UNIVERSITY OF MELBOURNE, PARKVILLE AND SOUTHBANK, MELBOURNE VIC

Chiller staging and condenser water tuned plant by plant



11.1%

average measured plant energy saving across nine buildings, each against its own pre-implementation baseline

The university runs chilled water plants for a neuroscience research facility, a rare books library, a performing arts school, a biocontainment institute and a law school. Plants range from 1,198 kWr to 5,300 kWr with two or three chillers. Some serve laboratories with tight limits; others serve teaching space that is empty for months.

Exergenics modelled each plant on its own trend data and generated chiller staging thresholds and condenser water temperature control within limits the site team confirmed. The university's incumbent controls contractor coded the strategies into the existing BMS across three tranches from 2021 to 2025. No hardware was added.

426,444
kWh saved per year, nine verified buildings

371
tCO_2e abated per year at 0.87 tCO_2e/MWh

5.3–21.8%
range of measured savings by building

> One control philosophy across every building would have been simpler to deliver. The energy team asked for each plant to be tuned to its own building, and for the results to be *measured rather than asserted*. Broadleaf, the university's energy consultants, independently verified every figure on these two pages.

FACILITY
University campus, 14 buildings on two campuses

PLANT
35,592 kWr total; 23,562 kWr verified. Two to three chillers per plant

STRATEGY
Chiller staging thresholds and condenser water temperature control

CONTROLS
Coded by the incumbent contractor into the existing BMS

CAPITAL EXPENDITURE
Nil. No hardware, gateway or external network connection

DELIVERED
2021 to 2025, in three tranches

MEASURED
12-month reporting period per building, against its own baseline

VERIFIED
Broadleaf portfolio summary, July 2025

Saving by building, measured over 12 months

Reduction in plant energy against each building's own baseline. The portfolio average of 11.1% is weighted by baseline energy.

BUILDING	KWR	MEASURED SAVING
144 Kenneth Myer, Neurosciences	4,200	21.8%
379 Building, 207 Bouverie Street	1,240	13.8%
248 Peter Doherty Institute	5,300	13.6%
110 The Spot	2,280	10.2%
864 Dance Building, Southbank	1,900	10.0%
880 MCM Performing Arts, Southbank	1,370	9.3%
401 Nancy Millis Building	1,198	8.5%
106 Law Building	3,200	6.2%
168 Doug McDonell	2,874	5.3%
Nine buildings verified	**23,562**	**11.1% weighted average**



Five buildings awaiting verification

Modelled savings. Not included in the verified totals.

105 Business & Economics	2,500	17.2%
177 Baillieu Library	3,500	10.0%
104 Alan Gilbert Building	1,880	9.0%
133 Glyn Davis, School of Design	1,650	8.5%
153 Chemistry, West Wing	2,500	5.8%

How it was delivered

01 **Model each plant on its own data.** Chiller, pump and cooling tower trends drawn from each building individually.

02 **Generate a strategy within site limits.** Staging and condenser water control bounded by constraints the site team confirmed.

03 **Implement through the incumbent contractor.** Setpoints and sequences coded into the existing BMS.

04 **Verify against the building's own baseline.** 12 months of reporting data, compiled and verified by Broadleaf.

METHOD

Boundary is the chilled water plant of each building. Each verified building was regressed against measured cooling load and compared over a 12-month reporting period with its pre-implementation baseline on the same basis. The portfolio average is weighted by baseline energy. Carbon uses 0.87 tCO_2e/MWh (NGA Factors 2025, Victoria: 0.78 scope 2 plus 0.09 scope 3). No cost savings are reported. Figures from the 12-month M&V reports and the Broadleaf portfolio summary, July 2025.