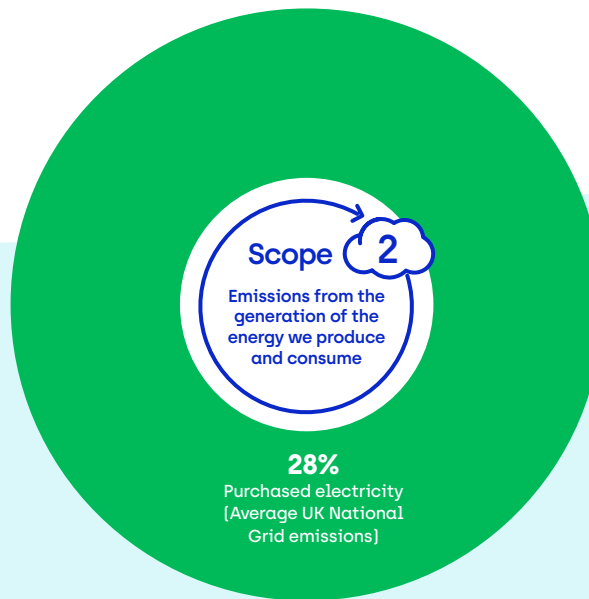
Indirect emissions from
purchased electricity

39,500 tCO₂e

[Market Based]

45,053 tCO₂e

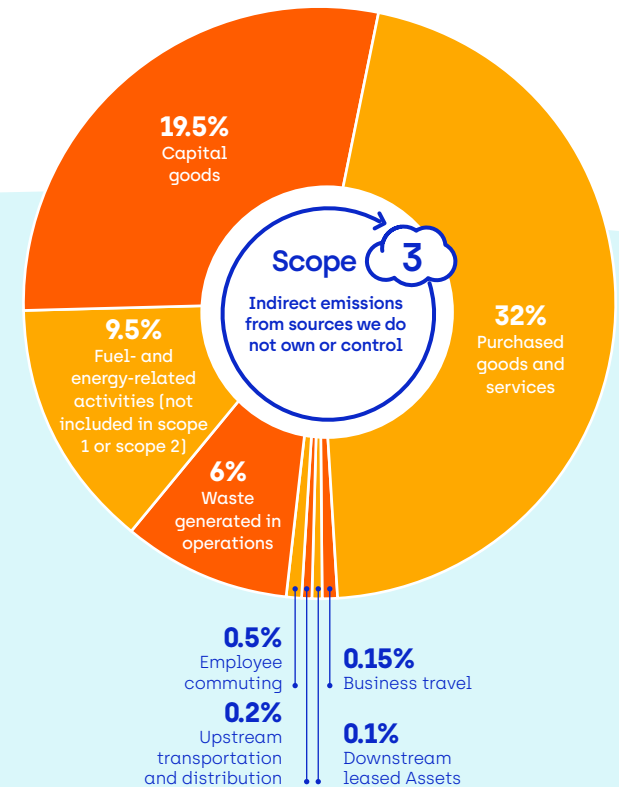
[Location Based]



Scope 3

Indirect emissions from our value chain

108,598 tCO₂e



Overall, the total energy consumption (electricity, natural gas, and liquid fuels) used to calculate emissions has decreased by 5.7% from 243,026,864 kWh in 2022/23 to 229,143,027 kWh in 2023/24. In 2022/23 we consumed 6,755,177kWh of natural gas and liquid fuel, this reduced to 4,884,103kWh in 2023/24 (a 28% reduction), this has resulted in a 13% reduction in scope 1 emissions compared to prior year. This is due to a reduced use of diesel-powered standby generators to provide power to our operations.

5.7% ⚡

decrease in total energy consumption

For our scope 2 emissions, although we used 3.7% less electricity in 2023/24 compared to 2022/23 [219,129,078kWh vs 227,552,361kWh], we have recorded an increase in both location-based and market-based emissions. Our location-based emissions are greater than 2022/23 due to an increase in the UK grid average emissions factor.

Our market-based scope 2 emissions are calculated using supplier specific emissions factors. In October 2023, following significant increases in the price of REGO backed electricity we took a decision to pause the purchase of a specific green tariff as it does not offer customers fair value for money. Our market-based emissions therefore reflect six months of REGO backed energy and six months reported using the supplier's residual tariff. Alternative options for both purchasing and generating our own renewable energy remain under review as part of our Net Zero strategy.

