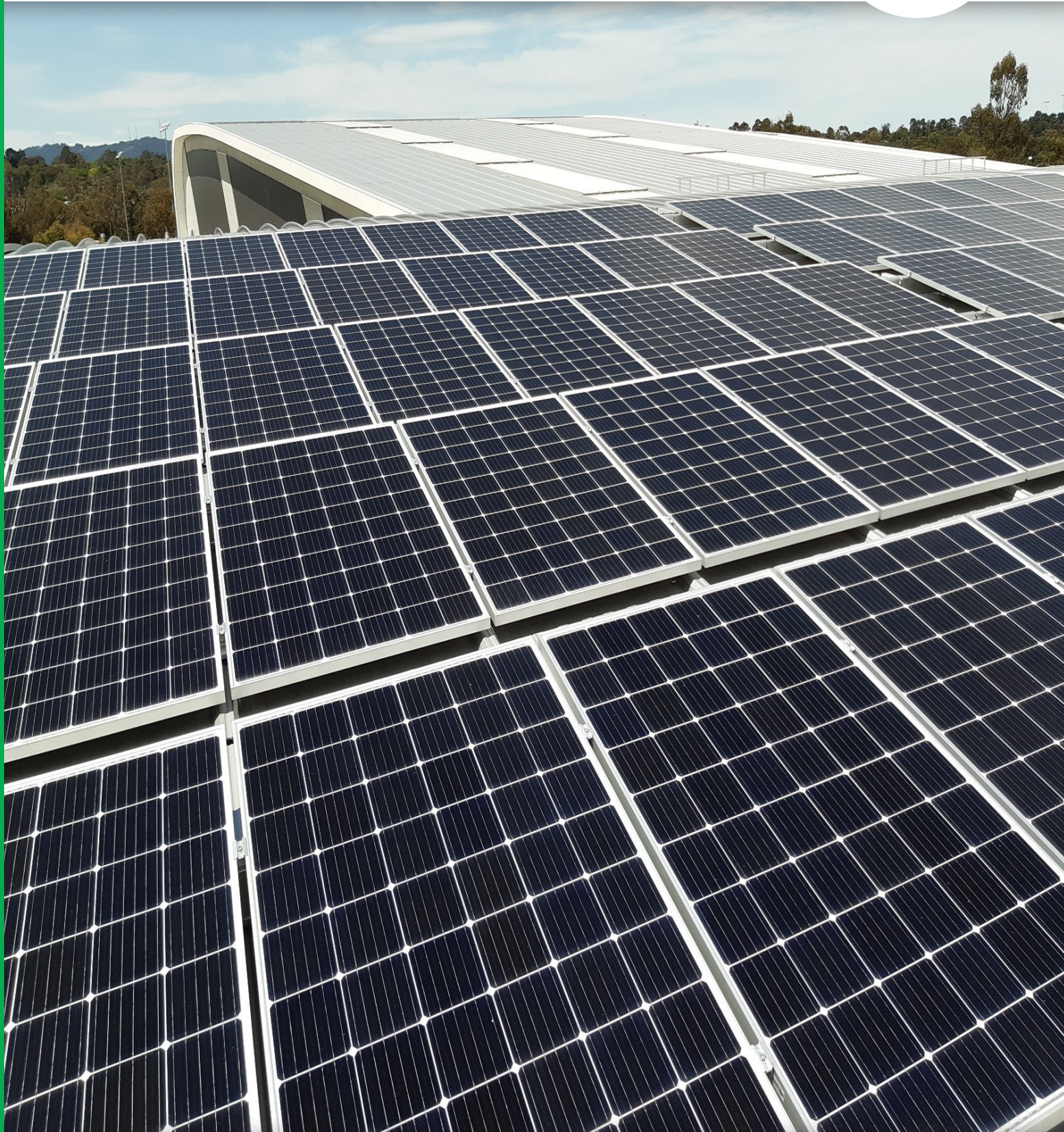


Carbon Neutral Strategy and Action Plan 2014-2021 Activities Report

Working towards a clean green and sustainable community







Working towards a clean green and sustainable community

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Acknowledgment of Country

We, in the spirit of Reconciliation, acknowledge the Wurundjeri People of the Kulin Nation as traditional custodians of the land now known as the City of Maroondah, where Indigenous Australians have performed age-old ceremonies. We acknowledge and respect their unique ability to care for Country and their deep spiritual connection to it. We pay our respects to their Elders, past, present and emerging.



Introduction

The *Carbon Neutral Strategy Activities Report* describes actions undertaken by Maroondah City Council and the Maroondah community to reduce energy use and greenhouse gas emissions associated with Council’s services and operations.

It incorporates financial years 2014/15 to 2020/21 progress reporting on Council’s existing *Carbon Neutral Strategy 2014-2021*.

The *Council Plan 2017-2021* is Council’s medium-term strategic document that sets key directions and priority actions to work towards the long-term community vision outlined in *Maroondah 2040 - Our future together*.

Our commitments are:



Safe, healthy and active



Prosperous and learning



Vibrant and culturally rich



Clean, green and sustainable



Accessible and connected



Attractive, thriving and well built



Inclusive and diverse



Well governed and empowered

Council Plan 2017-2021 (2020/21 Update) – Priority Action: undertake a review and update Council’s *Carbon Neutral Strategy*.

Highlights of the Carbon Neutral Strategy

Some of Council’s implementation highlights of the *Carbon Neutral Strategy 2014-2021* have included:

- Council was certified carbon neutral for its services and operations by Climate Active in April 2021.

Buildings

- Annual savings of \$200,000 and 1,500 t Co2-e as the outcomes of the EAGA joint Energy Performance project aimed to reduce energy consumption and operational costs by approximately 30% in Council-owned buildings and facilities.
- Council completed construction of a 5 star GreenStar certified office adjacent to Realm which is now acting as the main administration building, including housing the Council Chambers in 2020.
- An Environmental Sustainability Design (ESD) Policy for Council Buildings and Infrastructure and Policy Guidelines were endorsed by Council in 2017 and reviewed in 2020.

- Successfully delivered of a Green IT program to prevent wasted paper and to improve efficiency across the Council network. By implementing this program, a 65% reduction in paper usage has been achieved in 2021.
- Development of an energy saving behaviour change program in the new Realm office for building users to inform staff about the energy saving features of the building and their role in reducing emissions and saving energy.
- Installation solar systems across Council-owned buildings with a total system size of over 1.2 MW from 2014 to 2020.

Street lights

- All Category P and V lights (100% Council-owned) have been replaced with LEDs resulted in 70% saving in costs, electricity consumption and annual savings of 2,515 t Co2-e.
- The *Maroondah Public Lighting Policy* was completed in 2019. The policy aims to promote a consistent approach to public lighting in Maroondah that reflects best practice and contributes to the sustainability and amenity of the municipality.

Plant and Fleet

- Development of the Maroondah Interactive Map in 2017, specific to the region which shows public and active transport networks and mobility options for any destination within Maroondah.
- Encourage Council staff commuting to and from work by public transport. Staff have been able to access Myki cards for work purposes since 2013.
- The EcoDriver Program was delivered 2013 to 2016 to build the capacity of participating councils to reduce emissions and save money through more efficient and safer management of vehicles. An overall 5-10% reduction in fuel usage has been achieved representing a 150-300 t-CO2 e reduction in annual emissions.
- Finalisation of the Carbon Neutral Offsets Policy in 2019 under the National Carbon Offset Standard (NCOS), enabling the achievement of carbon neutrality.

Waste

- To promote the concept of a circular economy, each Council office now has enhanced recycling infrastructure to reduce waste sent to landfill and separate bins have been installed for landfill, paper, recycling and organics.

Paper

- Development of a business case to help select paper with a reduced environmental impact including the development of a guideline or a paper purchasing policy to ensure all office paper is 100% recycled.
- Implementation of paper-smart program for staff to use of available electronic template and the default settings for printers in the main administration buildings to reduce Council's paper usage.

Offsets

- The Carbon Neutral Offsets Policy was completed in 2019 to help guides Council's carbon management roadmap to achieving carbon neutrality in 2020.

Funds

- Establishment of the Carbon Neutral Revolving Energy Fund in 2015 to provide a funding source for projects that reduce utility consumption and greenhouse gas emissions.
- Council's Revolving Energy Fund continues to reinvest funding into greenhouse gas reduction projects and stimulating usage of new technologies. This Fund is not intended to supplement project budget shortfalls.

Data management and reporting

- Council has been measuring greenhouse gas emissions profiles since 2010 when there was increasing need to capture information on Council's energy use and emissions generated within each sector.
- MEAC (Maroondah Environment Advisory Committee) were engaged with regular updates provided on key projects. Their involvement has been important for the implementation of the *Carbon Neutral Strategy*.

The *Carbon Neutral Strategy* seeks to achieve a planned, systematic and supported approach to carbon management by fostering collaboration and ownership of its principles and actions across Council departments. It also aims to embed low carbon considerations into decision making processes.

The Maroondah Environmental Advisory Committee and other relevant teams have been instrumental in providing input and delivering carbon reduction projects to Council on strategy priority actions in Maroondah.

Council sincerely thanks all community members for their invaluable contributions.



Carbon Neutral Strategy and Action Plan status overview

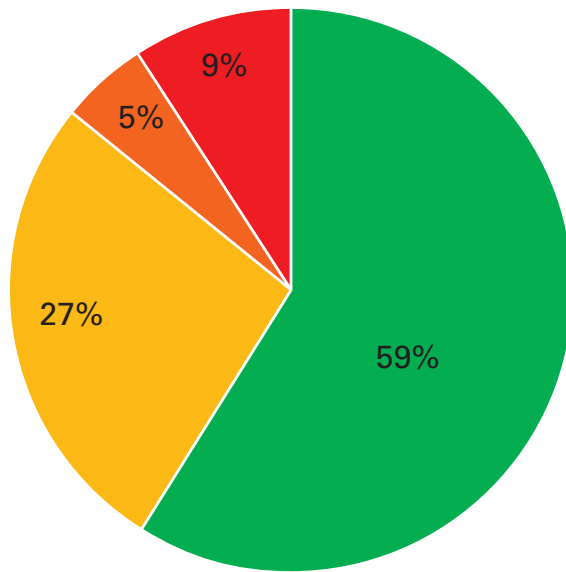
The strategy action plan includes 46 operational actions over nine priority actions: approach, buildings, street lights, plant and fleet, waste, paper, offsets, funds and data management and reporting.

Priority action scoring key as follows and evaluates the delivery of each priority action. This approach will answer the question “have we done what we said we would?”

Achieved	Ongoing	Cancelled	Need attention
Priority action has been achieved	Priority action is ongoing or is in progress	Priority action has been cancelled or is no longer feasible	Priority action has not been achieved

Table 1. Carbon Neutral Strategy 2014 to 2021 priority actions status overview

Priority action	Status of operational actions				Total actions
	Achieved	Ongoing	Cancelled	Need attention	
Approach	1	1	0	0	2
Buildings	5	2	1	0	8
Street lights	4	1	0	1	6
Plant and Fleet	6	3	1	3	13
Waste	4	2	0	0	6
Paper	3	0	0	0	3
Offsets	1	0	0	0	1
Funds	1	1	0	0	2
Data management and Reporting	2	3	0	0	5
Total	27	13	2	4	46



Achieved Ongoing Cancelled Need attention





Carbon Neutral Strategy 2014 to 2021

The Strategy contributes to the ‘clean, green and sustainable’ community direction embraced by residents, business and visitors in Maroondah 2040 - Our future together.

This outcome seeks to take significant actions to reduce Council’s greenhouse emissions in the short term. Council is committed to addressing the global issue of climate change and began this work officially in 1998. It recognises the local contribution to be made and this strategy provides direction on managing and reducing Council’s corporate greenhouse gas emissions.

In 2008, Council set a corporate goal of achieving carbon neutrality by 2020. This strategy provides principles and actions for carbon management that maps a path to carbon neutrality. It values energy reductions and offsetting growth in greenhouse gas emissions to create a future where Council operations and services are delivered with a reduced carbon impact.

Through the *Carbon Neutral Strategy and Action Plan 2014-2021*, Council acknowledges its responsibility to continue to act on climate change and reduce the carbon intensity of its services and operations. It seeks to achieve a planned, systematic and supported approach to carbon management by fostering collaboration and ownership of its principles and actions across council departments. Also, it recognises the importance of early action and the long life of assets and infrastructure.

