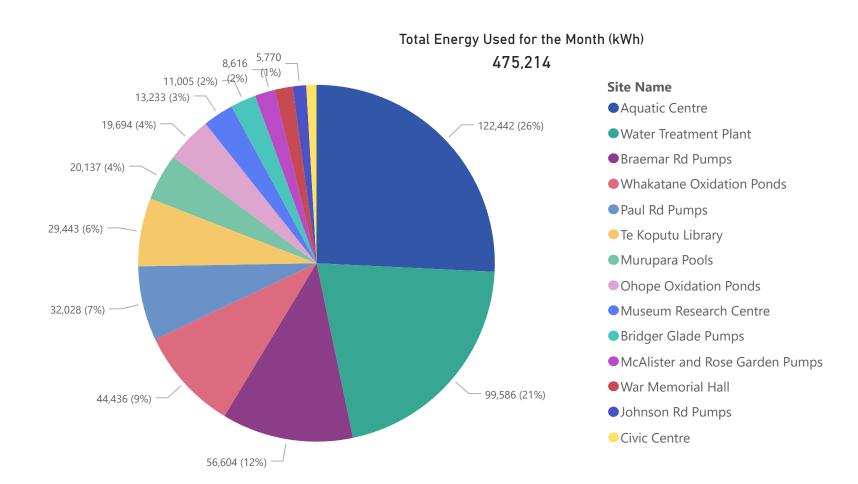


# Summary

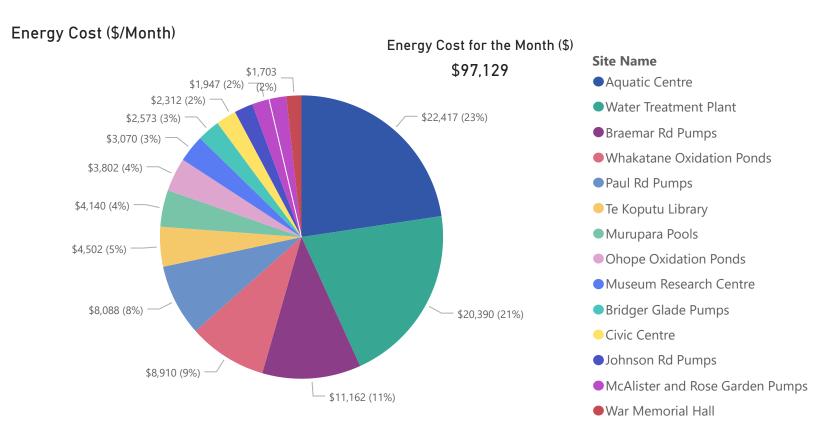
<b>\$7,271</b> Monthly Energy Cost Savings	42,484 Elec. Savings (kWh/mo)	<b>9%</b> Elec. Savings (%)	376,308 R12M Electricity Savings (kWh/yr)	<b>5,078</b> CO2e Savings (kg/mo)
\$118,269 R12M Energy Cost Savings	<b>-2,355</b> Gas. Savings (kWh/mo)	<b>-12%</b> Gas. Savings (%)	<b>634,093</b> R12M Gas Savings (kWh/yr)	<b>186,837</b> R12M CO2e Savings (kg/yr)

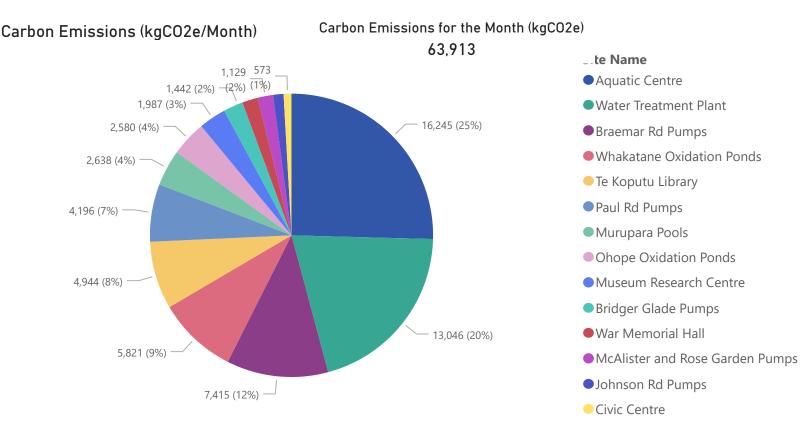
### Total Energy (kWh/Month)





# Summary

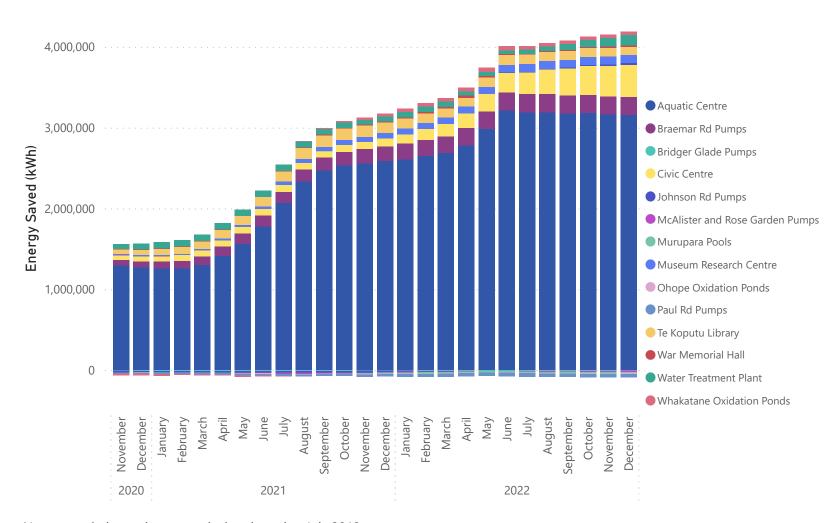






# **Summary**

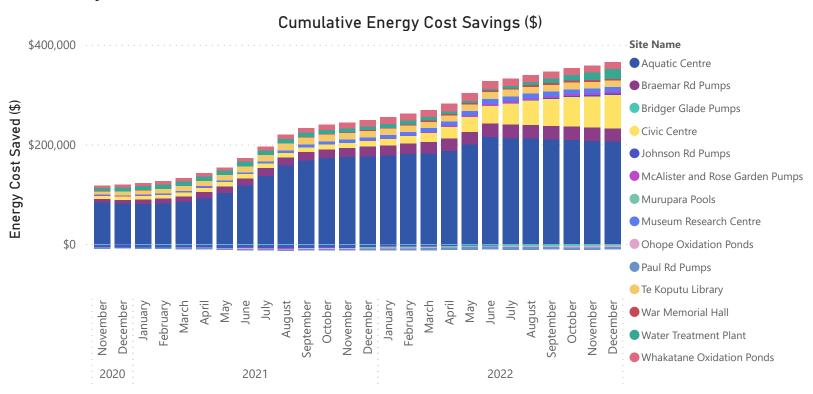
#### Cumulative Energy Savings (kWh)



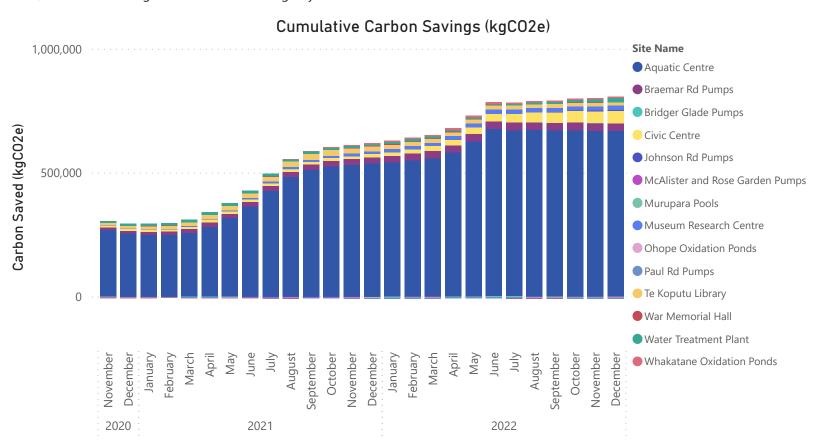
Note, cumulative savings are calculated starting July 2018



# Summary



Note, cumulative savings are calculated starting July 2018





### Civic Centre

\$3,290	19,967	82%	299,270	2,616
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
\$55,452				38,712
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)

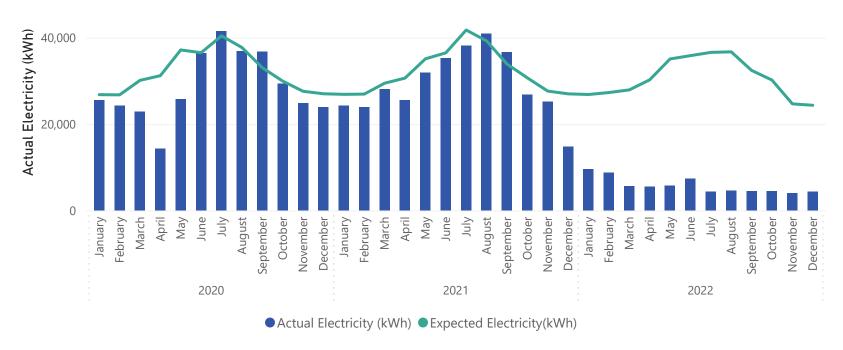
#### **Comments:**

The baseline for the Civic Centre has been updated, the baseline period was selected as Dec-2020 to Nov-2021, in order to exclude months where refurbishment was taking place.

Electricity use continues to be less than baseline for 2022, the Civic Centre renovation has displaced many office workers, which has decreased electricity demand.

