8.2 SUSTAINABLE ENVIRONMENT STRATEGY 2019-2024 PROGRESS UPDATE

Attachments: **1. Metrics and Mapping - SES Progress Update 2020/21**

RECOMMENDATION:

That Council NOTES:

1. **the update on progress towards targets within Sustainable Environment Strategy 2019 – 2024;**
2. **that targets exceeded in 2019/20 were reviewed and amended where appropriate following referral to the City's Sustainability and Transport advice group in 2020/21;**
3. **that Administration intends to refer all targets met or exceeded in 2020/21 to the City's Sustainability and Transport Advisory Group in 2021/22 for review and advice relating to further amendments; and**
4. **that a renewable energy contract for the City's contestable electricity accounts is expected to commence in April 2022.**

PURPOSE OF REPORT:

The purpose of this report is to provide Council with an update on progress towards the targets adopted in Sustainable Environment Strategy 2019 – 2024 (SES).

BACKGROUND:

At the Ordinary Meeting of Council held on 12 October 2021 Council received a progress update on the implementation of actions within the SES Implementation Plan. That update also highlighted the key achievements for 2020/21 in each of the five key opportunity areas of the SES. This report provides the metrics and maps showing progress towards SES targets.

DETAILS:

The current SES was developed in 2018/19. At that time, 2017/18 was the most recent financial year for which complete datasets were available for the majority of opportunity areas. As a result 2017/18 is the baseline year against which most of the targets in the SES are set. The exceptions are tree canopy and community transport mode share, for which the most recent datasets were from 2014 and 2016 respectively.

The tables and graphs in **Attachment 1** detail the metrics that quantify progress towards all SES targets (including those relating to the community) and provide explanations for observed performance. Maps of street tree and eco-zone plantings are also provided in **Attachment 1.**

The table below highlights the key metrics across the SES opportunity areas for the City's facilities/operations. It shows that the City is on track to meet or exceed most of the related targets.

Key opportunity area	Metric	Baseline	Target	Progress to date
Greenhouse Gas Emissions	Net greenhouse gas emissions from operational energy, operational transport and municipal waste	8,383 tonnes CO_2 equivalent per year	0 tonnes CO_2 equivalent per year by 2030	6,668 tonnes CO_2 equivalent per year (On track to meet target)
Energy	Solar energy generation on City-owned buildings	58.7 Megawatt hours per year	589.8 Megawatt hours per year by 2024	477.35 Megawatt hours per year (On track to meet target)

Key opportunity area	Metric	Baseline	Target	Progress to date
	Total grid-supplied electricity used by the City's operations	6,401.80 Megawatt hours per year	5,761.62 Megawatt hours per year by 2024	5,061.95 Megawatt hours per year (Target exceeded)
Transport	Percentage of the City's passenger vehicle fleet with tailpipe emissions	97%	50% by 2024	89% (11% fully electric, 86% hybrid, 3% standard internal combustion engine) (On track to meet target)
Waste	Total waste to landfill	9,530 tonnes per year	0 tonnes per year by 2028	8,774 tonnes per year (On track to meet target)
Water	Total scheme water use by City-owned facilities	67,356 kilolitres per year	Maintain at or below 67,356 kilolitres per year	59,077 kilolitres per year (Target met)
	Groundwater use for irrigation	7,357 kilolitres per hectare per year	6,989 kilolitres per hectare per year by 2024	7,983 kilolitres per hectare per year (Not on track to meet target)
Urban Greening and biodiversity	Tree canopy cover on public land	21.5%	27.3% by 2023	24% (On track to meet target)
	Area of eco-zoning completed	49,549m^2	69,549m^2 by 2023	71,293m^2 (Target exceeded)

The only operational area not on track in 2020/21 was groundwater use for irrigation and this can be attributed to two main factors:

1) The baseline year (against which targets were set) experienced above average rainfall and required less irrigation than prior years. It was understood at the time of setting the groundwater target that it was ambitious, though necessary given declining ground water reserves plus expected reductions in water allocations; and

2) Major turf renovations to three active sporting reserves in the spring/summer of 2020/21 required significant supplementary watering.