The strategy provides principles and actions to achieve emissions reduction targets:

- Council to be carbon neutral by 2020
- Reduce greenhouse gas emissions by 20% below 2010/11 levels (excluding Ringwood Aquatic Centre) by 2020/21 (excluding Aquanation)

Substantial mitigation work will need to continue beyond 2020/21, with the intention of reduction target for 2025-26 that includes all emissions from the inventory.

In the baseline year of 2010-11, Council’s total corporate greenhouse gas emissions were 16,463 tonnes Co2-e. It is acknowledged that to 2020-21 proposed resources will not offset this growth entirely. Therefore, a reduction target that does not include Aquanation has been set. This is to reduce emissions by 20% below 2010/11 levels (excluding Ringwood Aquatic Centre), by 2020-21 (excluding Aquanation).

Council acknowledges its responsibility to continue to act on this significant issue and reduce the carbon intensity of its services and operations. This provides the additional benefits of reducing exposure to energy costs and infrastructure improvements. Although this strategy addresses climate change mitigation, it recognises the need to be aware of actions’ impacts and overlaps with climate change adaptation. A climate change adaptation strategy is currently has been adopted by Council as a separate but complimentary body of work. The strategy outlines how Council will work towards a more climate adapted Maroondah.

The actions within this strategy are priority actions that provide a roadmap to 2020-21. Actions are focused on energy efficiency with significant estimated greenhouse and cost savings.

Strategy context

The strategy reviews links to the following Maroondah 2040 key directions and supporting strategies/policies:

- Maroondah 2040 Community Vision
 - A clean, green and sustainable community
 - A well governed and empowered community
- *Council Plan 2017-2021 (2020/21 update)*
- *Sustainability Strategy 2016-2020*
- *Carbon Neutral Strategy and Action Plan 2014/15-2020/21*
- *Carbon Neutral Offset Policy*
- *Climate Change Risk and Adaptation Strategy 2018/19-2021/22*
- *Environmentally Sustainable Design Policy for Council Buildings and Infrastructure*

Our vision

A clean, green and sustainable community

In 2040, Maroondah will be a vibrant and diverse city with a healthy and active community, living in green leafy neighbourhoods which are connected to thriving and accessible activity centres contributing to a prosperous economy within a safe, inclusive and sustainable environment.



Our Achievements 2014-15 to 2020-21

Priority Action 1 - Approach



We are raising awareness on climate change science and impacts

	Operational action	Status
Approach	AP1. Hold Climate Change Roadshow to raise staff awareness about the latest climate change science and impacts	Achieved
	AP2. Identify training and information needs for staff involved in carbon management	Ongoing

AP1. The Eastern Alliance for Greenhouse Action (EAGA) Climate Science Roadshow was held across the eastern region including at Maroondah in 2014. Presentations from the Bureau of Meteorology and CSIRO were to inform staff of the latest findings from the Intergovernmental Panel on Climate Change’s Fifth Assessment Report and the 2014 CSIRO State of the Climate Report and highlight individual council’s work on climate change. Staff from a range of council areas participated in workshops to develop the EAGA Climate Change Adaptation Roadmap for Melbourne’s east.

This work was used to inform the development of the *Climate Change Risk and Adaptation Strategy 2018–22*. This strategy outlines establishes a plan of action for Council to prepare for the long-term risks of climate change. It will guide Council’s efforts to integrate climate change risk management and adaptation.

AP2. Engineering staff attended the Environmental Lighting Forum in 2017 and 2018, representatives from Strategic Planning & Sustainability attended The Stage of Council Solar Forum in August 2017.

Priority Action 2 - Buildings



We partnered to initiate the first joint Energy Performance Contract (EPC) program in Australia’s local government sector

	Operational action	Status
Buildings	R1. Continue to investigate the potential of reducing energy use in buildings through an Energy Performance Contract (EPC) as part of a joint EAGA project, or independently	Achieved
	R2. Implement the Ringwood City Offices heating, ventilation and air conditioning system and building management system replacement	Cancelled
	R3. Continue to install energy efficient appliances, equipment and fixtures as part of Council’s annual capital works facility improvement program	Ongoing
	R4. Continue to encourage and advocate for Green Star certification for Realm	Achieved
	R5. Develop an Environmentally Sustainable Design (ESD) policy and guidelines for Council buildings to provide an environmental standard for new buildings and renovations	Achieved
	R6. Continue to investigate the delivery of a green IT program, including a printer consolidation project	Achieved
	R7. Investigate the development of an energy saving behaviour change program for building users	Achieved
	RE1. Investigate a business case for renewable energy generation potential of the municipality	Ongoing



R1. Eastern Alliance for Greenhouse Action (EAGA) has delivered a joint Energy Performance Contract (EPC) since 2016. The program aimed to reduce energy consumption and operational costs by approximately 30% in Council-owned buildings and facilities. Benefits of an EPC opposed to a traditional model include guaranteed energy savings, a thorough monitoring and verification process, and implementing an Environmentally Sustainable Design (ESD) policy for new buildings and renovations.

This was a joint EAGA project, where Maroondah partnered with Boroondara, Knox, Monash and Yarra Ranges. At Maroondah this project was jointly funded by Assets and Integrated Planning.

Energy efficiency measures such as lighting upgrade, boiler replacements, installation of power factor correction unit, variable speed drives pumps, building management systems upgrade, rooftop solar PV installation and pool blankets were completed at Aquahub, Aquanation, Realm, The Rings, and Maroondah Federation Estate. The final stages of the project at Maroondah facilities were completed in 2019-20.

Maroondah City Council is now capturing annual financial savings of \$200,000 and 1,600 tonnes of carbon abatement from energy efficiency and solar installation measurements.

Table 2. Savings from implementing energy efficiency projects

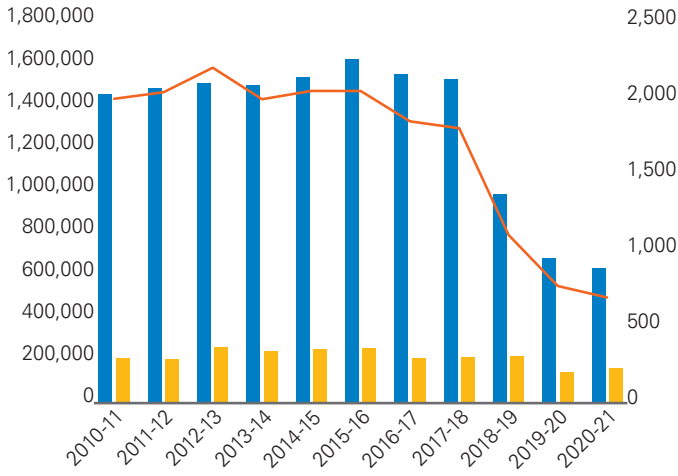
Project	Achieved savings \$	GHG savings t CO2-e
Aquahub	\$122,485.00	1,062
Aquanation	\$41,248.00	321
The Rings	\$14,418.00	81
Maroondah Federation Estate	\$6,882.00	28
Realm	\$10,740.00	115
Total	\$195,773.00	1,607

Electricity, gas usage and costs and GHG emissions costs trend from 2010 to 2021 for these infrastructures are presented in Figure 1.



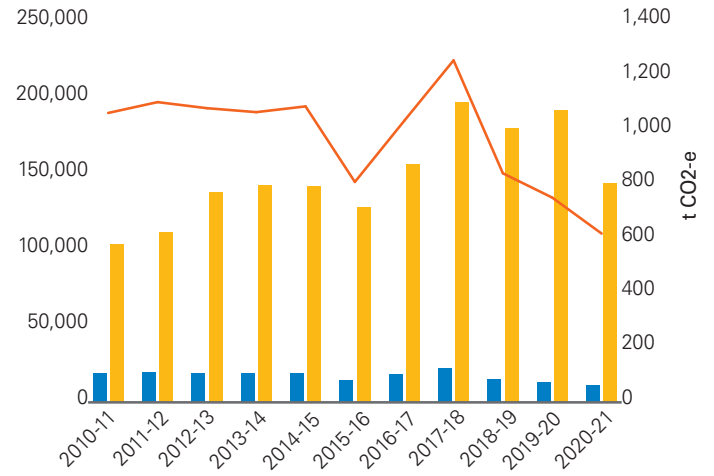


Aquahub



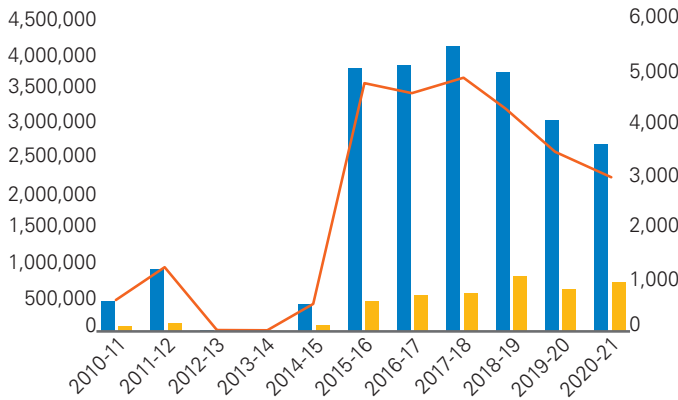
Usage (kWh) Costs Emissions (t CO2-e)

Aquahub



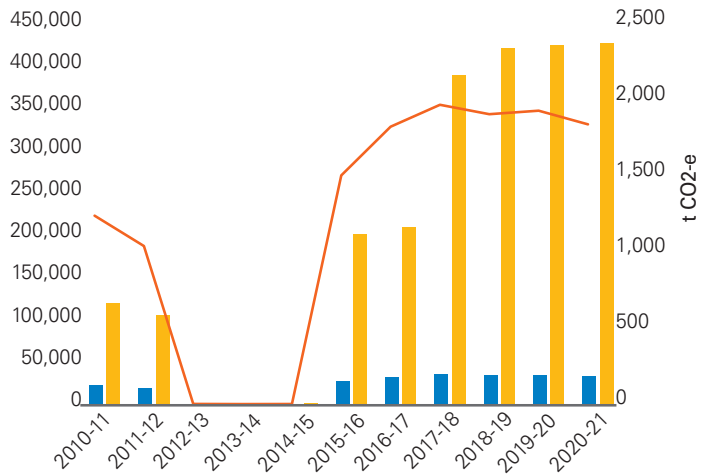
Usage (GJ) Costs Emissions (t CO2-e)

Aquanation



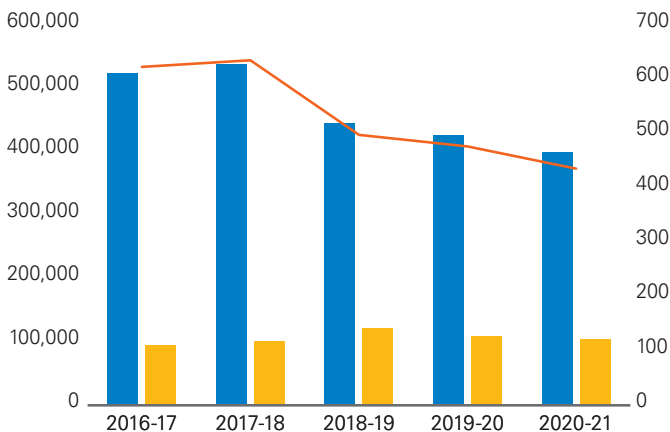
Usage (kWh) Costs Emissions (t CO2-e)

Aquanation



Usage (GJ) Costs Emissions (t CO2-e)

Realm



Usage (kWh) Costs Emissions (t CO2-e)

