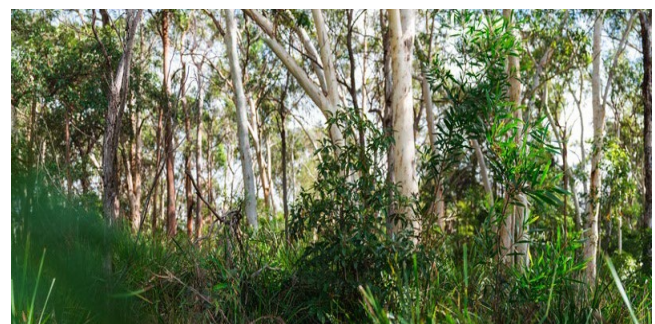
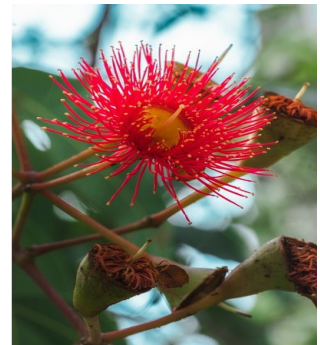


Sustainability Targets Tracking

2023 Status Report



SUSTAINABLE DEVELOPMENT GOALS

Acknowledgement of Country

We acknowledge the Traditional Custodians of the land upon which Macquarie University is situated, the Wallumattagal people of the Dharug nation, whose cultures and customs have nurtured, and continue to nurture, this land since time immemorial.

We pay our respects to the Dharug people and the Wallumattagal Clan. We also wish to acknowledge and pay our respects to the Elders of the Dharug Nation - past, present and future.



Cover image credits:

- Learning Circle (Dinil Jayasekara)*
- Wally's Walk (Morris McLennan)*
- Central Courtyard Cafeteria (Adam Scarf)*
- Flowering Gum (Joanne Stephan)*
- Clinical Education Building (Buildcorp)*
- Campus Bushland (Joanne Stephan)*



Contents

1. Purpose	4
1.1 Background.....	4
1.2 Sustainability Impact.....	4
1.3 Sustainability Strategy Review.....	4
1.4 Summary Performance Against Targets.....	5
2. Context	6
2.1 Our Approach.....	6
3. Energy	7
3.1 Consumption.....	7
3.2 Intensity.....	8
4. Emissions	9
4.1 Production.....	9
4.2 Intensity (Scope 1 & Scope 2).....	10
5. Green Finance	11
Case Study: <i>Financing sustainable initiatives</i>	11
6. Water	12
6.1 Consumption.....	12
6.2 Intensity.....	13
Case Study: <i>Wastewater Treatment</i>	14
7. Reuse, Recycling and Waste Disposal	15
7.1 Diversion from Landfill.....	15
7.2 Waste Breakdown.....	16
7.3 Circular Economy.....	17
Case Study: <i>Restoring Habitat on campus</i>	18
Notes	19



1. Purpose

The Macquarie University Campus Masterplan 2014 established sustainability targets for energy, emissions, water and waste reduction based around a 2009 baseline.

This report provides an update on progress towards achieving these targets:

1.1 Background

At Macquarie University our understanding of sustainability is aligned with the United Nation's Sustainable Development Goals (SDGs). The SDGs are 17 interlinked goals designed as "*a global blueprint to achieve a better and more sustainable future for all.*" Our targets and progress towards them help us to understand the impact of our actions and activities and enable us to make informed decisions around better sustainable practices.

1.2 Sustainability Impact

Each year Macquarie University is ranked globally for our performance against the SDGs in the *Times Higher Education (THE)* Impact Rankings.

In the most recent ranking, across 2,152 universities, we improved fifteen places on the previous year to be **ranked 24th in the world**. Overall, we improved three places to be ranked 6th in Australia. The rankings methodology is based on universities' teaching, research, outreach and stewardship.

For its overall score of 94.2, Macquarie University ranked sixth in the world for SDG6, Clean Water and Sanitation, 12th for SDG14, Life Below Water, and 25th for SDG17, Partnership for the Goals, which refers to the forging of strong international partnerships that support sustainable development across various sectors.

We also landed in the global top 50 in SDG15, Life on Land (27th), SDG8, Decent Work and Economic Growth (39th), and SDG13, Climate Action (44th).

1.3 Sustainability Strategy Review

Macquarie University is currently in the process of creating our next sustainability strategy and new targets to lead on from the work that the following report outlines.







1. Purpose

1.4 Summary Performance Against Targets

To track progress against our sustainability targets, we are using 2009 as our baseline.

Since then, despite Macquarie University increasing its gross floor area by 80%, and the population growing by 36%, we have been working hard to meet these targets.

Here is our progress for 2023:

Category	2030 Target	2023 Progress
	40% Reduction in Energy Intensity (GJ/sqm GFA) from 2009	43% reduction achieved TARGET EXCEEDED
	40% Reduction in Emissions Intensity (CO ₂ -e (T)/sqm GFA) from 2009	92% reduction achieved TARGET EXCEEDED
	40% Reduction in Water Intensity (kL/EFTSL+FTE) from 2009	42% reduction achieved TARGET EXCEEDED
	90% Waste Diversion rate from Landfill from 2009	88.5% diversion achieved



2. Context

In 2023, Macquarie University has increased its size (gross floor area) by 80% and its population of students and staff by almost 36% higher than 2009 levels.

