



Sustainable cooling that delivers customer comfort and 93% lower energy consumption.

Bunnings, Alice Springs, NT

Project Address

Corner Stuart Highway and Power Street, Brainting, Alice Springs, Northern Territory.

Consultant

Jeffrey Green Building Services

Installer

Grosvenor

Equipment

21 x Climate Wizard Indirect Direct Evaporative High Capacity Air Conditioning Unit

Model: Climate Wizard **CW-H15S Plus**

CUSTOMER PROFILE

Bunnings Warehouse is a leading Australian home improvement and hardware retailer known for its large format stores and broad product range. It supplies building materials, tools, and garden products at competitive prices. The company emphasises strong customer service and DIY support, appealing to both everyday consumers and professional tradespeople.

INDUSTRY

- Warehouse
- Retail

APPLICATION

- Stand-alone cooling
- Dedicated ventilation

Bunnings Warehouse is Australia's leading retailer of home improvement and outdoor living products, operating a nationwide network of large-format warehouse stores. The Alice Springs store serves both trade and retail customers throughout Central Australia and operates in one of Australia's most challenging climatic regions, where summer temperatures regularly exceed 40°C.

The store's large open-plan layout, high ceilings and extended operating hours create significant cooling demands, making energy efficiency a key consideration for maintaining customer comfort and reducing operating costs.

Project Requirements

The Alice Springs facility required a cooling solution capable of maintaining comfortable indoor conditions throughout the extreme desert climate while minimising energy consumption and peak electrical demand.

Key design criteria included:

- ASHRAE 0.4% summer design conditions of 40.4°C dry bulb and 18.5°C wet bulb
- Retail floor area of 5,835 m²
- Internal sensible heat load of 420 kW
- Total heat load of 481 kW
- Operating hours from 7:00 am to 7:00 pm
- Supply air diffusion height of 5 metres
- Indoor temperature set-point of 26°C with relief temperature of 29°C

The customer sought a solution that would provide reliable cooling performance while significantly reducing energy use compared with a conventional refrigerated air-conditioning or direct evaporative system.

Proposed Solution

A high-performance indirect evaporative cooling solution based on 21 Climate Wizard CW-H15S Plus units was proposed.

Under the design conditions, each CW-H15S Plus unit delivers:

- Airflow: 1,600 L/s at 80 Pa ESP
- Supply air temperature: 14.0°C
- Sensible cooling capacity: 28.2 kW
- Input power: 2.2 kW
- Cooling COP: 12.8

The 21-unit installation provides a combined sensible cooling capacity of approximately 592 kW while delivering 4.1 air changes per hour throughout the occupied space.

The total installed electrical input power for the Climate Wizard system is only 46.2 kW. By comparison, a conventional refrigerated system sized to meet the full 481 kW cooling load would require approximately 165.8 kW of input power.

This represents a reduction in peak electrical demand of 119.6 kW, equivalent to a 72% reduction in peak cooling power requirements.

The Outcome

The Climate Wizard solution transformed the indoor environment at Bunnings Alice Springs, delivering significantly improved thermal comfort and air quality for both customers and employees. By supplying 100% fresh, filtered outside air while maintaining comfortable indoor conditions, the system created a more pleasant shopping and working environment throughout the year.

In addition to enhancing occupant comfort, the solution delivered substantial operational savings. After accounting for water costs of \$2.50/kl, the system is estimated to provide net annual operating cost savings of approximately \$70,600 compared with a conventional refrigerated air conditioning system.

When compared with a traditional direct evaporative cooling solution, Climate Wizard reduces annual energy consumption by approximately 79% while using around 84% less water, demonstrating the advantages of indirect evaporative cooling technology in hot, dry climates.



COOLING SOLUTION COMPARISON – BUNNINGS ALICE SPRINGS

5,835 m² Warehouse | Design Conditions: 40.4°C DB / 18.5°C WB | Operating Hours: 7am – 7pm

PERFORMANCE METRIC	CLIMATE WIZARD 21 x CW-H15S Plus	REFRIGERATED AIR CONDITIONING (DX)	DIRECT EVAPORATIVE COOLING 14 x RPB1400 (Two Speed Fan)
Peak Input Power (kW)	46.2	165.8*	105
Peak Power Reduction vs. Refrigerated	72% LOWER	-	37% LOWER
Estimated Annual Energy Consumption (kWh)	19,271	284,630	92,541
Annual Energy Savings vs. Refrigerated	265,360 kWh (93% LOWER)	-	192,089 kWh (67% LOWER)
Estimated Annual Water Consumption (kL)	1,468	0	8,906
Annual Electricity Cost (@ \$0.28/kWh)	\$5,398	\$79,696	\$25,912
Annual Net Cost Saving vs. Refrigerated (incl. water @ \$2.50/kL)	\$70,631 ✓	-	\$31,520



72%
LOWER PEAK POWER
THAN REFRIGERATED
AIR CONDITIONING



93%
LOWER ANNUAL
ENERGY CONSUMPTION
THAN REFRIGERATED
AIR CONDITIONING



84%
LESS WATER
USAGE THAN
DIRECT EVAPORATIVE
COOLING

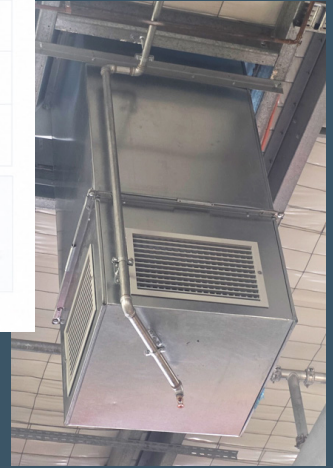


\$70,600+
ANNUAL NET OPERATING
COST SAVINGS VS.
REFRIGERATED SYSTEM



100%
FRESH, FILTERED
COOL AIR FOR A
HEALTHIER STORE
ENVIRONMENT

*Baseline DX system sized to meet the total heat load of 481 kW (internal sensible 420 kW + other loads).



ASHRAE 0.4% Monthly Conditions (Alice Springs, NT, Design Conditions) - Ambient - 40.4 °C DB / 18.5 °C WB / Indoor - 26.0 °C DB / 50% RH

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dry Bulb	42.2°C	41.0°C	39.2°C	35.9°C	31.0°C	28.8°C	28.0°C	31.9°C	36.1°C	38.9°C	40.3°C	42.1°C
Wet Bulb	19.3°C	18.9°C	19.0°C	17.7°C	15.4°C	15.0°C	13.6°C	14.4°C	15.7°C	16.3°C	17.4°C	18.5°C
Dew Point	4.5°C	4.4°C	6.4°C	5.7°C	3.7°C	4.8°C	1.4°C	-1.0°C	-1.8°C	-3.6°C	-0.6°C	1.6°C

21 x CW-H15 S Plus (33,600 L/s @ 80Pa ESP) - Performance for Stand-alone

CW-H15 Plus Supply Air Temp	14.7°C	14.4°C	15.0°C	14.0°C	12.2°C	12.2°C	10.6°C	10.6°C	11.3°C	11.4°C	12.6°C	13.6°C
Stand Alone Cap	567 kW	577.5 kW	554.4 kW	592.2 kW	665.7 kW	663.6 kW	726.6 kW	726.6 kW	699.3 kW	695.1 kW	648.9 kW	606.9 kW
Stand Alone COP	12.26	12.48	12.02	12.83	14.40	14.38	15.74	15.72	15.14	15.06	14.05	13.14



For more information, please call 1300 475 091
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