UB’s new Primary Industry Centre, a leader in Ecological Sustainable Design (ESD).

A number of Departments recently moved into the new Primary Industries Centre including the National Centre for Sustainability. Below is a list of ESD features incorporated into the building design. These features will enable the PIC to be the most efficient UB building per m² of floor space.

One of the biggest operating costs for UB buildings is heating, cooling and providing fresh air to office spaces and classrooms.

PIC is maximising the use of fresh air through a number of vents. These vents are positioned at the bottom and top of the building. Air vents will automatically open when:

a) **CO₂ detection.** PIC automatically opens vents when a high level of carbon dioxide CO₂ is detected in classrooms and workspaces. (too much carbon dioxide in a building will make staff and students drowsy)

b) **Summer cooling.** By opening the bottom and top vents, hot air will be flushed out and air movement will keep occupants cool. This will dramatically reduce the need for mechanical cooling.

c) **Night purging.** The vents will open automatically overnight in summer to cool the building. This reduces mechanical cooling.

All vents are on the Building Automation System (BAS) and will open and close automatically based on the indoor and outdoor temperature to maximise efficiency.

Classrooms have exterior whirly fans and side vents which assist to flush out hot air. Classrooms have no mechanical cooling.

Classrooms and office spaces have ceiling fans which have winter and summer settings. In winter the fans will turn slowly to push down rising warm air and in summer they will spin faster to provide a cooling effect to occupants on hot days.
PIC is heated by natural gas which is much cheaper and produces less greenhouse gas emissions per gigajoule than electricity. The systems chosen are high efficiency.

Lighting

There is a huge amount of natural light entering the building so fluorescent lights switch off or dim when natural light is adequate. Installed sensor switches allow lights to switch off automatically if rooms are vacant. The lighting used is T5 fluorescent globes which are extremely efficient.

No halogen downlights have been installed.

Outside security lighting are new compact fluorescent lights with reflectors. These lights are extremely efficient and put out a large amount of light.

Orientation & Shading

The building has been designed to maximise north sun which assists in heating the building during winter. Large windows facing north and minimal windows facing west will assist with passive heating in winter and reduced heating bills. The north windows are shaded to prevent sunlight entering the building in summer but still allowing winter sunshine in.

Solar hot water

PIC is the first UB building to install a solar hot water system. The system will provide hot water for showers and student tea room.
Water tanks

PIC has installed two large steel tanks collecting water from the main building and nearby sheds. The tanks will hold approximately 110,000 litres when full. Further plumbing work is required to utilize the water for hot houses, vegetable gardens and other gardens around the centre.

Appliances

This boiler/chiller provides both boiling water and chilled water for the tea room. It has an inbuilt programmer and it is set to switch on at 7am and switch off at 6:30pm and off on weekends. This is much more efficient than having boilers running 24/7 and trucking in bottled water.

Waste

The Primary Industries Centre is aiming to be the leading Department to maximise recycling and minimise landfill waste. To do this NCS has provided all staff with a desktop bin and co-mingled recycling bin to assist in reducing landfill waste. Desktop bins have been shown to reduce landfill waste by 80%!

Staff food scraps from the tea room are also removed from landfill and staff have a roster of placing food scraps into the nearby compost bin.

In classrooms we are aiming to be the first school to run a student program to reduce landfill and reduce recycling. Co-mingled recycling bins will also be installed in 5 classrooms in 2011 and we’re hoping to have a student roster to empty the bins daily.

Glazing and Insulation

Additional insulation has been installed in the roof and walls above the standard regulations and high performance single glazing is installed in all windows.

Interface Carpets

Interface manufacture the most sustainable carpets available. Made from recycled products, Interface will remove the carpet when it’s worn out and recycle back into new carpet.