This new spatial growth includes:

1. New large-scale developments such as the Australian Hearing Hub, Macquarie University Library and, more recently, the Central Courtyard Precinct, including on campus student accommodation, and the Michael Kirby Building; a new dedicated law school.
2. New specialised buildings including the Brain Behaviour Building and the Biosciences Research Facility.
3. Significant modernisation of older, existing building stock including Science (12 Wally’s Walk), the Arts Precinct (25 Wally’s Walk) and 18 Wally’s Walk.

At a high level, focus areas for Macquarie University, regarding minimising our resource use and maximising our efficiency, are based on:

- Continual improvement to our precinct model of energy and district thermal systems.
- Precinct load diversification resulting in peak load reduction.
- Implementation of behind the meter renewable supplies to contribute to reducing baseload power consumption.
- Continual improvements to metering, monitoring, automation and building intelligence systems.
- Lifecycle building upgrades with a focus on utilisation, efficiency, flexibility and functionality of space.
- Utilising our unique campus landscape and creek systems as a biofilter to improve downstream water quality, enhance biodiversity and mitigate localised flood impacts.

2.1 Our Approach

As the campus develops, Macquarie University’s focus continues to be on resource efficiency, control and management. Prioritising using less, self-generating energy where appropriate, while maintaining functionality and enhancing the occupant experience required in this unique operating environment.

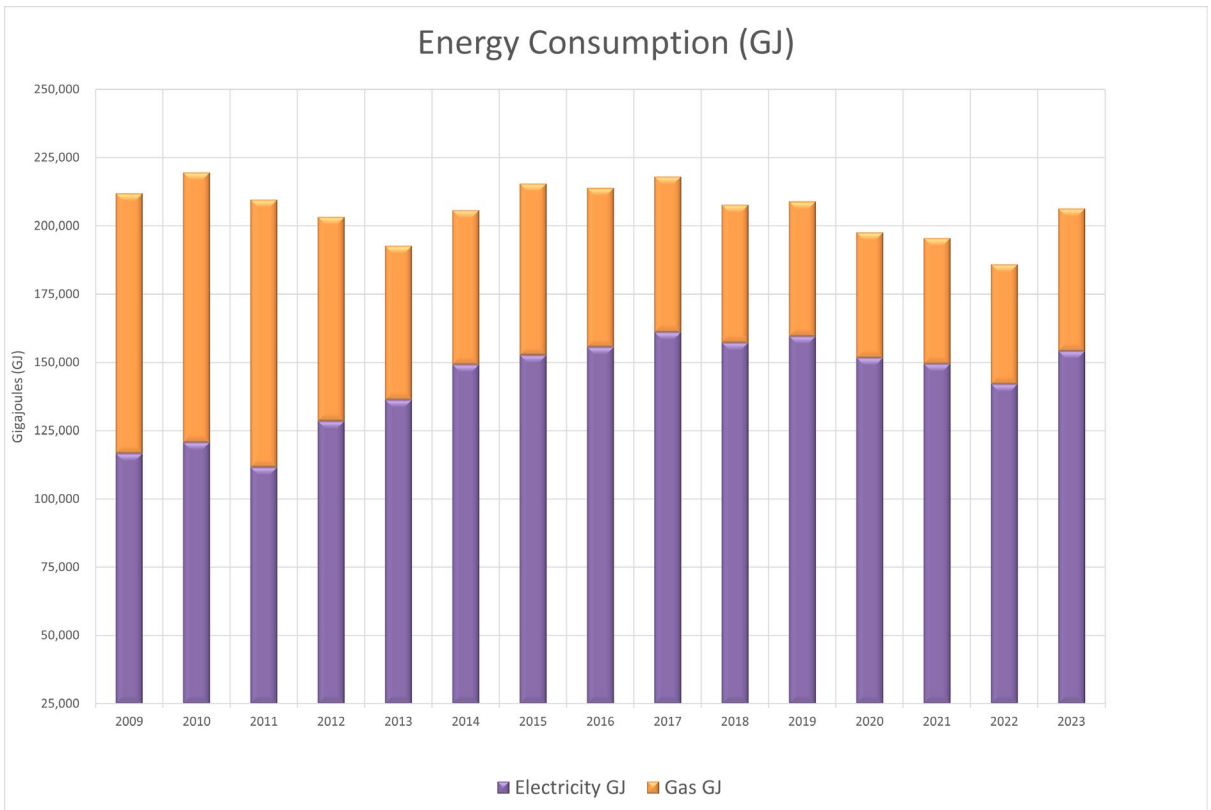




3. Energy

3.1 Energy Consumption

- 0.8% reduction in total annual energy consumption compared to 2009, despite the 80% increase in gross floor area.
- Reduced reliance on gas as an energy source due to increased efficiency of electrical infrastructure and increasing provision of on-site renewable sources.