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

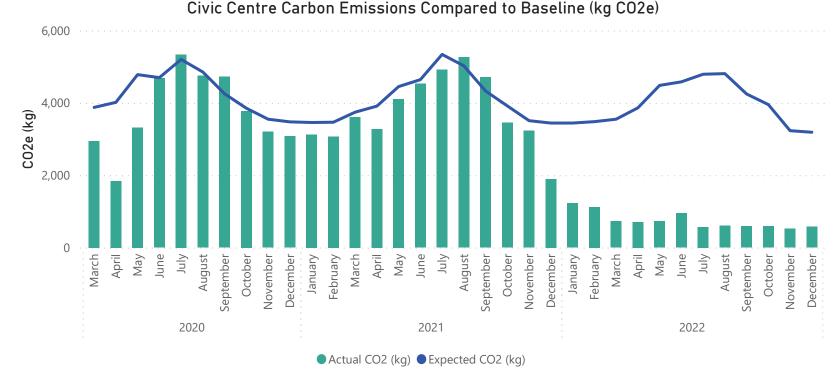
#### Civic Centre Electricity Use Compared to Baseline (kWh)

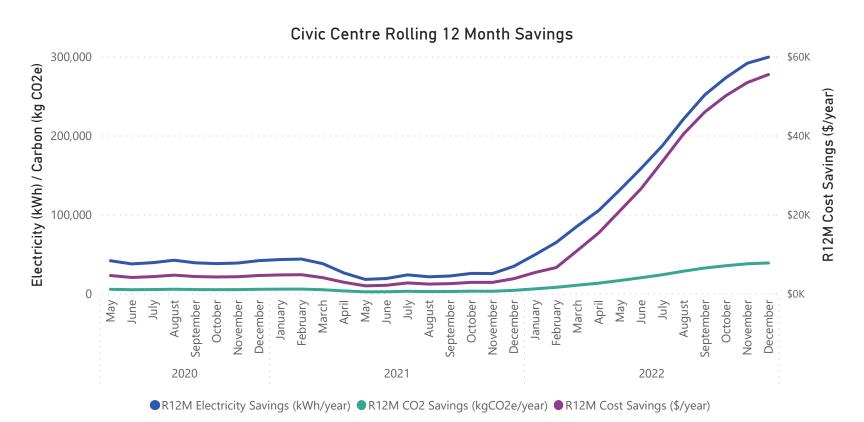




## Civic Centre



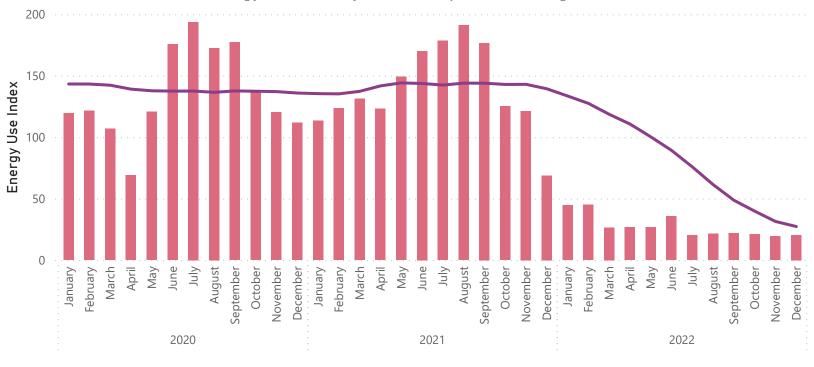






## Civic Centre





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



## **Aquatic Centre**

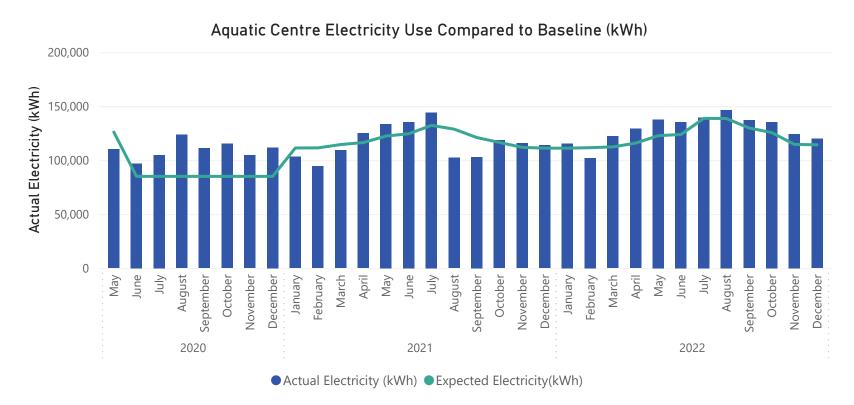
-\$1,000 Monthly Energy Cost Savings	- 5,455 Elec. Savings (kWh/mo)	<b>- 5%</b> Elec. Savings (%)	-85,401 R12M Electricity Savings (kWh/yr)	<b>-988</b> CO2e Savings (kg/mo)
\$30,135 R12M Energy Cost Savings	<b>-1,319</b> Gas. Savings (kWh/mo)	<b>- 95%</b> Gas. Savings (%)	657,136 R12M Gas Savings (kWh/yr)	<b>131,724</b> R12M CO2e Savings (kg/yr)

#### **Comments:**

Electricity and natural gas baselines have been updated for the Aquatic Centre, the baseline period is May 2021 to June 2022 and excludes Aug. and Sept. 2021 due to changes in Covid-19 alert levels and partial closure. The outdoor pool is open year-round and the baseline reflects this change.

Both electricity and natural gas use were higher than expected in December 2022. Gas use is approximately twice as much as expected, however, this is because very little gas use was expected for the month. The EUI for the month is lower than the average for the past 12 months, which is good.

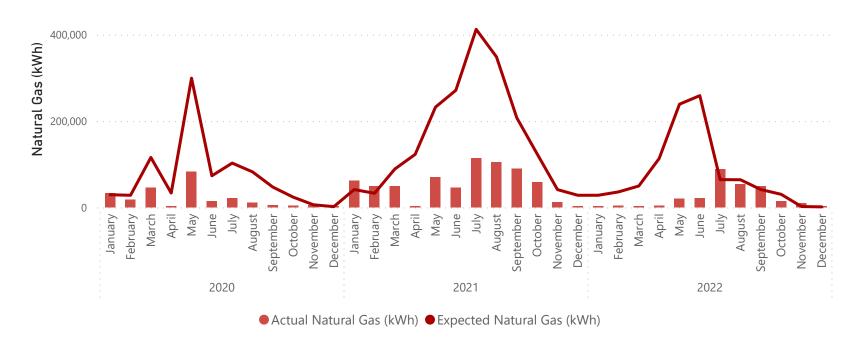
Rolling 12 month savings are decreasing and will continue to decrease as a result from savings being measured against the new baseline. Savings can be increased by implementing new energy saving initiatives.



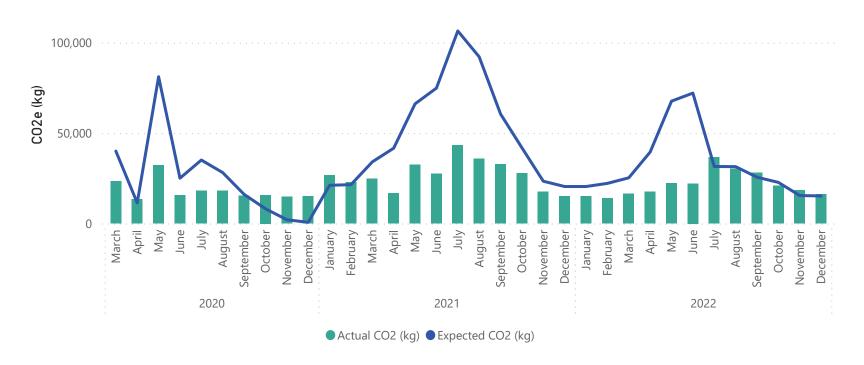


# **Aquatic Centre**

#### Aquatic Centre Natural Gas Compared to Baseline (kWh)

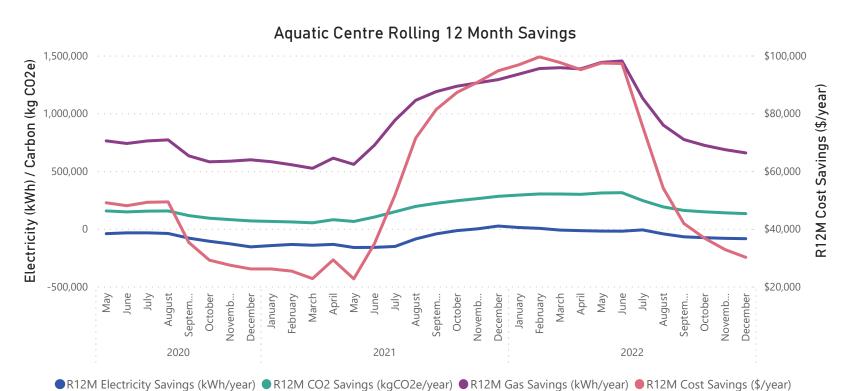


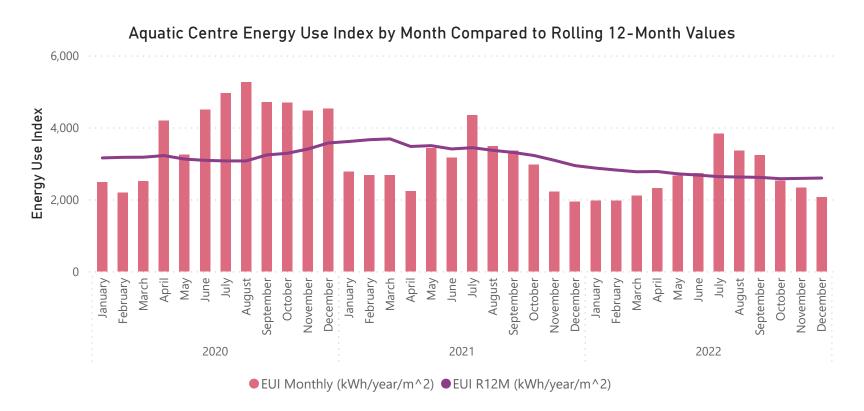
#### Aquatic Centre Carbon Emissions Compared to Baseline (kg CO2e)





