



# CYNDA

chemical solutions



**Heat Shield – Federation Shopping Centres**  
**Mandurah Forum Shopping Centre, Mandurah WA**

## CASE STUDY

The content of this Case Study was independently prepared by management of the **Mandurah Forum** which is part of the **Federation Shopping Centres** portfolio.

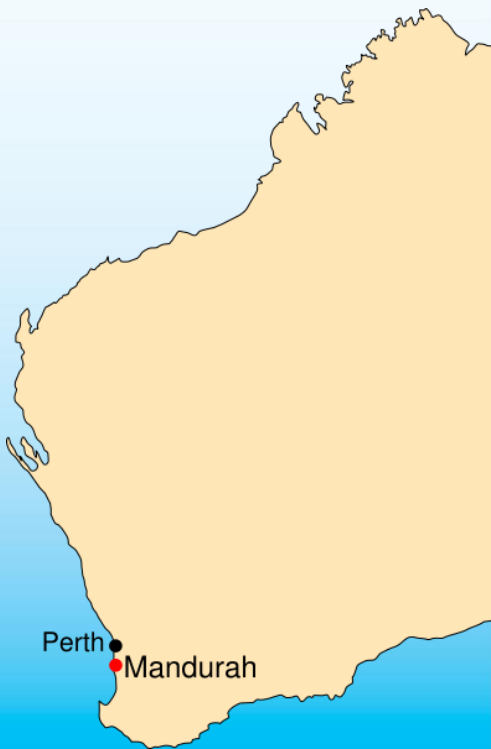
Cyndan appreciates the attention to detail and support of Federation Shopping Centres in enabling this information to be published to highlight the energy saving potential and ambient temperature comfort benefits associated with using **Cyndan Heat Shield** paint in a shopping centre environment.

**Cyndan WA Sales Representative Dave Limpus** co-ordinated arrangements with the Mandurah Forum and can be contacted for WA product related queries at [dave.limpus@cyndan.com.au](mailto:dave.limpus@cyndan.com.au)



## LOCATION

**Mandurah Forum** is a shopping centre situated on the corner of Pinjarra Road and Mandurah Bypass Road, located 72kms south of the Perth CBD.



**Key Customers Include:**

- Brookfield Multiplex-Defence
- Central Parklands
- Essential Energy
- Hume Contracting
- J&B Painting
- Nilsen Electric (SA)
- NSW Golf Club
- North Ryde RSL Club
- Ringwood Property Services
- Road Trek Body Works
- Southern Downs Council
- Star Trak Express Tullamarine
- Toll Fleet Management

## HEAT SHIELD

### Paint on Heat Insulation

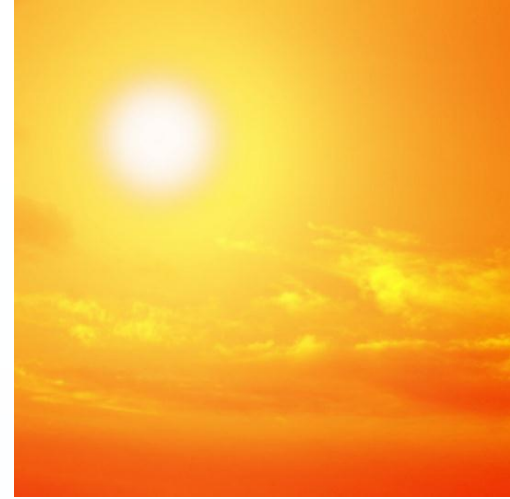
Cyndan Heat Shield is an acrylic, solar reflective paint utilising the latest in micro crystals technology, with a proprietary formulation to provide an excellent coating for heat insulation purposes.

It is primarily used for exterior roof or vertical surfaces, facades, HVAC equipment and ductwork. It can also be used in many other miscellaneous applications that benefit from the insulation provided. The finished coating also provides exceptional fire proofing properties.

### Key features and benefits

1. High total reflective index (85%) to sun light
2. Low glare, which reduces the environmental impact to your neighbourhood.
3. Excellent water proofing properties, can bridge cracks and holes of up to 4mm.
4. Excellent flexibility and adhesion to any substrate.
5. Excellent weather and UV durability, life expectancy 25 years +.
6. Satisfying the requirements as an energy saving product, can save up to 40% in cooling costs.
7. Can be applied to all metal, timber, plastic and masonry surfaces.
8. Available in a range of colours.

*Part of the Cyndan Green Range*



- Reduces internal building temperatures by up to 20°C
- Cuts cooling costs by up to 40%
- Waterproofing properties
- Fire resistant properties

**Use on:**

- ✓ Rooftops
- ✓ Buildings
- ✓ Facades
- ✓ HVAC equipment
- ✓ Fuel storage tanks



## TRIAL

**Report Prepared by Jason Rose,  
Mandurah Forum Operations Manager.**

Following from recent trials of **Cyndan Heat Shield** reflective coating system at Mandurah Forum the following information was collated to review the effectiveness of the product in a working environment, the results were positive with grounds for further tests / installation of treatments to Federation Centres assets.

