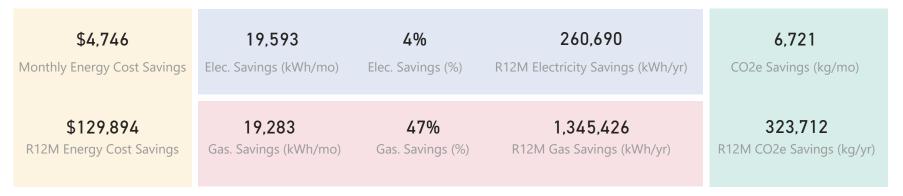
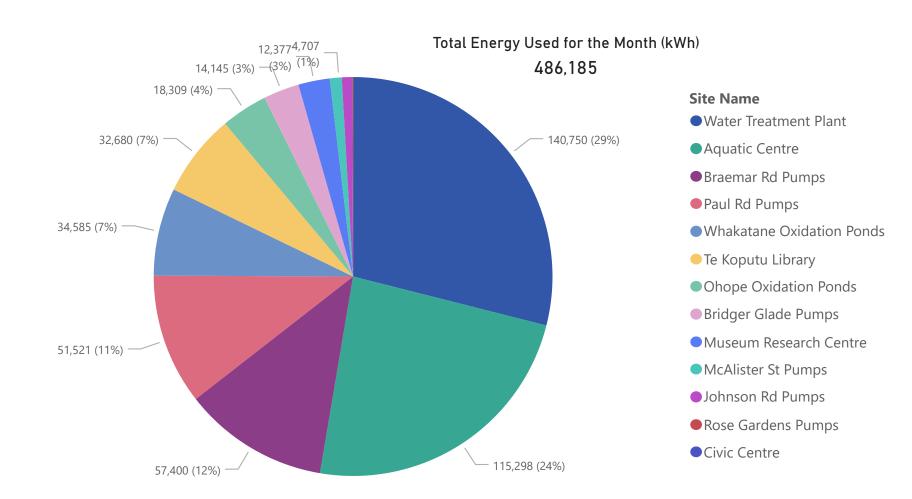


Summary



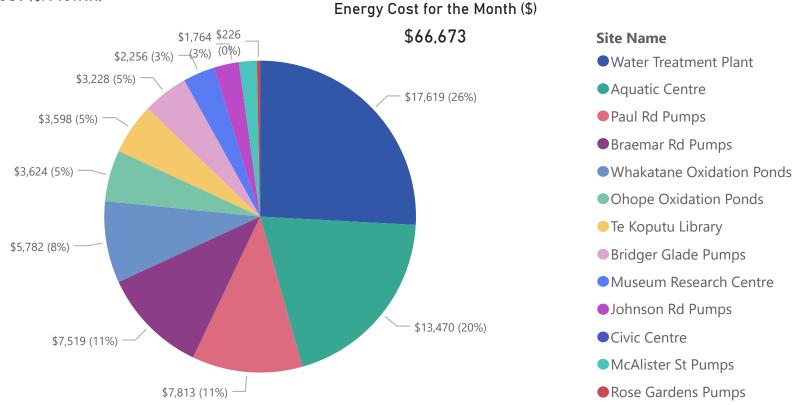
Total Energy (kWh/Month)

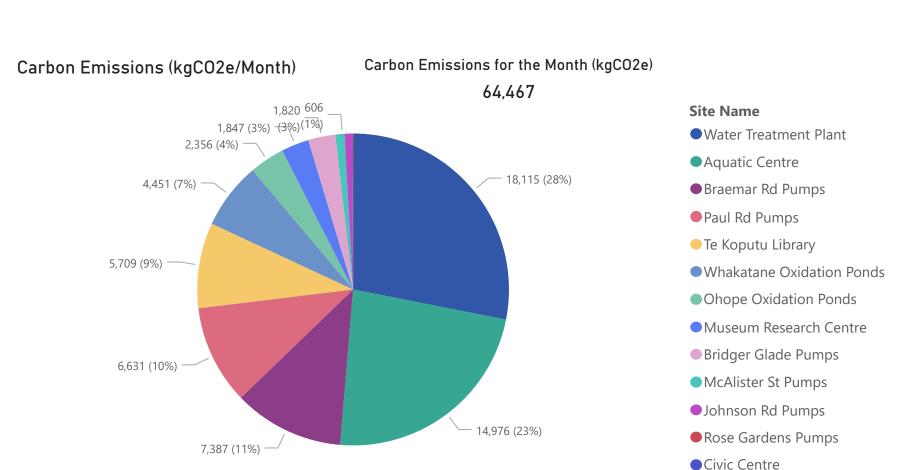




Summary

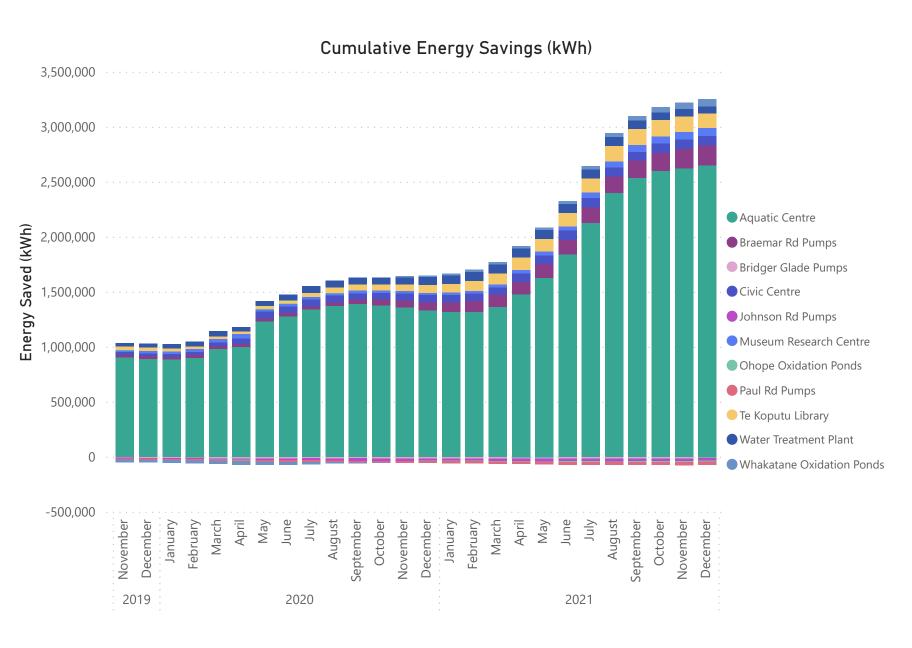








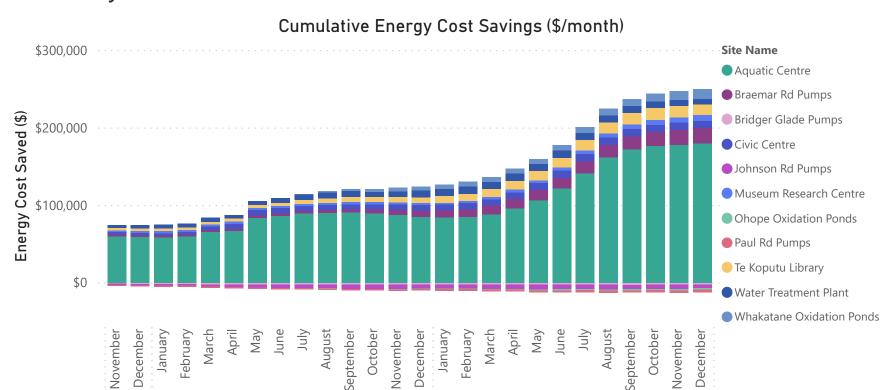
Summary



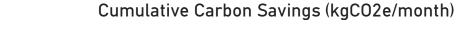


2019

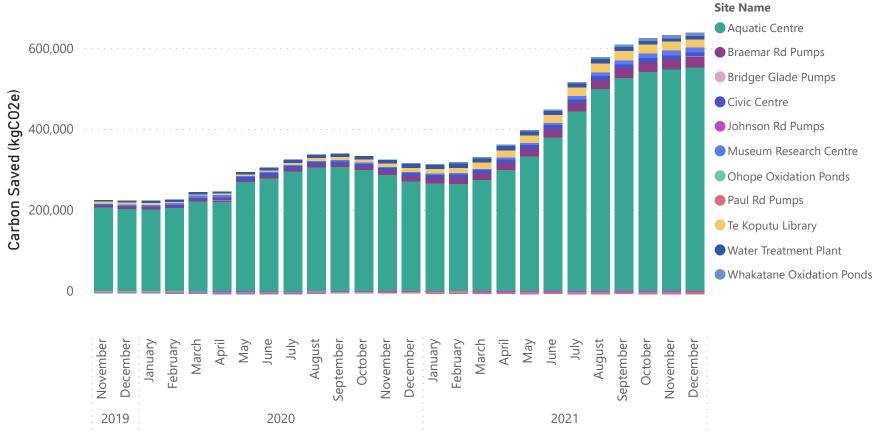
Summary



2021

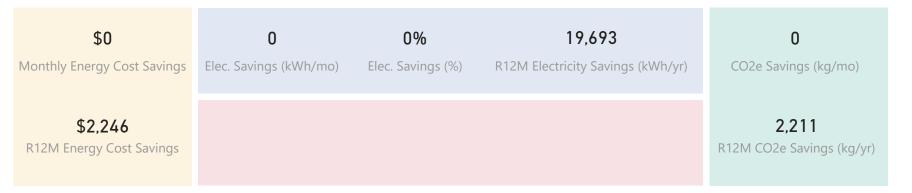


2020





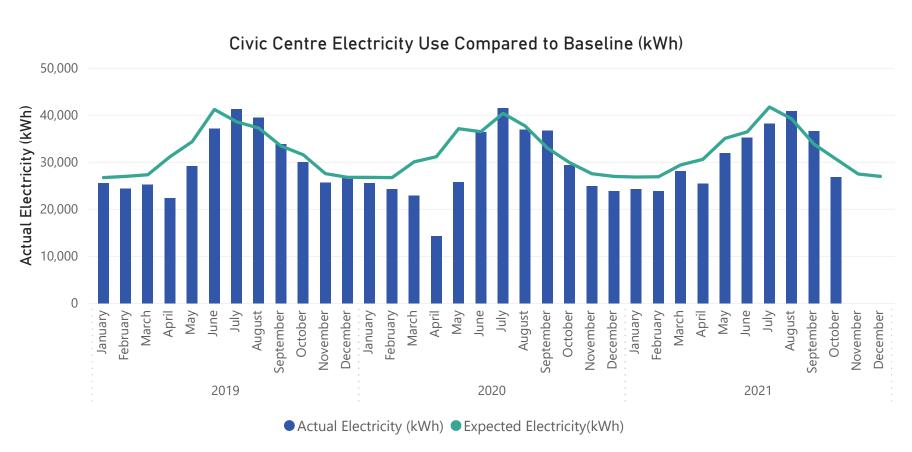
Civic Centre



Comments:

Electric vehicle charging stations have been in use from March 2021, non-routine adjustments are on-going to account for the increased electricity use.