2020/21 is the second year in a row that ground water use for irrigation has increased. Actions to address this to date include:

- Review of the irrigation requirements of the City's reserves – completed in 2020/21;
- Identifying and implementing ways to optimise the City's centralised irrigation control system – commenced in 2020/21 and ongoing; and
- Analysis of high water-use reserves to identify further water saving opportunities, including landscaping treatments and changes to hydro-zoning – completed in 2020/21, with implementation of treatments under way.

Irrigation efficiency can only partly address the water-related impacts/challenges created by climate change. The drying climate is accompanied by increasingly unpredictable weather events with heavier rainfall and growing pressure on the City's drainage systems. A holistic and integrated approach to the local water cycle is needed. To this end, in 2020/2021, Administration completed a review of strategies, policies and plans that impact the management of water in the City. The review identified gaps relating to water sensitive urban design and has made recommendations for addressing these as the relevant documents are updated.

There was a minor increase in total greenhouse gas emissions from 2019/20 to 2020/21 as detailed in **Attachment 1**. 2019/20 experienced a COVID-induced dip in emissions, which has been partly but not fully reversed in 2020/21.

The City remains on track to reach its net zero target by 2030, with introduction of FOGO and the commencement of a renewable energy contract for the City's contestable electricity accounts in 2021/22 expected to result in further significant emission reductions from 2022 onwards.

CONSULTATION/ADVERTISING:

Nil.

LEGAL/POLICY:

Nil.

RISK MANAGEMENT IMPLICATIONS

Low: It is low risk for Council to consider the progress update on SES targets.

STRATEGIC IMPLICATIONS:

This is in keeping with the City's *Strategic Community Plan 2018-2028*:

Enhanced Environment

We have improved resource efficiency and waste management.
We have minimised our impact on the environment.
Our urban forest/canopy is maintained and increased.

Accessible City

We have embraced emerging transport technologies.

Sensitive Design

Our planning framework supports quality design, sustainable urban built form and is responsive to our community and local context.

Innovative and Accountable

Our resources and assets are planned and managed in an efficient and sustainable manner.

SUSTAINABILITY IMPLICATIONS:

This is in keeping with the following key sustainability outcomes of the *City's Sustainable Environment Strategy 2019-2024.*

Sustainable Energy Use/Greenhouse Gas Emission Reduction
Sustainable Transport
Water Use Reduction/Water Quality Improvement
Waste Reduction
Urban Greening and Biodiversity

PUBLIC HEALTH IMPLICATIONS:

This is in keeping with the following priority health outcomes of the City's *Public Health Plan 2020-2025*:

Increased mental health and wellbeing

Increased physical activity

Reduced injuries and a safer community

Reduced exposure to environmental health risks

FINANCIAL/BUDGET IMPLICATIONS:

Funding for SES implementation actions has been included in the City's 2020/21 budget and key SES projects/programs are reflected in the City's Corporate Business Plan. Longer term funding of SES implementation is included in the City's Long-Term Financial Plan.

COMMENTS:

Since early 2020 the City has been an active participant in a renewable energy group purchase initiative led by the Western Australian Local Government Association (WALGA) on behalf of its members. The Energy Sustainability and Renewables Project, as it has been named, has culminated in the offer of a three year contract for the purchase of renewable electricity to be supplied by three Western Australian Wind farms. The contract is planned to commence in April 2022.

By purchasing 100% renewable electricity for its contestable sites under this contract, the City will reduce greenhouse gas emissions by 1,800 tonnes of CO_2 equivalent per year (27% of total emissions reported for 2020/21).

It is anticipated that a further ten year contract will be negotiated for the period 2025 to 2035. Street lighting is intended to be included in this second contract, reducing greenhouse gas emissions by a further 1,450 tonnes of CO_2 equivalent (22% of total emissions reported for 2020/21).

