

1MW floating solar array, Rosedale Wastewater Treatment Plant

The 1MW floating solar array at the Rosedale WWTP will help Watercare achieve its operational emissions reduction targets and realise operational cost savings. The floating array creates value from an otherwise marginal land asset (the pond), and provides a testbed for future deployments on other reservoirs and dams. The array is a real, visible example of an exciting green energy solution in the heart of Auckland. The Rosedale Wastewater Treatment Plant (WWTP) is Watercare's second largest wastewater treatment facility and among the largest in New Zealand. The plant serves a population of approximately 220,000.

CLIMATE THEMES ADDRESSED



NET ZERO EMISSIONS



SOLAR PV ON ASSETS



RENEWABLE ENERGY



WHOLE OF BUSINESS CLIMATE CHANGE STRATEGY



LAND USE



RESILIENCE

FIGURE 35 Drone picture of floating solar array



The 1,040kW floating solar array project is the result of a partnership between Watercare and the local lines company and solar installer Vector PowerSmart.

The project delivered several firsts in New Zealand – it was the first time floating solar had been used and it is the first megawatt-size solar project in New Zealand. The array comprises 2,700 JA Solar panels and 4,000 floating pontoons and occupies about 9,500m² on the treatment pond, making excellent use of a marginal land asset in a dense urban environment. 16 x 50kW SMA inverters convert the electricity into AC where it then joins an 11kV ring main and helps power the WWTP along with biogas cogeneration. The array can produce 1.486GWh per year.

The array utilises an interlocking pontoon system called 'Hydrello' from French company Ciel et Terre, who have been involved in numerous floating solar installations worldwide.

The array was assembled row by row and constructed in four large sections and each section was then towed across the pond by boat.

To ensure a stable and fixed location on the pond, each section was attached to the 65 x 2.4 tonne geo-located anchor points that had earlier been placed into the pond by a crane-barge. Once assembled, the array is very stable and it is possible to walk on it for panel cleaning and maintenance purposes.

FIGURE 36 First floating quadrant is towed into position June 2020



SOURCE Vector Powersmart

FIGURE 37 Operational array prior to opening ceremony with Mayor October 2020



SOURCE Watercare

FIGURE 38 Still from drone footage of completed array, October 2020



SOURCE Vector Powersmart

FIGURE 39 On-shore SMA inverters installed June 2020



SOURCE Watercare

FIGURE 40 Array almost completed July 2020



SOURCE Vector Powersmart

Benefits to the utility, and to climate-related outcomes

- Help achieve Watercare's 45% operational emissions reduction target by 2030
- Reduce carbon emissions from energy by 145 tonnes of CO₂e each year
- Deliver operational cost savings (around \$150k pa)
- Improve energy self-sufficiency/resilience of the WWTP
- Support Watercare's objective to achieve Net Zero carbon emissions by 2050
- Raise the public profile of Watercare and Vector Powersmart and enhance the profile of solar energy as a viable solution for other water utilities and businesses
- Create excitement around green energy as a solution to climate risks
- Contribute to New Zealand's carbon emission reduction targets under the Paris Agreement and the government's 100% renewable electricity target by 2035.