Note:

- Calculations have been made using the Emission Factors from the National Greenhouse and Energy Reporting (Measurement) Determination, Schedule 1.
- A data quality assurance statement for energy and emissions figures has been issued by an independent validator through an external audit process.

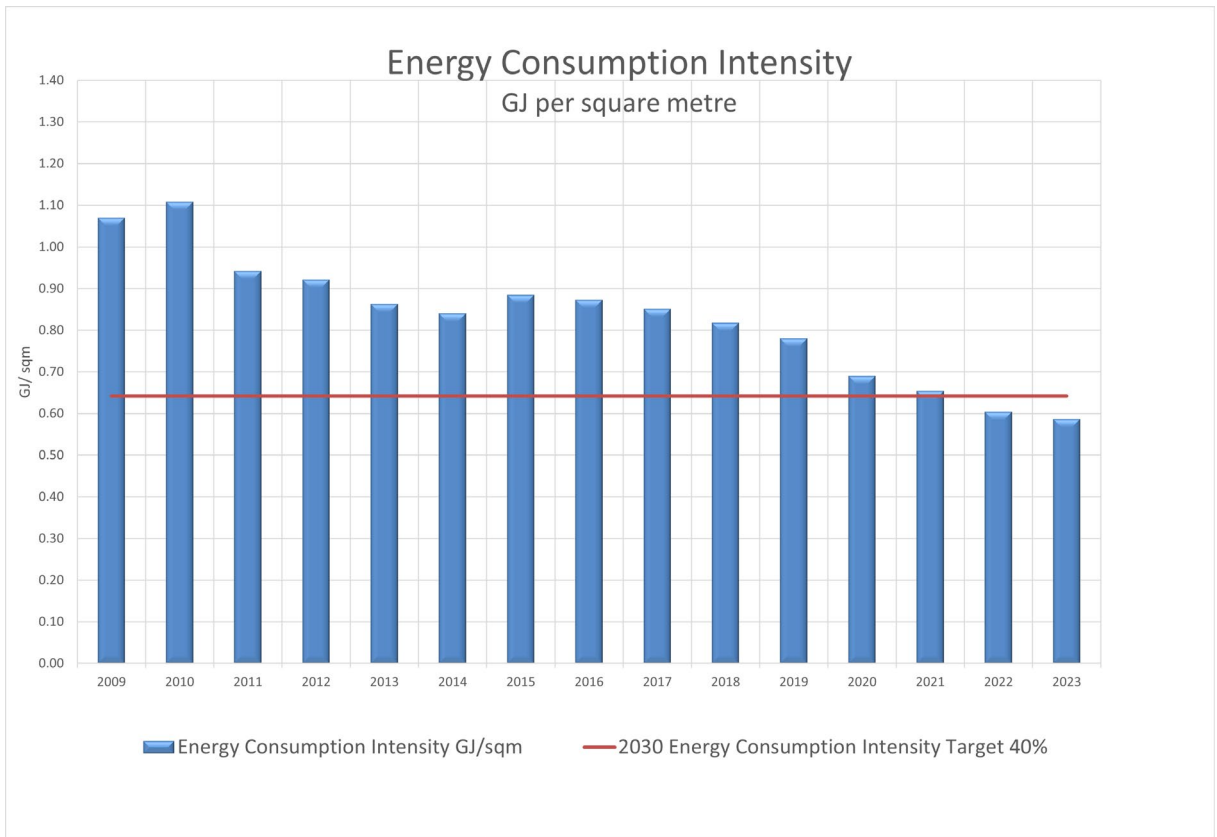




3. Energy

3.2 Energy Intensity

- Reduction target: 40% by 2030 (against 2009 baseline) measured in gigajoules (GJ) per square metre gross floor area (GFA).
- 2023 progress: 43% reduction achieved, despite 80% increase in GFA meaning we have **exceeded** our target.



Note:

- Calculations have been made using the Emission Factors from the National Greenhouse and Energy Reporting (Measurement) Determination, Schedule 1.
- A data quality assurance statement for energy and emissions figures has been issued by an independent validator through an external audit process.