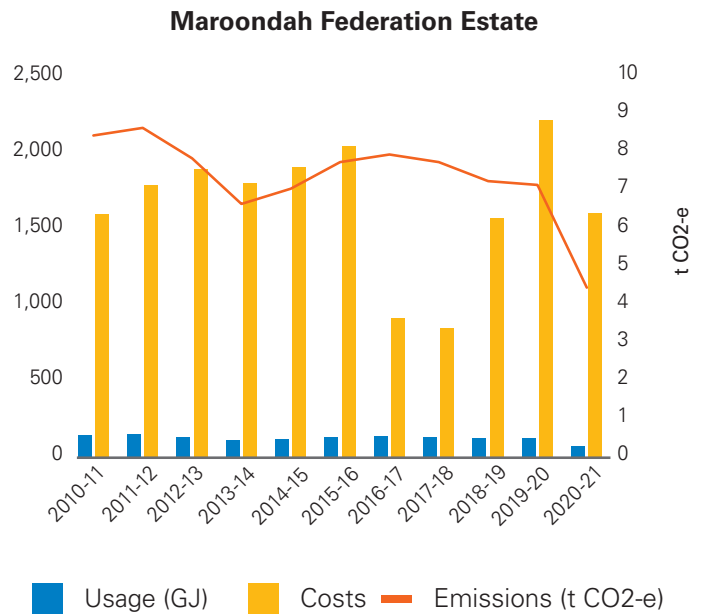
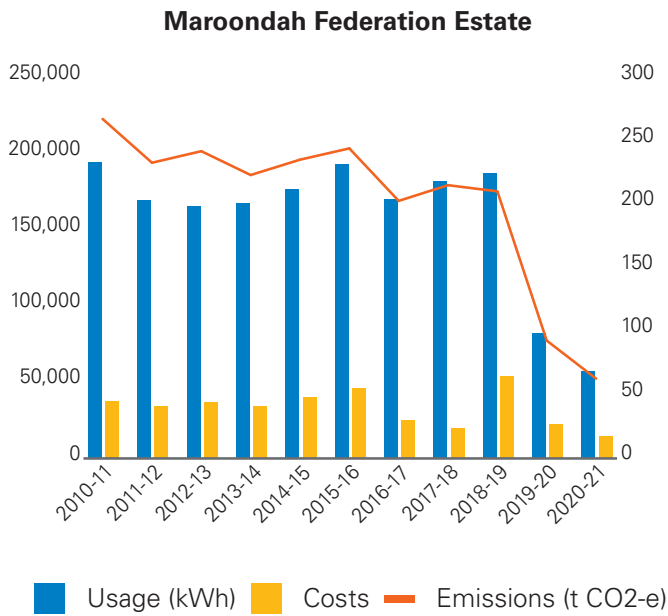
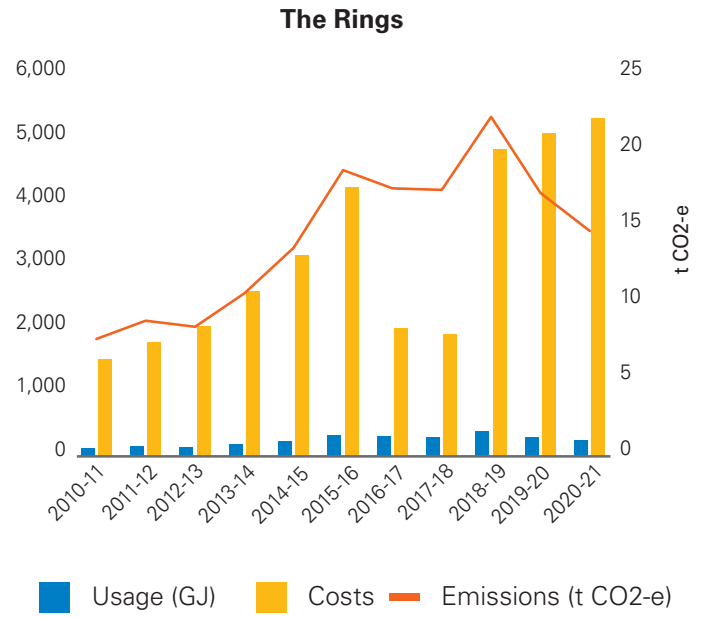
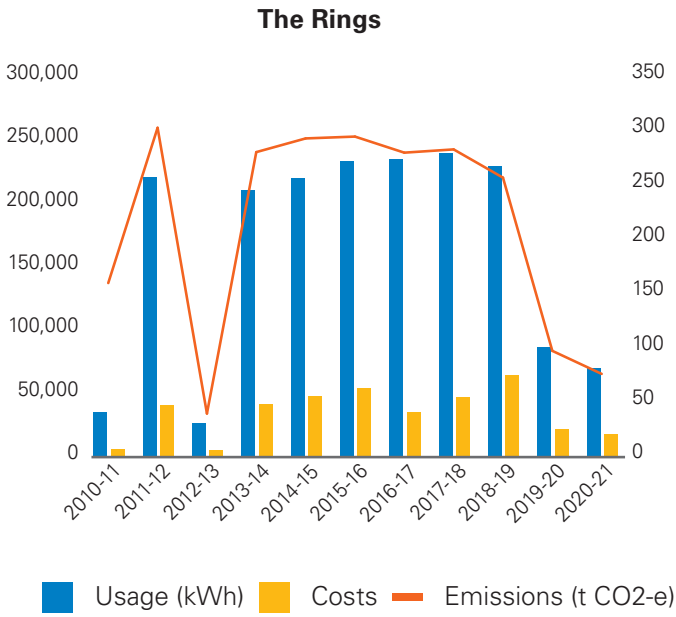


Figure 1. Electricity and gas usage, costs and GHG emissions from Council's assets participated in EPC contract



R2. This action was cancelled due to the relocation of the main administration base to Realm in 2020. Construction of the new main administration building adjacent to the Realm library and customer service centre in Ringwood Town Square was completed in July 2020. This building is 5 star GreenStar certified and is the primary office building for most of the administrative staff members, including housing the Council Chambers.

Ongoing use of the Ringwood City Office building will be considered as part of the development of a master plan for the area, including Karralyka. Any improvement works for the office should comply with the ESD in the Council Buildings and Infrastructure Policy.

R3. Various energy efficient initiatives are being incorporated into the community facility improvement component of Council's annual capital works program.

These works are facilitated by the Environmentally Sustainable Design (ESD) policy for Council buildings and infrastructure which establishes guidelines to set a standard for new assets and infrastructure and renovations to ensure that these will have high environmental performance.

Examples include:

- Solar PV system installation on the Rings, Maroondah Federation Estate, Operations Centre, Ringwood Golf, Kerrabee, and Aquanation.
- Design for the HE Parker Multi-Sports Complex, now formally named Maroondah Nets, was completed in 2019. It includes high performance building fabric with good levels of insulation, water efficient taps to minimise consumption, rainwater tanks connected to toilets and irrigation to planter boxes, LED lights, solar, energy efficient heating and cooling systems.

Future significant projects for the inclusion of major ESD initiatives are the Croydon Community Wellbeing Precinct and Karralyka redevelopment.

R4. In July 2020, Council completed construction of a 5 star GreenStar certified office adjacent to Realm which is now acting as the main administration building, including housing the Council Chambers. Features of the building that contribute towards the GreenStar certification include:

- high efficiency glazing and exterior wood panelling for insulation and sun shading
- building management systems for heating and cooling
- LED lighting and skylights for enhanced natural light
- solar PV for reduced costs and greenhouse gas emissions
- water tank to reuse rainwater runoff
- rooftop garden for better air quality and ecological value
- separate waste bins on each level in the kitchen for organics, recycling, and landfill
- centrally located staircases to encourage occupants to use the stairs instead of taking the lift
- naturally ventilated outdoor gathering spaces throughout the building
- centralised location to encourage alternative forms of transport.

R5. An *ESD Policy for Council Buildings and Infrastructure and Policy Guidelines* were endorsed by Council in August 2017. The policy and guidelines were reviewed in 2020 following an EAGA lead project to review and develop best practice guidance for member councils.

The policy and guidelines articulate the Council's position on ESD requirements to be achieved in the planning, design, construction, operation and management of Council buildings and infrastructure. The purpose of the policy is to embed ESD principles into the Council's building and infrastructure program and improve environmental and operational outcomes. Additionally, it aims to provide leadership and facilitate the uptake of ESD principles in the wider community.

R6. A printer consolidation project was initiated in the lead up to the move to the new Realm administration building. This project also included the implementation of 'Follow-Me printing' to simplify print queue deployment and reduce accidental waste or resources. Follow-Me printing uses one universal print queue, and staff members can swipe at the nearest printer that's convenient to them to release the print job with their swipe card. This system prevents wasted paper from selecting the wrong printer name, decongests print queue traffic, and ensures efficiency across the network.

R7. As part of the development of the Sustainability Strategy, various members of the Maroondah Environment Advisory Committee (MEAC) developed a business case for an energy saving behaviour change program for buildings recommended a program for major buildings to inform staff about the energy saving features of the building and their own role in reducing emissions. The outcome of the business case have been integrated into projects.

RE1. During 2018 to 2019, an EAGA project was been rolled-out to develop a business case for scaling-up and refining a new procurement approach for behind the meter solar on Council buildings.

This was made possible by \$63,000 funding awarded in December 2017, through Local Government Victoria's Collaborative Council - Sustainability Funds Partnership Program. The project assessed and prioritised 53 second-tier sites (outside of the EPC contract), compared contracting models, and developed procurement resources.

Maroondah City Council nominated nine sites - a combination of Council-owned and operated sites and those owned by Council and managed by a third party. Sites were identified by Assets and Integrated Planning in consultation with Children's Services and Leisure. The nine sites were Kerrabee Club, East Ringwood Seniors, North Ringwood Seniors, CRISP Nursery, Glen Park Community Centre, Parkwood Community Hub, Lifeworks (EACH) Community Centre, MCH Ringwood North, Wyreena Community Arts Centre.

There are a number of solar systems installed across Council-owned buildings with a total system size of over 1.2 MW. There are other sites planned for solar PV systems installation in 2022.

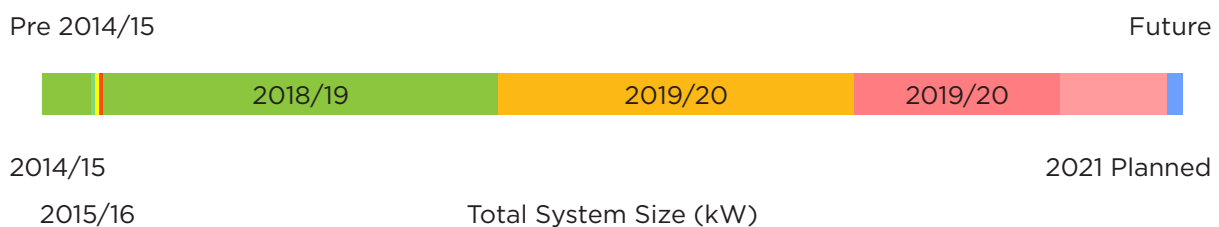


Figure 2. Solar PV system installed and planned capacity

There are four additional planned solar installations beyond 2021 at Springfield Multipurpose Pavilion, RO Spencer Multipurpose Pavilion, and Karralyka. Solar installations are planned for Proclamation Park Sporting Pavilion and Ainslie Park Sporting Pavilion.

Further investigation into the renewable energy potential across council buildings will occur during 2022 and the review of the Carbon Neutral Strategy.



Priority Action 3 – Street lights



All Category P and V lights (100% Council-owned) have been replaced with LEDs

	Operational action	Status
Street lights	R1. Continue to implement phase 1 of the street light energy efficiency program	Achieved
	R2. Plan for and implement phase 2 of the street light energy efficiency program	Achieved
	R3. Develop outdoor and street lighting policy and guidelines	Achieved
	R4. Map non-standard (decorative) street lights to determine energy efficiency options.	Achieved
	R5. Map off-street outdoor lighting assets to identify energy efficiency options.	Ongoing
	R6. Investigate options to provide support for sports clubs to install energy efficient outdoor lighting	Needs Attention

R1. The street light energy efficiency program aims to reduce energy use and lower costs on Maroondah streets.

Phase 1 of the 'Changing the Globe Maroondah Street Light Energy Efficiency Project' for residential street lighting was implemented between March 2015 and October 2018. During this time, 5,390 high-performance and energy efficient LED street lights (category-P) were installed on residential roads, replacing 3,125 inefficient mercury vapour and high-pressure sodium lights. This is expected to reduce emissions by ~720 t Co2-e. Almost 98% of the old light bulbs removed by the program are recycled. The project will reduce energy consumption and associated costs by 77% and reduce greenhouse gas emissions by 15,411 t Co2-e over 20 years, or 2015 t CO2-e per year. This is equivalent to removing 339 cars from the road each year for the next 20 years.

R2. Phase 2 of the street light energy efficiency project was expanded to target Major Road Lights (category V) and was completed in 2020. During this time, 930 mercury and high-pressure sodium lights were replaced, saving approximately 500 t CO2-e annually in greenhouse gas emissions, and over a 60% reduction in energy consumption and associated maintenance costs (See Fig 4).

The next phase, will continue the program to replace decorative lights with LEDs and the remaining mercury vapour and high-pressure sodium lights are cost-shared lights with Department of Transport.