For 2023/24 we have recorded an increase in scope 3 emissions compared to 2022/23 which is primarily due to increases in Category 1, 2 and 5 emissions. Category 1 emissions increased due to improved data collection and the use of primary data for chemicals reporting. Applying a similar methodology to last year would lead to a figure similar to last year's value. Category 2 emissions increased due to spending more on emission-intensive goods such as civil buildings and pumps. Category 5 emissions (waste generated from operations) increased by 35% from 2022/23, driven mainly by a 23% increase in the total tonnage of waste. In particular, there was a 21% increase in the amount of water treatment waste that we produced [18,749 tonnes in 2023/24 vs 15,533 tonnes in 2022/23]. The amount of water treatment waste we produce is driven by a variety of factors including demand for water and changes to river water quality (which is typically influenced by the prevailing weather conditions).



Capital Programme

This table provides a summary of the emissions associated with the delivery of our capital projects and is used to complete Ofwat's APR Table, ref 11A.50. A capital project refers to a significant, long-term investment in infrastructure that aims to build, upgrade or replace physical assets.

In line with Ofwat's reporting requirements we have calculated the cradle-to-build emissions for our capital programme. "Cradle to build" refers to the entire lifecycle of a product or project, from its initial concept (the "cradle") through to its construction or completion (the "build"). This means we can understand the emissions arising from raw material extraction, manufacturing, transport to site and construction activities. This builds on the reporting undertaken last year. For 2023/24 we estimated that the emissions associated with the delivery of our capital programme were 13,301 tCO₂e. Although this is an increase on our 2022/23 estimate of 8,465 tCO₂e and our 2021/22 estimate of 4,350 tCO₂e the scope of projects included within this year's reporting is significantly greater than in 2022/23 and 2021/22. In 2023/24, we estimated the emissions associated with 227 projects- an increase from 47 projects in 2022/2023 and from 11 projects in 2021/22.

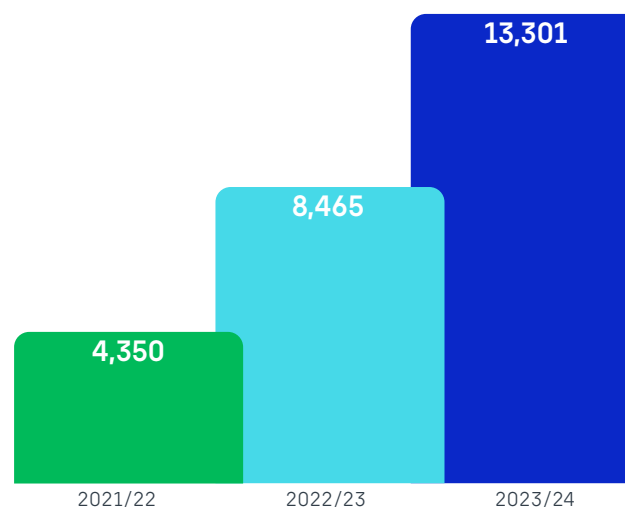
For 2023/24 we have modelled the emissions associated with 93% of Affinity Water's capital spend on construction activities. This includes

below ground assets (infra), above ground assets (non-infra), metering and minor reactive works.

Method Used

To estimate our capital project emissions, we use a bespoke tool created for Affinity Water which incorporates over 400 carbon models. These models use data from a range of sources, and although the tool includes over 400 different models, some assets we construct, or install are not included in the tool. Therefore, due to these current limitations, we have not been able to estimate the emissions of 7% of our capital portfolio; these are those associated with our river restoration, land, leakage, and Operational Technology programmes.

Capital Project emissions (tCO₂e)



Ofwat Regulatory Report Table

The following table satisfies the requirements for APR Table 11A as part of Ofwat's regulatory accounting guidelines for 2023/24. Emissions reported here are estimated using the CAW, Affinity Water's asset carbon estimation tool and the Scope 3 inventory. The most appropriate/accurate source has been selected where multiple sources are available.

Year	2021/22	2022/23	2023/24
Unit	tCO ₂ e	tCO ₂ e	tCO ₂ e
Scope one emissions			
Burning of fossil fuels [location-based]	1,870	1,578	982
Burning of fossil fuels [market-based]	1,870	1,578	982
Process and fugitive emissions	2,417	2,189	1,943
Vehicle transport	1,996	2,147	2,070
Emissions from land	-	-	-
Total scope one emissions [location-based]	6,283	5,914	4,995
Total scope one emissions [market-based]	6,283	5,914	4,995
Scope one emissions; GHG type CO ₂	3,822	3,678	3,020
Scope one emissions; GHG type CH ₄	52	1	1
Scope one emissions; GHG type N ₂	2,407	2,232	1,974
Scope one emissions; GHG other types	-	3	-
Scope two emissions			
Purchased electricity [location-based]	46,736	43,623	45,053
Purchased electricity [market-based]	-	-	39,500