There were metering errors for the Civic Centre in November and December 2021, no usage was recorded and the Civic Centre has not been invoiced. The electricity retailer, Mercury, is currently working towards a resolution. Monitoring will be updated when data becomes available. The metering issues have not yet been resolved as of 18 Jan 2022.

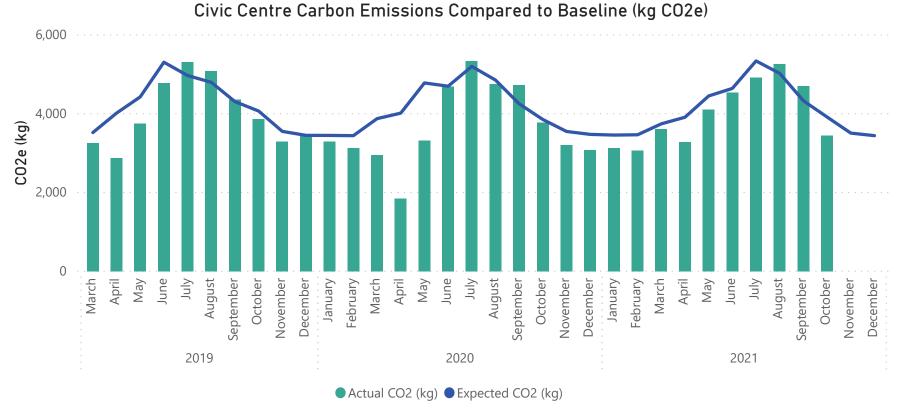


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

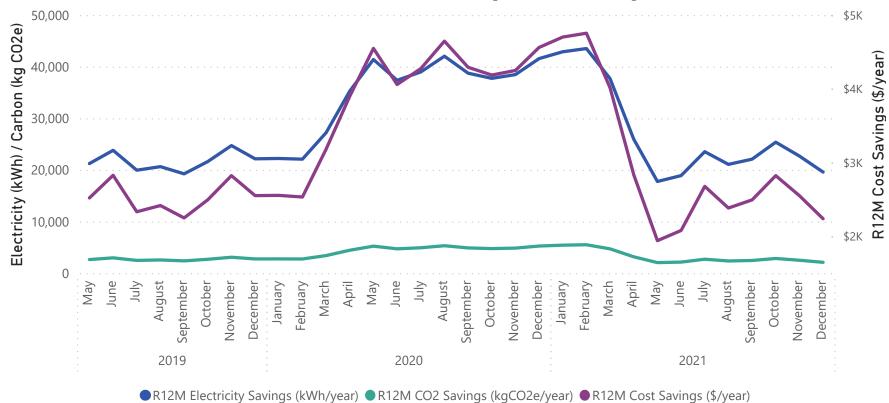


Civic Centre



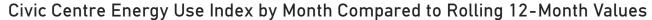


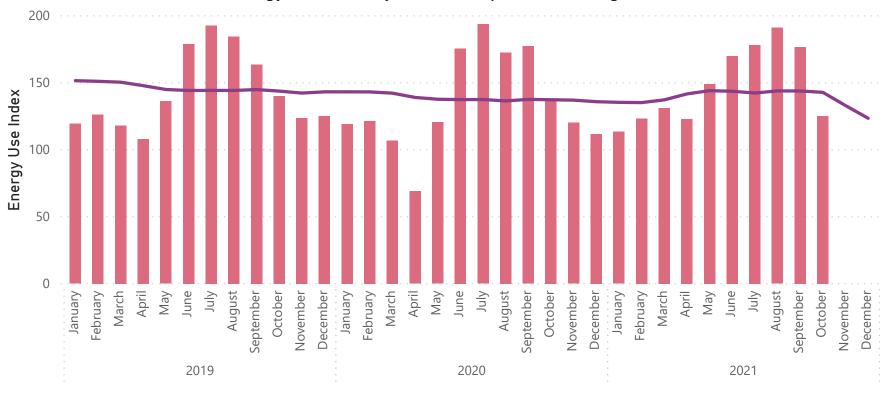






Civic Centre





● EUI Monthly (kWh/year/m^2) ● EUI R12M (kWh/year/m^2)



Aquatic Centre

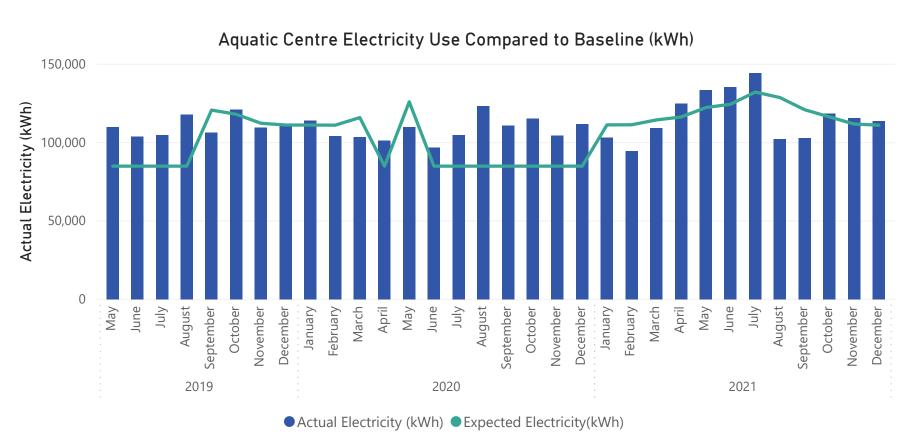
\$1,655 Monthly Energy Cost Savings	-2,591 Elec. Savings (kWh/mo)	-2% Elec. Savings (%)	23,950 R12M Electricity Savings (kWh/yr)	5,488 CO2e Savings (kg/mo)
\$94,727 R12M Energy Cost Savings	26,696 Gas. Savings (kWh/mo)	94% Gas. Savings (%)	1,291,864 R12M Gas Savings (kWh/yr)	281,365 R12M CO2e Savings (kg/yr)

Comments:

The outdoor pool is now open year-round and uses a baseline that reflects this change.

Electricity use was slightly more than baseline in December 2021, however, natural gas savings are 94% for the month.

Rolling 12 month savings have reached a new record, with approximately \$95,000 saved per year.

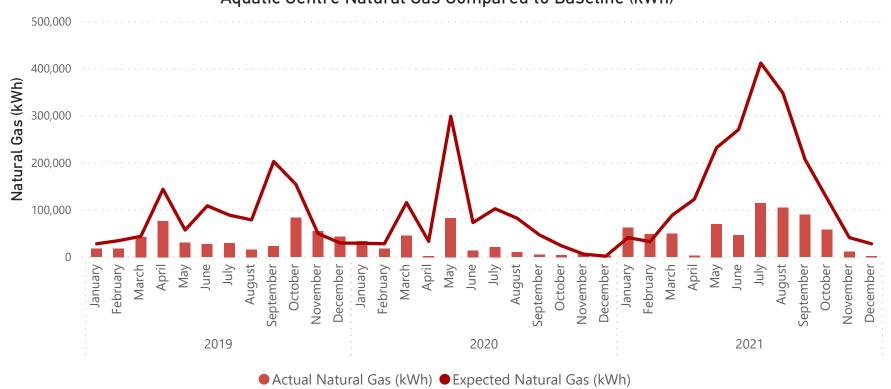


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

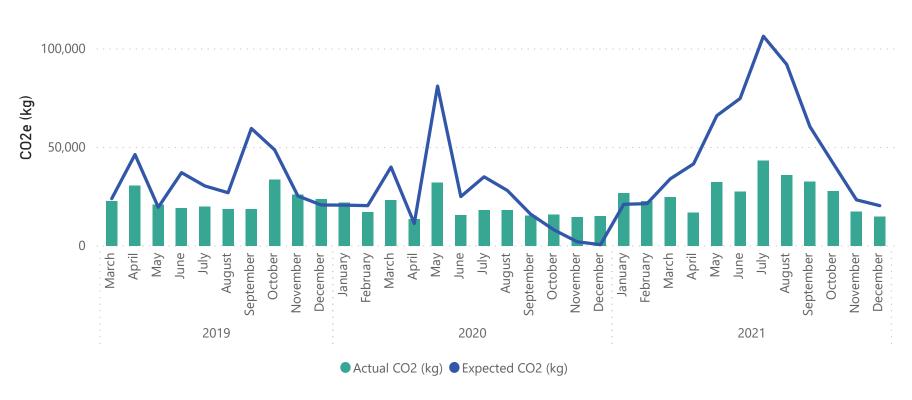


Aquatic Centre





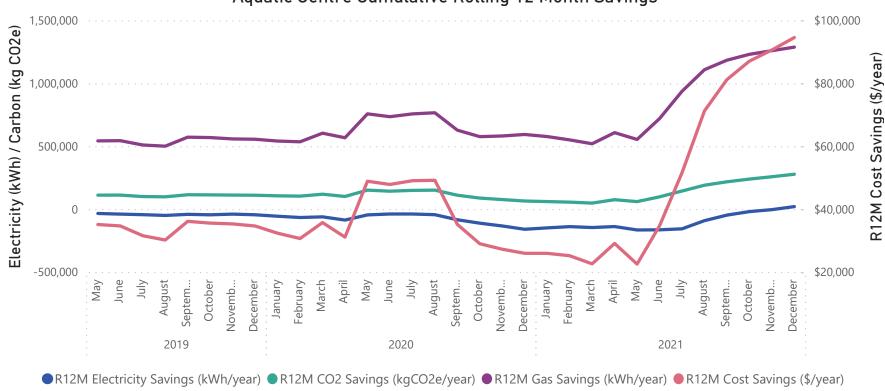
Aquatic Centre Carbon Emissions Compared to Baseline (kg CO2e)





