



Interactive ESD Report:  
Detailed Design Stage

client

# Department of Health

project

Echuca Regional Health Redevelopment

Introduction

Healing Gardens

Respite Spaces

Dispensing Error Mitigation

Hand Hygiene

Nurse Station Circadian Lighting

Informatics

Solar Thermal Array and Storage

LED Lighting

Active Floor Slab

Renewable Power Generation

Personalised HVAC for Nurse Stations

Airtight Building Envelope

Sustainable Drainage Pipes

Sustainable Flooring Materials

Reclaimed Timber Integration

Other Sustainability Features

Short-listed ESD Initiatives

Hospital Environment

Materials

## Introduction

Project Background

Client Team

Project Team

Incorporating ESD

Outcome Aspirations

Echuca is an historic port town located on the southern side of the Murray River, which forms the northern border of Victoria with New South Wales. Echuca Regional Health (ERH) is a public hospital founded in 1882 and is one of the largest employers in the region.

The current \$65M redevelopment includes a new emergency department, medical imaging, high-dependency unit, main entrance and information centre, and maternity, paediatric, surgical, medical, palliative and sub-acute wards. It will provide over 100 additional beds to the hospital.

Total new floor area is 7905m<sup>2</sup>. Start on site is scheduled for August 2012, with final completion in February 2015.



ESD Lead  
Mike Rainbow  
Associate

Phone: +61 3 9668 5677

Email: mike.rainbow@arup.com



www.arup.com

ARUP

Interactive ESD Report,  
Detailed Design Stage

client

## Department of Health

project

Echuca Regional Health Redevelopment

Introduction

Healing Gardens

Respite Spaces

Dispensing Error Mitigation

Hand Hygiene

Nurse Station Circadian Lighting

Informatics

Solar Thermal Array and Storage

LED Lighting

Active Floor Slab

Renewable Power Generation

Personalised HVAC for Nurse Stations

Airtight Building Envelope

Sustainable Drainage Pipes

Sustainable Flooring Materials

Reclaimed Timber Integration

Other Sustainability Features

Short-listed ESD Initiatives

Hospital Environment

Materials

## Healing Gardens

In recent years a growing awareness has developed in the healthcare community of the need to create functionally efficient and hygienic environments that also have pleasant, stress reducing characteristics. Several studies of have consistently shown that simply looking at environments dominated by greenery, flowers, or water - as compared to built scenes lacking nature (rooms, buildings, towns) - is significantly more effective in promoting recovery or restoration from stress (See Ulrich, 1999, for a survey of studies).

In addition to ameliorating stress and improving mood, gardens and nature in hospitals can significantly heighten satisfaction with the healthcare provider and the overall quality of care. Evidence has begun to appear showing that hospital gardens

increase staff satisfaction with the workplace, and may help hospital administrators in hiring and retaining qualified personnel.

This initiative is to ensure that courtyards and green spaces around the redevelopment be developed to specifically respond to this therapeutic and restorative agenda. Courtyards will be irrigated with harvested rainwater to increase the range of planting that is viable.

Planting within these spaces is likely to include species that are known to have medicinal value in both Aboriginal, western and Asian cultures; along with edible fruit and herbs associated with healthy diet such as lemons, mandarins and tea-tree.

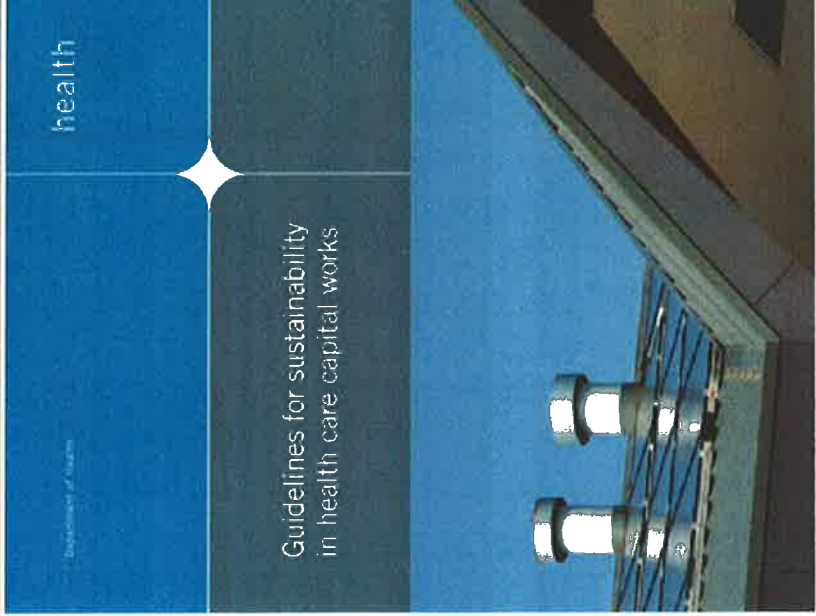


ESD Lead  
Mike Rainbow  
Associate  
Phone: +61 3 9668 5677  
Email: [mike.rainbow@arup.com](mailto:mike.rainbow@arup.com)

[www.arup.com](http://www.arup.com)



ARUP



## Other Sustainability Features

### Department of Health Guidelines

As the adoption and level of sustainability considerations has begun to increase over recent years in all sectors it becomes important to establish what is currently deemed routine 'good-practice' or 'business as usual' design measures. This has been greatly facilitated by the Victorian Department of Health's updated 'Guidelines for Sustainability in Healthcare Capital Works' (July 2010). In addition to scheduling a range of expected initiatives it sets aside a budget allocation for sustainability measures considered over and above this baseline threshold, and ensures that ESD consultancy is appointed directly by the Department for projects over a certain value.