The testing was conducted in two areas both before and after the coating was applied, with significant reductions in transferred heat being noted.

## HEAT SHIELD

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building temperatures  
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Waterproofing  
Properties

Fire Resistant  
Properties

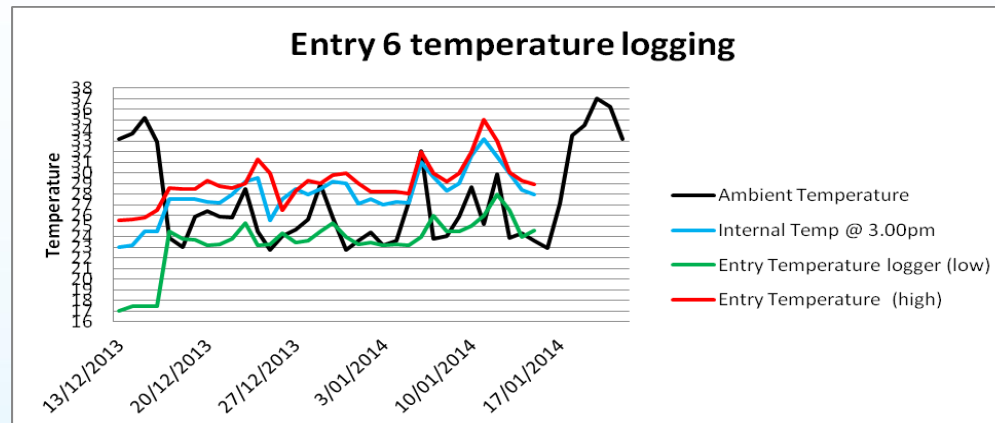




## TRIAL – TEST AREA 1

Test area 1 was the airlock of entry 6 noted as a fairly hot entry, the testing equipment was installed above the ceiling approximately 1 metre below the roof, this portion of the building is air conditioned by the main plant and receives spilled air from the shops adjacent.

The data from the test equipment prior to the coating system being applied shows reasonable temperatures for the area under test given the ambient temperature, the most notable piece of information for this segment is the temperature swing differential, prior to the coating the variation is 8.5°C, after the coating is applied the temperature deviation is down to 4.5 °C. Between maximum and minimum temperatures.



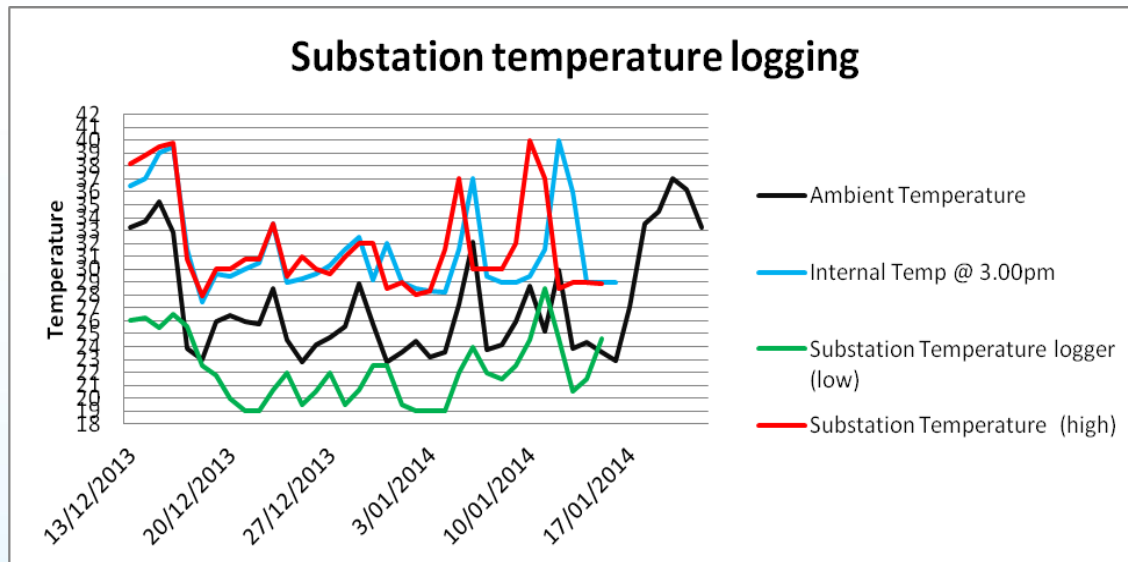
The above graph shows how the ambient temperature fluctuation is quite wide however, the difference between the low and high temperatures remain fairly consistent after the coating is supplied, reducing the high temperature and increasing the low temperature giving a more stable environment.