4. Emissions

4.1 Production

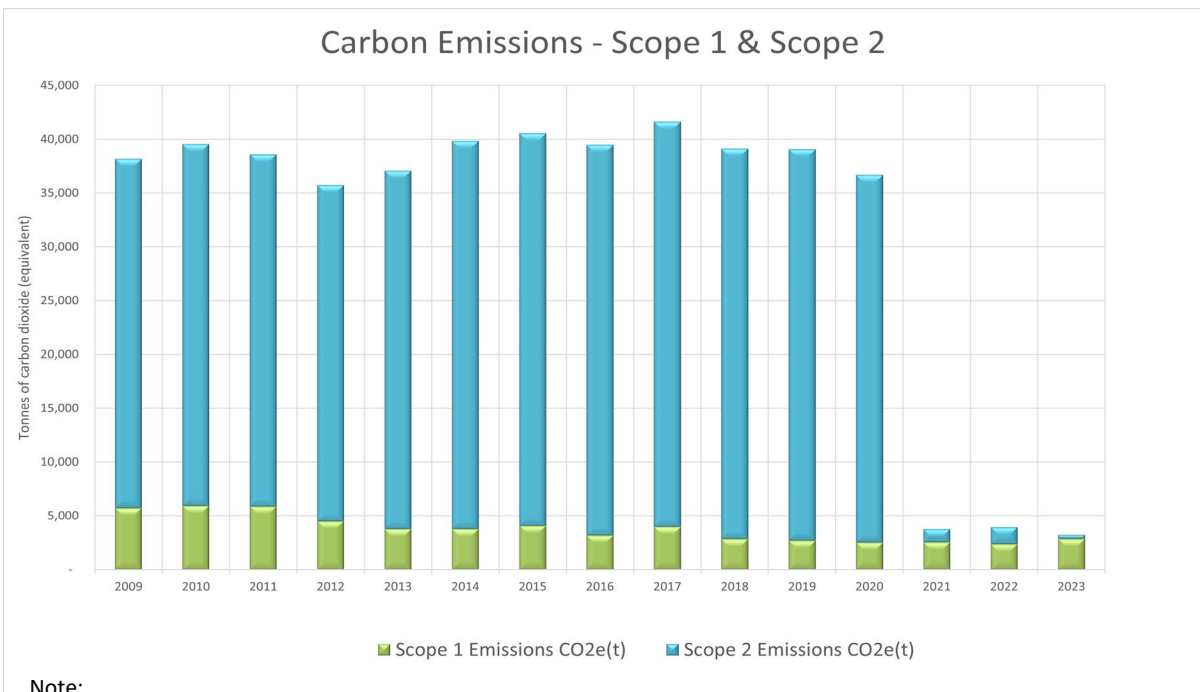
Our ongoing contracts for a 100% renewable electricity supply have reduced our Scope 2 emissions by almost 100% in 2023.

Overall, our annual carbon emissions for 2023 have reduced by more than 92% since 2009 (Scope 1 and Scope 2).

Definitions:

Scope 1: emissions released to the atmosphere as a direct result of an activity. For example, natural gas used for heating or fuels used in cars, etc.

Scope 2: emissions released to the atmosphere from the generation of purchased electricity.



Note:

- Calculations have been made using the Emission Factors from the National Greenhouse and Energy Reporting (Measurement) Determination, Schedule 1.
- A data quality assurance statement for energy and emissions figures has been issued by an independent validator through an external audit process.





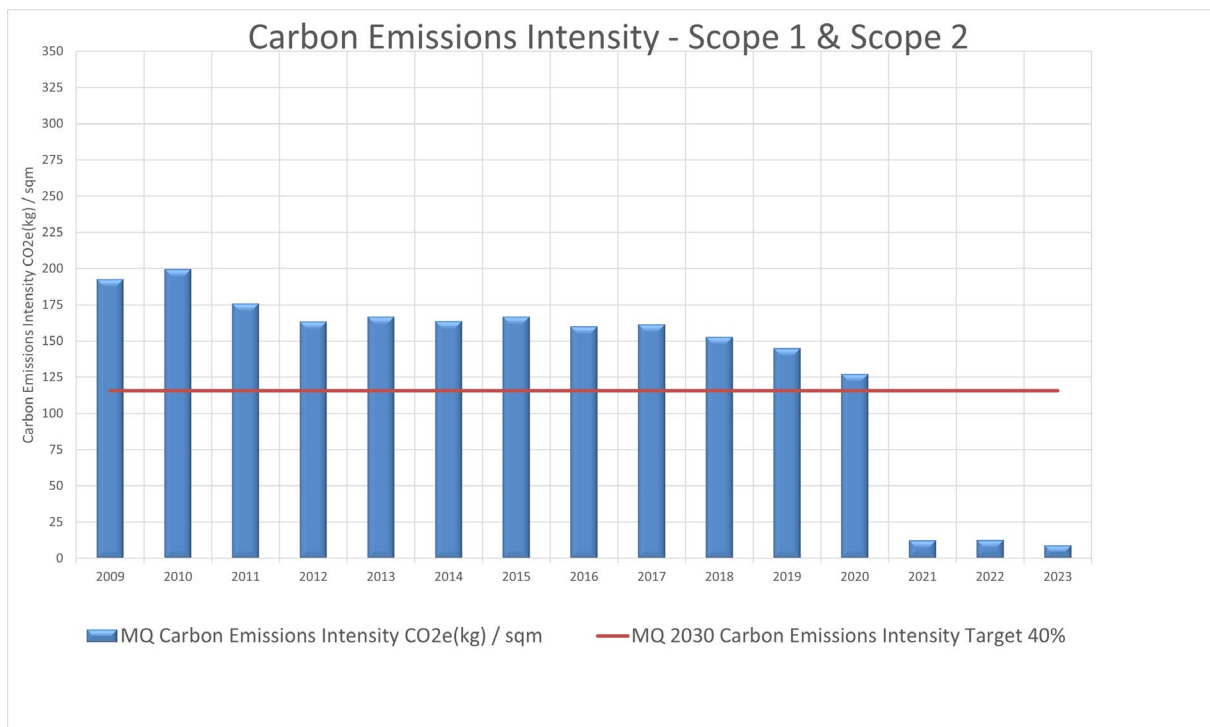
4. Emissions

4.2 Emissions Intensity (Scope 1 & Scope 2)

Our emissions intensity is measured by tonnes of carbon dioxide equivalent per square metre of gross floor area (GFA).

