Sustainable Design Summary

In November 2007 Woolworths launched its Sustainability Strategy identifying our material environmental impacts, setting targets and commitments for improvement, as well as starting us on the pathway to change.

Our Sustainability Strategy identified the priority issues for our store operations as:

- the climate change impacts resulting from our use of energy and our direct greenhouse gas emissions
- the direct use of water and the effect of drought

In these two priority areas the most significant commitments are:

- an overall 40% reduction in CO_2 emissions by 2015 (on projected growth levels) bringing our emissions back to 2006 levels
- all new Woolworths' Supermarkets opening from September 2008 will be built to conform to our sustainable design guidelines to minimise energy use and environmental impacts
- to reduce our annual water usage by at least 200 million litres by 2010

Refrigeration Services

Woolworths released our updated Supermarket refrigeration specification in June 2009 with a particular emphasis on lifecycle costing and the simplification of the previously employed carbon dioxide (CO_2) retail refrigeration technology. These refrigeration systems are designed to be energy efficient whilst utilising refrigerants with a low Global Warming Potential (GWP).

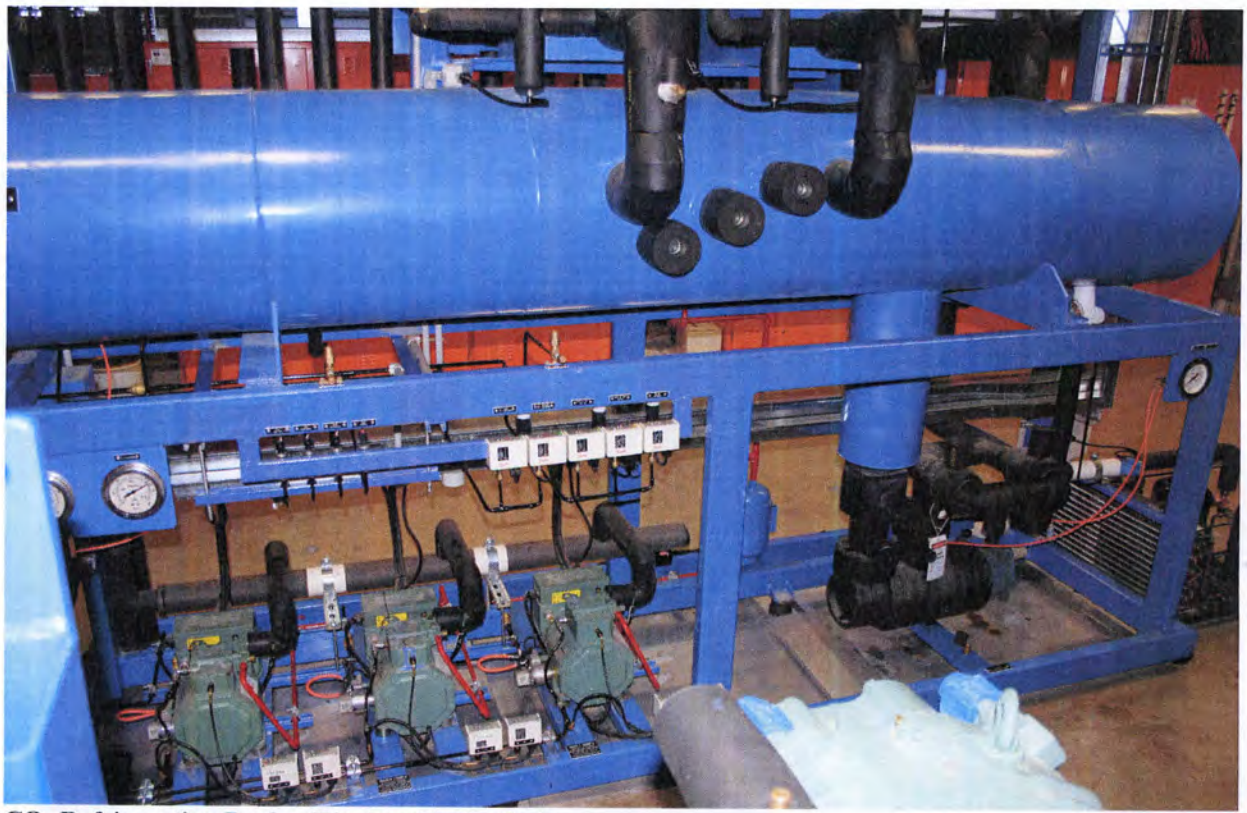
All refrigeration cases procured by Woolworths are designed to establish the optimal lifecycle costing (examining factors such as energy, carbon and maintenance costs). The refrigeration cases incorporated into our Supermarkets are over 20% more energy-efficient than those procured in 2006.