Aquatic Centre





Aquatic Centre Energy Use Index by Month Compared to Rolling 12-Month Values



● EUI Monthly (kWh/year/m^2) ● EUI R12M (kWh/year/m^2)



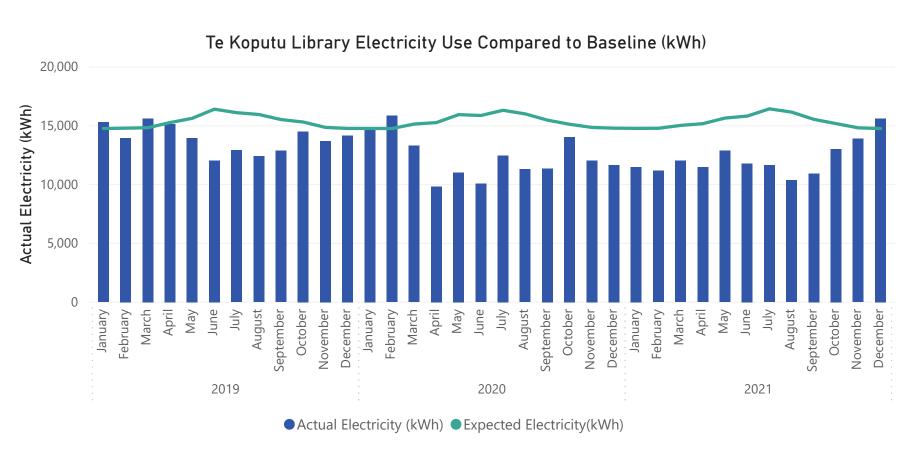
Te Koputu Library

-\$857 Monthly Energy Cost Savings	-847 Elec. Savings (kWh/mo)	-6% Elec. Savings (%)	37,879 R12M Electricity Savings (kWh/yr)	-2,390 CO2e Savings (kg/mo)
\$5,960 R12M Energy Cost Savings	-10,542 Gas. Savings (kWh/mo)	-162% Gas. Savings (%)	22,890 R12M Gas Savings (kWh/yr)	9,891 R12M CO2e Savings (kg/yr)

Comments:

Electricity and natural gas use have both increased compared to recent months. Gas use was 160% more than expected even though December was a warmer month on average. Electricity was above baseline for the first time since February 2020.

Dehumidification loads were significant in December, and this requires both electricity for cooling, as well as gas for re-heat. Control of relative humidity has improved, however further investigation is needed to understand if this is optimised or if the cooling and heating coils are fighting each other excessively.

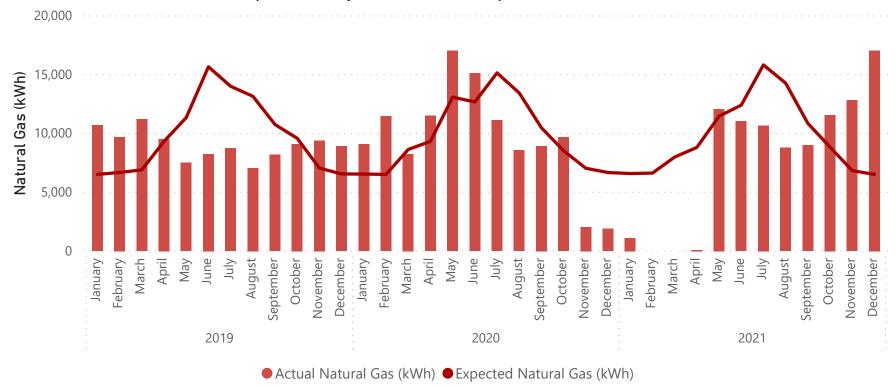


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

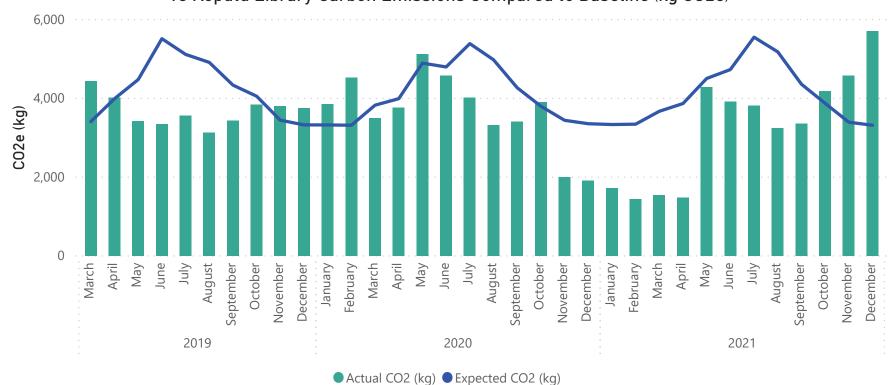


Te Koputu Library





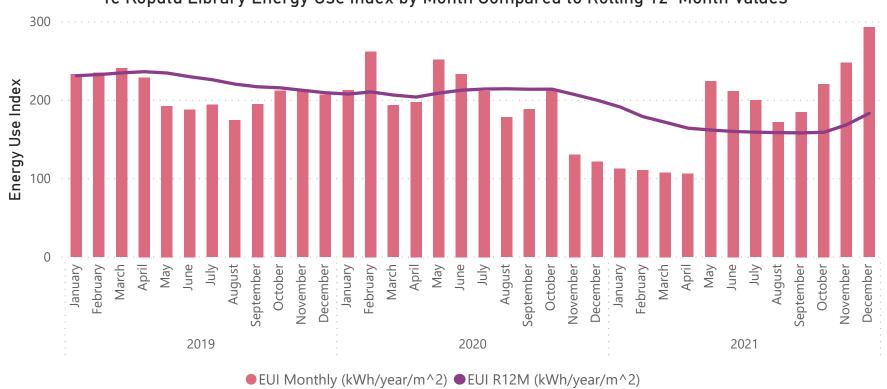
Te Koputu Library Carbon Emissions Compared to Baseline (kg CO2e)



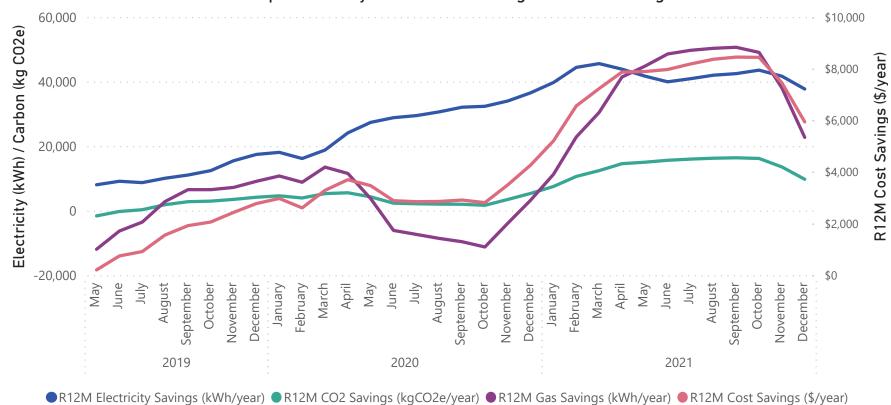


Te Koputu Library











Museum and Research Centre

\$282 Monthly Energy Cost Savings	528 Elec. Savings (kWh/mo)	5% Elec. Savings (%)	22,843 R12M Electricity Savings (kWh/yr)	746 CO2e Savings (kg/mo)
\$4,822 R12M Energy Cost Savings	3,129 Gas. Savings (kWh/mo)	52% Gas. Savings (%)	30,673 R12M Gas Savings (kWh/yr)	9,590 R12M CO2e Savings (kg/yr)

Comments:

The trend for the rolling 12 month EUI continues to drop for the Museum and Research Centre and rolling 12 month savings have also increased this month, which is good.

Some savings reflect the recent work on the HVAC system, operation of the air handling unit has been changed as well as modifying timing on air conditioning. Some of the savings in August and September 2021 are likely attributed to the Museum and Research Centre being closed to public during alert level 3.

Museum Research Centre Electricity Use Compared to Baseline (kWh)

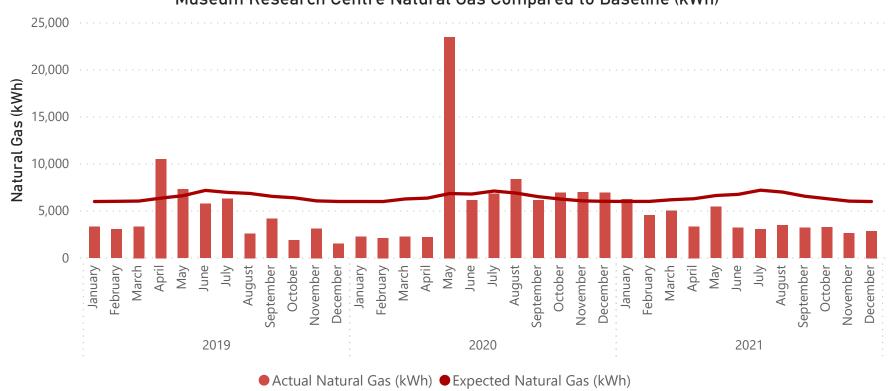


Actual Electricity (kWh)
 Expected Electricity(kWh)