In 2023, our emissions were reduced to only 9.03kg carbon dioxide per square metre of GFA.

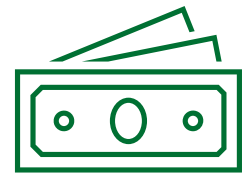
- **Target Reduction:** 40% by 2030 (2009 baseline) t CO₂-e per square metre of GFA
- **2023 Status:** 92% reduction achieved (2009 baseline) – target exceeded



Note:

- Calculations have been made using the Emission Factors from the National Greenhouse and Energy Reporting (Measurement) Determination, Schedule 1.
- A data quality assurance statement for energy and emissions figures has been issued by an independent validator through an external audit process.





5. Green Finance

Case Study: *Financing sustainable initiatives*

In 2023, the University reached a significant sustainability milestone by launching the refinancing of \$450 million in existing bank facilities. This was accomplished through the establishment of a five-year **Sustainability-Linked Loan Framework**.

Sustainability-linked loans (SLLs) incentivise sustainability performance by linking interest margins to pre-agreed social and environmental key performance indicators (KPIs). We have **committed to an ambitious six KPIs**, rather than the typical three, and will invest basis point savings into student scholarships.

Our KPIs are intentionally broad by design. The aim is to challenge existing parameters, view this opportunity from a different perspective, and hopefully inspire other organisations to assess their environments and embrace innovation.

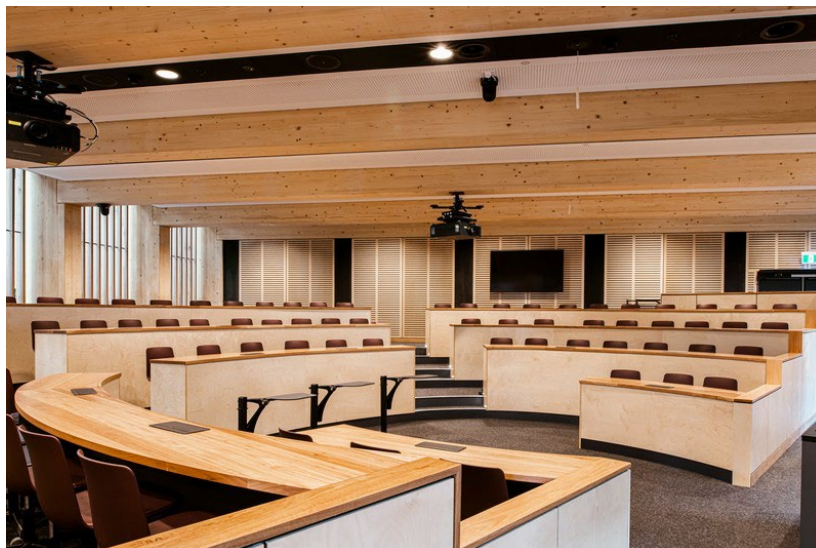


Image credit: Clinical Education Building (Buildcorp)