All energy-saving initiatives have been incorporated into our specifications to ensure that these initiatives become standard within our new and refurbishment store program.

As of October 2010 Woolworths has 29 operational CO_2 refrigeration systems in Australia and is a world leader in the implementation of this technology.

Plant

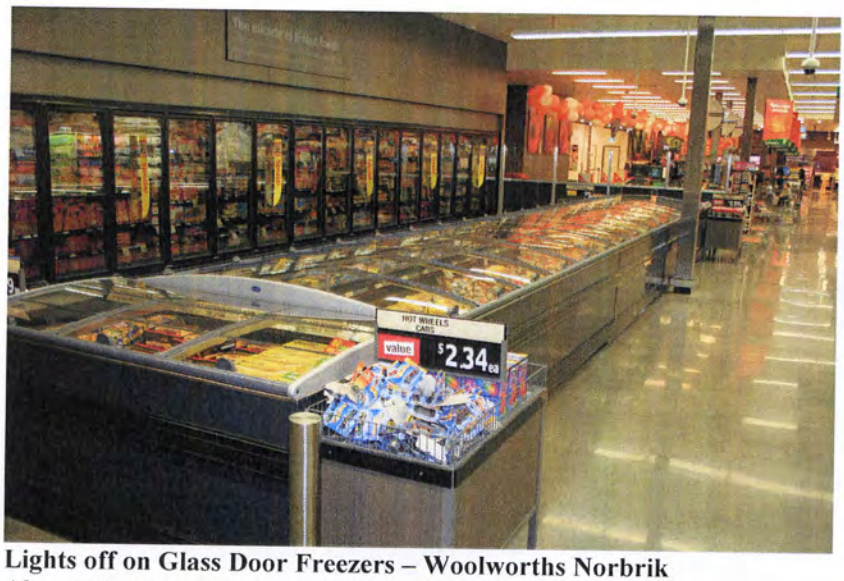
- Energy efficient and environmentally friendly hybrid CO_2/R-134a refrigeration plant for all metropolitan installations
- CO_2 used in low stage (over 3,000 times lower GWP than previous refrigerant) and R-134a used in medium & high stages (3 times lower GWP than previous refrigerant)
- High efficiency compressors
- Electronic direct expansion valves used for CO_2 system
- Heat reclaim (utilising waste heat from compressors to heat and de-humidify the store)
- Heat recovery (utilising waste heat from compressors to pre-heat water for use within the store)



CO_2 Refrigeration Rack – Woolworths Norbrik

Cases

- All refrigeration cases incorporate high efficiency EC (electronically commutated) fans, resulting in lower energy use
- LED lighting, controlled by motion sensors, in upright refrigeration freezer cases that uses less energy, produces less heat, contain no mercury and provide maintenance savings
- Anti-sweat control on upright refrigeration freezer cases, minimises unnecessary door heater operation
- Lids on all open wide-island freezers, minimising cold air spill and improving overall refrigeration system efficiency
- All multi-deck refrigeration cases will have automatic retractable blinds to reduce energy consumption when the store is closed
- Front fences on multi-deck refrigeration cases, reducing cold air spill



Lights off on Glass Door Freezers – Woolworths Norbrik
Also, Wide Island Freezer Lids

Walk past and the Glass Door Freezer lights turn on – Woolworths Norbrik
Also, Wide Island Freezer Lids

Automatic Night Blinds

Glass Front Fences

Mechanical Services

Plant

- BCA Section J HVAC requirements must be met as a minimum
- Refrigerant is R134a (this refrigerant has a zero ODP and a relatively low Global Warming Potential)
- Depending on the system design load the compressors are screw or turbine, and include an economiser and variable speed drive (VSD) control
- Primary heating for temperature and humidity control is made available from the refrigeration heat reclaim system
- Any secondary heating for temperature and humidity control is provided through a hot water coil (hot water provided from either natural gas fired boiler or heat pump)
- No electric element heating for temperature and humidity control
- Economy cycle (utilising "free" outside air to cool in preference to mechanical cooling whenever possible)