### Cyclist Facilities

Measures such as these have proved effective in many sectors in setting an appropriate level of project aspiration and mitigating the subsequent erosional process of design development and value management.

### Central Staircase

### Future Proofing

Interactive ESD Report:  
Detailed Design Stage

client

## Department of Health

project

Echuca Regional Health Redevelopment

### Introduction

Healing Gardens

Respite Spaces

Dispensing Error Mitigation

Hand Hygiene

Nurse Station Circadian Lighting

Informatics

Solar Thermal Array and Storage

LED Lighting

Active Floor Slab

Renewable Power Generation

Personalised HVAC for Nurse Stations

Airtight Building Envelope

Sustainable Drainage Pipes

Sustainable Flooring Materials

Reclaimed Timber Integration

### Short-listed ESD Initiatives

Hospital Environment

Low-carbon Design

### Other Sustainability Features

About Arup Interactive Reports

Toggle Fullscreen

Print Report

Close Report

ESD Lead  
Mike Rainbow  
Associate  
Phone: +61 3 9668 5677  
Email: mike.rainbow@arup.com



www.arup.com

ARUP

Interactive ESD Report:  
Detailed Design Stage

client

## Department of Health

project

Echuca Regional Health Redevelopment

Introduction

Healing Gardens

Respite Spaces

Dispensing Error Mitigation

Hand Hygiene

Nurse Station Circadian Lighting

Informatics

Solar Thermal Array and Storage

LED Lighting

Active Floor Slab

Renewable Power Generation

Personalised HVAC for Nurse Stations

Airtight Building Envelope

Sustainable Drainage Pipes

Sustainable Flooring Materials

Reclaimed Timber Integration

Other Sustainability Features

Introduction

Healing Gardens

Respite Spaces

Dispensing Error Mitigation

Hand Hygiene

Nurse Station Circadian Lighting

Informatics

Solar Thermal Array and Storage

LED Lighting

Active Floor Slab

Renewable Power Generation

Personalised HVAC for Nurse Stations

Airtight Building Envelope

Sustainable Drainage Pipes

Sustainable Flooring Materials

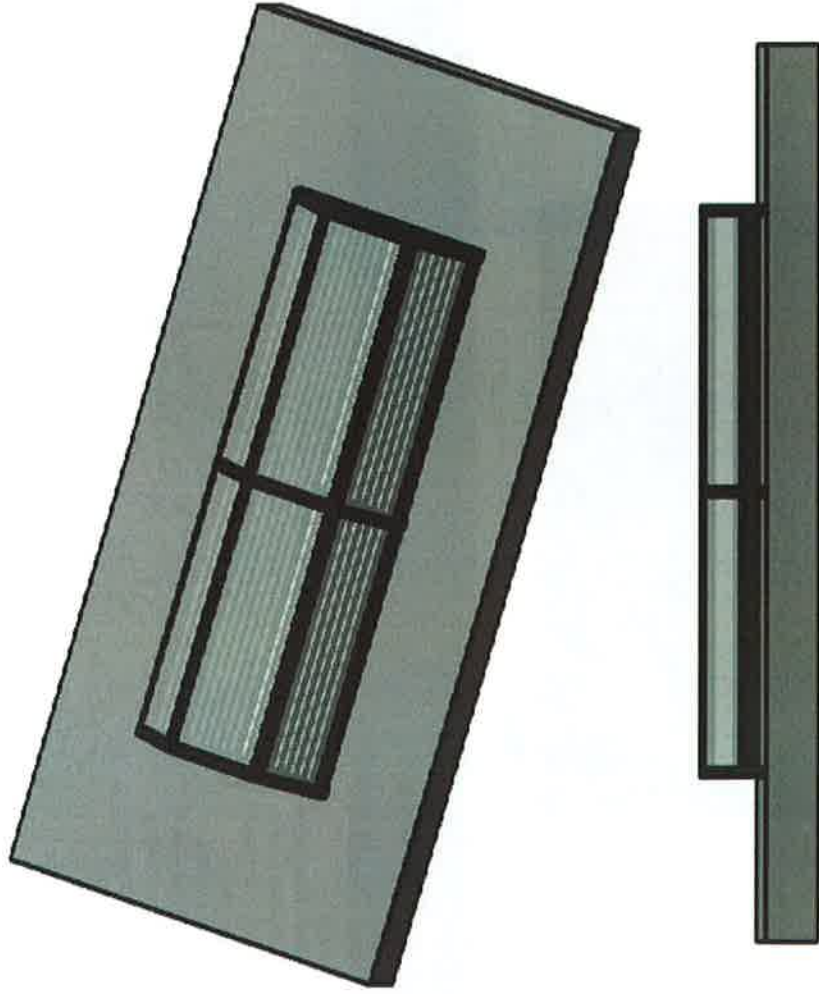
Reclaimed Timber Integration

Other Sustainability Features

Short-listed ESD Initiatives

Low-carbon Design

Materials



### Chromasun Panel

Echuca Regional Health is a ready home to the largest solar cooling array in Australia, incorporating 300m<sup>2</sup> of evacuated tube panels, generating a peak thermal output of 125kW.