# **Aquatic Centre**







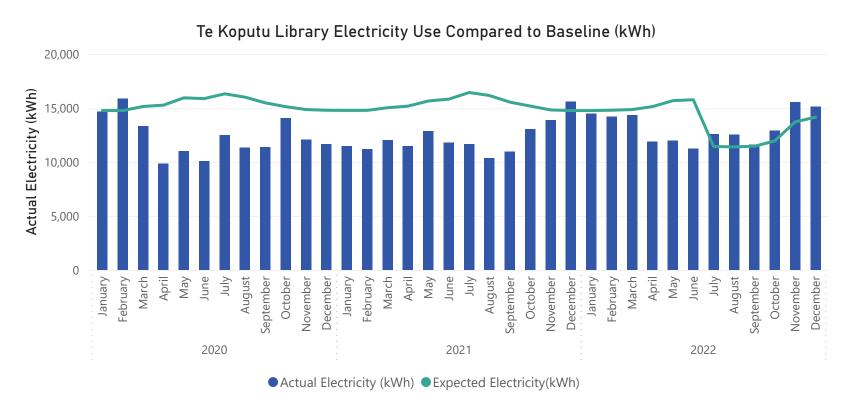
# Te Koputu Library

-\$246 Monthly Energy Cost Savings	-978 Elec. Savings (kWh/mo)	<b>-7%</b> Elec. Savings (%)	<b>6,691</b> R12M Electricity Savings (kWh/yr)	-342 CO2e Savings (kg/mo)
<b>-\$458</b> R12M Energy Cost Savings	- 1,035 Gas. Savings (kWh/mo)	<b>-8%</b> Gas. Savings (%)	-28,154 R12M Gas Savings (kWh/yr)	- <b>5,121</b> R12M CO2e Savings (kg/yr)

#### **Comments:**

New baselines were established for electricity and natural gas at the Library, the baseline period is July 2021 to June 2022 and use cooling degree days as the independent variable.

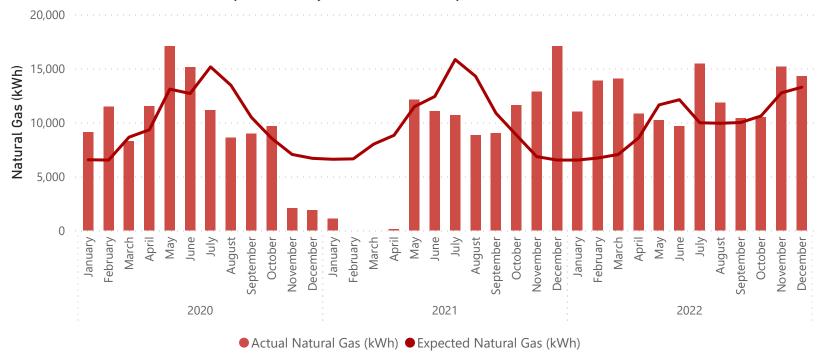
Electricity use was above baseline for the month, natural gas use was also higher than expected. It is likely that the main cause of higher energy use is from significant dehumidification loads. The average daily temperature in December 2022 was two degrees cooler than December 2021. Less natural gas and electricity were used in December 2022, compared to December 2021.



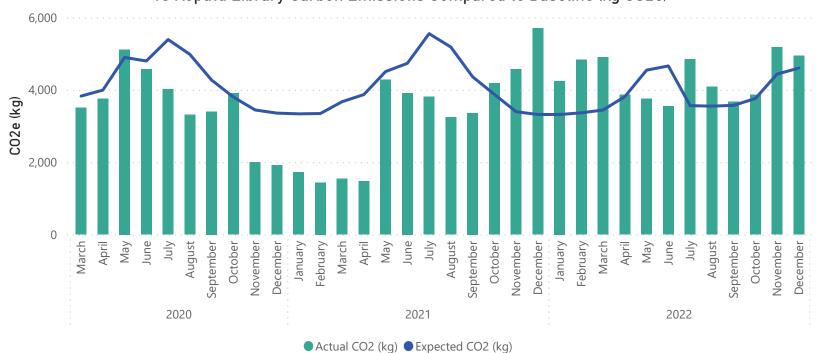


# Te Koputu Library









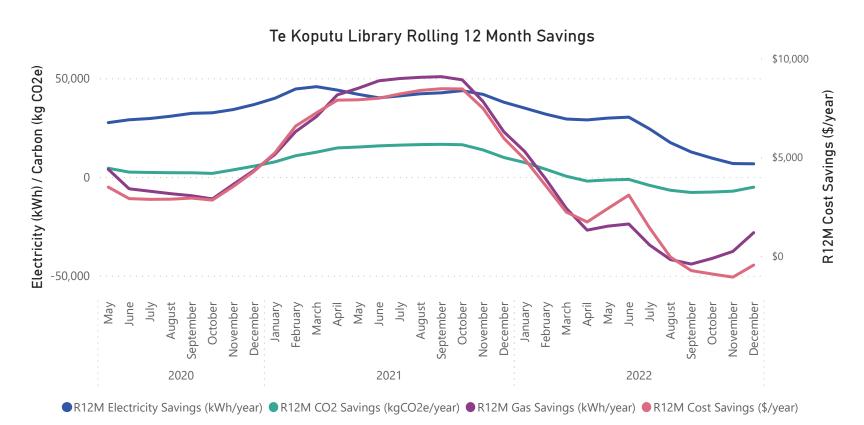


# Te Koputu Library











## Museum and Research Centre

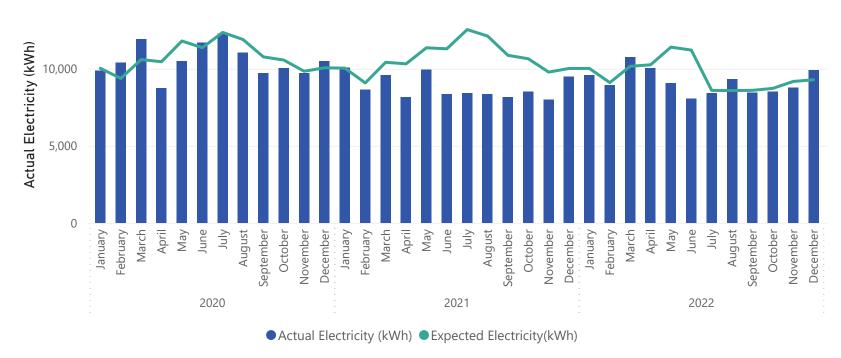
-\$147 Monthly Energy Cost Savings	-614 Elec. Savings (kWh/mo)	<b>-7%</b> Elec. Savings (%)	<b>5,383</b> R12M Electricity Savings (kWh/yr)	-193 CO2e Savings (kg/mo)
<b>\$2,832</b> R12M Energy Cost Savings	- 545 Gas. Savings (kWh/mo)	<b>-20%</b> Gas. Savings (%)	<b>22,180</b> R12M Gas Savings (kWh/yr)	<b>5,494</b> R12M CO2e Savings (kg/yr)

#### **Comments:**

New baselines were established for electricity and natural gas at the Museum and Research Centre, the baseline period is July 2021 to June 2022. The electricity baseline uses cooling degree days as the independent variable and the natural gas baseline uses heating degree days as the independent variable.

Electricity and natural gas use were both higher than expected, which is likely due to dehumidification requirements.

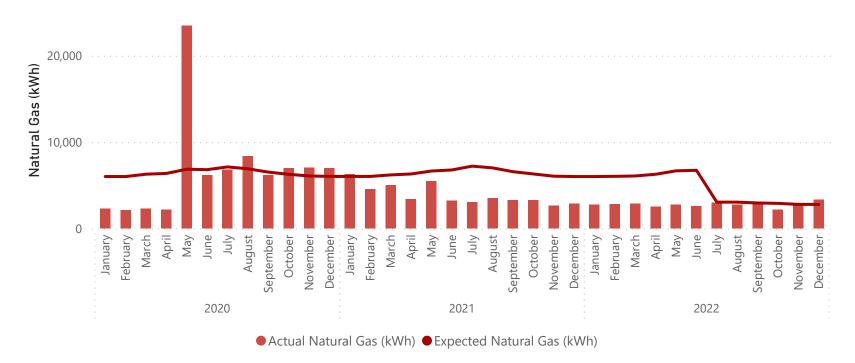
#### Museum Research Centre Electricity Use Compared to Baseline (kWh)



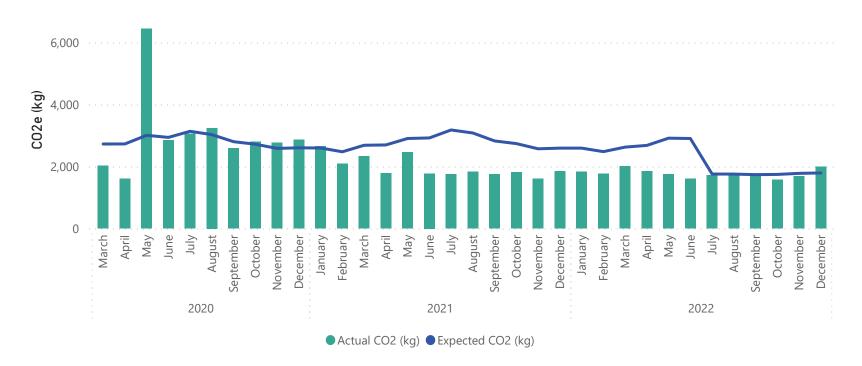


## Museum and Research Centre

#### Museum Research Centre Natural Gas Compared to Baseline (kWh)

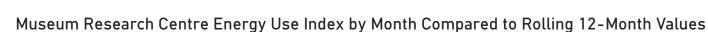


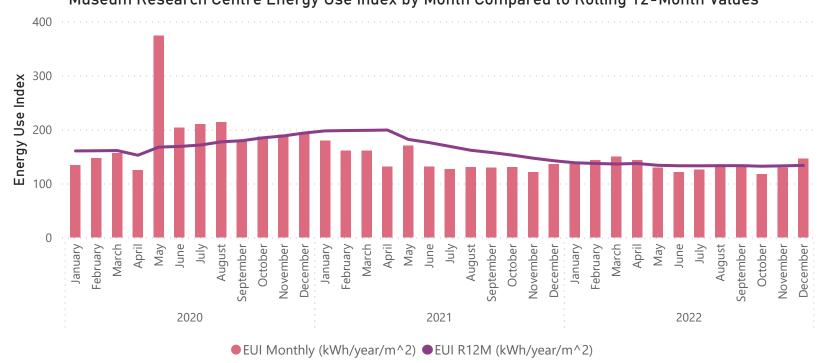
#### Museum Research Centre Carbon Emissions Compared to Baseline (kg CO2e)



