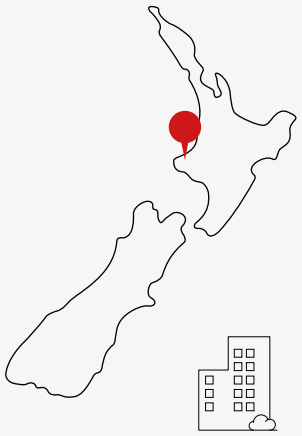
Project Showcase:

Waitara High School

TARANAKI



COMMERCIAL

Decarbonising School Infrastructure with CAHV Radiator Heating in a Dust-Sensitive Technical Block

Located in Taranaki, Waitara High School has taken a major step toward reducing its carbon footprint with the removal of its natural gas boiler system. In its place, a new CAHV EcodanPro Hot Water Heat Pump from Mitsubishi Electric was installed by Climate Plumbing. Offering a sustainable, low-emissions heating solution that could work with the school's existing radiator infrastructure, this upgrade not only supports the school's sustainability goals but also ensures reliable, quiet, and dust-safe heating for its technical classrooms.

EQUIPMENT BREAKDOWN

- CAHV-R450YA Hot Water Heat Pump

The Goal

The project aimed to reduce the school's reliance on fossil fuels by eliminating its natural gas heating system. Beyond improving energy efficiency and reducing emissions, it was essential that the new system could work with the existing hydronic radiator network to minimise disruption and cost. Equally important was the need to provide a safe and suitable heating solution for the woodworking workshop, where air movement from traditional AC systems could pose a safety risk due to sawdust and fine particles in the air. The school sought a system that would deliver silent, radiant-style heat without airflow, supporting both comfort and safety in these high-use learning spaces.

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The Challenge

Several challenges had to be addressed to deliver on the school's heating upgrade. The technical block, particularly the woodworking workshop, was not suitable for conventional ducted or high wall-mounted air conditioning systems. Air movement posed a risk in this dust-prone environment, making a radiant-style heating approach essential. Fortunately, the existing radiator and pipework system was still in good condition. However, most modern heat pumps could not meet the required combination of high water temperature and heating capacity to make use of this infrastructure.

Additionally, asbestos present in the old boiler room needed to be professionally removed prior to any installation work. Space within the plant room was also limited, and any new equipment needed to be brought in without major structural changes to the building. Careful planning and equipment selection were critical to ensure that everything, including buffer tanks, could be manoeuvred into position. While the school's electrical system required minor upgrades, a complete overhaul was avoided thanks to the efficiency and compatibility of the chosen solution.

The Solution

Mitsubishi Electric's EcodanPro CAHV-R450YA-HPB Hot Water Heat Pump was selected as the most suitable solution for the project. With the ability to deliver water temperatures up to 70°C, the CAHV system provided the exact performance needed to retain and reuse the school's existing radiator infrastructure. This approach allowed the school to meet its heating needs without introducing airflow to dust-sensitive areas, making it an ideal fit for the woodworking classrooms.

The system also aligned well with the school's sustainability targets. By using low Global Warming Potential (GWP) refrigerant R454C, the CAHV model reduces environmental impact by more than 90% compared to its predecessor. It also features advanced inverter control for optimised power usage and can be expanded in the future with additional modules if needed. The equipment was installed in a redesigned plant room layout that not only improved safety with guard rails but also freed up extra storage space for the school. Importantly, the new buffer tanks were selected to fit through existing building access points, avoiding the need for structural changes.

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The Result

The upgrade to a Mitsubishi Electric CAHV system has enabled Waitara High School to fully decarbonise its classroom heating while maintaining a practical and safe learning environment. The woodworking workshop, in particular, now benefits from silent, radiant-style heating that does not stir dust or compromise air quality – ensuring both comfort and safety for students and staff.

Feedback from contractors noted that the system performed reliably and exceeded expectations, especially considering it was their first CAHV installation. The school also praised the neatness of the installation and appreciated the additional space made available in the plant room following the removal of the gas boiler. The project demonstrates how legacy infrastructure can be successfully adapted with modern heat pump technology to deliver both environmental and functional benefits in a school setting.

Full Equipment Breakdown

Hot Water Heat Pump System

1x CAHV-R450YA Hot Water Heat Pump

Contractor:

Climate Plumbing