Whilst Mandurah Forum is unable to give a confirmed cost saving figure in relation to power consumption, the readings would suggest a positive outcome due to the more stable temperature.

## TRIAL – TEST AREA 2

The second location for the temperature logging was the West Substation switch room.

This area has air conditioning to offset the heat load produced by the switch gear and the heat load generated by radiated heat from the tin roof, whilst this roof is insulated the area has historically suffered from high ambient temperatures causing switch gear over heating issues.



The above graph shows the difference prior to the coating being applied and the direct affect after the coating is applied.

As can be seen, prior to the coating the being applied the temperature difference is between 12 and 14 °C, after coating installation the difference is down to between 6 and 7 °C.

## TRIAL – TEST AREA 2

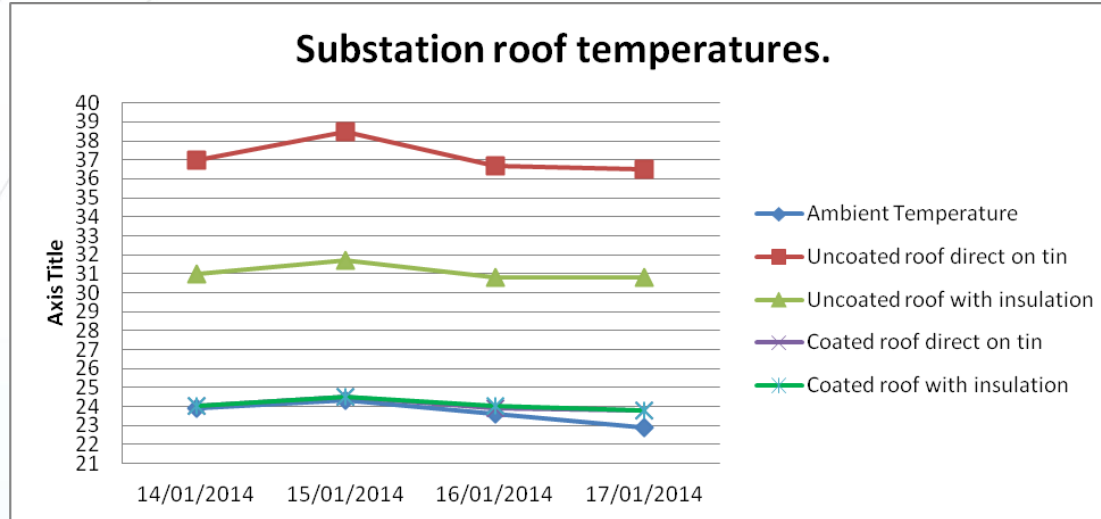
During the test we had an abnormal event in building during the night, this was picked up by the temperature logger and the corresponding spikes are shown on the graph, this was also apparent in the Air - conditioning run times.

Prior to the coating the Air – conditioning ran for 17 hours a day both main and standby units, after the coating was applied this reduced to 7.5 hours a day average with just the main unit running, the standby unit only running during the abnormal conditions.

Additional temperature readings taken show roof temperatures on the underside of the tin in both treated and non treated areas, as well as on the insulated and uninsulated tin.



## RESULTS – COATING EFFICIENCY



As can be seen on this graph the temperatures show both treated and untreated surfaces, the efficiency of the coating is easily seen.

The temperature difference between coated and non coated directly on the underside of the tin is  $13^{\circ}\text{C}$ , the difference between coated and uncoated with insulation is  $7^{\circ}\text{C}$ .

The temperature difference between uncoated direct on tin and uncoated on the insulation is  $6^{\circ}\text{C}$ , whilst the temperature difference between the coated direct on tin and the coated direct on insulation is negligible.

## RESULTS – COATING EFFICIENCY

Overall the data suggests that there is a potential for cost savings to be made when applied to the right application, data suggests that even in a non cooled application there are benefits to eliminate radiated heat.

Heat calculations based on solar gain and heat transfer suggest positive heat reduction figures, on an untreated roof with ordinary insulation the heat gain is equivalent to 7.5kw of heat.

Using the values for a treated roof the heat gain is approximately 4.7 to 5.2 kw which equates to a 30% to 35% reduction in heat gain.

As noted previously the running hours reduced from 17 hours a day to 7.5 hours, a reduction of 10 hours, converted in to KWH reduction for the unit it equates to a saving of 22.5kwh, based on our electricity charges at present this equates to a saving of \$125 per month for the unit in the substation based on peak level usage.

The above would be a best case scenario, but even after factoring in anomalies it would suggest a potential for cost savings.

**CONTACT US  
FOR FURTHER  
INFORMATION**

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