



Loving Hearts
Child Care Centre and Kindergarten

Early Learning Centre

Australian Sustainability Case Study

Loving Hearts Child Care Centre and Kindergarten is arguably Australia's most sustainable childcare centre, with over 42 eco-friendly features, many never incorporated in an early learning centre before.

Loving Hearts achieved Australia's first UDIA EnviroDevelopment rating for a childcare centre, demonstrating its industry-leading credentials.

Many early learning centres are poorly designed and costly to operate, so Loving Hearts set a lofty self-imposed sustainability vision from the start.

The team created goals and targets, to match the vision *"To demonstrate nation-leading Childcare Centre sustainable design and operations for the benefit of the whole community and future generations"*. An independent sustainability consultant was engaged from the start of the project to embed sustainability throughout the project, and also track and optimise the building over time.



Results

The centre won the 2019 Queensland State Master Builders Excellence in Energy Efficiency and Environmental Management award, and is UDIA EnviroDevelopment certified. It is also the first ever Finalist of the national Banksia Sustainability award (2019).



Proud finalist of the 2019
**BANKSIA MEDIUM
BUSINESS AWARD**

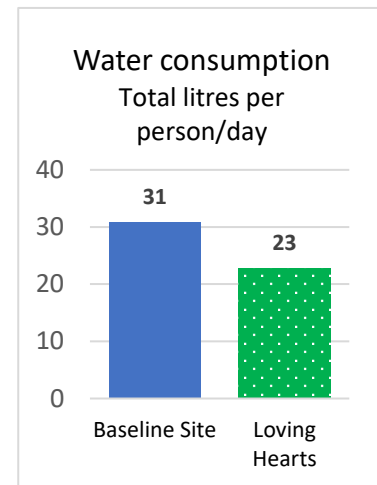
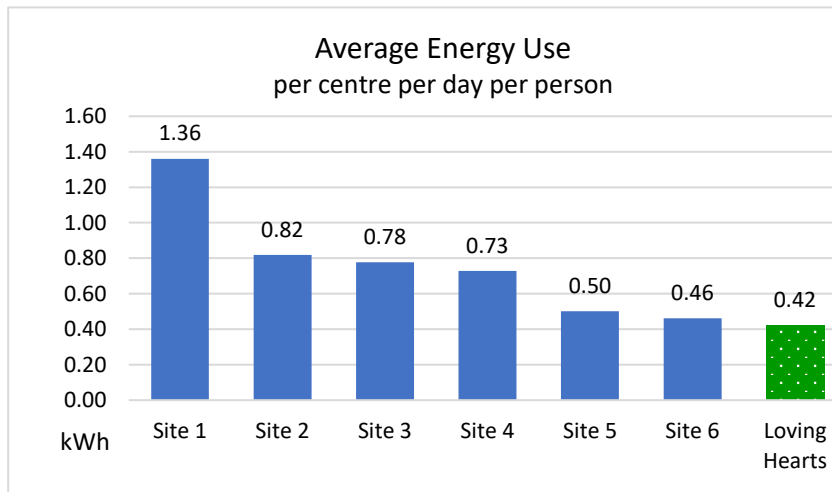


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The **operational results** are admirable and are being improved over time as staff training and system optimisation continues.

Loving Hearts currently uses:

- **30% less water** relative to a comparative centre.
- **37% less energy** compared to the average (0.77) of comparative centres, whilst also providing better all-year-around internal comfort and higher rates of fresh air.



The top sustainability features that were incorporated at the design, construction and operational stages are summarised below.

Sustainable Design Features

- The building is orientated to the north to maximise passive solar design and so that daylight or reaches most rooms; this reduces lighting costs and contributes to the well-being of the children and staff. Technical daylight modelling was used to optimise the amount of sunlight coming into each room and reduce glare.
- Cold-water auto-stop taps for children's bathroom basins reduces hot water use.
- The white eco-concrete road makes the local area cooler by reducing heat gain and reflecting heat.



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- Low Volatile Organic Compound (VOC) flooring from the sustainable flooring company Interface, to minimise toxic emissions from internal materials.
- High efficiency air conditioning systems with Economy mode, consume about 40% less energy compared to systems in other centres.
- A Smart Meter to monitor and optimise the centre's electricity use.
- 15kW Solar photovoltaic energy array generating 24,000kWh of renewable energy each year.
- An outdoor area has been made available to sun-dry clothes and hats.
- Appliances all have high water and energy Star ratings.
- Extra windows to allow more daylight into rooms which will also reduce the need for electrical lighting.
- Extra shading so harsh sunlight cannot heat the centre during summer months.
- Water efficient toilets, showerhead and taps.
- Roofs orientated to the North and pitched steeper to maximise solar energy panel efficiency.
- More light weight material on the exposed exterior, instead of brick, to reduce heat gain
- Sliding windows instead of louvres to reduce noise entering the baby's sleeping room.
- Additional outdoor play area beyond code requirements to give the children more outdoor experiences.
- An independent local Childcare Needs Assessment was conducted to ensure the centre would be used by the local community for decades to come.