Year	2021/22	2022/23	2023/24
Purchased heat	-	-	-
Electric vehicles	-	-	-
Removal of electricity to charge electric vehicles at site	-	-	-
Total scope two emissions [location-based]	46,736	43,623	45,053
Total scope two emissions [market-based]	-	-	39,500
Scope two emissions; GHG type CO ₂	46,854	43,134	44,593
Scope two emissions; GHG type CH ₄	176	180	195
Scope two emissions; GHG type N ₂	302	309	265
Scope two emissions; GHG other types	-	-	-
Scope three emissions			
Business travel	109	204	182
Outsourced activities ¹	101	156	82
Purchased electricity; extraction, production, transmission, and distribution [location-based] ²	4,136	3,991	14,748
Purchased electricity; extraction, production, transmission, and distribution [market-based] ²	4,138	3,991	14,748
Purchased heat; extraction, production, transmission and distribution ³	-	-	-
Purchased fuels; extraction, production, transmission and distribution ⁴	-	-	688
Chemicals	1,300	10,858	6,832
Disposal of waste ⁵	2,434	2,409	-

Year	2021/22	2022/23	2023/24
Total scope three emissions (location-based)	18,081	17,618	22,532
Total scope three emissions (market-based)	18,083	17,618	22,532
Scope three emissions; GHG type CO ₂	-	8,293	4,038
Scope three emissions; GHG type CH ₄		1,314	17
Scope three emissions; GHG type N ₂	-	1,140	24
Scope three emissions: GHG other types	-	6,027	296
Gross operational emissions (Scopes 1,2 and 3)			
Gross operational emissions (location-based)	71,100	67,155	72,581
Gross operational emissions (market-based)	24,366	23,532	65,969
Emissions reductions			
Exported renewables	-	-	-
Exported biomethane	-	-	-
Insets	-	-	-
Other emissions reductions	-	-	-
Total emissions reductions	-	-	-
Net annual emissions			
Net annual emissions (location-based)	71,100	67,155	72,581
Net annual emissions (market-based)	24,366	23,532	65,969
GHG intensity ratios			
Emissions per Ml of treated water (location based) ⁶	207	195	210

Year	2021/22	2022/23	2023/24
Emissions per Ml of sewage treated (location based)	-	-	-
Emissions reductions			
Green tariff electricity	-	-	-
Capital projects			
Capital projects (cradle-to-gate)	-	-	-
Capital projects (cradle-to-build)		8,465	13,301
Purchased goods and services			
Purchased goods and services	-	38,407	50,628

Table Notes

- ¹ Outsourced Activities includes services which are considered part of the core business operations but not captured elsewhere in scope 3 reporting. This category incorporates emissions from IT services and transport emissions from courier and waste services.
- ² This category was previously Purchased electricity: transmission and distribution
- ³ This is a new category for Affinity Water to report in 2023/24
- ⁴ This is a new category for Affinity Water to report in 2023/24

- ⁵ For 2023/24 Ofwat clarified that this category should be limited to wastewater sludge. As Affinity Water is a water only company this category is no longer relevant to our operations. Emissions in previous years captured in this category are emissions from water treatment waste.
- ⁶ This is the common intensity metric for the watery industry and is our operational GHG emissions per Ml of treated water (kgCO₂e/Ml). The volume of Ml treated by Affinity water is recorded in Ofwat regulatory table 6B and is summarised below.

DI	2021/22	2022/23	2023/24
Ml/d	936.35	960.20	945.34
Ml	341,768	350,473	345,994

Water UK Net Zero 2030 commitment

This table summarises the emissions which are relevant to our Water UK Net Zero 2030 target. All emissions have been calculated using the UKWIR CAW (with the exception of IT services) and are reported using a market-based approach in line with the Water UK Roadmap to 2030.