A mechanism has been identified and is currently being tested to enable sites that are currently considered non-contestable to be included in the contract. Non-contestable sites currently account for only 8% of the City's reported greenhouse gas emissions, but their inclusion in the renewable energy contract would see the City operating on 100% renewable electricity by 2025.

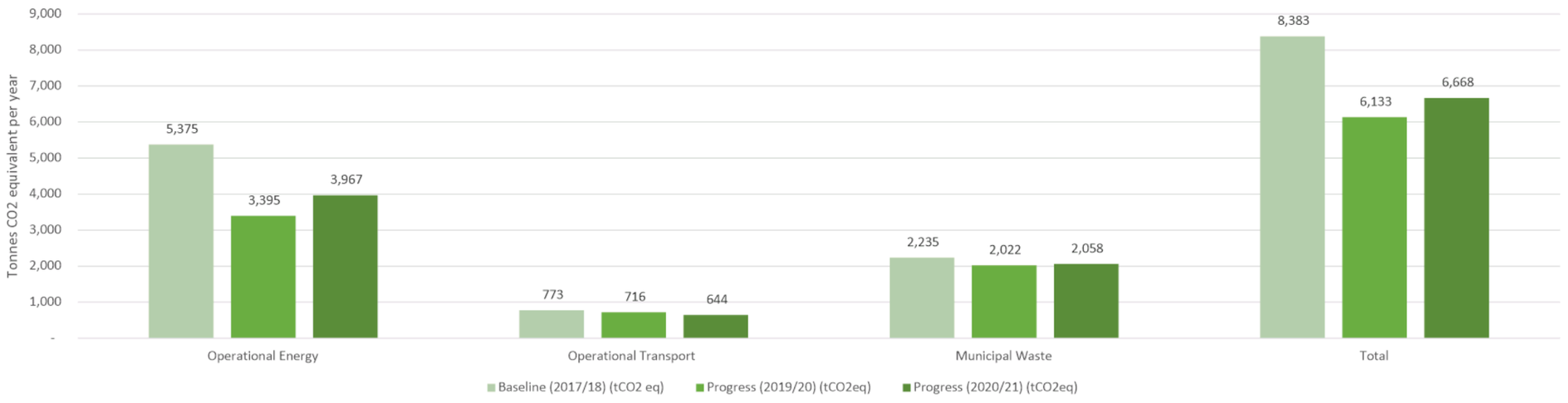
Purchasing renewable energy to supplement on-site generation at City-owned facilities will play a significant part in achieving the City's net zero greenhouse gas emissions target by 2030.

Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Table 1. Greenhouse gas emissions from operational energy use, operational transport and municipal waste

Greenhouse gas emissions	Metric	Unit of measure	Baseline	2020/21 Progress update	Target	Target year	Status tracking	Commentary
City operations plus landfill	Net greenhouse gas emissions from operational energy, operational transport and municipal waste	Tonnes of CO_2 equivalent per year	8,383	6,668	0	2030	On track to achieve target	Refer to **figure 1,** below for progressive greenhouse gas emission tracking and to **tables 2, 3** and **4** for commentary on each of the three key opportunity areas that contribute to this overarching metric. In 2019/20 energy use and associated emissions were lowered significantly by COVID-related facility shutdowns. They increased by 8% in 2020/21 compared to 2019/20. The increase in emissions in 2020/21 was due to 1) Reopening of facilities after lock-down in 2019/20, which increased energy use; and 2) Increased total waste collection volumes resulting in increased waste sent to landfill, despite the diversion rate also increasing from 46.5% to 47%.