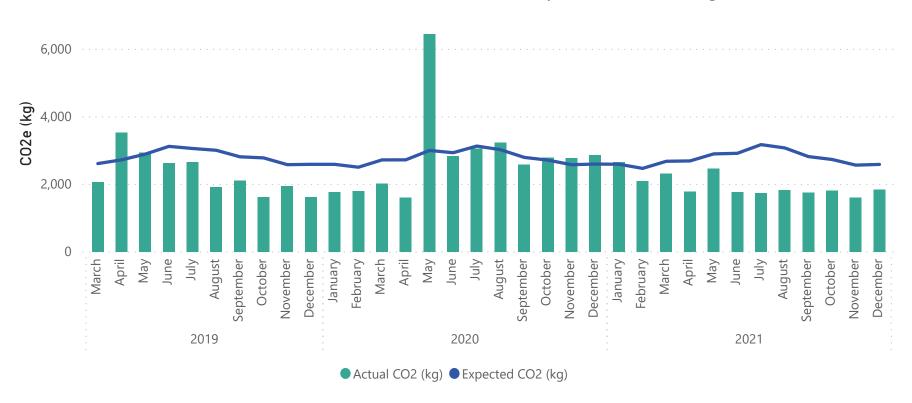


Museum and Research Centre





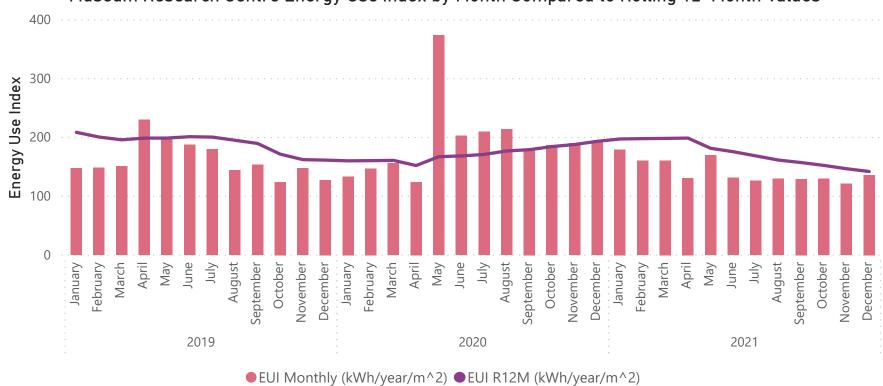
Museum Research Centre Carbon Emissions Compared to Baseline (kg CO2e)





Museum and Research Centre



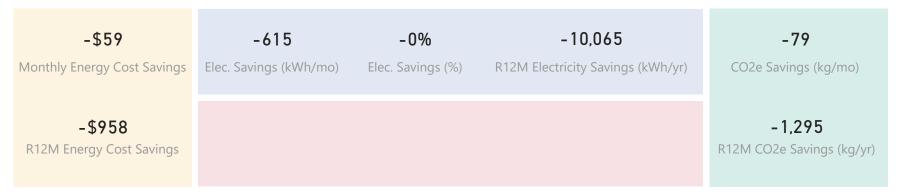






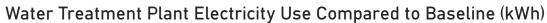


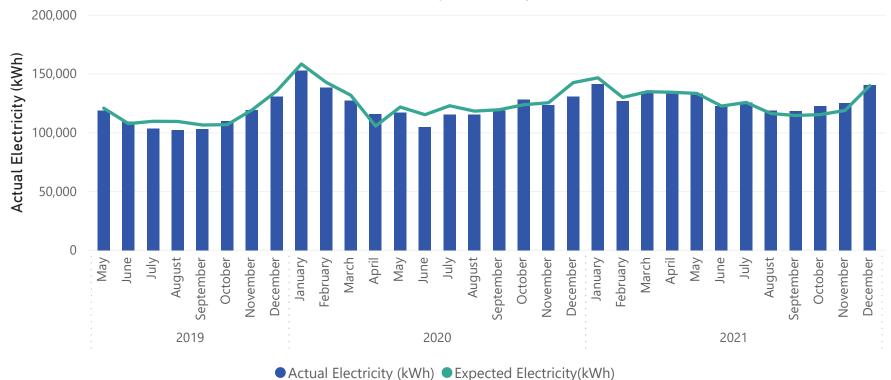
Water Treatment Plant



Comments:

December 2021 is the fifth month in a row that electricity use has been greater than baseline, however the water treatment plant has only used 600 kWh extra in December 2021. The monthly EUI has returned to what it was in July 2021, when electricity use started to increase above the baseline. The monthly EUI in December 2021 is lower than average over the past 12 months.



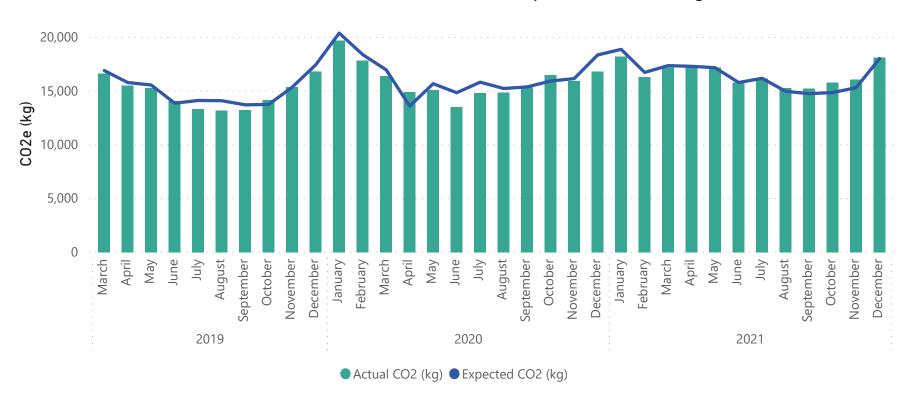


Actual Electricity (RWII) Expected Electricity(RWII)

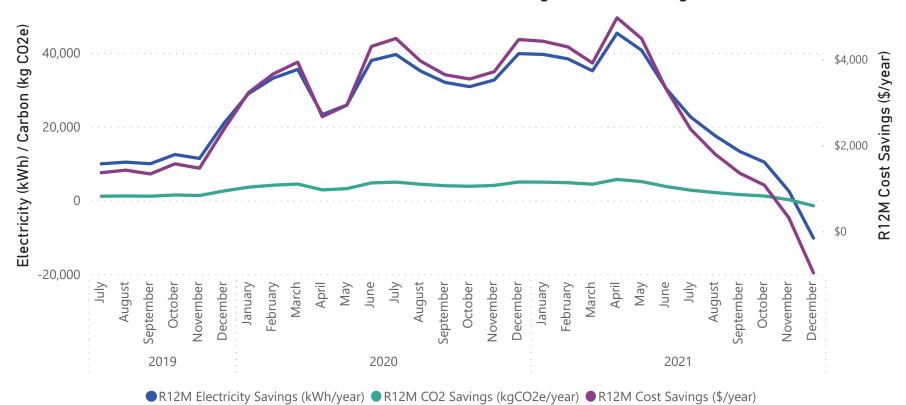


Water Treatment Plant

Water Treatment Plant Carbon Emissions Compared to Baseline (kg CO2e)



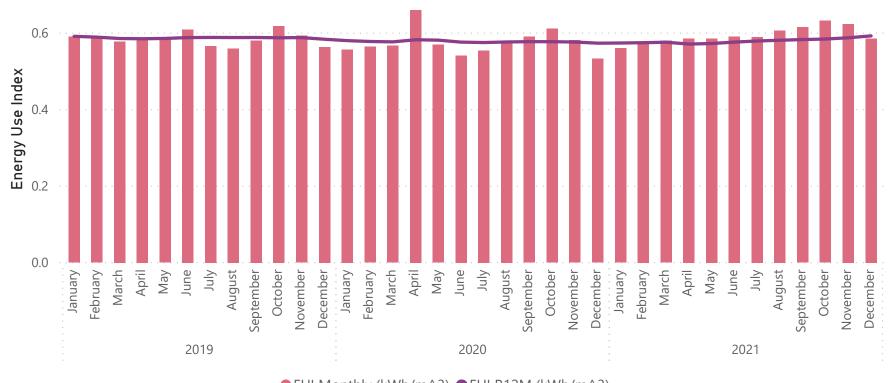
Water Treatment Plant Cumulative Rolling 12 Month Savings





Water Treatment Plant

Water Treatment Plant Energy Use Index by Month Compared to Rolling 12-Month Values



● EUI Monthly (kWh/m^3) ● EUI R12M (kWh/m^3)



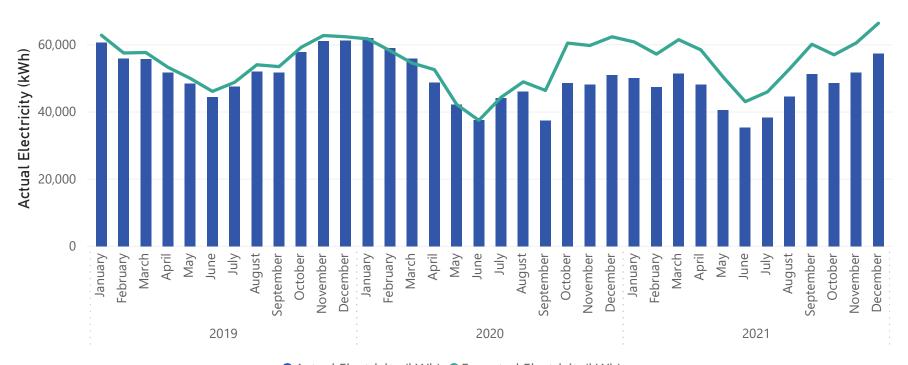
Braemar Road Pump Station

\$892	9,043	14%	110,035	1,143	
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)	
\$11,978				14,684	
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)	

Comments:

Continued savings from high efficiency pumps and motors, installed September 2020. Rolling 12 month savings are approximately \$12,000 per year and 110,000 kWh per year. December 2021's EUI has increased by approximately 6% since November 2020, when the pumps were operating most efficiently.