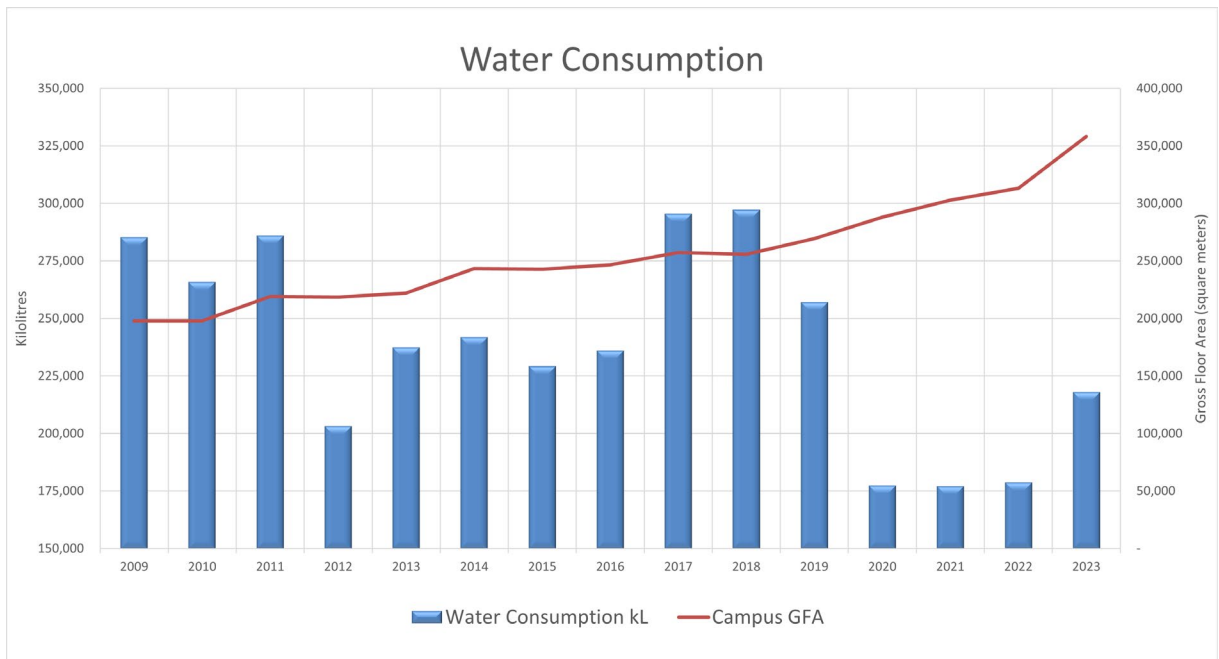
6. Water

Our campus interacts with fresh water in numerous ways, both in the built environment and our natural environment. Water is conserved in our buildings by running taps at a reduced pressure to optimise flow rates. Additionally, rainwater harvesting allows us to use supplemental water sources for grey water purposes (e.g., flushing toilets). Water recycling allows us to use treated blackwater for irrigation of our sports fields.

Our water reduction target is 40% reduction from 2009 levels by 2030

6.1 Consumption

- 26.7% reduction in total annual water consumption from 2009 levels despite 80% increase in campus gross floor area (GFA).



Note: water consumption data is for 2023 calendar year and has been sourced directly from utility bills.





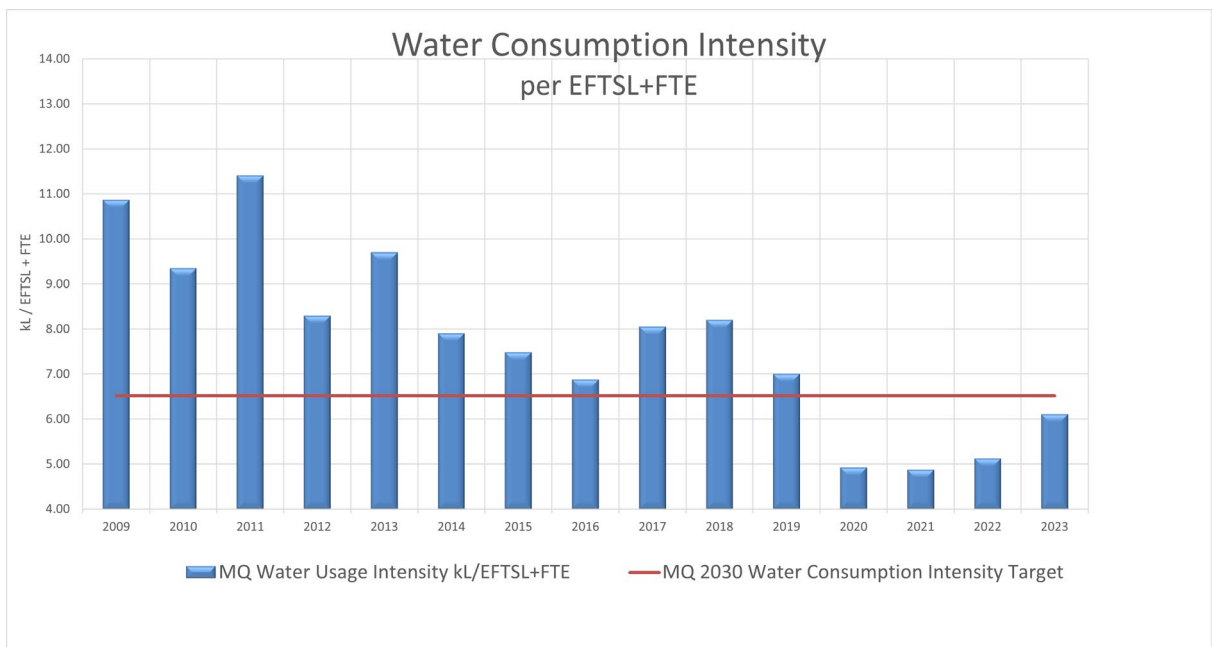
6. Water

6.2 Intensity

- Reduction target: 40% per person (EFTSL + FTE) by 2030.
- 2023 Status: 42% reduction achieved against 2009 baseline despite 36% increase in EFTSL + FTE – **target exceeded.**

Definitions:

- **EFTSL:** equivalent full-time student load is the measure of study load for a year of a student undertaking a full-time course of study.
- **FTE:** full-time equivalent is a measure of staff employment and includes both academic and professional staff.



Note: water consumption data is for 2023 calendar year and has been sourced directly from utility bills.





6. Water

Case Study: *Wastewater Treatment*

The *Sports Fields Water Project* includes a **wastewater treatment** plant (WWTP).

The WWTP recycles treated blackwater through a process called ‘sewer mining’. The plant has now been successfully operating for several years after an extensive period of testing and optimization.

The treatment process involves:

1. Extracting the wastewater from a sewer main near Mars Creek.
2. Processing the liquid through a septic system.
3. Passing the liquid through a pair of reed bed filtration wetlands over a period of hours/days.
4. Further sterilization using ultraviolet light technology.

No chemicals are used – this process is all natural.