Heat Reclaim System – Woolworths Norbrik

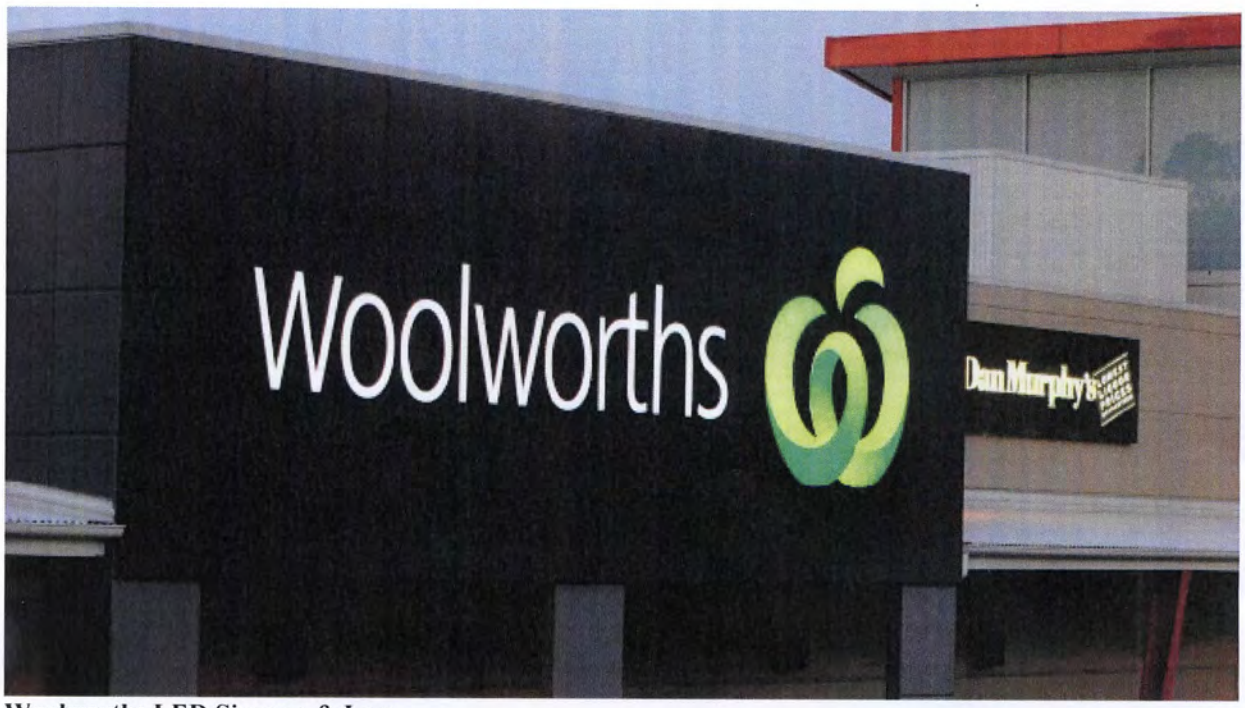
Air Handling

- BCA Section J HVAC requirements must be met as a minimum
- Cold aisle has a dedicated return air system to minimise store cooling load
- Dampers, interlocks & controls on exhaust to minimise HVAC losses

Electrical Services

- BCA Section J lighting requirements must be met as a minimum
- Grocery floor lights are T5 with electronic ballasts
- Fresh area lighting is T5 with electronic ballasts & LED (minimum 50% reduction in energy usage compared with previously used metal halide lamps)
- All back-of-house lights are T5 with electronic ballasts
- All trading area lighting are controlled by the TAC EMS System (including freezer lights)
- All mall & external illuminated signs use LED technology (minimum 50% reduction in energy usage compared with conventional fluorescent signage)
- Most back-of-house lighting is controlled by passive infra-red sensors
- All emergency/exit signage incorporates LED technology

LED downlights in Fresh Area – Woolworths Camden

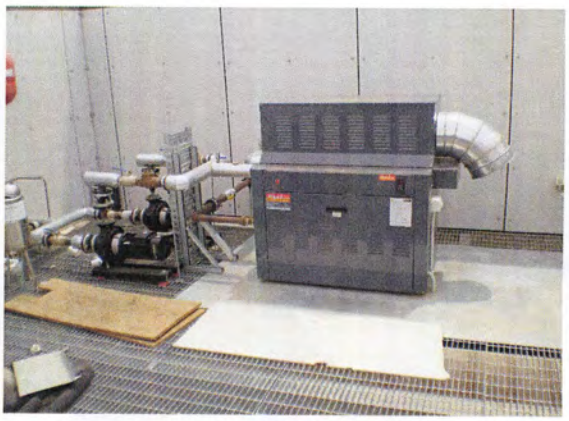


Woolworths LED Signage & Icon

Fuel Substitution / Offset

- Natural gas (if readily available) hot water boiler (in lieu of the usual electric powered unit) for store hot water and heating, resulting in 50% lower greenhouse gas emissions
- If natural gas is unavailable a heat pump will be used for the provision of store hot water and heating in preference to the usual electric powered unit
- Use of natural gas (if readily available) as the fuel source for suitable chicken cookers and bakery ovens (in lieu of usual electric powered units), resulting in 50% lower greenhouse gas emissions