Braemar Rd Pumps Electricity Use Compared to Baseline (kWh)

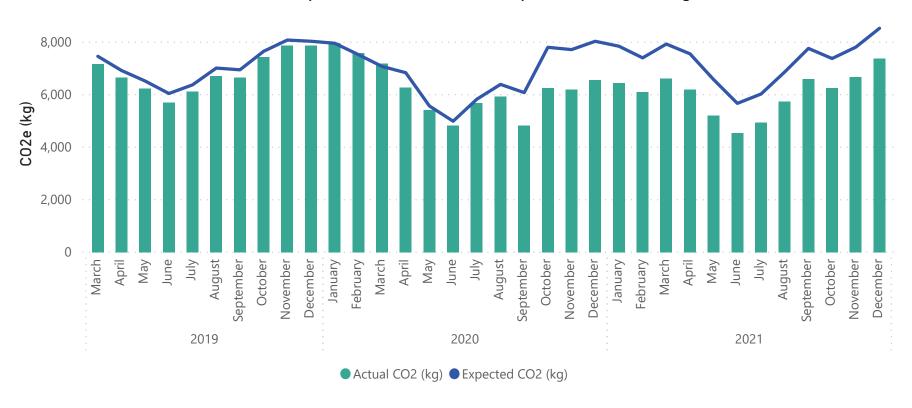


■ Actual Electricity (kWh) ■ Expected Electricity(kWh)

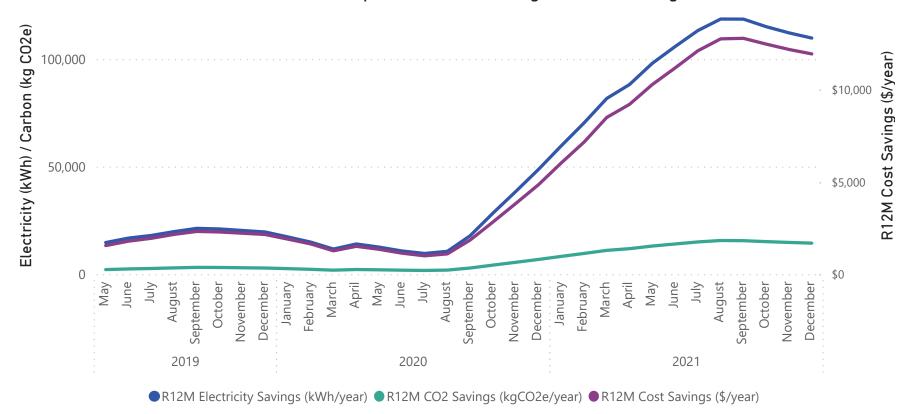


Braemar Road Pump Station

Braemar Rd Pumps Carbon Emissions Compared to Baseline (kg CO2e)



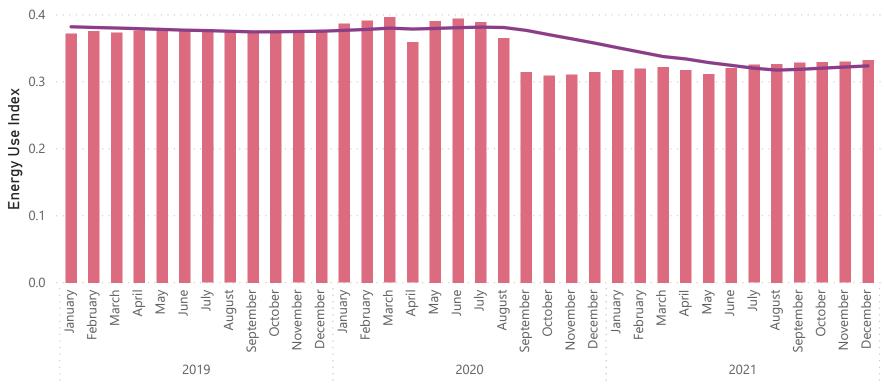






Braemar Road Pump Station

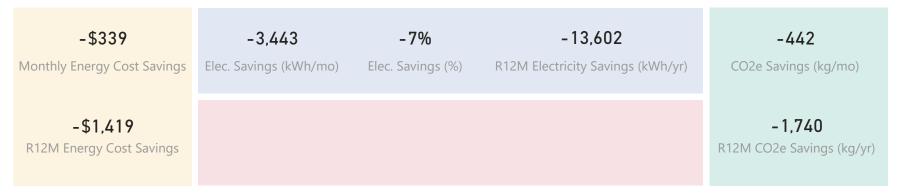




● EUI Monthly (kWh/m^3) ● EUI R12M (kWh/m^3)



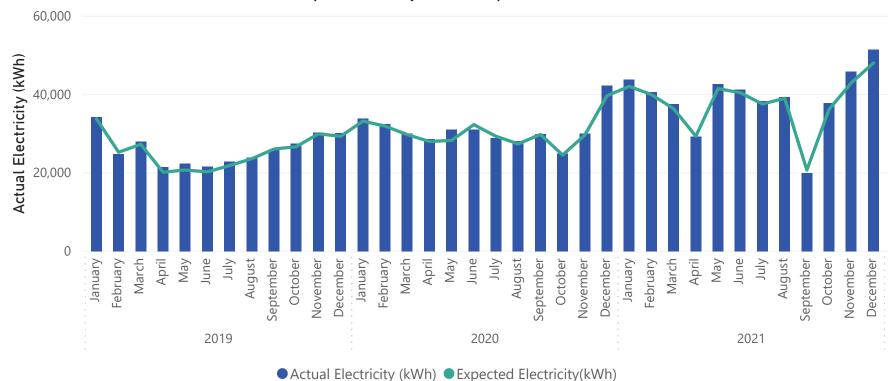
Paul Road Pump Station



Comments:

Demand has increased for the fourth month in a row. High demand in December and electricity use that is more than expected may indicate that the pump is operating outside its optimum efficiency range.

Paul Rd Pumps Electricity Use Compared to Baseline (kWh)

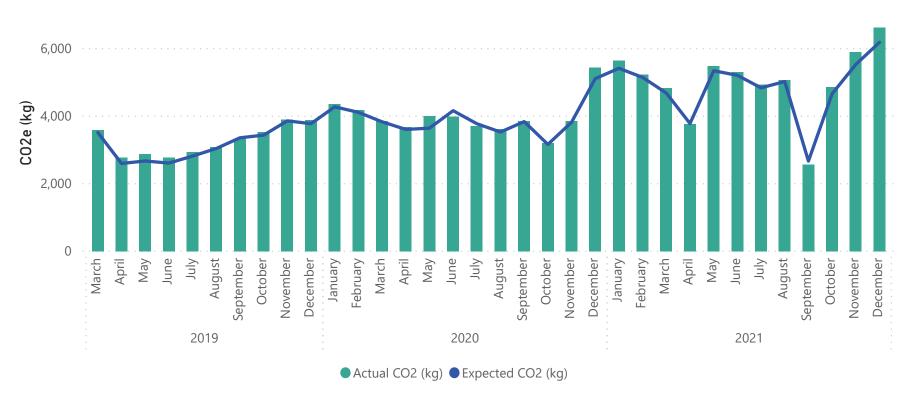


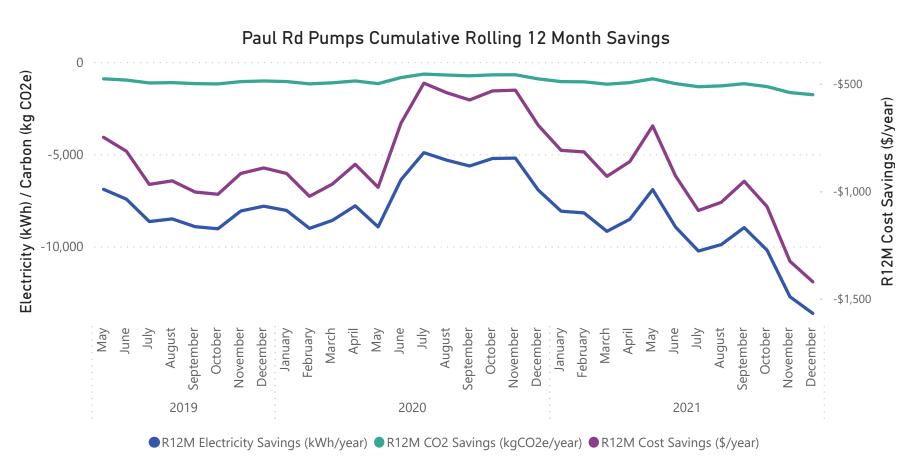
Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time



Paul Road Pump Station

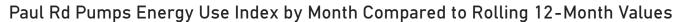
Paul Rd Pumps Carbon Emissions Compared to Baseline (kg CO2e)

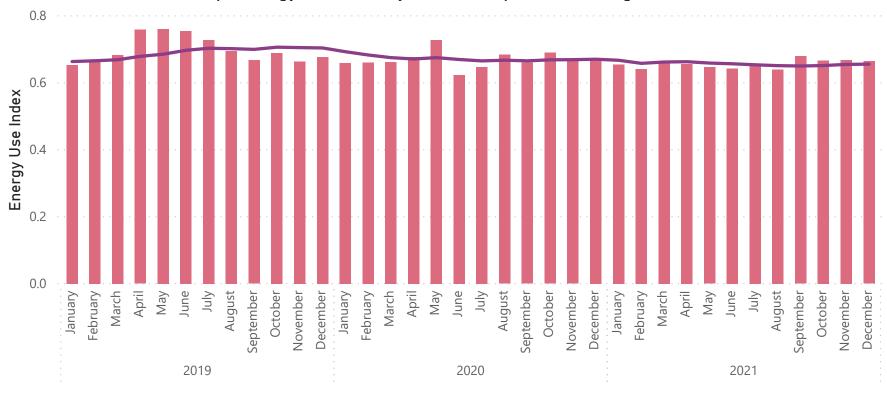






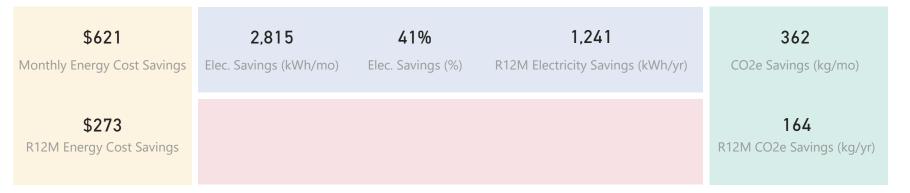
Paul Road Pump Station







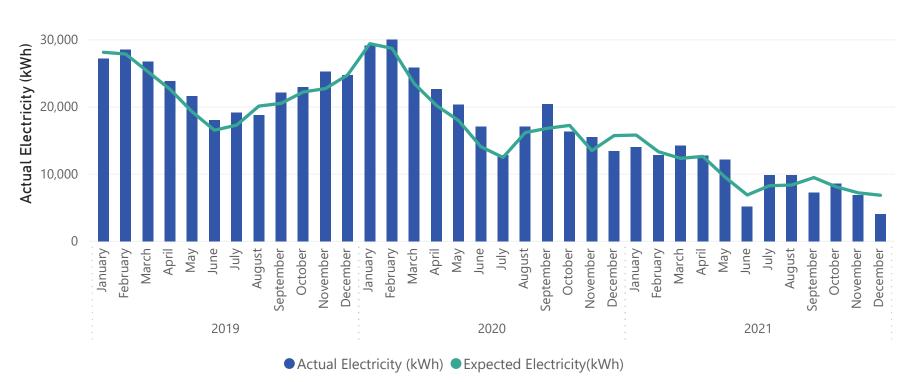
Johnson Road Pump Station



Comments:

The rolling 12-month EUI for Johnson Road Pump Station has increased over the past year as demand decreases. This is expected as the pump station has a non-zero baseload.