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Sustainable Construction Features

- 96% of all construction waste was recycled.
- Best practice stormwater control measures were used.
- Some outdoor playground equipment made of timber from the site.
- Children's timber furniture made from the world's highest sustainability standard timber which is Forest Stewardship Council (FSC) certified. The furniture is also
 - 100% compostable at the end of its life-cycle
 - uses less embodied energy compared to steel and plastic alternatives
 - uses no toxins or harmful environmental pollutants during its manufacturing.
 - Is designed to last for well over 10 years before requiring any maintenance.
- Planting of over 500 trees and shrubs on site which are also local native species to increase biodiversity and support native fauna. Most of the plants are also drought tolerant, meaning they won't need any constant watering after establishment.
- The white eco-concrete road makes the local area cooler by reducing heat gain and reflecting heat, compared to a traditional black bitumen car park,
- Additional acoustic insulation to minimise sound was installed around the nursery rooms.
- High efficiency lighting including the use of LED technology for internal lights
- 54,000 litres of rain-water storage tanks to collect water from the roof. The rainwater used to flush the centre's toilets to save on water.
- A pressure tank on the rainwater pump to reduce pump energy and extend its lifetime.



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Sustainable Operation Features

- Composts 95% of its organic waste via chickens owned by a parent, or on-site compost.
- Use of several waste recycling streams including paper, plastics and glass
- Dedicate space for batteries in the future, which will allow the centre store energy and send it back to the grid when the local grid is short of power.
- 100% of wastewater is collected and treated on-site using an advanced septic system, bio-accelerator and geotextile canvas pipe. The system produces aerobic and anaerobic conditions which treat the water naturally without chemicals and with very little electricity required.
- Timers on the hot water circuit and recirculating pump so the ring main can be optimised to save water and reduce the amount of energy required to heat water. The hot water system is set to operate during daylight hours so it is powered by the sun via the solar energy array.
- Covered outdoor area to dry clothes and reduce clothes dryer energy consumption.
- Refrigerators with high energy star ratings to reduce electricity consumption.
- Dishwashers and washing machines with high water and energy star ratings to reduce electricity consumption.
- Rainwater tank level meter to track and minimise water use.
- A community bus, to assist children and families and reduce overall vehicle use.
- A number of extra programs is also provided including a children's sustainability show.
- PeakSmart technology reduces the electrical load on the local network at peak times to reduce infrastructure costs to the local community. This technology allows the retailer to remotely adjust the air conditioning systems power use during times of network stress and share energy across the suburb.



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- A Smart Meter enables the centre's facility manager to monitor (and then optimise) the centre's electricity use, every 30 minutes if required.
- Provides higher quality nutritious meals that are also kinder to the environment e.g. vegetarian
- A skilled cook is employed full-time to make all meals on site and sun-safe, outdoor and natural materials play is facilitated by the centre's holistic interior design.
- By creating a centre that uses less energy and water, savings can be passed onto parents which creates more affordable education.



Target Evaluation

The centre had over 100 design targets; these are just a sample:

Topic	Target	Result	Achieved?
Construction Waste	Minimum 80% of construction waste is recycled/reused	96%	✓
Water	Reduce water use	54,000 litre rain water storage for the 22 toilets	✓
Lighting	Use efficient lighting	LEDs, including High performance street luminaires, 14W	✓
Local Content	Give preference to materials sourced or manufactured in locally	Most landscaping (plants) and food is local. Some building materials could not be sourced locally.	Partially
HVAC	Use efficient air conditioning with R32 and PeakSmart	High efficiency Panasonic units and PeakSmart installed.	✓
Material emissions	All paint, adhesive and sealant products should not exceed the best practice TVOC limits.	All paints were low or zero VOC. One sealant was not. 90% of the flooring was Interface low VOC flooring.	Mostly
Concrete	Use 'green' concrete specifications.	Cement use in the concrete was reduced by 63% by Holcim.	✓
Timber	Use best practice timbers	Children furniture is FSC certified. Plywood was AFS certified.	Partially
Heat Island Effect	Reduce heat gain SRI>64	Light colour (Surfmist) used (82)	✓

The centre's learnings are being used to educate others in the industry and encourage assessments of existing centres to improve indoor comfort, reduce bills and address climate change.

For more information or a tour, please contact the centre or Ecomply Sustainability.

www.lovingheartschildcare.com.au

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