Figure 1. Combined Greenhouse Gas Emissions



Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Table 2. Energy and associated greenhouse gas emissions

Energy	Metric	Unit of measure	Baseline	2020/2021 Progress update	Target	Target year	Status tracking	Commentary
City Operations	Total grid-supplied electricity	Megawatt hours per year	6,401.80	5,061.95	5,761.62	2024	Target exceeded	Despite consumption being higher than in 2019/20, the 2024 target has still been exceeded in 2020/21. This is in large part due to ongoing energy efficiency projects and improvements to energy management. Short-term shut-downs of some facilities or parts of facilities in 2020/21 have also played a part.
	Total natural gas	Gigajoules per year	10,327.73	3,065.57	2,065.55	2024	On track to achieve target	Natural gas consumption data reported in 2019/20 was incomplete and was later updated from 2,750.35GJ to 3,041.44GJ (still a significant reduction compared to baseline). An increase of 1% in consumption has been reported for 2020/21 compared to 2019/20 (totalling 24.13GJ). This increase was expected as facilities returned to full use following COVID-related shut-downs in 2019/20. *
	Solar PV installed on City-owned buildings	Kilowatts	37.50	302	400.00	2024	On track to achieve target	As reflected in **figure 2** below, there was one solar PV system installed in 2020/21, with a number of sites deferred to future years. If solar installations currently planned for 2021-2023 proceed, the 2024 target will be exceeded.
	Solar energy generation on City-owned buildings	Megawatt hours per year	58.7	477.35	589.80	2024	On track to achieve target	
	Greenhouse gas emissions from electricity and gas used by the City's operations	Tonnes of CO_2 equivalent per year	5,374.85	3,966.69	4,434.25	2024	Target exceeded	As natural gas use is minimal compared to electricity, the increase in emission from 2019/20 to 2020/21 is primarily due to increased electricity use resulting from reopening of facilities and return to normal operations following COVID-19 impacts.
Community	Average grid-supplied household electricity use	Kilowatt hours per day	13.26	13.53	11.93	2024	Not on track	It is unclear why average household electricity use increased in 2020/21 after decreasing in 2019/20. It may be reflective of 1) Increased number of people per household resulting from the current housing shortage; 2) Increasing consumer confidence in 2020/21 leading to less restraint with energy use; and/or 3) A relatively cold autumn/winter in 2021, increasing heating energy demand compared to the record warm year of 2019/20. Household data from Census 2021, when available will help to clarify the above.

Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Energy	Metric	Unit of measure	Baseline	2020/2021 Progress update	Target	Target year	Status tracking	Commentary
	~~Percentage of free-standing and semi-attached dwellings with solar PV systems~~	~~Percentage~~	~~16.9%~~	-	~~25.0%~~	~~2024~~	-	Due to changes in the way that this data is provided to the City, it is no longer possible to separate free-standing and semi-attached dwellings from multiple dwellings. Going forward, the uptake of solar by the community will be reported as a percentage of residential accounts with embedded solar PV systems (as provided by Synergy).
	~~Percentage of all dwellings with solar PV systems~~ Percentage of residential electricity accounts with embedded solar PV systems	Percentage	10.5%	13.0%	15.0%	2024	On track	
	Estimated installed solar capacity	Kilowatts	7,638.00	11,983	12,355	2024	On track	Estimated solar capacity was mistakenly reported as 13,306kW in 2019/20, which made it appear that the community solar target had been exceeded. The correct installed capacity was 7,761kW. This has been corrected in **Figure 3** below, which shows community solar is on track to meet the 2024 target. **Figure 4** shows the progressive increase in greenhouse gas emissions avoided by community solar PV alongside to the emission impacts of solar PV on City-owned facilities.
	Estimated electricity displaced from the grid by Vincent households using solar PV	Megawatt hours per year	12,266.60	17,539	19,842.40	2024	On track	
	Greenhouse gas emissions avoided	Tonnes of CO2 equivalent per year	9,200.00	13,154	14,882	2024	On track	

* Note: at the time of writing the City is awaiting confirmation of data completeness from the utility monitoring provider. It is possible that gas consumption data for 2020/21 may be further updated at a later date.