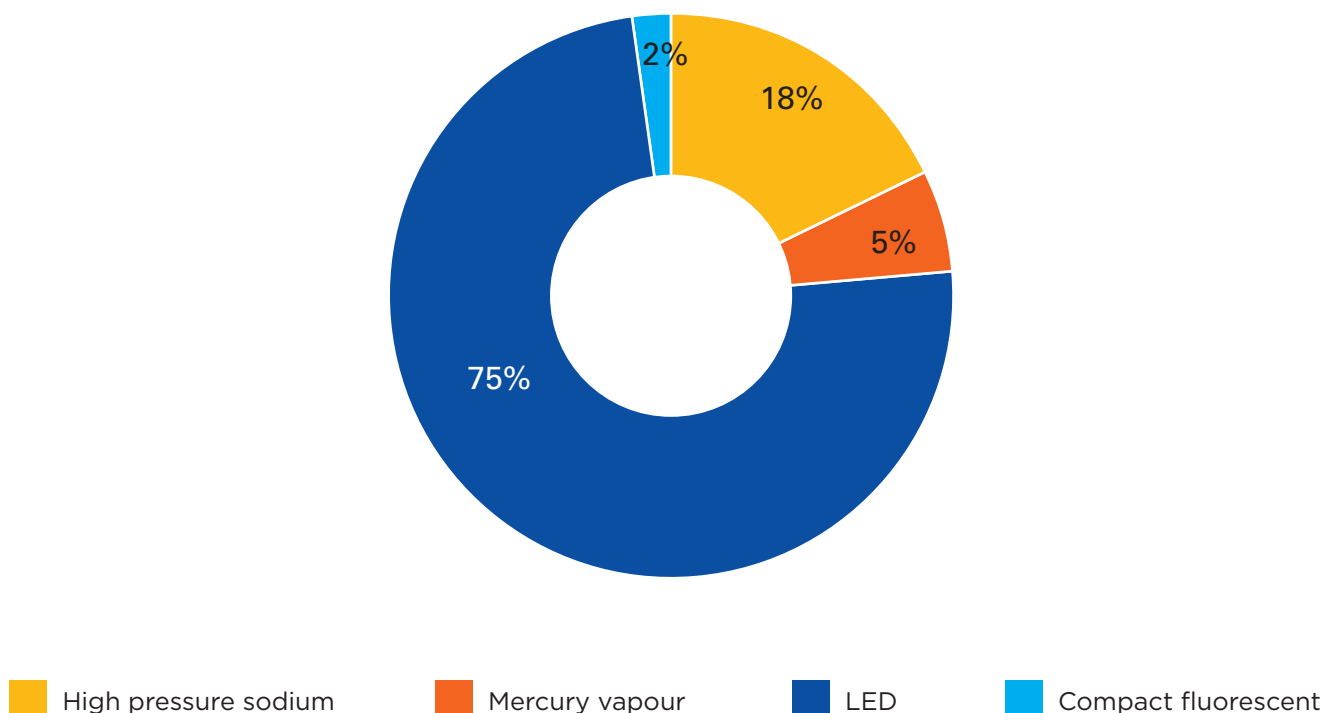


Figure 3. Overall percentage of bulb types for street lights (including cost-shared) in 2020-21

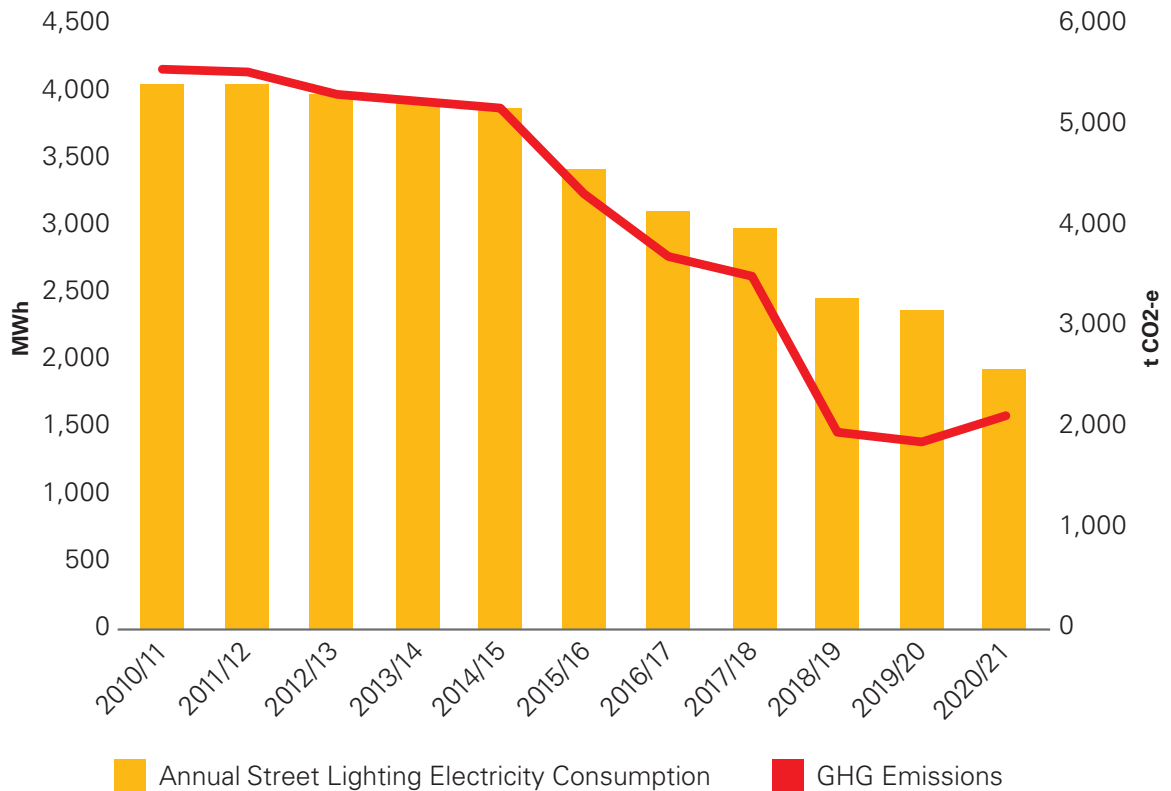


Figure 4. Street Lighting electricity consumption and GHG emissions 2010-2021

R3. The *Maroondah Public Lighting Policy* was completed in September 2019. It provides guidance on the design, installation and management of public lighting within Council. The policy aims to promote a consistent approach to public lighting in Maroondah that reflects best practice and contributes to the sustainability and amenity of the municipality. In particular the policy was prepared to make better use of energy resources, minimise the impact lighting has on the environment, and produce superior safety and amenity outcomes.

Council engaged with Ironbark Sustainability to develop a Public Lighting Position Paper and Public Lighting Guidelines. This is in line with the Road Management Act 2004 which allows Council to consider the provision of public lighting in roads and road-related areas.

R4. To gain an understanding of the costs and benefits associated with replacing all remaining energy inefficient street lights, early in 2020, Council initiated a project to map all non-standard (decorative) lights. This information was then used to develop a business case for replacement of these lights to LEDs following the approval of AusNet of a LED replacement lamp. During 2019-20, Council commenced the replacement of decorative lights. The remaining decorative lights are expected to be replaced during 2022.

The works for this project includes replacement of 284 existing lights with LEDs, removal of existing brackets and Category P lights and reducing mounting height and reorientation of existing LED light will be ongoing in 2022. Up until now, a total of 248 locations are successfully completed and the project is expected to be completed by March 2022.

R5. A metered lighting audit has been planned to be undertaken this financial year and is being used to inform the rollout of LED lights on the metered network and the project is expected to be completed in 2022/23. This will assist in implementing a number of actions points from Council’s Public Lighting Policy.

R6. Council will continue supporting energy efficacy measures for the sports clubs to maximise their energy performance and promote sustainability within Council’s leased assets.



MAX SAFE
WORKING
LOAD
227 KG

ABBEY

LV INSULATED



Priority Action 4 - Plant and Fleet



Council on its journey for the transition to a low emission vehicle fleet

	Operational action	Status
Plant and Fleet	A1. Publicise safe and amenable walking routes and destinations around Croydon and Ringwood Offices by using the Walkscore website	Achieved
	A2. Encourage employee to use teleconferencing functions on Council phones with an awareness campaign	Achieved
	R1. Trial hybrid passenger vehicle to assess performance and then consider expansion of hybrid as a greater proportion of the fleet	Needs Attention
	R2. Provide Myki cards for employees to borrow for work commuting	Achieved
	R3. Update Council's travel and vehicle usage policy to endorse and encourage more efficient and sustainable business transport practices.	Needs Attention
	R4. Delivery EcoDriver Program for fleet vehicle owners across the organisation	Achieved
	R5. Establish an online fleet vehicle booking system that allows staff to view vehicle bookings to arrange carpooling to meetings	Ongoing
	R6. Assess more efficient truck options at replacement if higher efficiency than current is available.	Cancelled
R7. Establish energy efficiency criteria for evaluation of plant purchases	Needs Attention	

	Operational action	Status
	R8. Provide information about responsibilities for owners and drivers of Council vehicles at induction.	Ongoing
	RE1. Investigate inclusion of electric vehicles in Council's fleet.	Ongoing
	O1. Continue to purchase Greenfleet offsets and review once offsets policy has been established.	Achieved
	M1. Conduct an employee travel survey to monitor changes in employee travel behaviour	Achieved

A1. Council developed the Maroondah interactive map in November 2017 as the walkscore website is an external online website. It was developed as a resource specific to the municipality which shows the entire public and active transport networks and mobility options for any destination within Maroondah. Residents and visitors to Maroondah can plan trips in detail with of public amenities shown to the accuracy of individual seats, drinking fountains or parks and BBQs. The virtual map can be accessed from Council's website.

Council also offers a range of community resources and programs to redirect demand on private vehicle transport by redistributing journeys to other modes, retiming or avoiding travelling altogether, including Bike It!, Walk to School and National Ride to Work Day.

A2. Council has been initiating the use of Microsoft Teams (MS Teams) as a collaborative teleconferencing system. Due to the impacts of COVID-19, working from home, and the need to convert onto an online working platform, MS Teams has been rolled out on all devices across the organisation and will continue to be used.

R1. This action will be reassessed along with action RE1 for electric vehicles to determine what mix of technology for passenger vehicles will be most environmentally and cost effective. A joint project with EAGA has been in progress to achieve this action.

R2. Staff have been able to access Myki cards for work purposes since 2013. Cards are mainly to travel to training, seminars, meetings and conferences in the CBD and inner Melbourne suburbs. Between 2014 to 2018, the borrowing rate increased from 49% to 197%.

As part of Transform Maroondah, the Alternative Ways to Work working group are investigating the Myki Commuter Club program to encourage staff commuting to work by public transport. This program targets staff commuting to and from work. There was a delay in the roll-out due to COVID-19 however it is expected that this offering will be provided during 2022. In addition, Council's website provides staff with information on sustainable transport options.

R3. Council is committed to promote sustainable travel practices and network. Translation of the travel and vehicle usage policy into universal travel policy will encourage staff to use sustainable transport options.

R4. The EcoDriver Program was delivered in partnership with EAGA and SECCCA (South East Councils Climate Change Alliance) from 2013-2016. The overall goal of the program was to build the capacity of participating councils to reduce emissions and save money through more efficient and safer management of vehicles.

The program resulting in a 5-10% reduction in fuel usage achieved across fleets representing a 150-300 t CO2-e reduction in emissions annually.

R5. This action is currently being considered under Transform Maroondah and the Alternative Ways to Work program with the intention to introduce an online booking system to coincide with the move into the new administration building at the Realm. This is on hold due to COVID-19 restrictions related to working in the office but is expected to commence in 2022.



R6. Council truck purchases currently meet the Euro 5 standard (this is the highest standard in Australia while Europe has moved to Euro 6) and the standard defines limits to exhaust emissions. Truck manufacturers do not generally provide an average fuel use figure. This is because there are a range of more variable factors that can contribute to a truck's fuel usage such as the chassis, load weight and type, driver behaviour and weather and road conditions.

An independent assessment to determine the most fuel-efficient truck option is not currently planned due to the small number of trucks in the fleet.

R7. Energy efficiency criteria should be considered when plan is to be renewed and it's highly depended on availability the technologies.

In April 2016, 4 electric skate caddies were introduced at Ringwood golf course. These are charged with energy from the standard electricity grid and from a 17 kW solar PV system was installed at Ringwood golf course in 2019.

R8. To provide additional information to make Council staff more aware of the impact of their driving style on environment and increase their knowledge in regards to eco-driving at induction. This will result in lowering Council's greenhouse emissions, saving in fuel and fleet maintenance and improving driver performance and awareness to decrease their carbon footprint. This action will be followed up in the new Climate Change Plan.