Finally, the recycled water is used to irrigate the 7-hectare playing fields overnight while the sports field is closed.

This project also involves harvesting stormwater and storing this water onsite to supplement treated water from the reed beds.



The treated effluent and stormwater harvesting can provide 95% of the sports fields peak irrigation demands.



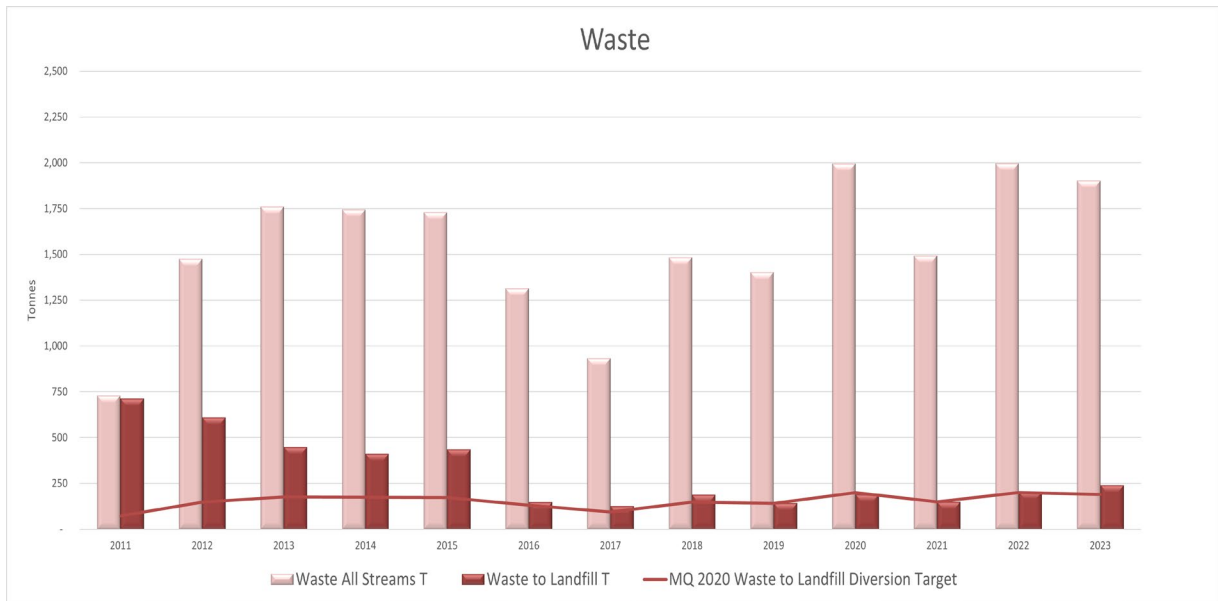


7. Reuse, Recycling and Waste

7.1 Waste Diversion from Landfill

Target Diversion Rate: 90% by 2020

2023 Status: 88.5% reduction achieved



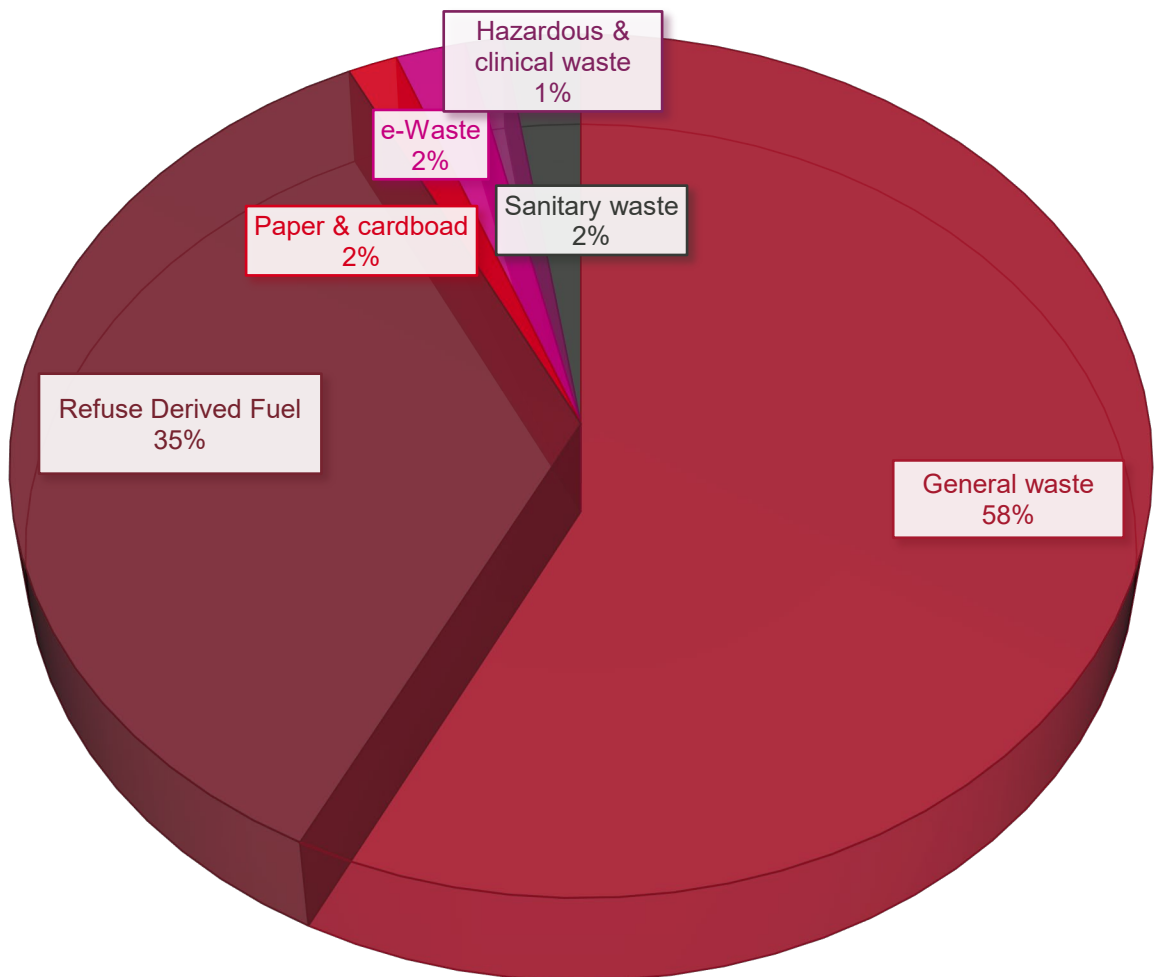
Note: waste data is for 2023 calendar year and has been sourced directly from reports provided by waste contractors.