Johnson Rd Pumps Electricity Use Compared to Baseline (kWh)

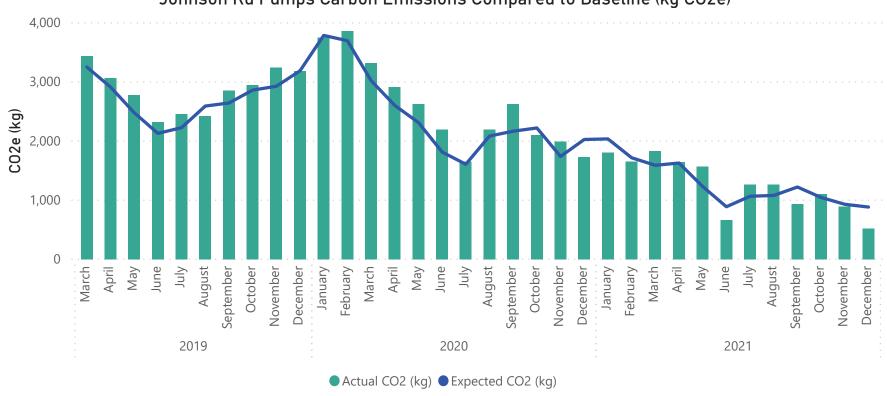


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time

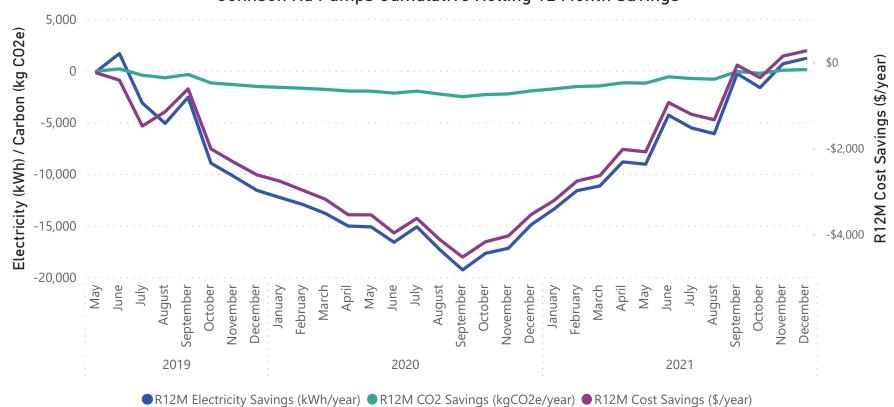


Johnson Road Pump Station





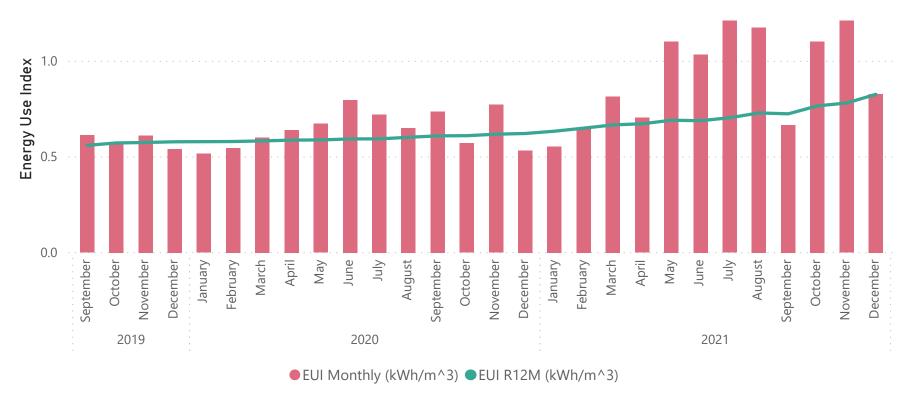






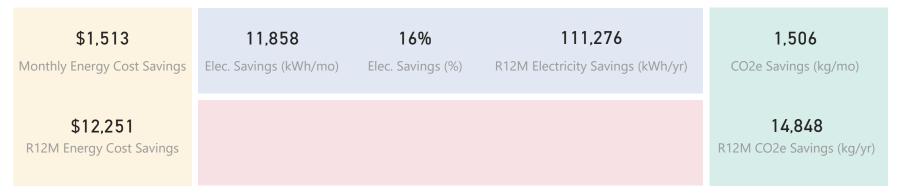
Johnson Road Pump Station

Johnson Rd Pumps Energy Use Index by Month Compared to Rolling 12-Month Values





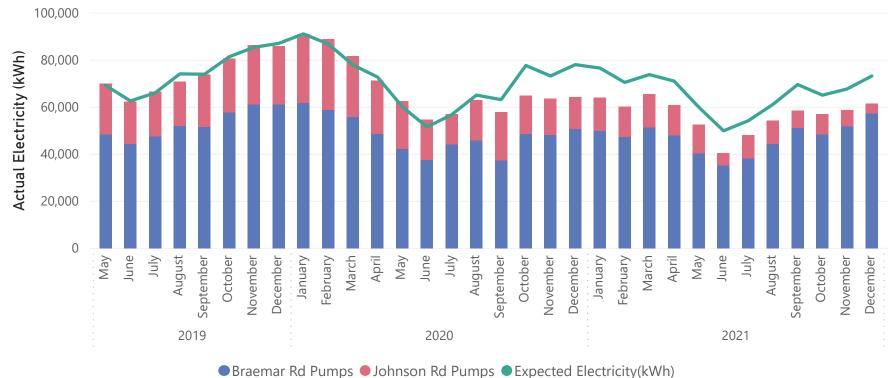
Johnson and Braemar Rd Pump Stations



Comments:

It is clear from the combined monitoring how the new, more efficient pumps (installed September 2020) at Braemar Road greatly contribute to the collective savings. On an EUI basis, even before the more efficient pumps were installed, Braemar Road was pumping water more efficiently than Johnson Rd.

Johnson and Braemar Rd Pump Stations Electricity Use Compared to Baseline (kWh)

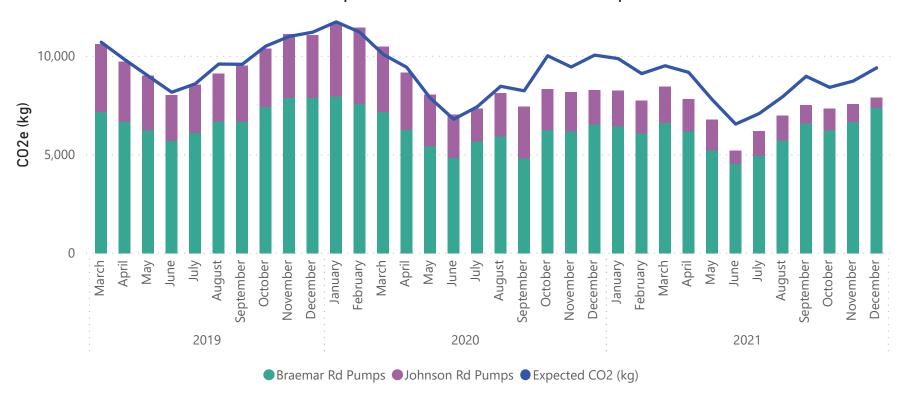


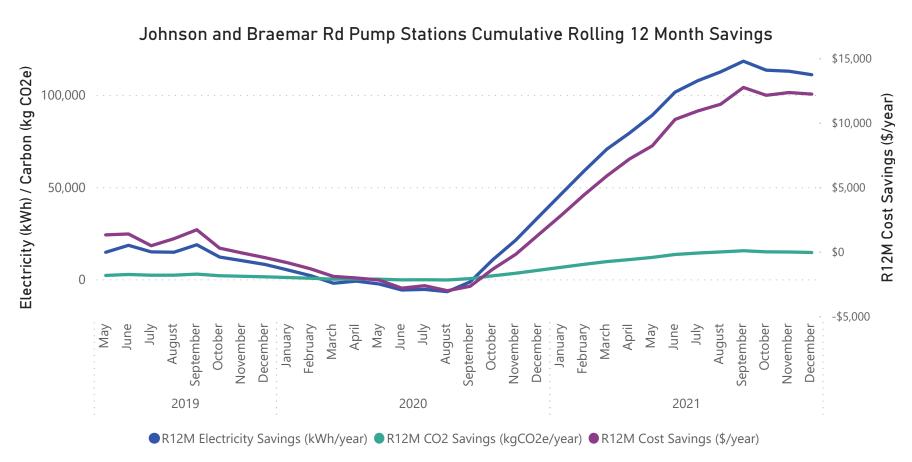
Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time



Johnson and Braemar Rd Pump Stations

Johnson and Braemar Rd Pump Stations Carbon Emissions Compared to Baseline (kWh)

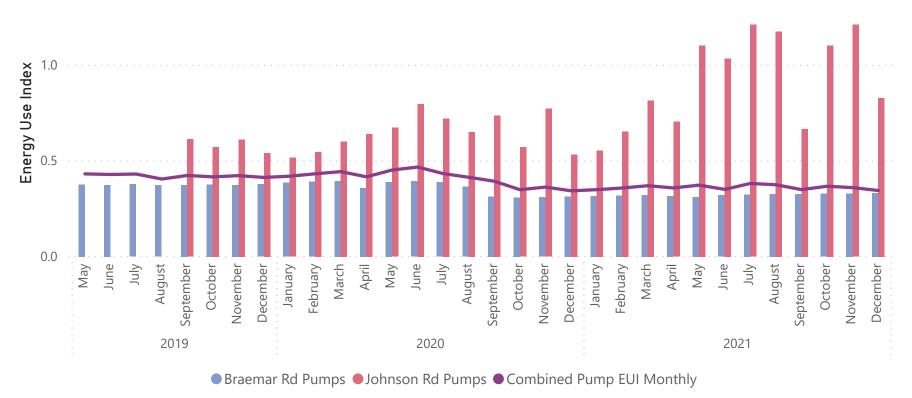






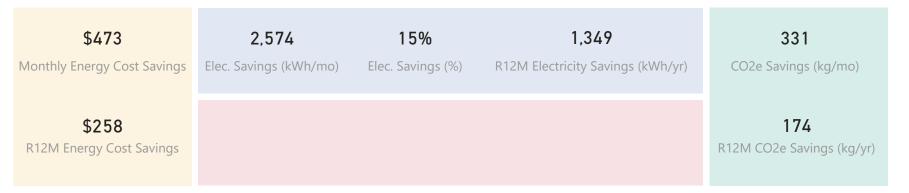
Johnson and Braemar Rd Pump Stations

Johnson and Braemar Rd Pump Stations Energy Use Index by Month





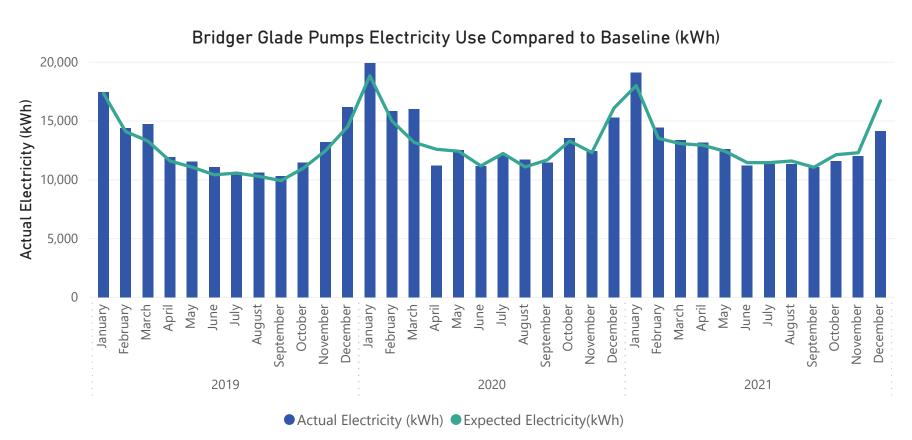
Bridger Glade Pump Station



Comments:

Electricity use has generally been as expected, or less than baseline, since June 2021 at Bridger Glade pump station.

In December 2021 electricity savings have increased to 15% less than baseline.

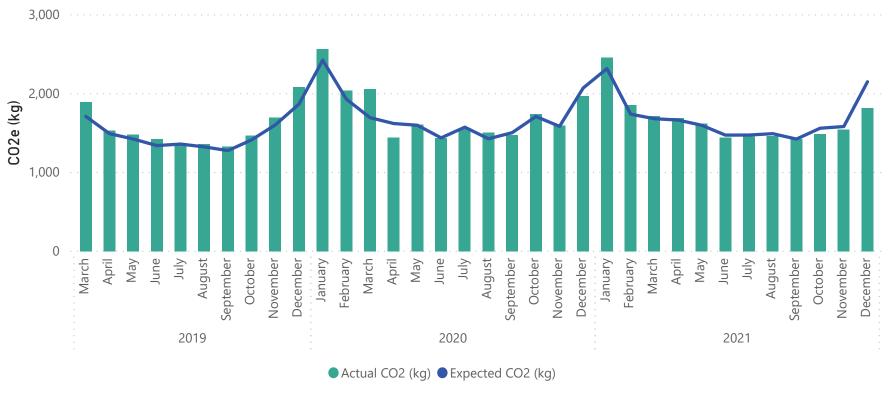


Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time



Bridger Glade Pump Station





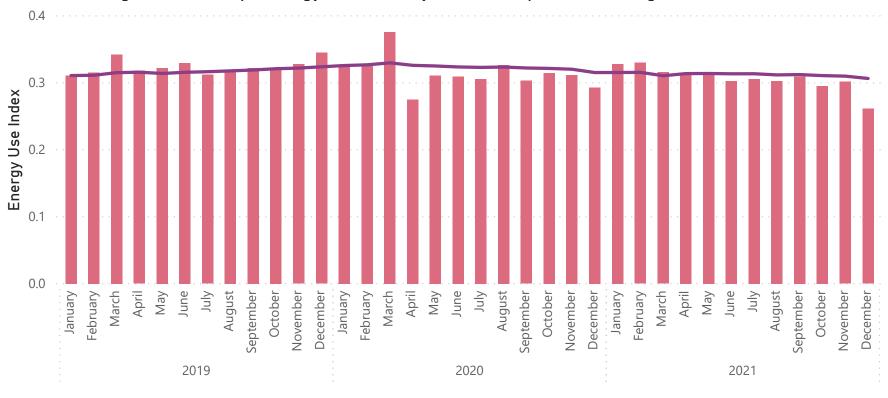






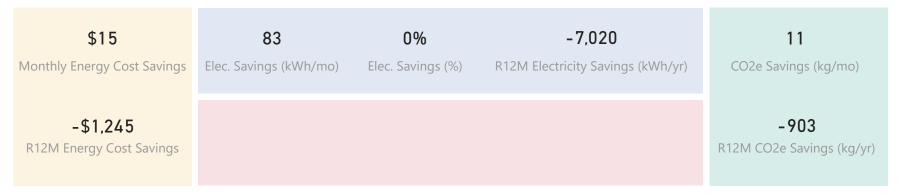
Bridger Glade Pump Station







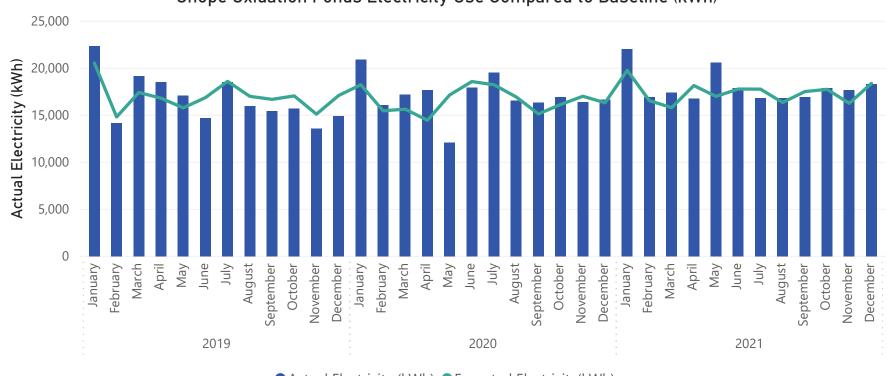
Ohope Oxidation Ponds



Comments:

Ohope oxidation pond electricity use was similar to baseline in December.

Ohope Oxidation Ponds Electricity Use Compared to Baseline (kWh)

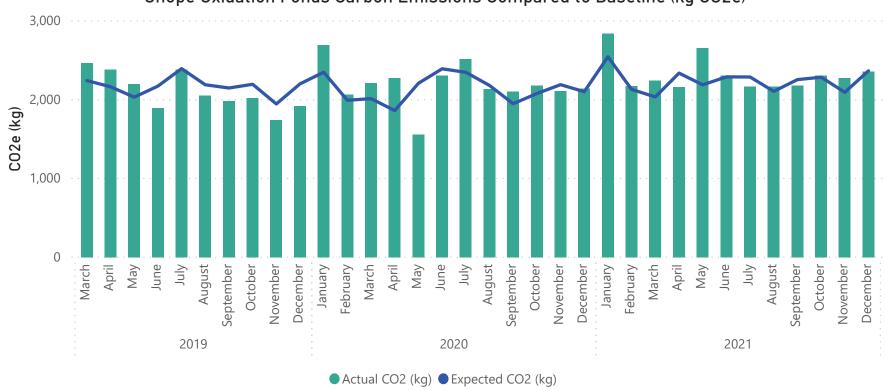


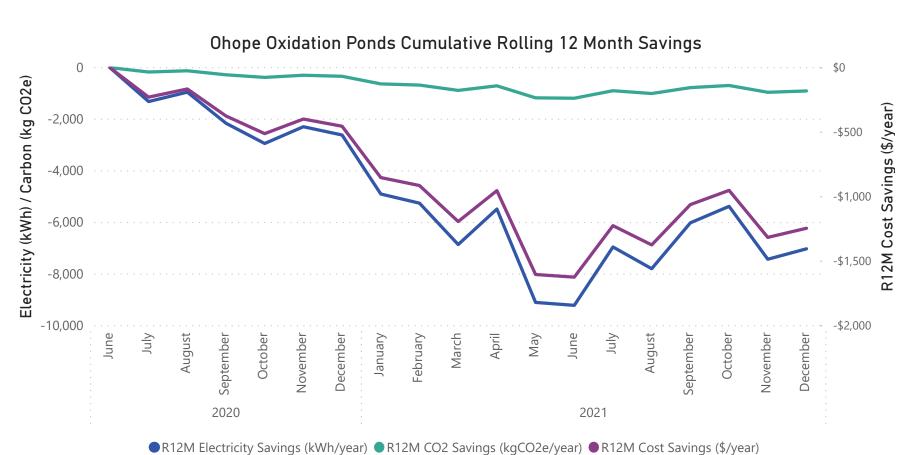
Actual Electricity (kWh)Expected Electricity(kWh)



Ohope Oxidation Ponds









Ohope Oxidation Ponds

Ohope Oxidation Ponds Energy Use Index by Month Compared to Rolling 12-Month Values





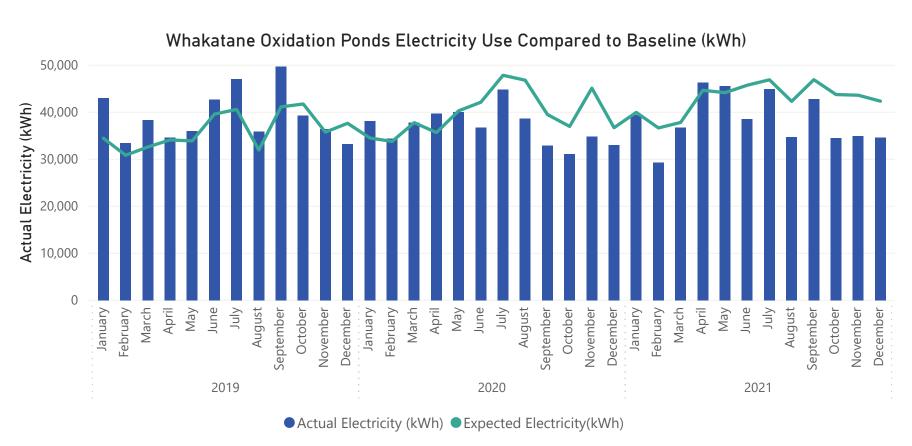
Whakatane Oxidation Ponds

	\$1,047	7,779	18%	52,718	1,001
M	Ionthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
ı	\$7,371 R12M Energy Cost Savings				6,785 R12M CO2e Savings (kg/yr)
	K 12IVI Energy Cost Savings				K 12 IVI COZE Savings (kg/)

Comments:

The Whakatane Oxidation Ponds have two ICPs, the aerators are set up as a time of use (TOU) account (supplied by Mercury), and the pumps are non-TOU (supplied by Genesis).