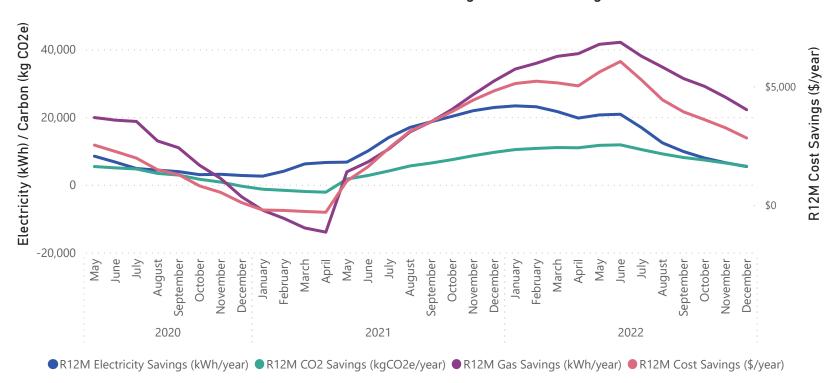


## Museum and Research Centre





#### Museum Research Centre Rolling 12 Month Savings





### War Memorial Hall

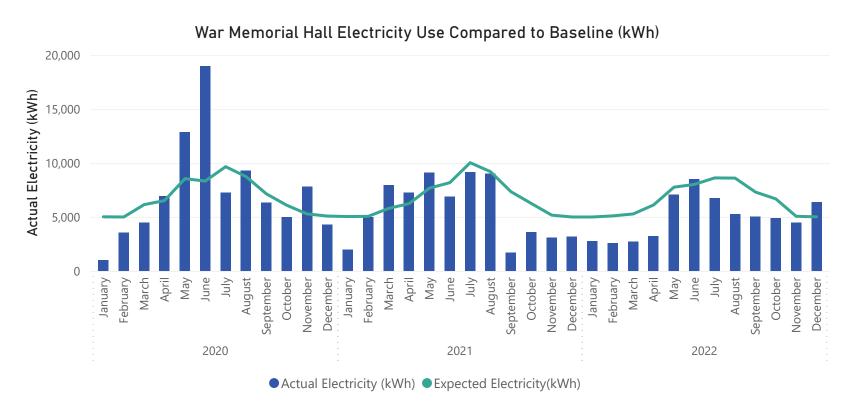
-\$187 Monthly Energy Cost Savings	-1,334 Elec. Savings (kWh/mo)	<b>-27%</b> Elec. Savings (%)	18,958 R12M Electricity Savings (kWh/yr)	<b>-62</b> CO2e Savings (kg/mo)
<b>\$2,307</b> R12M Energy Cost Savings	<b>544</b> Gas. Savings (kWh/mo)	<b>27%</b> Gas. Savings (%)	<b>-17,069</b> R12M Gas Savings (kWh/yr)	-1,173 R12M CO2e Savings (kg/yr)

#### **Comments:**

The baseline was updated for War Memorial Hall, the baseline adjusts for ambient temperature. The baseline period is July 2021 to June 2022. The War Memorial Hall uses more electricity and gas in winter months.

The War Memorial Hall has NHH accounts for both natural gas and electricity. Some months' usage may be estimated by the retailer and captured by a subsequent meter reading. It is recommended that manual meter readings are taken, which would improve accuracy of electricity and gas usage.

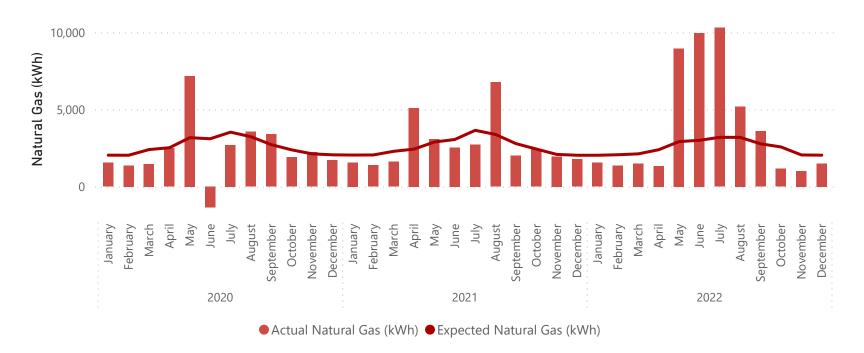
The War Memorial Hall has achieved significant gas savings for the month, however, electricity use is higher than expected. Carbon emissions for the month are 6% more than expected.



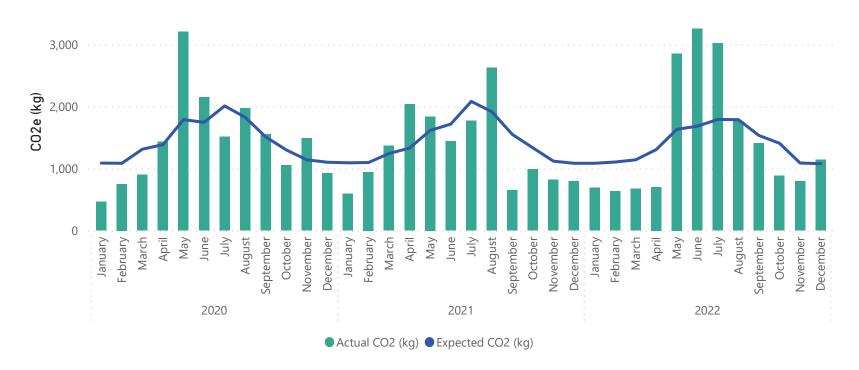


## War Memorial Hall

#### War Memorial Hall Natural Gas Compared to Baseline (kWh)



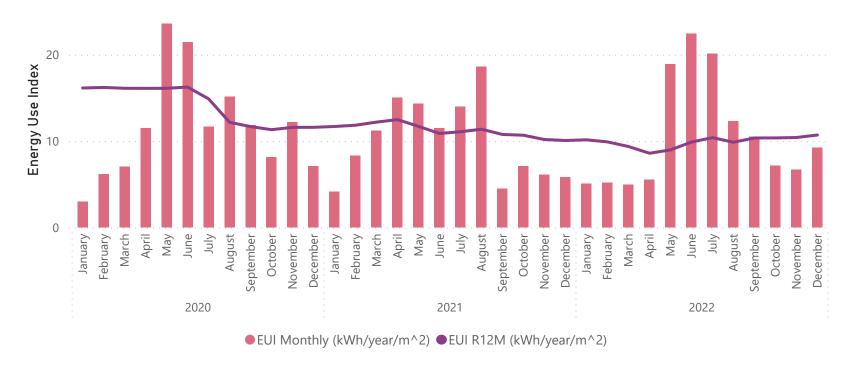
#### War Memorial Hall Carbon Emissions Compared to Baseline (kg CO2e)

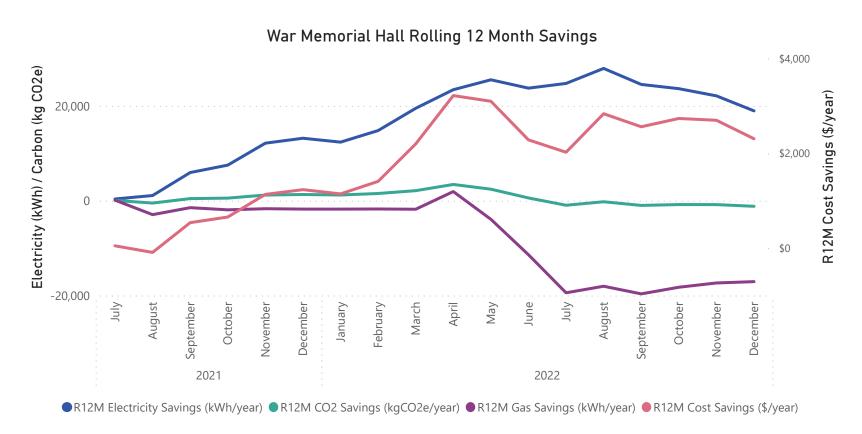




## War Memorial Hall

War Memorial Hall Energy Use Index by Month Compared to Rolling 12-Month Values







#### Water Treatment Plant

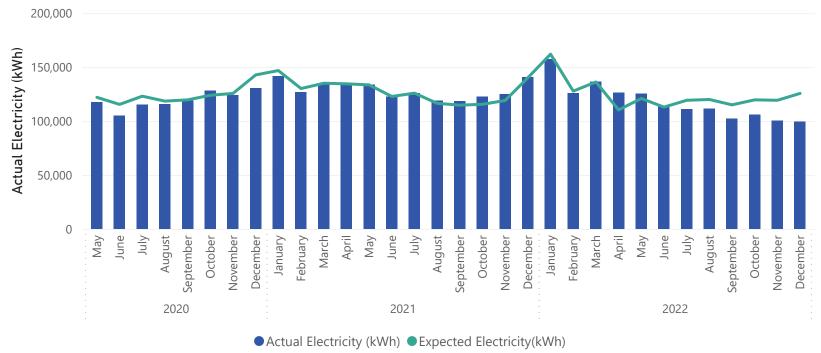
\$4,258	26,013	21%	73,303	3,408
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
\$12,086				9,637
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)

#### **Comments:**

The electricity use baseline was updated for the Water Treatment Plant, the baseline period is July 2021 to June 2022. The electricity baseline uses the amount of water pumped (m<sup>3</sup>) as the independent variable.

A 21% savings has been achieved at the WTP this month. The monthly EUI is less than the average over the last 12 months and rolling 12-month savings are increasing, which is good. Less water has been treated in December 2022 compared to Dec 2021, however, a significant savings has been achieved this year.