RE1. Council has joined a project with EAGA to develop a business case for the transition to electric vehicle and a supplier has been selected in Dec 2021 to proceed this project.

EAGA partnered with the Central Victorian Greenhouse Alliance to undertake a feasibility study into electric vehicle infrastructure requirements across Victoria "Charging the Regions Project", on behalf of 55 councils and the Electric Vehicle Council of Australia in 2019-20.

The Charging the Regions Study and Framework provides a comprehensive pathway for the coordination of charging stations across Victoria. The recommended pathway to research, plan and roll out of a network is further considered in the review of the *Carbon Neutral Strategy*.

O1. The Carbon Neutral Offsets Policy was completed in 2019 and guides the future purchase of offsets towards Council's carbon neutrality, ensuring all carbon offsets are purchased in a manner that considers best practice procurement principles, economic, social and environmental benefits and impacts, and the requirements of Climate Active certification.

These policy principles apply for the purchase of all offsets used to claim against carbon neutrality, including the purchase of GreenPower, Greenfleet offsets and Large-scale generation certificates (LCGs).

M1. The 2019 Transport and Parking Survey was conducted as part of the Transform Maroondah - Operational Readiness Program. The survey provided insights on staff's current and future travel and parking needs as they transition to new workplaces. Importantly, it focused on the extent of interested in switching to alternative transport for getting to work. The results of the survey have guided transport and parking policy for the new workplaces. A number of these initiatives are currently on hold due to COVID-19 and staff working from home arrangements. It is expected that as restrictions ease these initiatives will be introduced.





Priority Action 5 - Waste



In 2030, Maroondah will have halved the amount of waste we send to landfill, based on 2020 levels and 80% of materials collected from kerbside bins will be diverted from landfill.

	Operational action	Status
Waste	A1. Develop a staff awareness campaign to avoid and reduce food waste	Achieved
	A2. Establish a 'waste avoidance' champion group to decrease waste to landfill	Achieved
	R1. Investigate availability of recycling infrastructure for staff at Council facilities and install where needed if feasible	Achieved
	R2. Investigate composting of food waste at Council sites with high volumes of food waste	Achieved
	R3. Continue awareness raising program to increase recycling rate at Council facilities	Ongoing
	M1. Continue annual waste audits at the Croydon and Ringwood City Offices	Ongoing

A1. A staff 'Food for Thought' competition ran during September 2015. The competition involved staff creating a recipe out of 28 different leftovers from the fridge, freezer, pantry and fruit bowl. Overall, 20 recipes were submitted with the 10 best recipes winning a prize. The recipes were put into a Maroondah Master-Leftover-Chef cook book and shared internally.

To further reduce food waste, organic bins were placed in kitchen facilities and food waste was transferred to Ringwood golf course for composting.

A2. Educate and inform Council staff on waste and recycling issues so they can be champions in the community. This action has been considered as one of the priority actions of the *Maroondah Waste, Litter & Resource Recovery Strategy 2020-30*.

R1. Each Council office now has enhanced recycling infrastructure to reduce landfill and to promote the concept of the circular economy. Separate bins have been installed for landfill, paper, recycling and organics (in kitchen facilities) in the Council offices.

R2. A number of composting tumblers were set up at Ringwood golf course for café food waste and also to collect food waste from the office buildings for composting. The compost is used on site at Ringwood golf course. Composting reduces wastes and the greenhouse gases associated with organic waste breaking down in landfill.

R3. Council works with customer service coordinators in order to attend their staff meeting and educate staff on the recycling process and importance of recycling correctly. Signage is available at the point of disposal indicating what can go into which bin, and information is also available on Council's intranet. The scope of the *Waste, Litter & Resource Recovery Strategy 2020-30* includes all Council buildings and key outcome areas of this strategy will provide the framework to achieve less waste is sent to landfill and majority of waste is recovered and recycled in all Council buildings by the end of strategy timeline.

M1. Past audits have been undertaken by Council staff and were completed for a few years although not on a regular basis. The *Waste, Litter & Resource Recovery Strategy 2020-30* includes the proposed action: 'Undertake resource-flow audits of council run facilities and establish Waste Management Plans for each site.' These audits would not be undertaken annually and the first audit would establish Waste Management Plan (WMP), the WMP would then be reviewed annually. Data can then be used to developing waste action plans and can be used by other areas of Council. These audits are also required for greenhouse gas emissions reporting as part of Council's carbon neutral claims.



Priority Action 6 - Paper



A 65% Reduction in paper usage by implementing paper-smart program

	Operational action	Status
Paper	A1. Raise awareness about Council’s electronic templates for letters, reports and information bulletins	Achieved
	R1. Create a checklist to guide paper purchases informed by position on pulp source, certification and source of manufacture	Achieved
	R2. Encourage double sided paper use by providing collection trays and signage at print stations	Achieved

A1. Electronic templates are now available on the Council's intranet. They are accessible by all staff to download, to reduce paper usage, and to maintain consistency across written work related to the Council.

R1. As part of the development of the *Sustainability Strategy 2016 to 2020*, various members of MEAC developed a business case for options to help select paper with a reduced environmental impact. Options include the development of a guideline or a paper purchasing policy. Although, emissions from paper use are small but this is an opportunity to show leadership and in a small way influence the market. An example is ensuring all office paper is 100% recycled.

R2. As part of the printer consolidation, action R6, and paper-smart program, the default settings for printers in the main administration buildings are set to double-sided, black and white printing. Signage is displayed at print stations to reinforce this message.

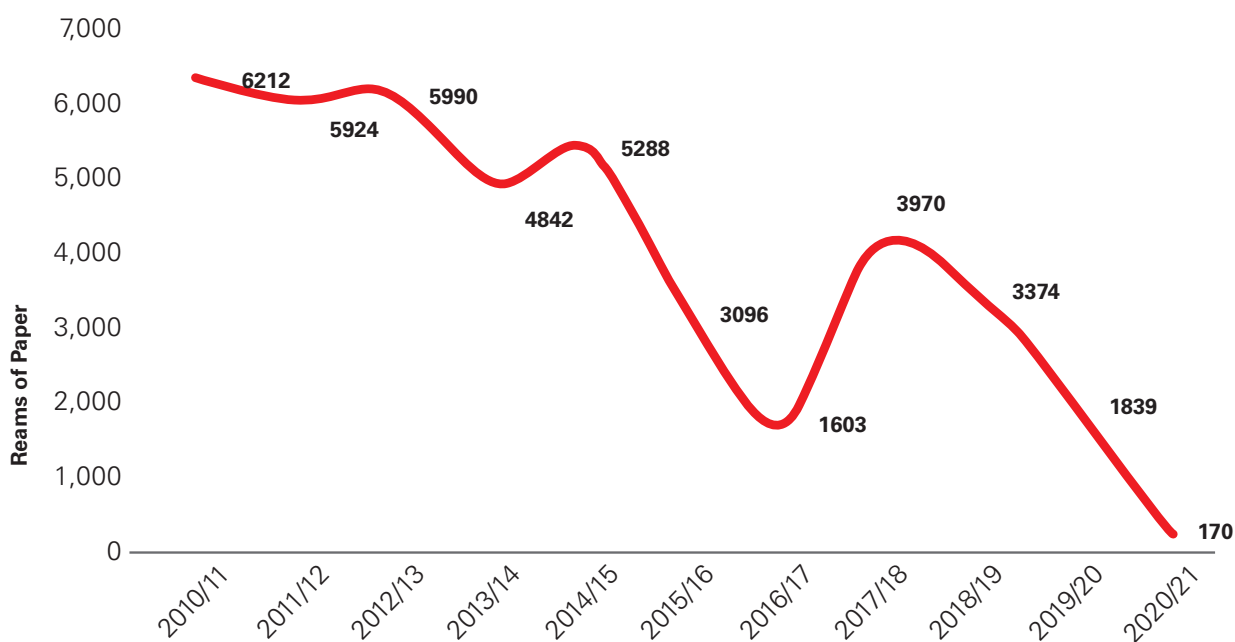
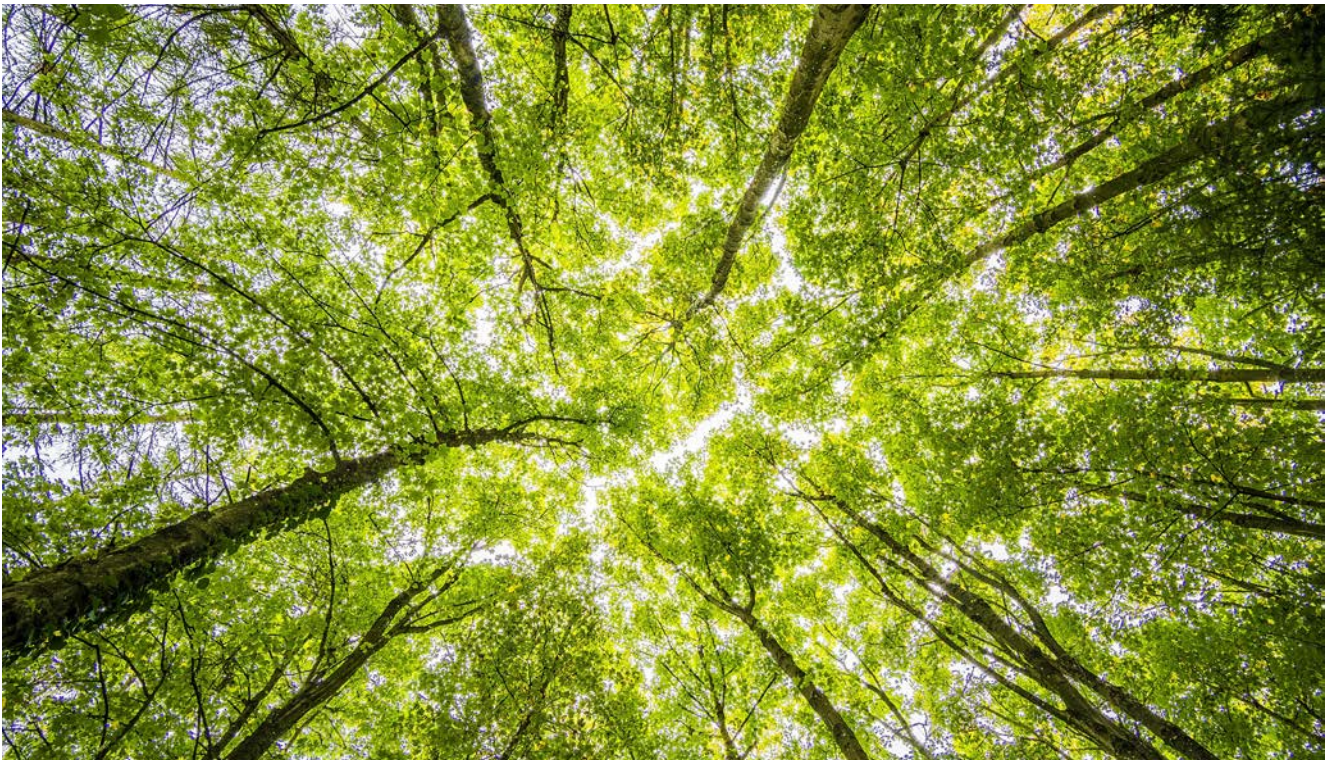


Figure 5. Reams of paper used annually from year 2010 to 2021



Priority Action 7 - Offset



Carbon offsets purchase will help Council to become carbon neutral

	Operational action	Status
Offsets	O1. Develop an offsets policy to guide future offset activity and purchases	Achieved

O1. The *Carbon Neutral Offsets Policy* was completed in 2019 to help guide Council's carbon management roadmap to achieving carbon neutrality in 2020. The policy was developed because Council recognised its responsibility to continue to act to reduce carbon intensity of its operations through Council's *Sustainability Strategy* and *Carbon Neutral Strategy and Action Plan 2014-2021*.

The *Carbon Neutral Offsets Policy* guides the future purchase of offsets towards Council's carbon neutrality, ensuring all carbon offsets are purchased in a manner that considers best practice procurement principles, economic, social and environmental benefits and impacts, and the requirements of Climate Active carbon neutral certification.

Priority Action 8 - Funds



The Carbon Neutral Revolving Energy Fund, a self-sustaining source of funding

	Operational action	Status
Funds	F1. Compile standard operating procedure for the Revolving Energy Fund	Achieved
	F2. Assess alternative funding options for projects such as through the CEFC, AGL and leasing schemes	Ongoing

F1. The Carbon Neutral Revolving Energy Fund was established in 2015 to provide a funding source for projects that reduce utility use and greenhouse gas emissions. An internal Working Group was established to guide the development of the fund, and to guide outgoing expenditure based on key criteria. The fund was established to implement actions from the *Carbon Neutral Strategy* that will assist Council to reach carbon neutrality and enable longer term planning of actions.