In December 2021, the oxidation ponds used a similar amount of electricity to the previous three months, however, the volume of water treated has decreased slightly. Rolling 12 month EUI has been steadily decreasing, which is good.

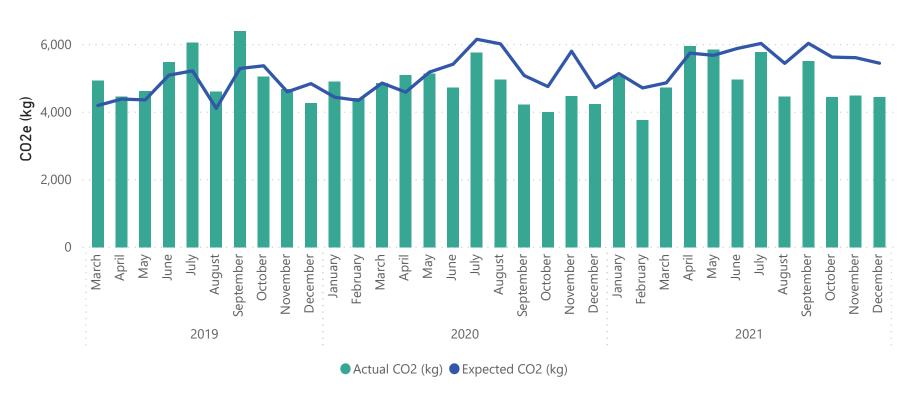


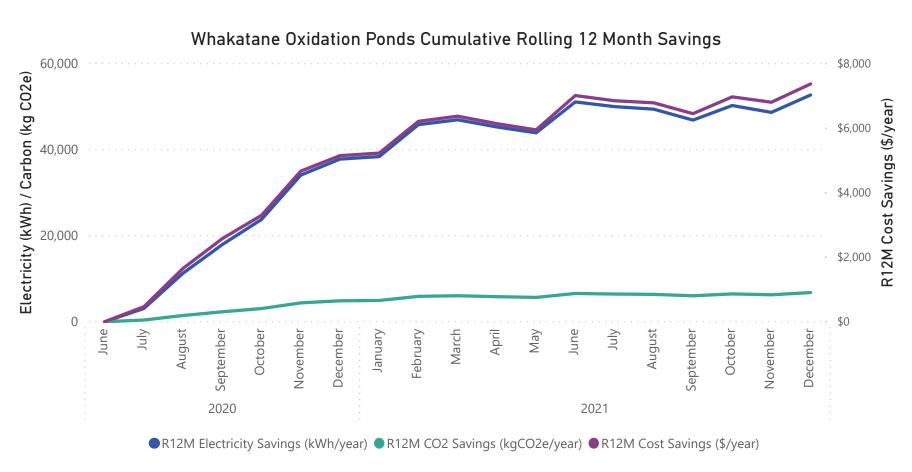
Note: New Zealand was in Covid-19 alert levels 3 and 4 from 23 March until 12 May, 2020. Energy use may have been impacted during this time



Whakatane Oxidation Ponds

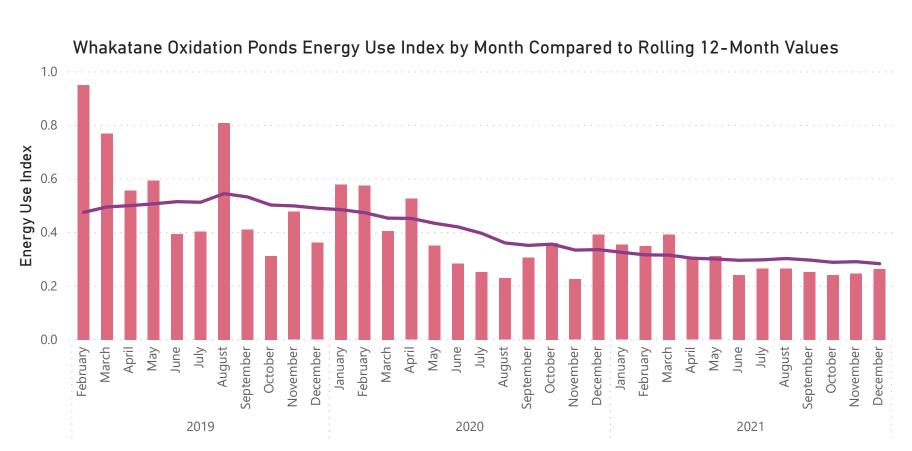
Whakatane Oxidation Ponds Carbon Emissions Compared to Baseline (kg CO2e)





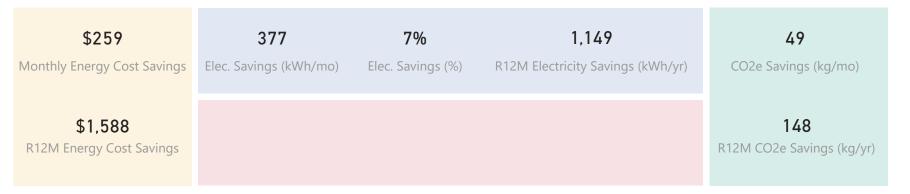


Whakatane Oxidation Ponds





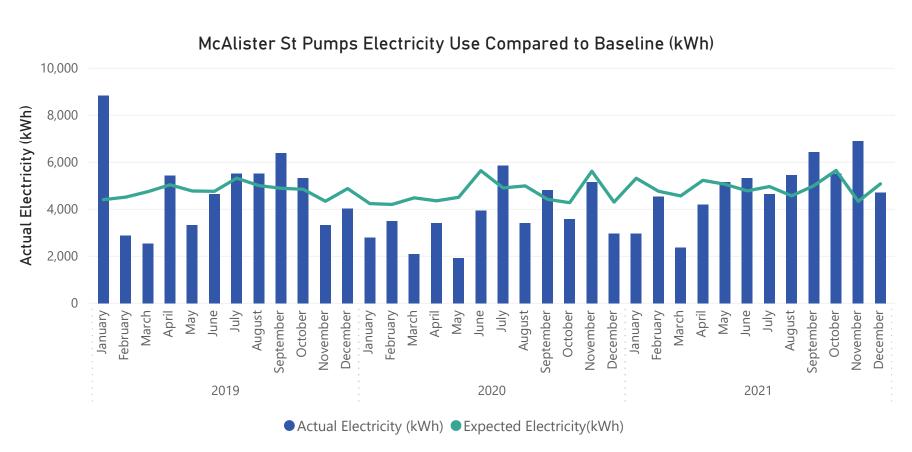
McAlister Street Pump Station



Comments:

A baseline was created for McAlister Street Pump Station that adjusts for the amount of rainfall at the Kopeopeo weather station. The baseline period is September 2020 to August 2021.

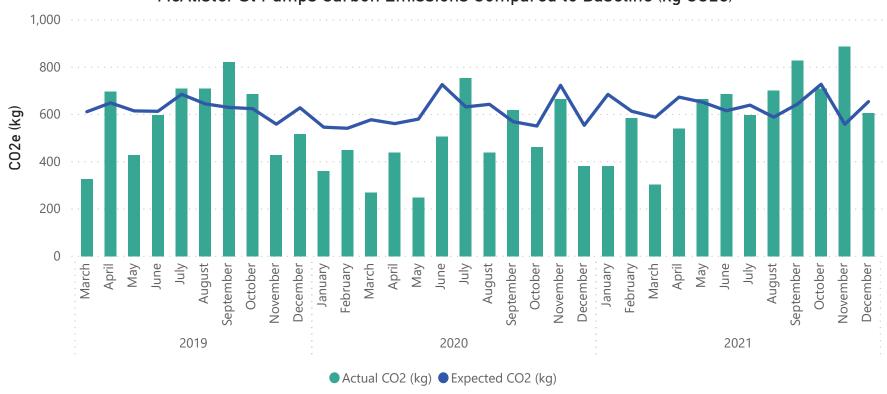
McAlister Street Pump Station is on a NHH account, some months' usage may be estimated by the retailer and captured by a subsequent meter reading. Manual readings at the end of each month would help with the accuracy of monitoring reports.





McAlister Street Pump Station





McAlister St Pumps Cumulative Rolling 12 Month Savings





Rose Gardens Pump Station

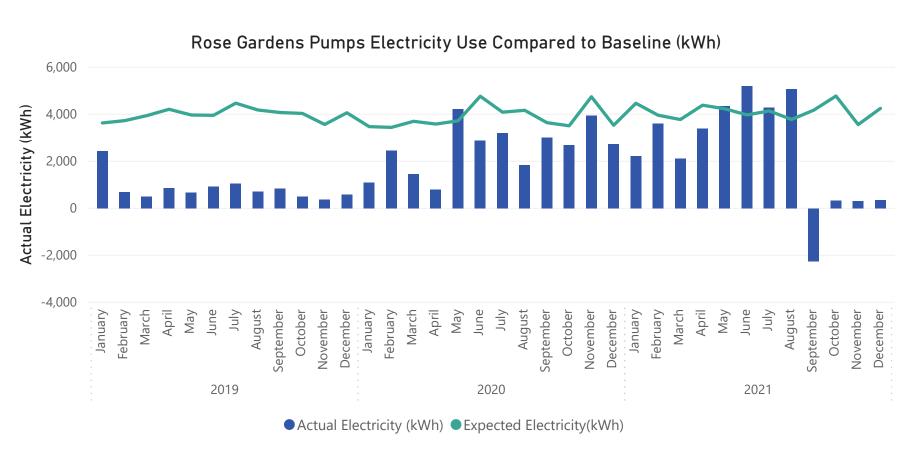
\$758	3,889	92%	20,518	501
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
\$4,293				2,641
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)

Comments:

A baseline was created for Rose Gardens Pump Station that adjusts for the amount of rainfall at the Kopeopeo weather station. The baseline period is September 2020 to August 2021.

The Rose Gardens Pump Station is on a NHH account, some months' usage may be estimated by the retailer and captured by a subsequent meter reading. The meter reading for August was over-estimated by the retailer, September's usage is derived from an actual reading and August's estimated reading. Credit was issued for the over-estimation in August 2021. Manual meter readings can improve accuracy of electricity usage.

Low usage in recent months reflect a positive change that was made in how the pump operates.





Rose Gardens Pump Station

Rose Gardens Pumps Carbon Emissions Compared to Baseline (kg CO2e)