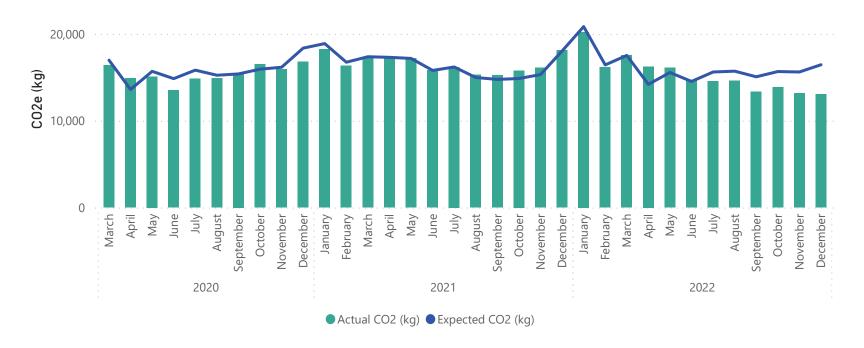






## Water Treatment Plant

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



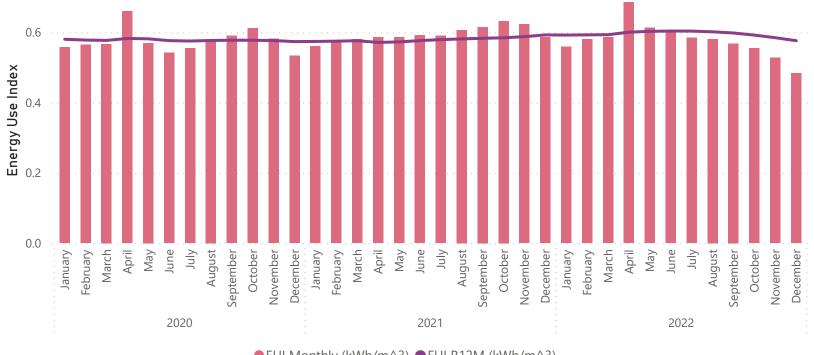
#### Water Treatment Plant Rolling 12 Month Savings





## 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)



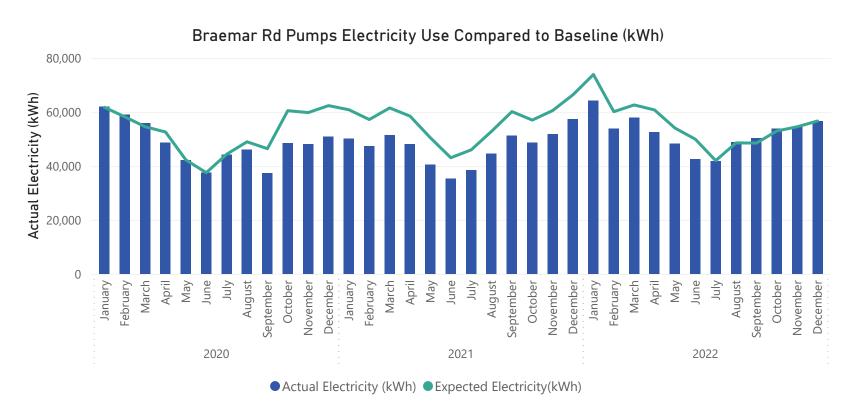
## **Braemar Road Pump Station**

\$15 Monthly Energy Cost Savings	91 Elec. Savings (kWh/mo)	<b>0%</b> Elec. Savings (%)	<b>39,473</b> R12M Electricity Savings (kWh/yr)	<b>12</b> CO2e Savings (kg/mo)
\$6,933 R12M Energy Cost Savings				<b>5,184</b> R12M CO2e Savings (kg/yr)

#### **Comments:**

The electricity use baseline was updated for the Braemar Road Pump Station, the baseline period is July 2021 to June 2022. The electricity baseline uses the amount of water pumped (m^3) as the independent variable.

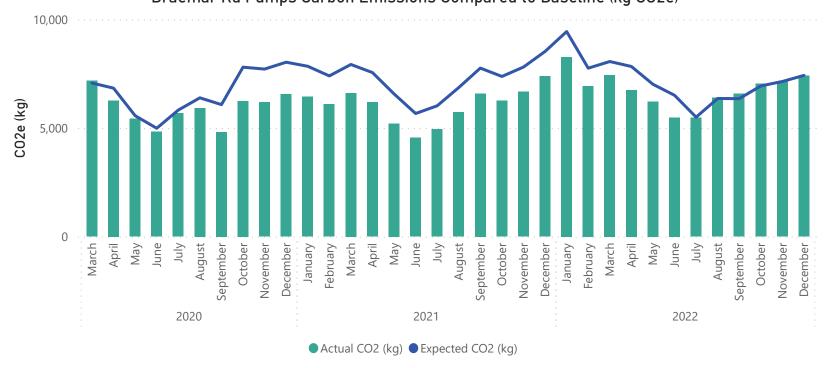
Savings from the high efficiency pumps and motors will no longer be visible when comparing to the new baseline and rolling 12-month savings will decrease. However, real savings have been achieved since September 2020, using approximately 15% less electricity compared to the older pumps and motors, which is evident in the EUI chart.



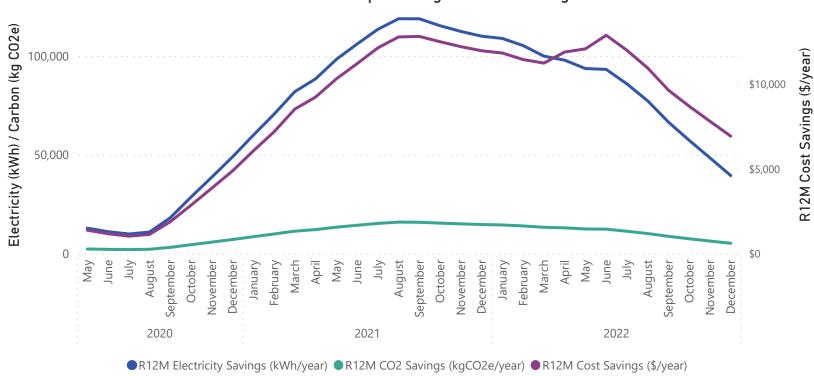


# Braemar Road Pump Station





#### Braemar Rd Pumps Rolling 12 Month Savings





# **Braemar Road Pump Station**





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



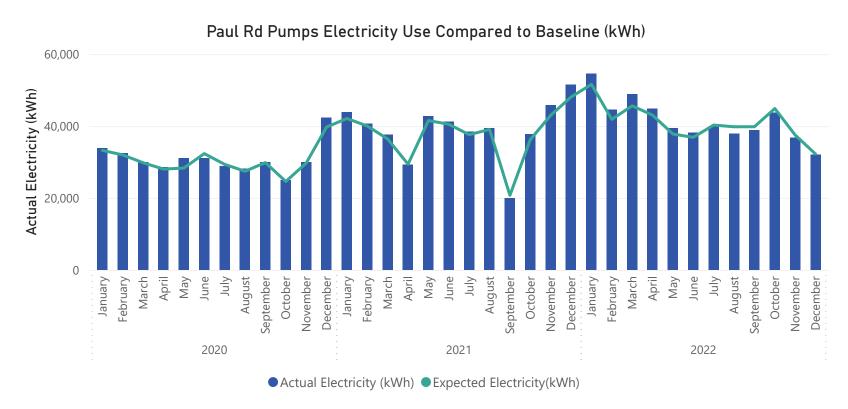
## Paul Road Pump Station

\$31	187	1%	-8,267	24
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
-\$1,224 R12M Energy Cost Savings				<b>-1,046</b> R12M CO2e Savings (kg/yr)

#### **Comments:**

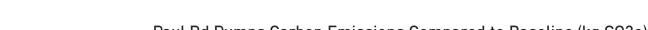
The electricity use baseline was updated for the Paul Road Pump Station, the baseline period is July 2021 to June 2022. The electricity baseline uses the amount of water pumped (m<sup>3</sup>) as the independent variable. The updated baseline has a smaller baseload factor and a larger variable component.

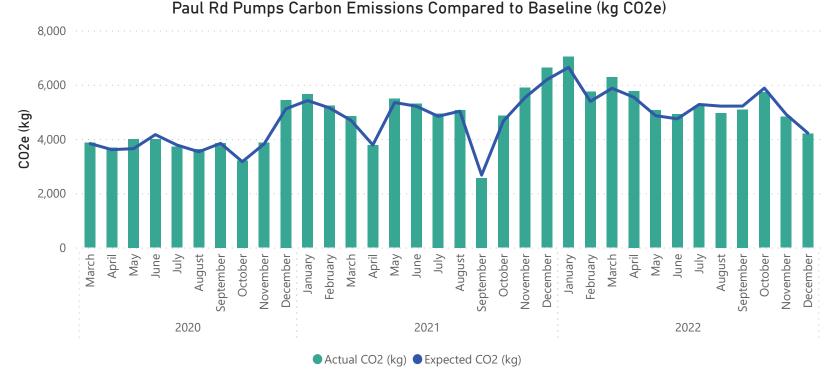
Another month where small savings have been achieved at the Paul Road Pump Station. The monthly EUI is slightly more than average over the past 12 months.