A standard operating procedure has been developed by the Working Group to create an agreement on how savings from energy efficiency projects will be calculated, how financial savings will be shared and what portion will be reinvested into new projects.

The operating procedure is periodically reviewed, and it is recommended that the working group investigates how new projects can be incorporated into the fund to continue to maintain this as a funding stream and assist with medium to long-term planning for energy reduction projects.

Since its inception, the fund has been reinvested into the energy efficient street light project, Energy Performance Contract and solar PV system

installations and has been key to delivering emissions reduction projects to facilitate Council carbon neutral certification.

F2. Council has assessed funding options as a strategic approach to the way sustainability initiatives are resourced. This involves being smarter with existing resources and exploring partnerships with other organisations to ensure continued sustainability of the Council.

Council continues to support EAGA projects that broker partnerships and will continue to pursue external funding opportunities. Key EAGA projects include the Solar Savers Project, scaling up on Council facilities, delivering a joint EPC program, and assisting in the delivery of the Local Government Power Purchasing Agreement project.

Additionally, Council will continue to use the *Grant Policy* and *Procurement Policy* to pursue sustainability opportunities in a manner conversant with occupational health and safety, risk management practices, relevant legislation, purchasing principles and Council's corporate objectives.



Priority Action 9 - Data management and reporting



Track progress towards carbon emissions reduction targets

	Operational action	Status
Data Management & Reporting	DM&R1. Investigate the information required by the Steering Committees to further understanding of emission profiles and to identify savings and track efficiency of actions	Ongoing
	DM&R2. Create a communications plan for reporting and providing information about the carbon neutral work	Achieved
	DM&R3. Investigate a framework for monitoring and reporting estimated energy and emission savings for projects run in-house	Ongoing
	DM&R4. Investigate options for data management systems for carbon inventories as part of the EAGA utilities management project	Ongoing
	DM&R5. Report annually on progress on implementing actions from the <i>Carbon Neutral Strategy</i>	Achieved

DM&R1. Council has been measuring greenhouse gas emissions profiles from its services and operation since 2010 when there was increasing need to capture information on Council's energy use and emissions generated within each sector.

DM&R2. A communication and engagement plan was developed and implemented in 2016. It aimed to create a targeted approach for each audience group and relay key messages regarding the *Carbon Neutral Strategy*. The main channels for communication included updates on Council website, intranet, internal communications, and meetings.

To engage with MEAC regular updates are provided on key projects and how they can get involved in driving the sustainability and carbon neutral agenda. Their involvement has important for the implementation of the *Carbon Neutral Strategy*, and they will be engaged during 2022 when the new plan is being developed.

The Communication and Engagement Plan was important to inform the CMT (Corporate Management Team) on how Council was progressing towards carbon neutrality and why it was necessary to do so.

DM&R3. The EPC joint project with EAGA includes monitoring and verification reports which will feed into this action. During development of business cases for energy efficient programs, energy related emissions savings are assessed and monitored, so that annual savings and return on investment can be calculated.

DM&R4. During 2020-21 Council has commenced a utilities management audit process which will likely consider options for data management systems moving forward. Currently Council's Annual Carbon Inventory is tracked using excel spreadsheets and is used to maintain Council's carbon neutral certification, and for monitoring and reporting on the progress towards Council's emission reduction targets.

DM&R5. This final activity report provides an update on the on the status of actions and achievements of the Carbon Neutral Strategy and Action Plan for the strategy lifetime from 2014 to 2021.



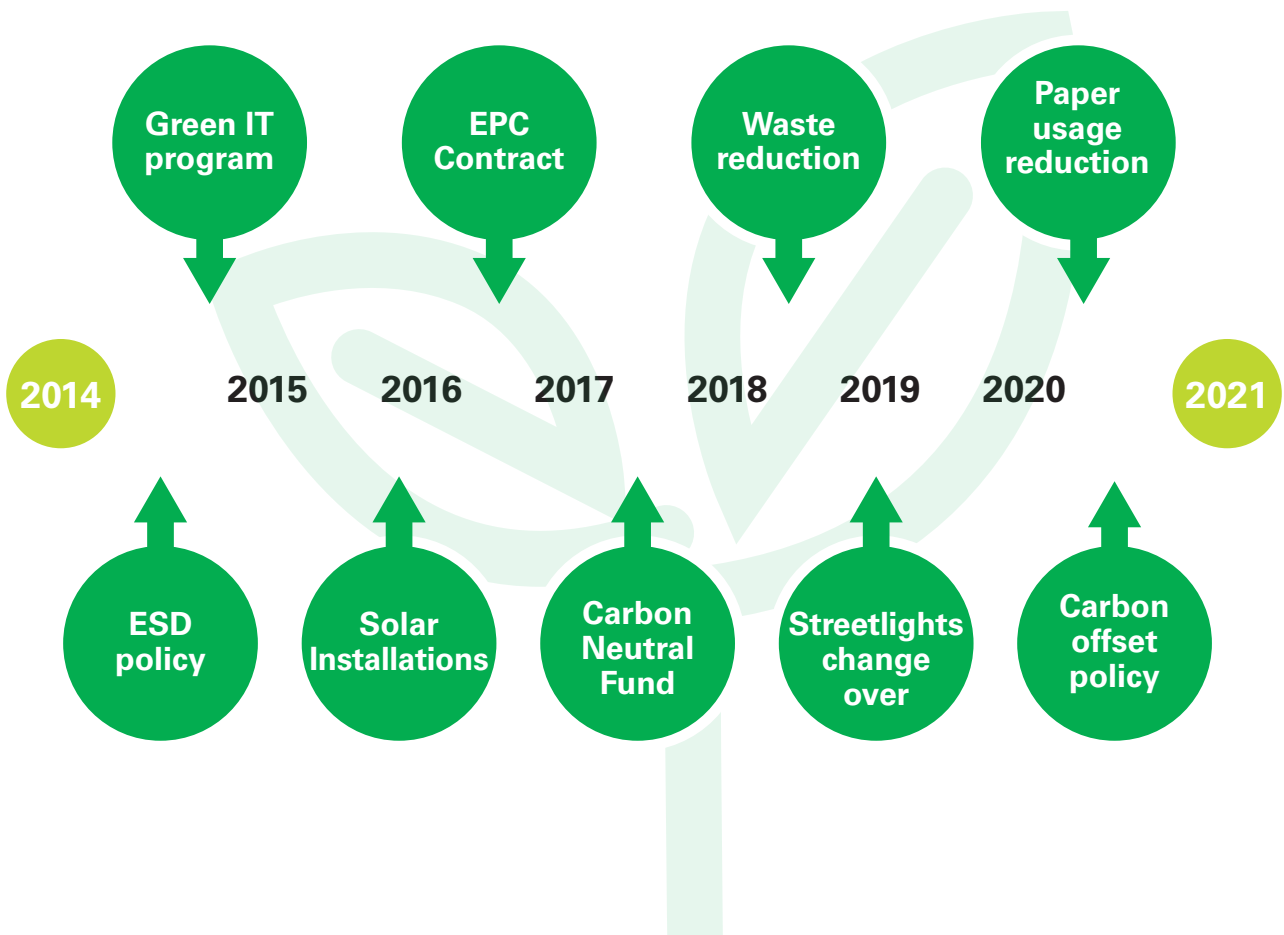
How carbon neutral is Maroondah?

Council was certified carbon neutral for its operations by Climate Active in 2020-21.

Council is committed to reduce the carbon intensity of its services and operations and reduce its emissions each year to keep the Council on its track of carbon neutrality.

All remaining unavoidable emissions were offset to ensure Council services and operations remain carbon neutral. To do this, Council invested in projects that reduced or absorbed greenhouse gas emissions equal to what we produced, through the carbon offset market.

Our journey to be carbon neutral



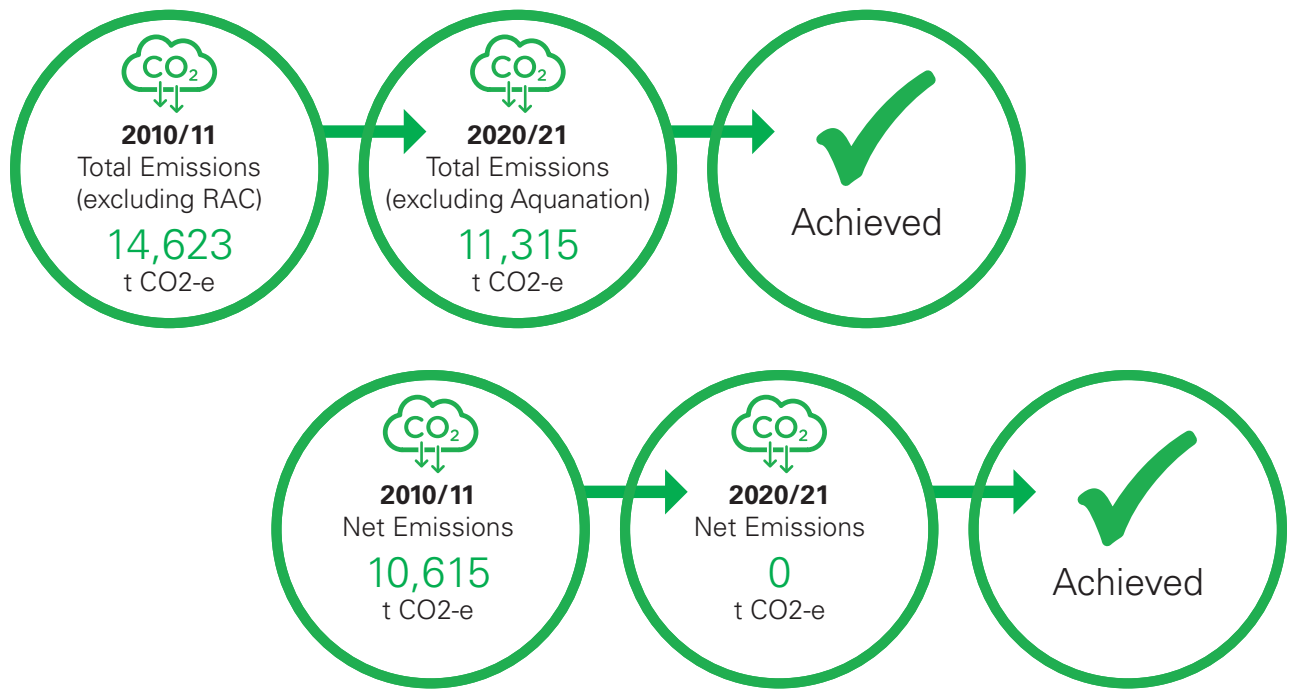
Carbon offset purchases

Offset units are used to compensate for emissions a business produces and to bring their carbon footprint down to zero. Offset units are generated by projects that reduce, remove or capture emissions from the atmosphere such as reforestation, renewable energy or energy efficiency. While carbon offset projects prevent, reduce or remove greenhouse gas emissions from being released into the atmosphere. Funding an equivalent amount of carbon emissions reductions through voluntary carbon offsetting is an effective way to take responsibility for the emissions emitted and to buy time while developing new processes and technologies to reduce emissions.

Often these projects have other environmental, social and economic benefits such as enhanced biodiversity, habitat protection, creating employment, helping people to live and work on country, improving health and education, and providing access to clean and affordable energy¹.

In 2020 and 2021, Council invested in renewable energy industries projects to ensure Council's operations remain carbon neutral.

¹ <https://www.climateactive.org.au/what-climate-active/carbon-offsets>



In 2020-21, Council’s GHG emissions are 20% less than 2010-11 levels

Table 3. Council’s Emissions since baseline year

Year	Total GHG Emissions t Co2-e	% Change from Baseline Year
2010-11	16,463	
2011-12	16,950	3
2012-13	14,550	-12
2013-14	14,129	-14
2014-15	14,641	-11
2015-16	19,791	20
2016-17	19,231	17
2017-18	19,187	17
2018-19	18,866	15
2019-20	16,368	-1
2020-21	16,031	-3

Total greenhouse gas emissions in 2020-21 were 16,031 tonnes CO₂-e. The emissions were reduced by 3% less than baseline year resulting from implementing operational actions from Carbon Neutral Strategy and Action Plan from 2014 to 2021.

Council's historical GHG emissions and carbon reductions targets

Council's corporate greenhouse gas emissions are those emissions resulting from Council's own operations and activities. This includes using electricity and gas in Council buildings, public lighting, and fuel in fleet cars.