7. Reuse, Recycling and Waste

7.2 Waste breakdown by category



Note: waste data is for 2023 calendar year and has been sourced directly from reports provided by waste contractors.





7. Reuse, Recycling and Waste

7.3 Circular Economy

The ‘Circular Economy’ is a model of production and consumption which involves extending the life cycle of products as long as possible.

Macquarie University is playing its part in contributing to the circular economy.

Here are just a few examples:

Edible Coffee Cups?

To reduce single use coffee cups, selected cafes on campus sell ‘**Good Edi**’, an edible coffee cup made from natural ingredients (oats, grains, water, sugar, vegetable oil and salt). They are 100% vegan.

Textile Recycling

To date we have prevented a massive **1,240 kg** of textile items from ending up in landfill: pre-loved Macquarie textile items are collected and sent to a local textile recycler to be processed into usable yarns and fabrics.

Furniture Re-Use

Setup in 2010, our Office Furniture Re-Use Store has reused more than 10,000 items and saved over \$3 million in new furniture purchases.

Coffee Cup Swap

Macquarie University has partnered with sustainable coffee cup manufacturer **Huskee** to support staff and students in reducing their single-use disposable coffee cup use. Huskee Cups are made from a unique eco-composite polymer which is actually made from coffee husks.



Case Study

Restoring Habitat on Campus

The Macquarie University campus is a mix of built precincts, curated landscapes, recreational spaces and remnant or re-established bushland. Each of these settings present an opportunity to provide not only our people with suitable resources, but also our resident wildlife.

Our work in assisted regeneration of habitat has increased the range of wildlife able to use the area. Urban-shy bird species like the ‘Superb Fairy Wren’ have emerged along Mars Creek in some of the newly curated habitat, with a stable population emerging in the past 2 – 3 years.

On the east side of campus, the large blue gums located along Science Road have become a regular flyway through Macquarie's grounds for our Tawny Frogmouth population; with people often feeling the slight ‘whoosh’ as one glides just a few meters above their heads.

By keeping the footpath lighting low to the ground, we have assisted in limiting the light-spill around this key habitat for the Frogmouths.



Superb Blue Fairy Wren

Native vegetation has received assisted regeneration, successfully encouraging shy urban birds like Fairy Wrens back on campus.



Notes

- During 2023, Macquarie University implemented *Archibus Asset Management Software* as our space management tool, leading to a comprehensive re-evaluation of area calculations across the entire campus.
 - In addition, changes in the status of several buildings contributed to the revised figures for the Campus gross floor area (GFA) total.
- GFA excludes on-grade and open multi-deck carparks, Macquarie University Hospital and non-University tenanted space in commercial buildings.
- Data used for analysis sourced from annual submissions to:
 - 2023 Tertiary Education Facilities Management Association (TEFMA) for TEFMA Benchmark Report, and;
 - Clean Energy Regulator for the annual National Greenhouse and Energy Reporting (NGERs) submission for the 2023 financial year.
- Data for energy and emissions uses current NGERs submission figures for financial year 2023 and includes on-campus and off-campus operations MQ, MGSM & U@MQ. Calculations have been made in accordance with Greenhouse Gas Protocol Accounting Standards and Guidelines. Data assurance for energy and emissions figures has been issued by independent validation through an external audit process.
- Water data has been sourced directly from utility bills provided by Sydney Water for the calendar year of 2023. Deductions have been made for Macquarie Hospital and Cochlear Building.
- Waste data has been sourced from reports issued by waste providers and is for calendar year of 2023.
- Water data for 2023 does not include captured rainwater due to difficulties with metering.
- Targets are set out in the *University Master Plan 2014*.



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