Figure 2. City-owned Facilities - Solar Capacity and Generation

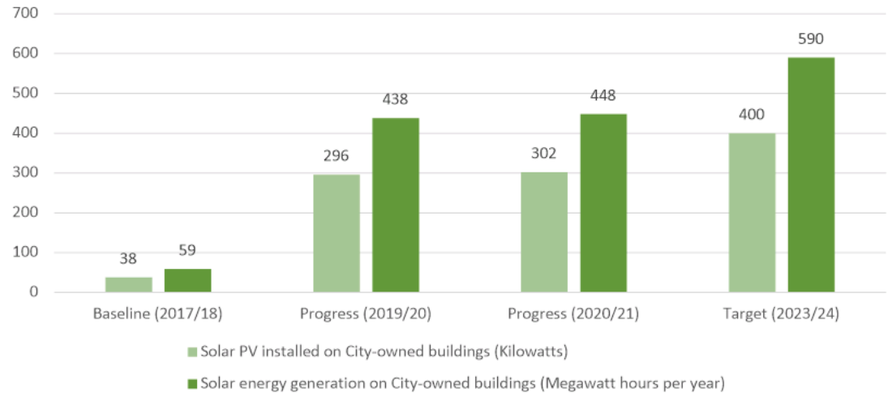
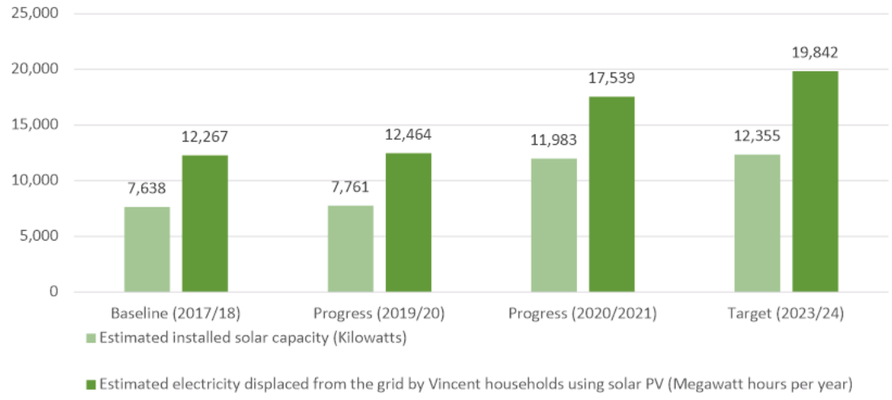


Figure 3. Community - Solar Capacity and Generation



Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Figure 4. Greenhouse Gas Emissions avoided via Solar PV