Council's historical GHG emissions from 2010 (baseline year) to 2021 are presented in figure below. By considering different emissions reduction scenarios, Council has achieved the target of a 20% emissions reduction from its operational activities over the strategy time frame.

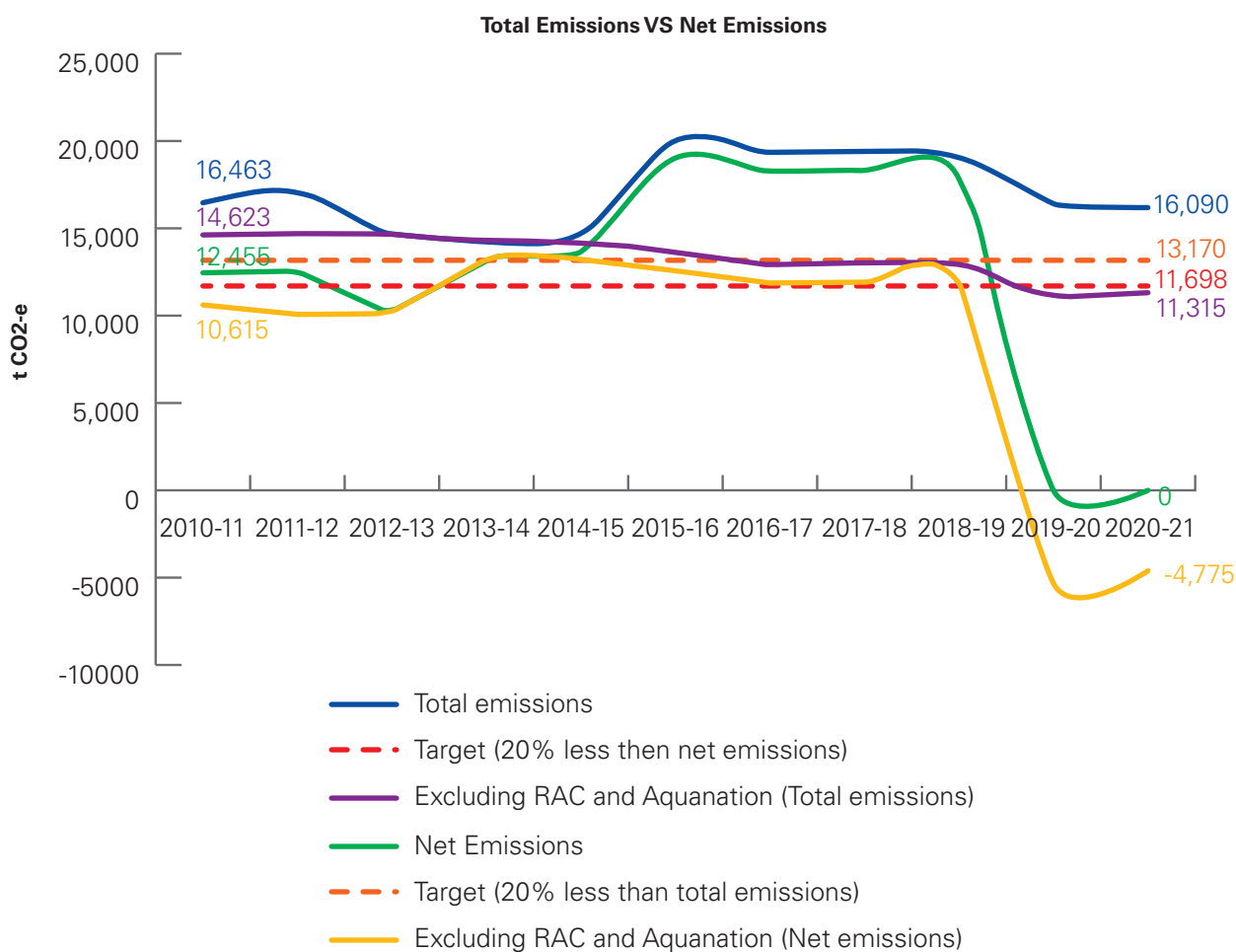


Figure 6. Council's historical GHG emissions and targets outlined in the strategy



Council’s emissions breakdown by scope

Greenhouse gas emissions are divided according to the “scope” of the emissions. This differentiates emissions occurring within the boundary of the organisation (scope 1) such as those from fuel use for Council cars; from energy generated outside of the boundary but used within it (scope 2) such as grid-sourced electricity purchased for the Council’s buildings, or those occurring outside of the boundary (scope 3) such as business travel and purchase goods and services.

Council’s GHG emissions from its operational boundary from scope 1, 2 and 3 are presented in Figure 7.

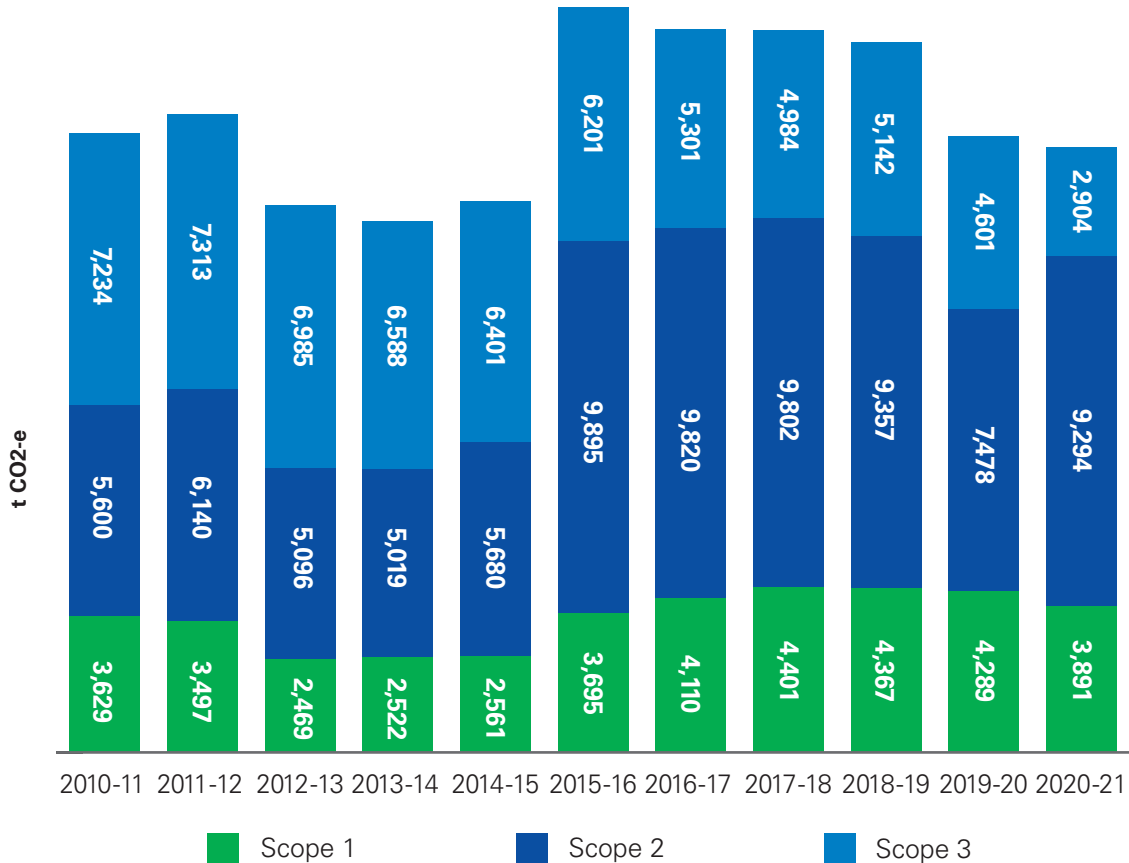
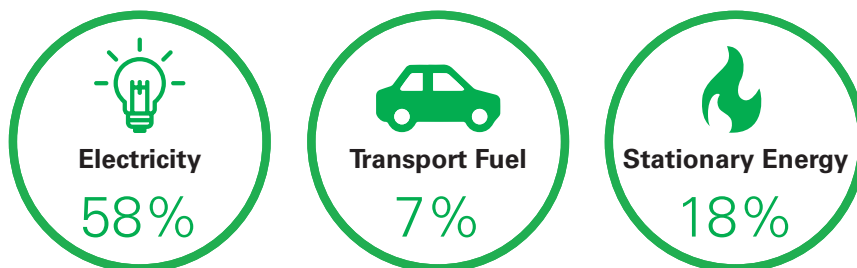
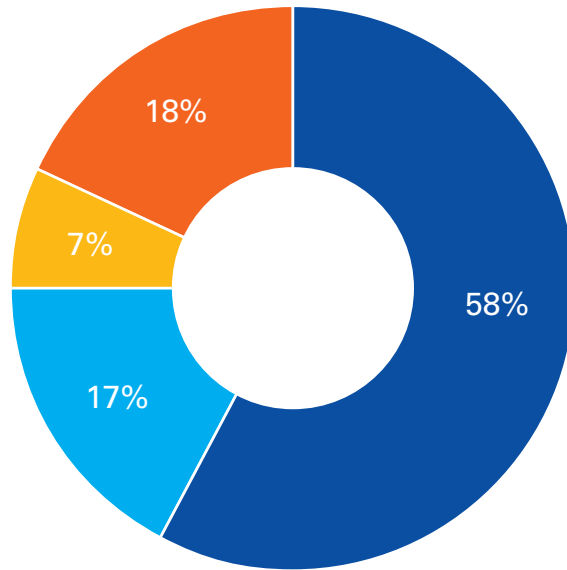


Figure 7. Council’s emission breakdown in different Scope

Council’s emissions breakdown by source and sector

Council’s corporate total greenhouse gas emissions was 16,031 tonnes of CO2-e in 2020-21. Electricity consumption (electricity consumed in Council’s buildings and street lights), Stationary Energy (natural gas consumption in Council’s buildings) and Transport Fuel made up 82% of Maroondah’s emissions in this year (Figs 8 and 9).





■ Electricity
 ■ Stationary energy
 ■ Transport fuel
 ■ Other emissions (<3% each)

Figure 8. Council's emission breakdown by source 2020-2021

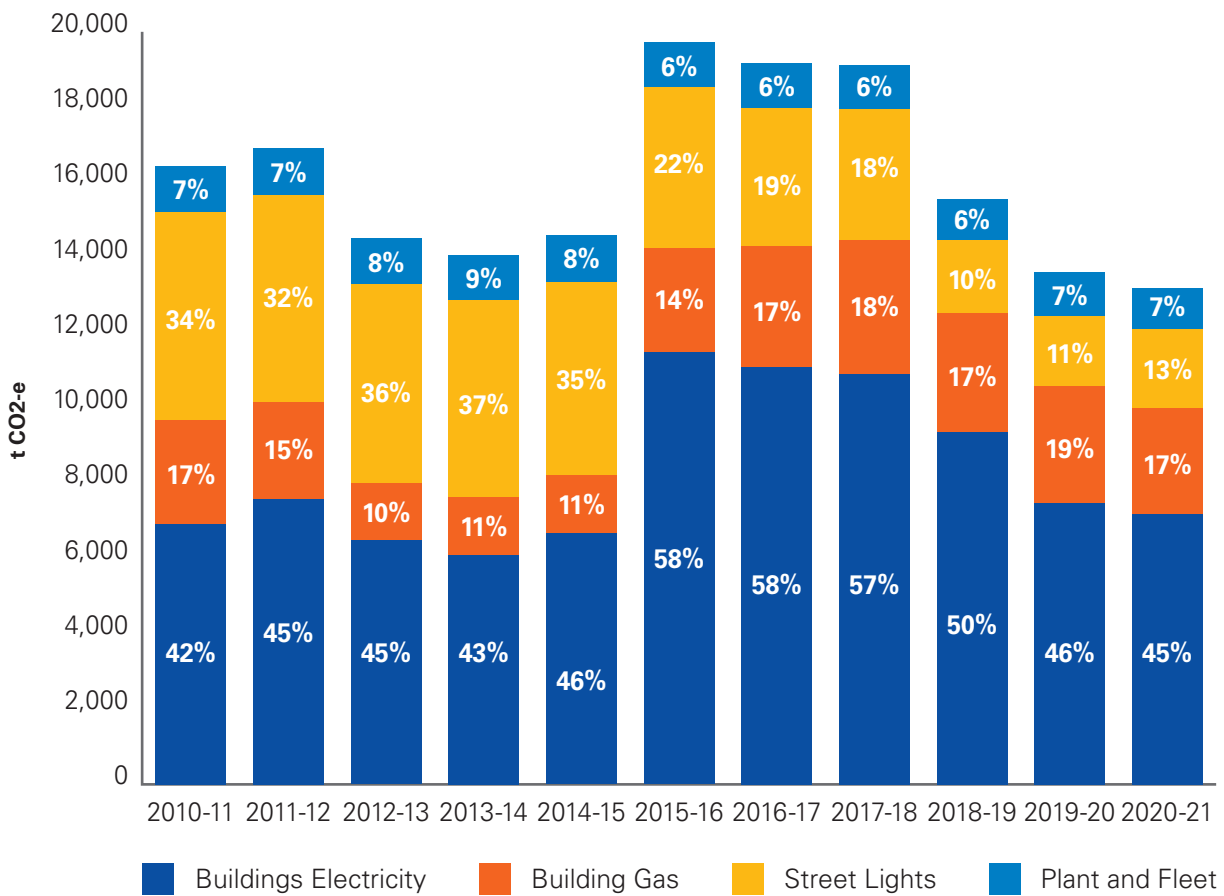


Figure 9. Council's emission breakdown by sector 2010-2021



Council’s historical electricity, gas and transport fuel usage

Council electricity usage shows a 30% increase compared with the baseline year 2010 due to large-scale projects (Aquanation) in operation particularly since 2015. In 2018, the EPC contract was successfully implemented in Council’s top five energy intensive assets. This resulted in a drop in electricity consumption and GHG emissions and resulted from undertaking energy efficiency measurements and solar PV system installations. The use of natural gas has increased by 2% over the strategy timeframe. Electricity usage from street lights dropped by 52% resulting from the street lighting upgrade program to change over inefficient lights to LED. By implementing the EcoDriver program aimed at reduction of fleet fuel usage, a 10% reduction in transport fuel usage has been achieved in 2021.