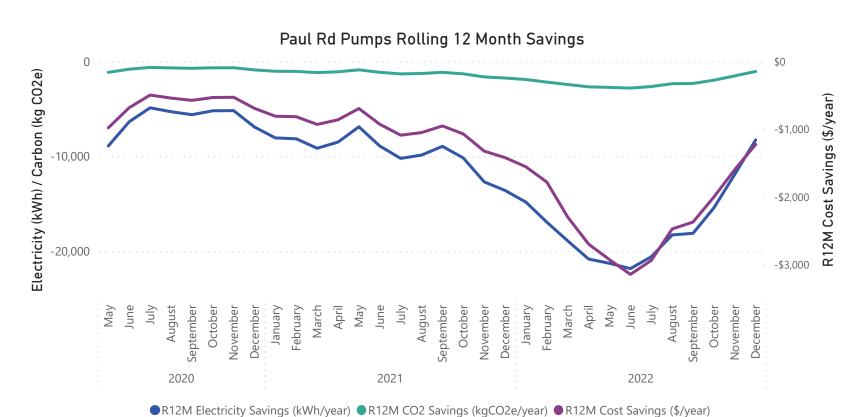




# Paul Road Pump Station









# Paul Road Pump Station

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



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



# Johnson Road Pump Station

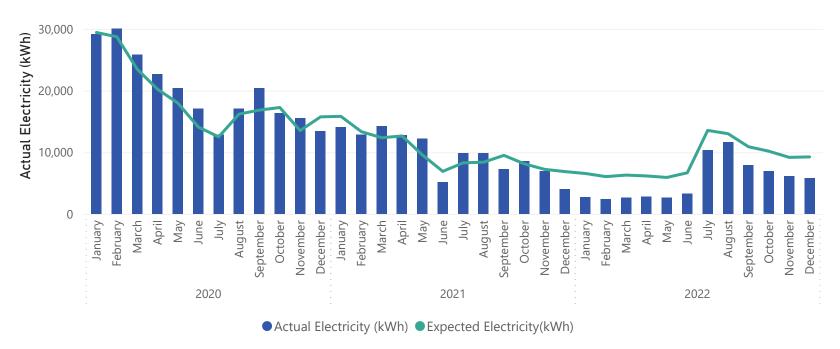
<b>\$748</b> Monthly Energy Cost Savings	3,477 Elec. Savings (kWh/mo)	38% Elec. Savings (%)	38,487 R12M Electricity Savings (kWh/yr)	<b>456</b> CO2e Savings (kg/mo)
<b>\$8,394</b> R12M Energy Cost Savings				<b>4,994</b> R12M CO2e Savings (kg/yr)

#### **Comments:**

The electricity use baseline was updated for the Johnson Road Pump Station, the baseline period is Aug 2018 to June 2022. The electricity baseline uses the amount of water pumped (m<sup>3</sup>) as the independent variable. The updated baseline has a smaller baseload factor and a larger variable component.

Another good month of savings for the month at Johnson Rd Pump Station, using nearly 40% less electricity than expected.

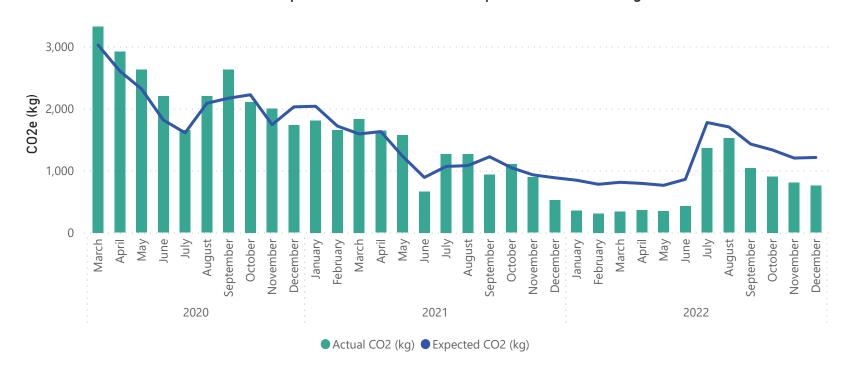
#### Johnson Rd Pumps Electricity Use Compared to Baseline (kWh)

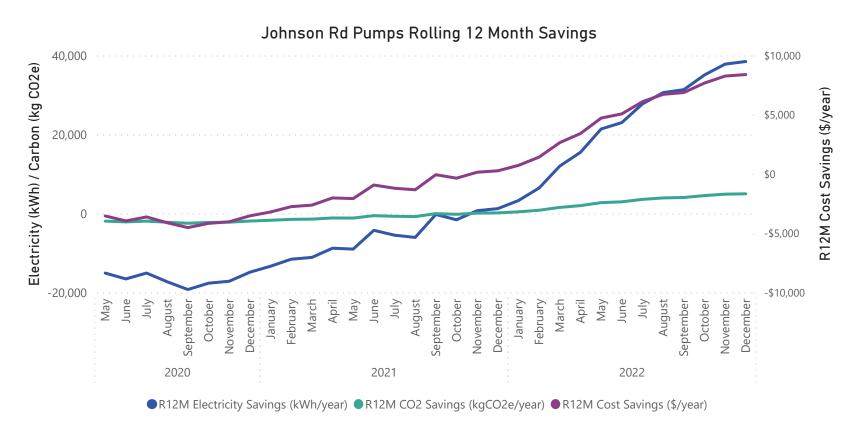




# Johnson Road Pump Station

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

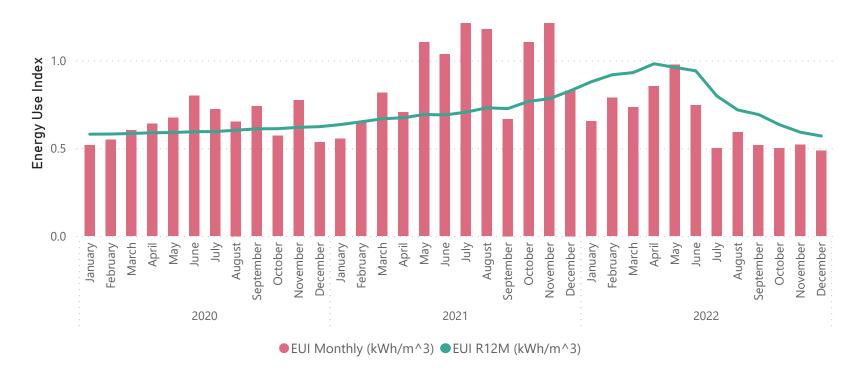






# Johnson Road Pump Station

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





## Johnson and Braemar Rd Pump Stations

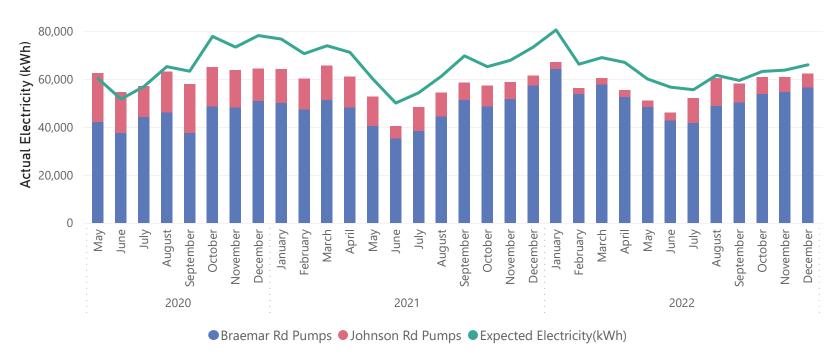
<b>\$764</b> Monthly Energy Cost Savings	3,569 Elec. Savings (kWh/mo)	<b>5%</b> Elec. Savings (%)	77,959 R12M Electricity Savings (kWh/yr)	<b>468</b> CO2e Savings (kg/mo)
\$15,327 R12M Energy Cost Savings	Liec. Javings (kvvii) iiio)	Liec. Savings (70)	K12IVI Electricity Savings (kwii/yii)	10,177 R12M CO2e Savings (kg/yr)

#### **Comments:**

Baselines were updated for Johnson Road and Braemar Road pump stations.

Johnson Rd achieved savings in December 2022, Braemar Rd pump station's electricity use was close to expected for the month. The monthly EUI for the two pumps has shown a trend of decreasing energy use in recent months, which is good.

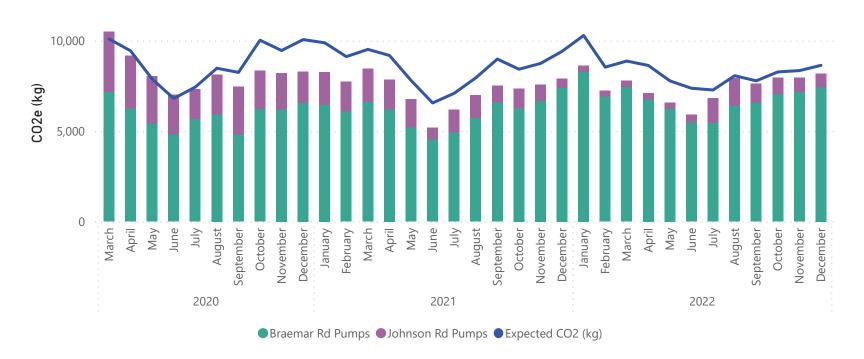
#### Johnson and Braemar Rd Pump Stations Electricity Use Compared to Baseline (kWh)

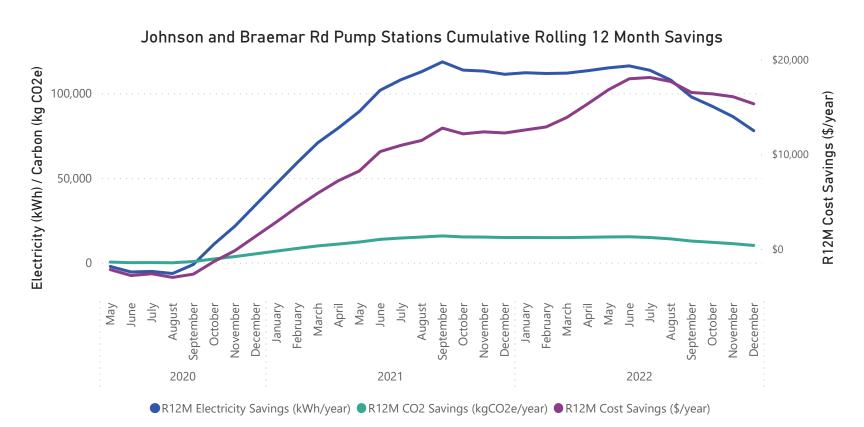




# Johnson and Braemar Rd Pump Stations

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

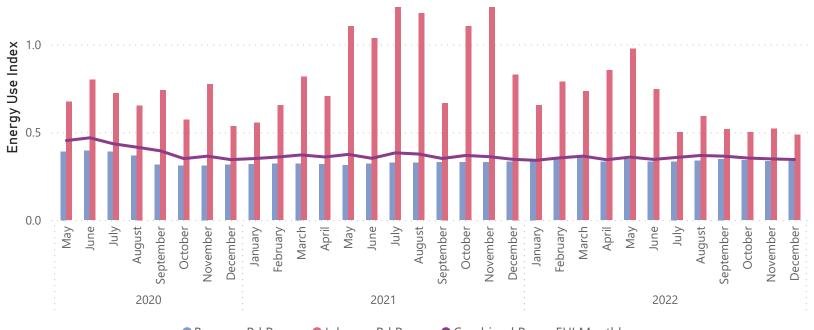






# Johnson and Braemar Rd Pump Stations

Johnson and Braemar Rd Pump Stations Energy Use Index by Month





## Bridger Glade Pump Station

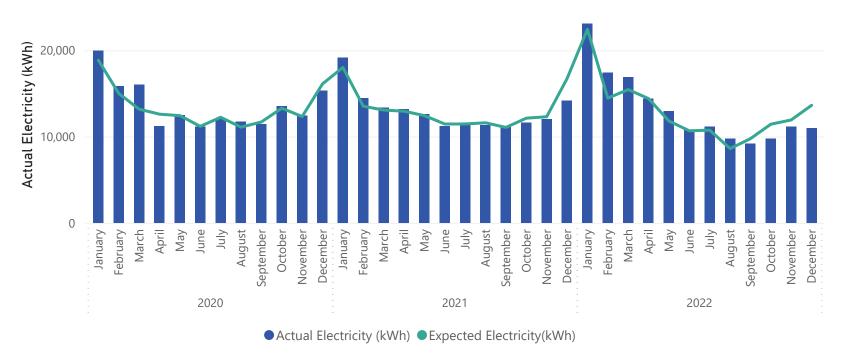
\$462 Monthly Energy Cost Savings	2,622	19%	-2,096	343
-\$415	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo) -260
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)