Gas Fired Instantaneous Hot Water System



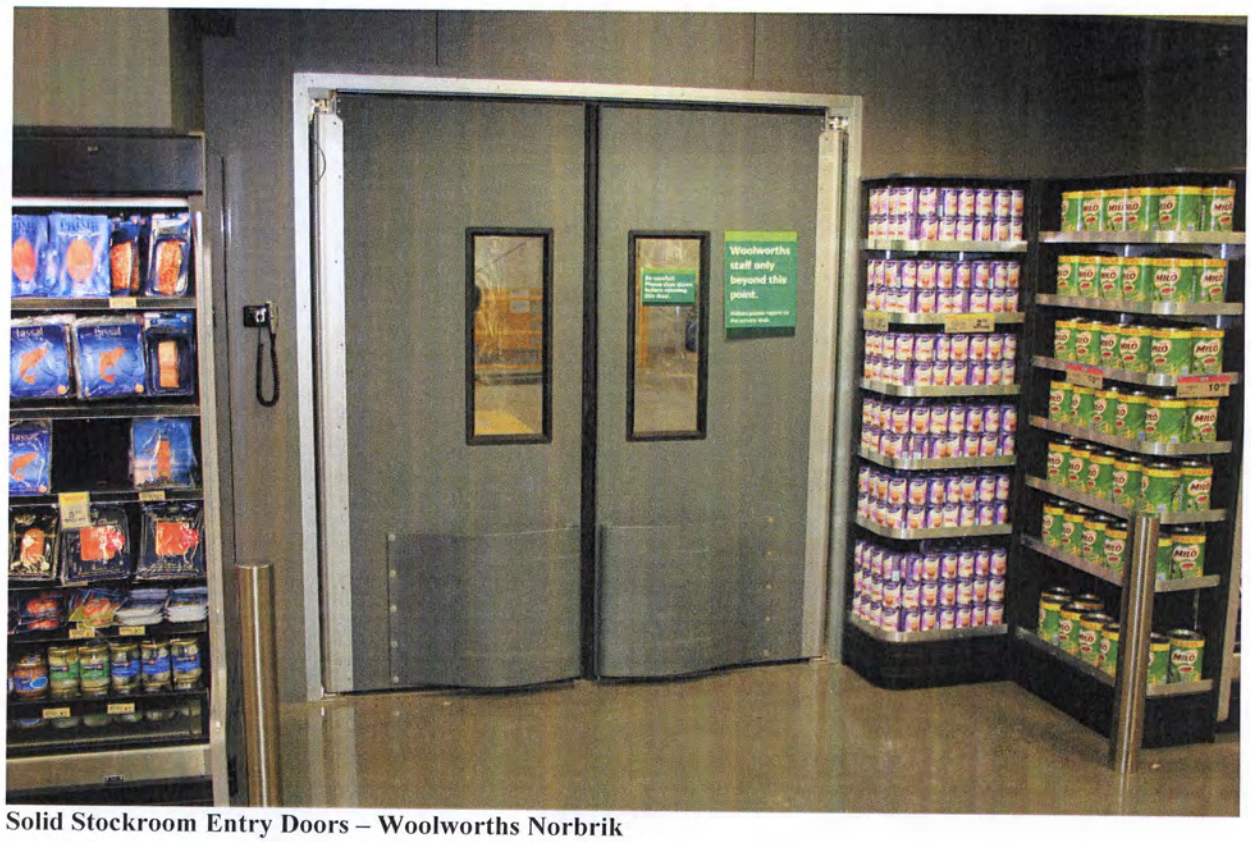
Gas Fired Boiler for Store Heating

Gas Fired Bakery Oven

Gas Fired Chicken Ovens

Fit-out

- Building fabric, building sealing and external glazing is BCA Section J compliant as a minimum
- Solid doors between trading and stockroom areas to minimise HVAC losses



Solid Stockroom Entry Doors – Woolworths Norbrik

Water Efficiency

- Standard cooling towers are not to be used
- All urinals are water efficient
- All toilet cisterns are water efficient; WELS 3 Star rated
- All preparation sinks, cleaners sinks and staff kitchen sinks are fitted with flow controls; WELS 3 Star rated
- All amenities basin taps are fitted with flow and time controls; WELS 3 Star rated
- Water supply to the site must be metered

Water Recycling and Reuse

- The collection, treatment and reuse of non-potable water must be investigated by Woolworths' hydraulic engineers to ascertain the suitability of water recovery
- If available recycled water will be supplied to all toilets
- If available recycled water will be supplied to all non-potable water outlets for washing
- If available loading dock wash-down and gardens will be served by non-potable water outlets

Waste Management

- An appropriate area to facilitate the recycling of store cardboard and plastic must be incorporated into the store design
- The opportunity to incorporate a "green waste" program into site operations will be investigated by Woolworths' business teams