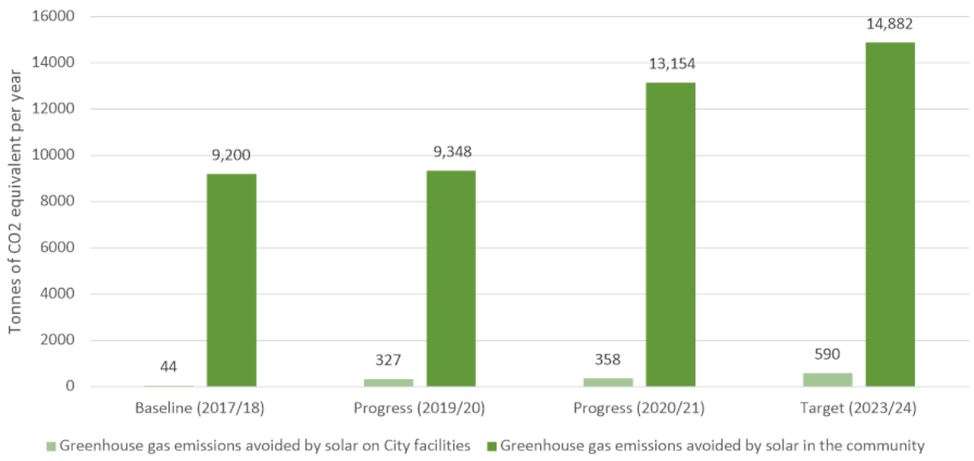


Table 3. Transport and associated greenhouse gas emissions

Transport	Metric	Unit of measure	Baseline	2020/21 Progress update	Target	Target year	Status tracking	Commentary
City Operations	Percentage of the City's passenger vehicle fleet with tailpipe emissions	Percentage	97%	89%	50%	2024	On Track	At baseline, 97% of the City's passenger fleet had traditional combustion engines. By 2020/21 this reduced to 3%, with 86% of the fleet now hybrid and 11% fully electric. Passenger fleet tailpipe emissions have reduced by 49% compared to baseline.
Community	Percentage of Vincent residents who use active or public transport to commute	Percentage	33%	not available for 2019/20	TBC	TBC	n/a	Update of mode share is pending the release of data from Census 2021.
	Percentage ownership of zero emission vehicles by the community	Percentage	0.065%	0.25%	1.00%	2024	On Track	The total number of electric vehicles registered in Vincent has more than tripled from 61 in 2019/20 to 207 in 2020/21. This rate of increase is expected to continue based on the available advice.

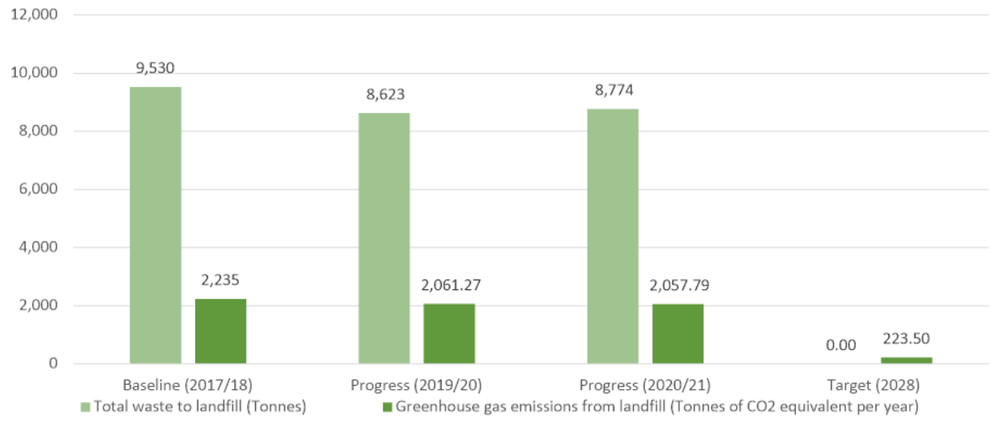
Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Table 4. Waste and associated greenhouse gas emissions

Waste	Metric	Unit of measure	Baseline	2020/21 Progress update	Target	Target year	Status tracking	Commentary
Operational & Community (Municipal)	Total waste to landfill	Tonnes	9,530	8,774	0.00	2028	On track	Progress was delayed by the deferred introduction of FOGO (from 2019/20 to 2020/21). Despite this, the waste diversion rate from landfill increased from 46.5% in 2019/20 to 47% in 2020/21. The total volume of waste sent to landfill increased by only 2%, while total waste collected increased by 3% - likely an effect of population growth. **Figure 5** below shows how waste tonnage and associated greenhouse gas emissions are tracking from baseline to target.
	Greenhouse gas emissions associated with the breakdown of organic waste	Tonnes of CO_2 equivalent per year	2,235.00	2,057.79	223.50	2028		

*This figure assumes that all organic waste will be composted using aerobic processes, resulting in a 90% reduction in greenhouse gas emissions.