#### **Comments:**

The electricity use baseline was updated for the Bridger Glade Pump Station, the baseline period is July 2021 to June 2022. The electricity baseline uses the amount of water pumped (m^3) as the independent variable. The updated baseline has no baseload factor and a marginally larger variable component.

December is the fourth month in a row that the Bridger Glade Pump Station has used less electricity than expected. The monthly EUI is less than average over the last 12 months.

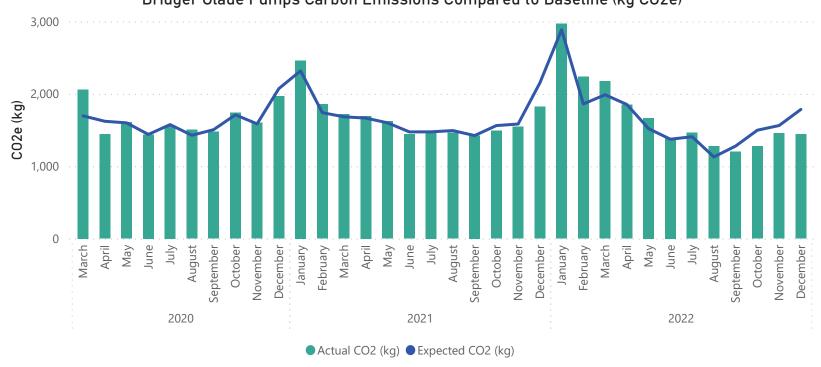
#### Bridger Glade Pumps Electricity Use Compared to Baseline (kWh)



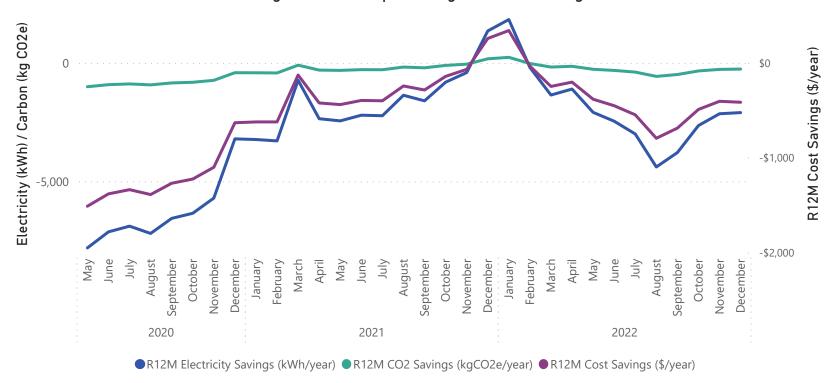


# Bridger Glade Pump Station











# Bridger Glade Pump Station





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



## **Ohope Oxidation Ponds**

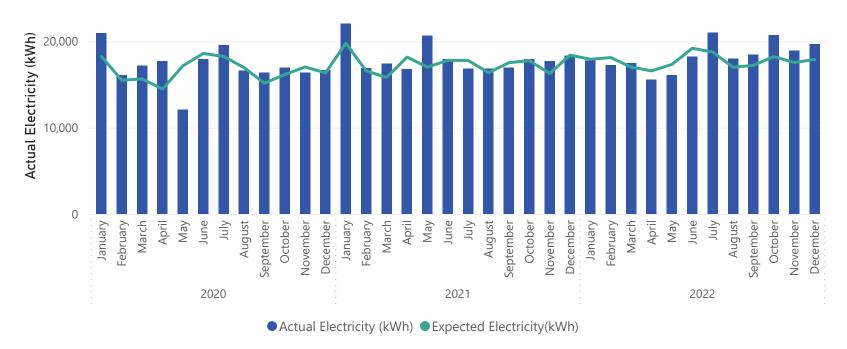
-\$318	-1,809	-10%	-6,329	-237
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
-\$1,100 R12M Energy Cost Savings				-838 R12M CO2e Savings (kg/yr)

#### **Comments:**

The baseline for electricity use was updated for the Ohope Oxidation Ponds, the baseline period is July 2021 to June 2022. The electricity baseline uses the amount of effluent pumped (m<sup>3</sup>) as the independent variable. The updated baseline has a larger baseload factor and a smaller variable component.

Ohope Oxidation Ponds used an extra 10% electricity in December 2022 compared to expected. In the last six months the Oxidation Ponds have used more electricity than expected, more electricity was also used when compared to the first half of the year.

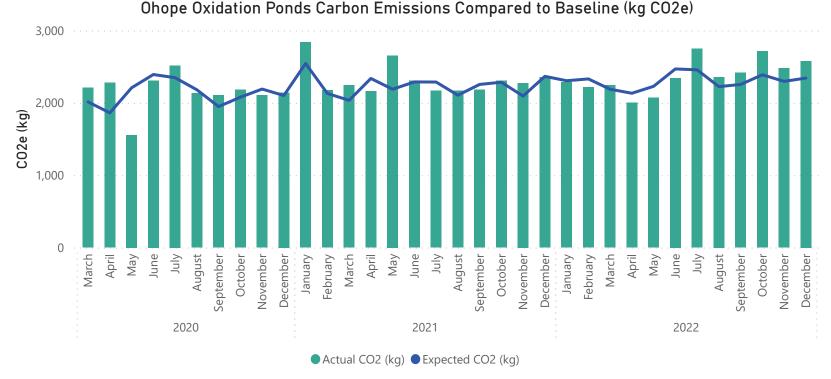
#### Ohope Oxidation Ponds Electricity Use Compared to Baseline (kWh)

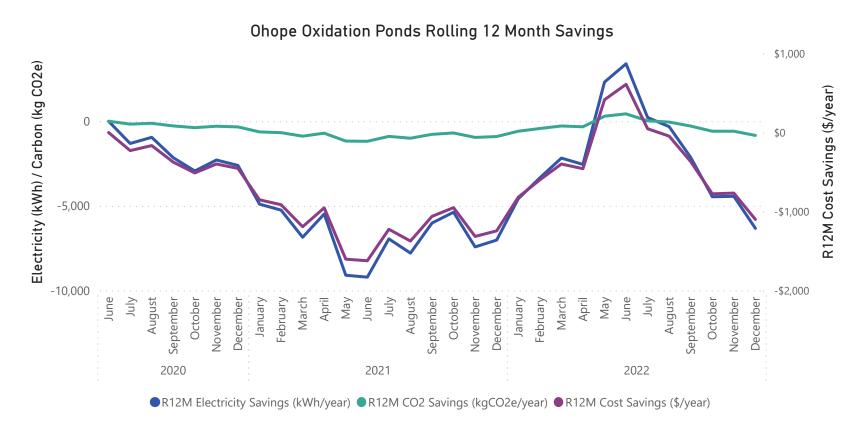




# **Ohope Oxidation Ponds**



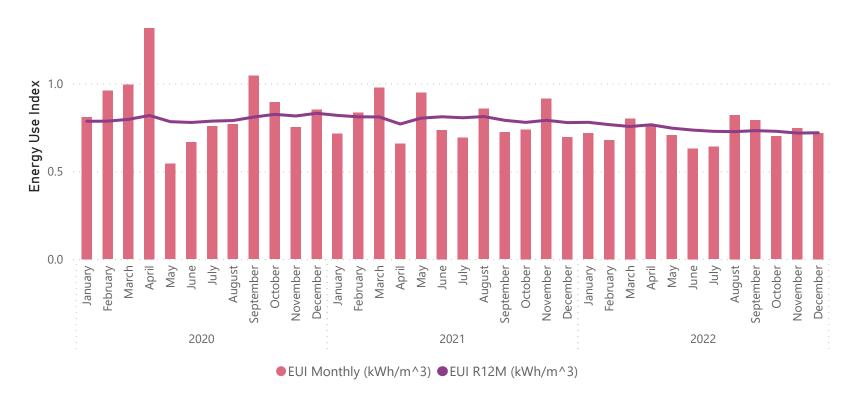






# **Ohope Oxidation Ponds**

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





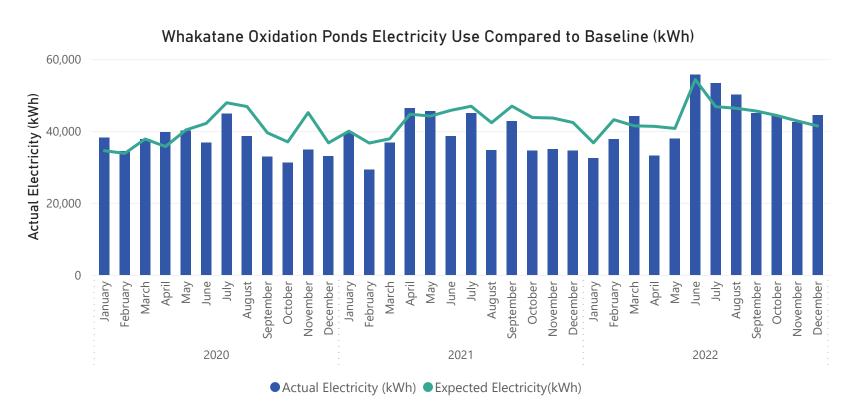
# Whakatane Oxidation Ponds

-\$529	-3,019	-7%	4,183	-396
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
\$554				510
R12M Energy Cost Savings				R12M CO2e Savings (kg/yr)

#### **Comments:**

The electricity use baseline was updated for the Whakatane Oxidation Ponds, the baseline period is July 2021 to June 2022. The electricity baseline combines electricity use for the NHH and TOU account and uses the effluent volumes each month (m^3) as the independent variable. The updated baseline has a smaller baseload factor and a smaller variable component.