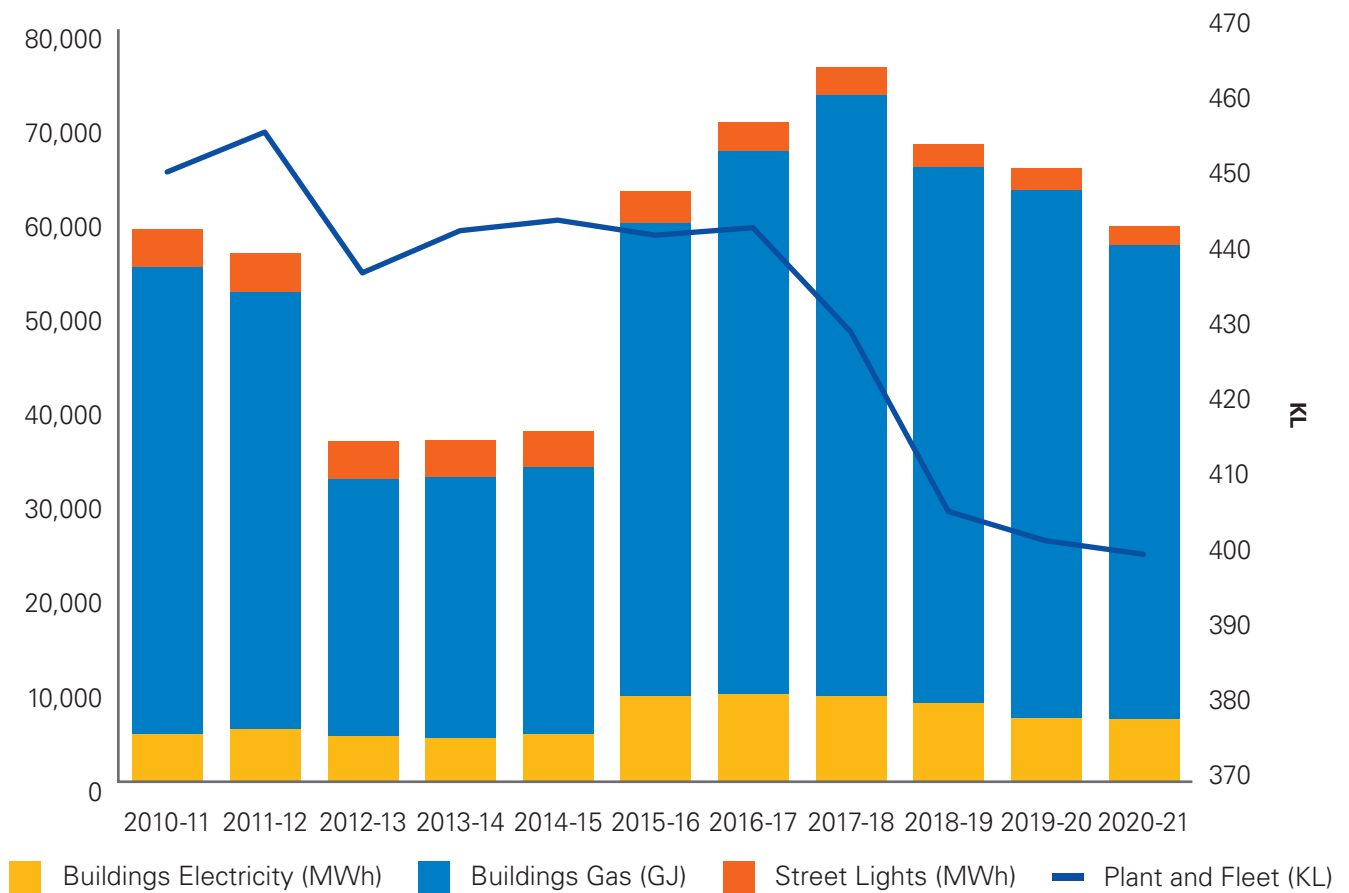


Figure 10. Council’s utility consumption 2010-2021





Summary of carbon reduction projects 2014-2021

Table 4. Council's expenditures on carbon reduction projects over carbon neutral strategy time frame

FY	Category	Project description	Building	Investment cost	Annual GHG savings (t CO ₂ -e)	Annual cost savings
2009/10	Solar installation	6.3kW Solar PV System	Dorset Golf Clubhouse		10	
2012/13	Solar installation	4.5kW Solar PV System	Croydon Tennis		7	
2014/15	Solar installation	5kW Solar PV System	Keystone		8	
2015/16	Solar installation	5kW Solar PV System	Trawalla Road Aged Care Centre (Abbeyfield House)		8	
	Solar installation	30kW Solar PV System	Central Ringwood Community Centre	\$28,290	46	
	LED Lighting	Category P street lighting upgrade	Street lighting	\$274,480		
2016/17	LED Lighting	Category P street lighting upgrade	Street lighting	\$125,488	827	\$153,283

FY	Category	Project description	Building	Investment cost	Annual GHG savings (t CO2-e)	Annual cost savings
2017/18	LED Lighting	Category P street lighting upgrade	Street lighting	\$339,902	1226.64	\$292,061
	LED Lighting	LED lighting upgrades (pool hall, dive pool uniformity, slide area)	Aquanation	\$233,940	132.44	\$18,132
	LED Lighting	Lighting excl. Pool Hall Lighting	Aquahub	\$113,127	180	\$21,195
	LED Lighting	Pool Hall Lighting - Option 1 Like for Like	Aquahub	\$103,200	74	\$9,862
	Boilers/ Pumps/VSD	Boiler Replacement	Aquahub	\$389,900	237	\$36,475
	Other	Overnight Baseload Reduction	Aquahub	\$17,500	39	\$2,201
	Boilers/ Pumps/VSD	Variable Speed Drives - Pool	Aquahub	\$41,053	98	\$7,786
	HVAC	Pool HVAC Optimisation & Pool Blanket	Aquahub	\$171,648	77	\$7,542
	Other	BMS fine tuning & Analytics	Aquahub	\$25,544.00	23	\$2,958
	Other	Power Factor Correction	Aquahub	\$2,079.00	N/A	



FY	Category	Project description	Building	Investment cost	Annual GHG savings (t CO2-e)	Annual cost savings
2018/19	LED Lighting	Street Lighting Upgrade	Street lighting	\$75,917		
	Boilers/Pumps/VSD	Boiler and Pump Control	Croydon Memorial Pool	\$25,000	14	\$3,500
	Boilers/Pumps/VSD	Pool VSD/Pump	Croydon Memorial Pool	\$10,000	7	\$2,000
	Solar installation	78kW Solar PV System	REALM	\$120,685	110	\$10,928
	Solar installation	231kW Solar PV System	Aquahub	\$474,046	316	\$51,258
	Solar installation	99.7kW Solar PV System	Maroondah Nets		47	
	Other	BMS integration of 3 x heating hot water pump replacement	Aquahub	\$37,214	20.93	\$3,484
	Other	Pool HEX control via the BMS	Aquanation	\$13,350	21	\$4,200
	LED Lighting	Courts high bay lighting replacement to LED	The Rings	\$52,626	81	\$14,060
	LED Lighting	Lighting replacement – internal and external lighting in the new wing	Maroondah Federation Estate	\$51,949	27	\$11,170
	HVAC	Chilled water system and buffer tank installation	Aquanation	\$89,360	33	\$4,783
	HVAC	HVAC modification	Aquanation	\$193,747	154	\$22,404
	Solar installation	99.7kW Solar PV System	The Rings	\$176,000	106	\$16,505
	Solar installation	99.7kW Solar PV System	Maroondah Federation Estate	\$54,000	47	\$5,256
	Solar installation	99.7kW Solar PV System	Operations Centre		47	

FY	Category	Project description	Building	Investment cost	Annual GHG savings (t CO2-e)	Annual cost savings
2019/20	Solar installation	17kW Solar PV System	Ringwood Golf		26	
	Solar installation	10kW Solar PV System (Scaling up solar)	Kerrabee	\$18,000	15	\$2,683
	Solar installation	25kW Solar PV System	Croydon Memorial Pool	\$45,000	39	\$5,256
	Solar installation	99.7kW Solar PV System	Aquanation	\$180,000	154	\$20,814
	Solar installation	Solar Savers program	Residential Solar			
	LED Lighting	Category V street lighting upgrade	Street lighting	\$698,539	544	\$183,527
2020/21	EPC Project	EPC Project	Monitoring and Verification	\$15,000		
	Other	Embedded utilities officer		\$55,000		
	Certification	Carbon Neutral Certification	Audit	\$3,475		
	Certification	Carbon Neutral Certification	NCOS fee	\$12,336		
	Certification	Carbon Neutral Certification	Offsets purchase	\$38,873		
	Other	LGC creation and retirement	Aquahub	\$316		\$4,470
	LED Lighting	Decorative lights	Street lighting	\$470,109		
	Solar installation	Solar Savers program	Residential Solar	\$7,000	52.5	
Total				\$4,783,693	4,877	\$917,793



Our journey to carbon neutrality

Council has met its 2020-21 carbon reduction targets and reduced its carbon emissions to help mitigate climate change as a priority. This plays a key role in supporting our community to improve its carbon footprint.

Council's Carbon Neutral Strategy journey will not end in 2021. Council will continue to act on climate change and lead local action, contributing to the global effort. Council will continue to reduce the carbon intensity of its services and operations. This commitment to act on climate change and the development and implementation of the Climate Change Plan aligns with the Maroondah 2040 Community Vision and priorities articulated in the *Council Plan 2017-2021* and the new Sustainability Strategy.

Council plays an important leadership role to drive local actions and to support the transition to a more sustainable and carbon neutral future.

The carbon neutral and the climate change risk and adaptation strategies will be merged into a new Climate Change Plan to guide Council on its journey of carbon neutrality to 2025-26. The Climate Change Plan will provide guidance on climate adaptation and mitigation priorities and provides a roadmap to keep Council on track to carbon neutrality over the coming years in partnership with the Maroondah community.

The new Climate Change Plan will consider and seek to overcome the challenges arising from the existing carbon neutral strategy. These being mainly due to available resources and current internal procedures and processes.

The *Carbon Neutral Strategy and Action Plan 2014-2021* was led by the Integrated Planning and Sustainability Team to achieve a planned and supported approach to manage Council's emissions by fostering collaboration and ownership of its principles and actions across all Council departments.

Council's carbon reduction target could not have been achieved without the cooperation of the Asset, Engineering, Waste and Finance teams.



To contact Council






- phone 1300 88 22 33 or (03) 9298 4598
- SMS 0480 020 200
- visit our website at www.maroondah.vic.gov.au
- email maroondah@maroondah.vic.gov.au

Translating and Interpreter Service

13 14 50

National Relay Service (NRS)

13 36 77

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