Solar cooling involves generating chilled water needed for hospital cooling systems by capturing heat from the sun rather than using significant electrical draw from Victoria's carbon intensive grid supply (fuelled predominantly by brown coal).

This proposal entails utilisation of pioneering micro-concentrator solar technology (MCT). This approach utilises a series of linear mirror strips to focus heat onto a pair of water pipes, as illustrated below. These motorised mirror strips track the solar path through the day to maximise harvesting efficiency. Both mirrors and pipes are contained within a sealed casing, protecting them from external exposure, as illustrated below.

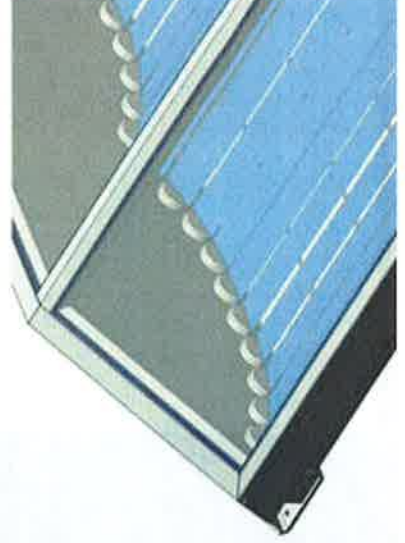
A key advantage of this technology is the efficiency at which it can generate a higher grade of heat (i.e. hotter temperatures) compared to more established solar thermal technologies.

Higher grade heat provides significantly higher efficiencies in absorption chillers which generate chilled water from hot water.

The panels are intended to be integrated into a sawtooth roof pitch over the hospital entrance foyer. The serrations are slightly twisted from the street grid to align with solar north, as illustrated below.

The specific intention for this phase of the project is to incorporate a glazed base panel to the unit so that the panels double as atrium rooflights. This will create a slatted daylight effect in the atrium that will vary with sun position.

### Return to 3D Model



ESD Lead  
Mike Rainbow  
Associate  
Phone: +61 3 9668 5677  
Email: mike.rainbow@arup.com



www.arup.com

ARUP

Interactive ESD Report:  
Detailed Design Stage

client

## Department of Health

project

Echuca Regional Health Redevelopment

Introduction

Healing Gardens

Respite Spaces

Dispensing Error Mitigation

Hand Hygiene

Nurse Station Circadian Lighting

Informatics

Solar Thermal Array and Storage

LED Lighting

Active Floor Slab

Renewable Power Generation

Personalised HVAC for Nurse Stations

Airtight Building Envelope

Sustainable Drainage Pipes

Sustainable Flooring Materials

Reclaimed Timber Integration

Other Sustainability Features

Short-listed ESD Initiatives

Materials



## About Arup Interactive Reports

The Arup Interactive Report offers a high-level visual overview of our work. It combines a navigable project model with pertinent information for each view, providing a new way to read and understand a project.

You can navigate using the buttons along the right hand side. The links along the bottom offer further information for each view.

The Arup Interactive Report was developed as an Arup Digital Innovation initiative and the technology and presentation of the Arup Interactive Report is Arup copyright.

- Introduction
- Maps - Bing Maps
- Internal renders - © Suers
- Healing Gardens - info@arup.com - [http://www.infobareil.com/Basic\\_Alobo\\_Vera\\_Plant\\_Care](http://www.infobareil.com/Basic_Alobo_Vera_Plant_Care)
- Respite Spaces - © Iwan Bean 2011
- Hand Hygiene - Daily Mail - © PA
- Solar Thermal - © Chromasun
- Circadian Lighting - © Whitecroft Lighting
- LED Lighting - Seno - <http://www.senoltd.com/LED-Ceiling-Light/261/LED-downlight-18W.htm>
- Cyclist Facilities - Penny Farthing Pushbike Parking - [www.pushbikeparking.com](http://www.pushbikeparking.com)
- Central Staircase - Ride and Stride UK - <http://www.ridenandstrideuk.org/news/carlcoxclassroom> - <http://coxclassroom.blogspot.com/2011/04/worksite-wellness-to-road-to-good.html>
- Reclaimed Timber - © Kelly Jade
- Future Proofing - © ERH
- All other images - © Arup

### Credit for images used:



ESD Lead  
Mike Rainbow  
Associate  
Phone: +61 3 9668 5677  
Email: [mike.rainbow@arup.com](mailto:mike.rainbow@arup.com)

[www.arup.com](http://www.arup.com)

ARUP