Table 4 Water UK Operational Net Zero by 2030 emissions

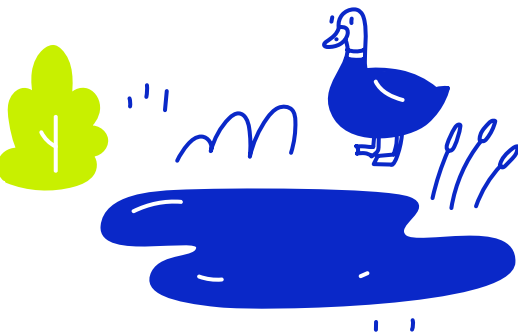
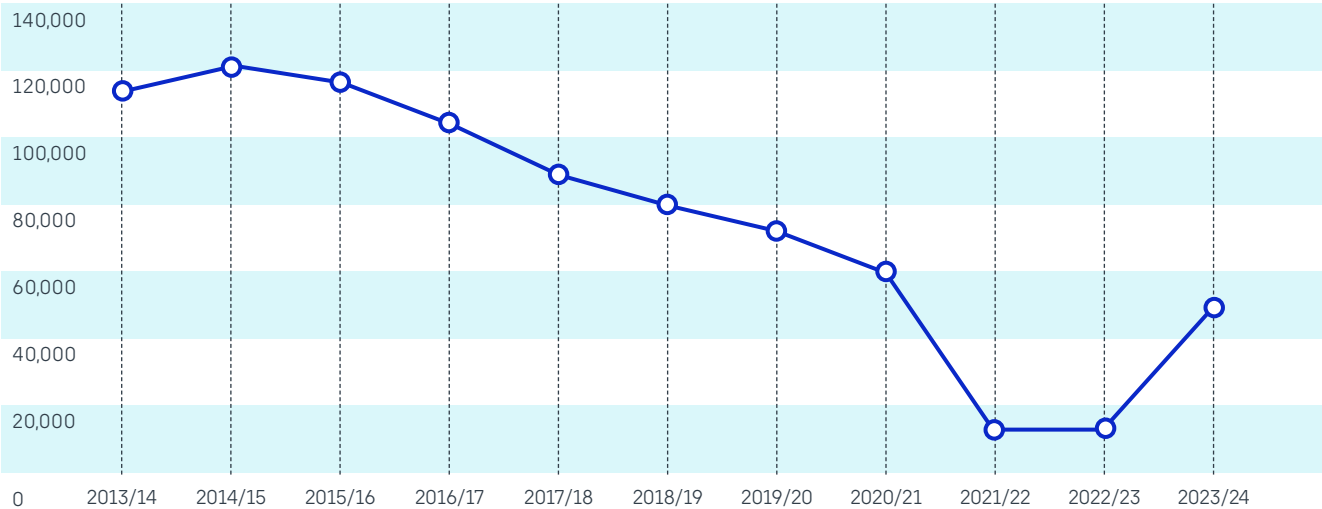
GHG emission source	2020/21 Gross [tCO ₂ e]	2021/22 Gross [tCO ₂ e]	2022/23 Gross [tCO ₂ e]	2023/24 Gross [tCO ₂ e]
Scope 1	5,003	6,283	5,914	4,995
Scope 2 [market based]	32,003	0	0	39,500
Scope 3 ¹	7,198	6,826	6,960	7,376
Total gross emissions	39,201	13,109	12,836	50,813

Table Notes

¹ Scope 3 emissions include emissions from IT services, waste from operations and transport emissions from courier services.

Affinity Water - Water UK Net Zero 2030 Emissions (Market Based)

Net Emissions tCO₂e



Emissions Reductions during 2023/24



Energy Efficiency

In 2023/24 we continued to take steps to improve our energy efficiency and reduce our GHG emissions.

During 2023/24, we implemented 14 energy efficiency schemes through our pump replacement programme. These projects are expected to save around 1.2GWh per year. Replacing and refurbishing our borehole pumps at Stoke by Nayland is expected to contribute the greatest single saving [245 MWh/year].

This year we have continued efficiency work on our buildings and offices, with new initiatives to reduce energy used for heating and lighting through process and behavioural change. We continue to put focus on changing our culture, promoting our Zapp app which empowers colleagues to raise efficiency ideas to investigation. Energy Management training has continued from last year.

We have a mature programme of energy savings opportunities with seven potential schemes in various stages of implementation. Using this programme, we have set ourselves a 1.9MWh per year savings target for 2024/25.



Renewables

Our solar installations continued to provide renewable energy to our sites at Chertsey and Walton generating a combined 1.6GWh, similar to the previous year. We also undertook construction of two new sites which will increase our generating capacity to around 4GWh per year.

The energy intensity of our operations also improved this year, averaging 606kWh per Ml of water into supply compared to 629kWh per Ml of water into supply in 2022/23.

1.6GWh



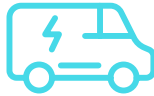
generated from our solar installations at Chertsey and Walton



Electric Vehicles

During 2023/24, our electric vehicles [EV] journey continued. We ordered an additional 19 electric vans and are expecting these to be delivered in Q2 of 2024/25. We undertook surveys of our Hatfield and Luton offices, ahead of EV chargers being installed in Autumn 2024. We placed orders for an additional 60 operational EVs in Q1 of 2024/25 and are excited about these being delivered in Q4 of 2024/25. When these are on the road, this will mean that approximately one fifth of our operational fleet has transitioned to EVs. This marks a big step on our route map to net zero. During AMP8, we are aiming to transition the rest of our operational fleet to EVs and committed during 2023/24 to not ordering any new petrol or diesel operational vehicles after 1 January 2025 unless the transition of certain vehicles is not supported by the technology.

19



additional electric vans ordered in 2023/24

AffinityWater