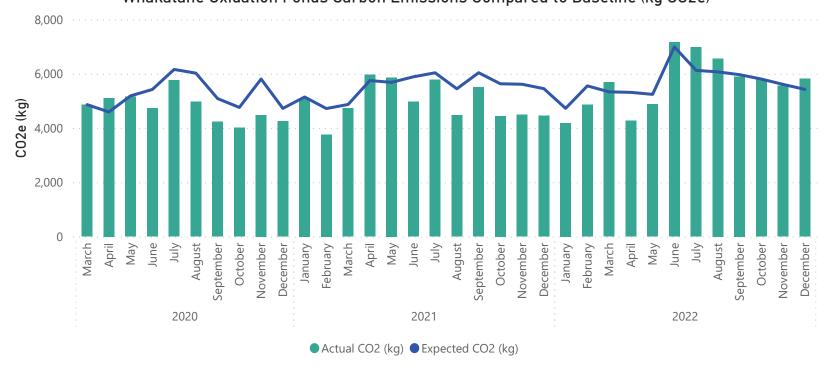
The oxidation ponds have used more electricity than expected in December 2022. The monthly EUI has increased compared to recent months and is close to average for the past 12 months.



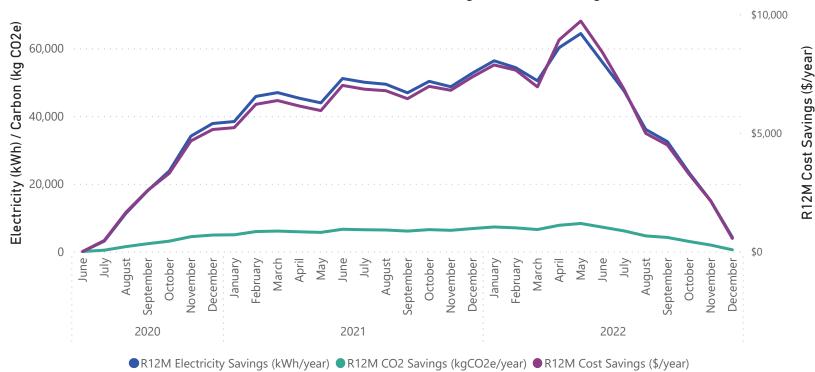


## Whakatane Oxidation Ponds



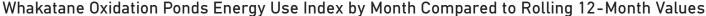


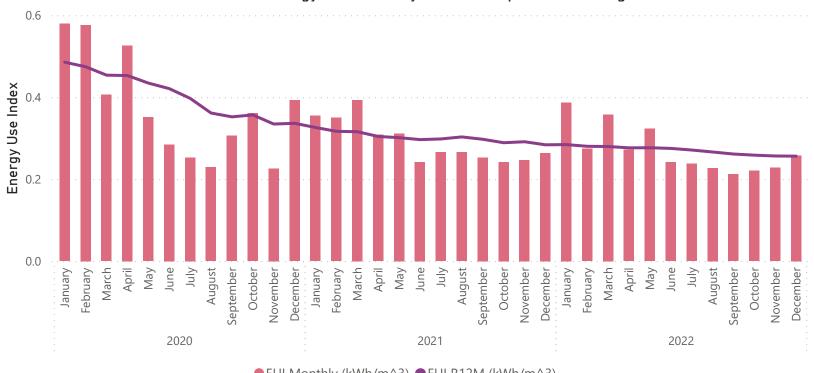






# Whakatane Oxidation Ponds





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



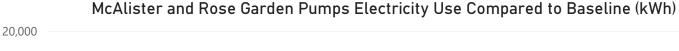
# McAlister Street and Rose Garden Pump Stations

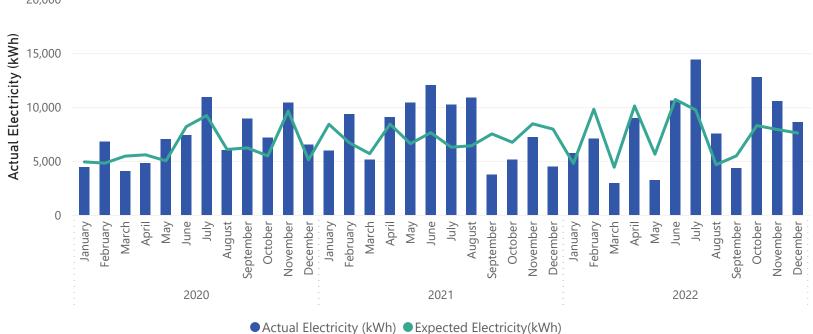
\$153	-1,024	-13%	-7,546	-134
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
<b>\$2,587</b> R12M Energy Cost Savings				-1,005 R12M CO2e Savings (kg/yr)

#### **Comments:**

The baseline for McAlister St and Rose Garden Pumps was updated, the baseline adjusts for the amount of rainfall at the Kopeopeo weather station. Expected electricity is for McAlister St and Rose Gardens combined. The baseline period uses data from July 2021 to June 2022. The updated baseline uses a smaller baseload and a marginally smaller variable component.

The pump stations used more electricity than expected this month. December 2022 was a heavy rainfall month, with close to 200mm of rain that coincided within the billing period.

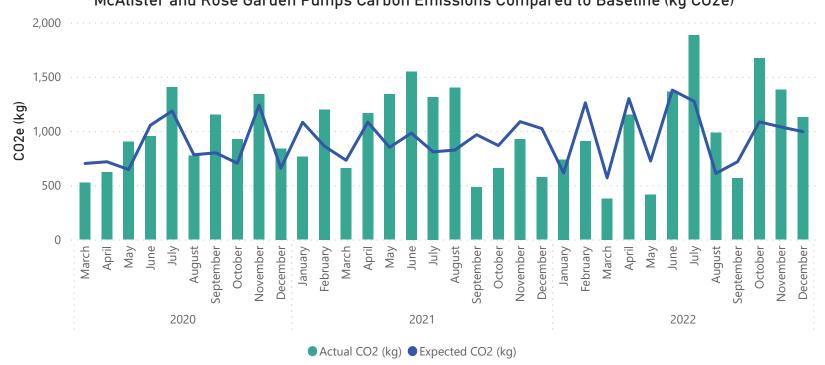


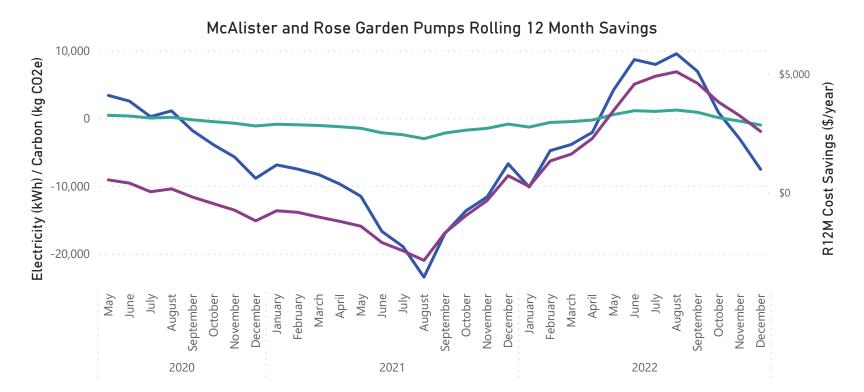




# McAlister Street and Rose Garden Pump Stations







**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 *Baselines were updated for all sites from July 2022.* 

●R12M Electricity Savings (kWh/year) ●R12M CO2 Savings (kgCO2e/year) ●R12M Cost Savings (\$/year)



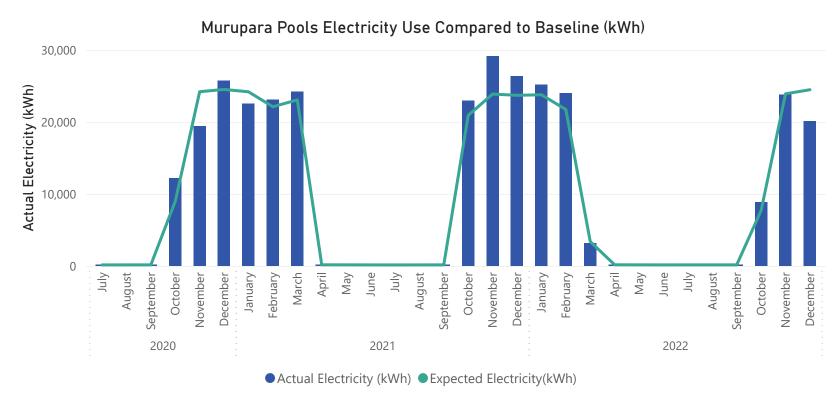
## Murupara Pools

\$741	4,360	18%	200	571
Monthly Energy Cost Savings	Elec. Savings (kWh/mo)	Elec. Savings (%)	R12M Electricity Savings (kWh/yr)	CO2e Savings (kg/mo)
<b>\$186</b> R12M Energy Cost Savings				<b>26</b> R12M CO2e Savings (kg/yr)

#### **Comments:**

Murupara Pools have been added to reporting this month. The baseline period uses data from July 2021 to June 2022 and adjusts for how many days in the month the pool is open or closed.

The pools used less electricity than expected in December 2022, even though it was a cooler month compared to previous seasons, which usually requires more electricity for heating.





# Murupara Pools