Figure 5. Waste to Landfill and Associated Greenhouse Gas Emissions



Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Table 5. Water

Water	Metric	Unit of measure	Baseline	2020/21 Progress update	Target	Target year	Status tracking	Commentary
City Operations	Total scheme water use by City-owned facilities	Kilolitres per year	67,356.00	59,077.00	67,356.00	Maintain at or below baseline	On track	Facilities undergoing upgrades target a 15% scheme water use reduction, but increasing use commensurate with population growth is expected to counteract savings overall. It is likely that the low water consumption in 2020/21 was at least in part due to ongoing impacts from COVID-19, with a number of events and gatherings cancelled in the first half of the financial year due to ongoing restrictions and snap lock-downs.
	Groundwater use (average across all irrigated areas)	Kilolitres per hectare per year	7,357.00	7,983.54	6,989.15	2024	Not on track	Large scale turf renovations to cricket pitches at three reserves during spring/summer led to the City exceeding its groundwater allocation in 2020/21. Despite 2021 having higher than average rainfall, the spring of 2020 was still very dry, with above average temperatures. This will have driven groundwater use higher.
Community	Community scheme water use	Kilolitres per person per year	96.86	85.42	90.00	2024	Target exceeded	Community scheme water use fluctuates significantly year-on-year and appears to follow rainfall patterns. In 2019/20 (second hottest and driest on record) community scheme water use averaged 103.76kL per person per year. In 2020/21 (above average rainfall year) it has dropped significantly. It is also possible that population growth in 2020/21 has exceeded the estimate used for this calculation for per-person water use – to be confirmed when Census 2021 becomes available.

Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Water	Metric	Unit of measure	Baseline	2020/21 Progress update	Target	Target year	Status tracking	Commentary
	Domestic groundwater use	Kilolitres per year	715,000	715,000	594,279.00	2024	Not on track (if estimates provided are correct)	Domestic ground water is estimated because garden bores are not licensed or metered. Estimates are based on household water use surveys and a subset of metered samples. The baseline set in the SES was based on Water Corporation advice received in 2018/19. Updated estimates received from Water Corporation in 2020 indicate that this should have been closer to 715,000, which is reflected in this table. The estimated use for 2020/21 remains the same as for the baseline year.

Table 6. Urban Greening and Biodiversity

Urban Greening and Biodiversity	Metric	Unit of measure	Baseline	2020/21 Progress update	Target	Target year	Status tracking	Commentary
City Operations	Tree canopy cover on public land	Percentage	21.5%	24.0%	~~23.33%~~ 27.3%	2023	On track	The City's street tree and eco-zone plantings have been ahead of schedule since the City's Greening Plan was first adopted in 2014. As a result, the targets for tree canopy on public land and for the number of street trees planted by 2023 was exceeded in 2019/20. This led to the revision of targets as shown at left. Urban canopy mapping data for 2020 is currently being processed and will be available in late 2021/early 2022*. The latest available canopy data shown at left remains the same as for 2019/20. 211 additional** street trees were planted in 2020/21 in the locations shown in **figure 6** below. These were all planted outside of designated greenways – prioritised for locations in greater need of shade and amenity. The length of established greenways therefore remains unchanged from 2019/20 but still on track for the 2023 target. 4,715 square meters of eco-zoning was completed in 2020/21 – refer to **figure 7** below for details.
	Number of street trees	Trees	13,000.00	14,811	~~13,500~~ 14,900	2023	On track	
	Length of greenways established within the City	Kilometres	25.00	25.94	26.50	2023	On track	
	Area of eco-zoning completed	Square metres	49,549	71,293	69,549	2023	Target exceeded	

Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Urban Greening and Biodiversity	Metric	Unit of measure	Baseline	2020/21 Progress update	Target	Target year	Status tracking	Commentary
Community	Tree canopy cover on private land	Percentage	6.8%	9.0%	7.5%	2023	Target exceeded	As explained in relation to tree canopy mapping for public land above, current data for private land is not yet available. This will be provided in next year's SES progress update and will inform any amendment to the target in the next year. The canopy data shown at left remains the same as for 2019/20.

* Via the Department of Planning, Lands and Heritage Urban Forest Dashboard
**320 street trees were planted in total, including replacements for trees that had been lost.

Figure 6. Street tree plantings 2020/21

Metrics: progress towards Sustainable Environment Strategy 2019 – 2024 targets as at 30 June 2021

Figure 7. Eco-zoning 2020/21