THERMOSHIELD®

thermal insulation coating

Woolworths

Australia's fresh food people

Claremont, Tasmania

Stage 2

Roof Restoration | Corrosion Control | Waterproofing

CORROSION control

Waterproof

THERMOSHIELD PROUDLY MADE IN AUSTRALIA

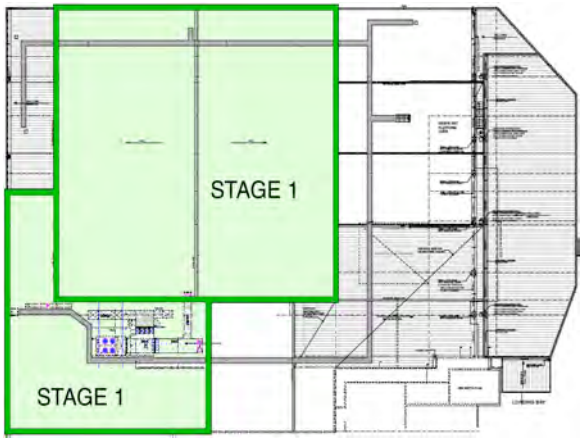
10 YEAR warranty IF APPLIED BY THERMOSHIELD APPROVED APPLICATORS

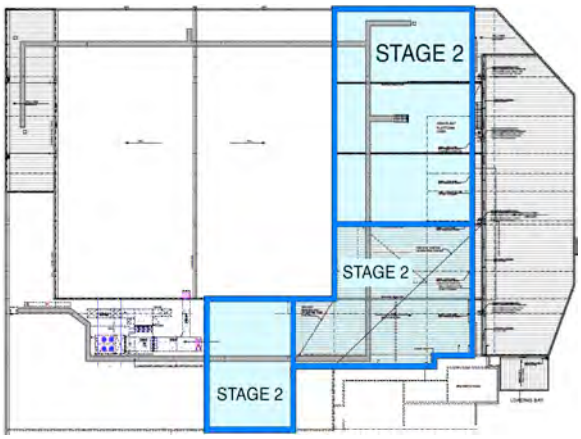
ISO 9001 & 14001 Certified

STAGE 2

Rust Conversion | Thermal Insulation | Water Proofing | Restoration

Following the works carried out earlier in the year (April 2014), the plan was to return to complete stage 2 of the project as outlined in the below diagram:





However, due to the amount building works carried out on the completed stage 1 area, (such as roofing works & HVAC installations), we were required to put a fair bit of time into stage 1 'touch ups' prior to stage 2 works.

There was more foot traffic & a lot of metal filings that caused unexpected damage but overall, we were very happy how the works had successfully delivered the primary goal of converting the underlying rust & preventing any rust re-surfacing.

Much like stage 1 – stage 2 coating process will consist of:

- **Power washing** (minimum 3,500psi)
- **Rust Conversion** (where required)
- **Rust Inhibitor Etch Primer**
- **Water proofing** (on a large scale)
- **2 coats of Thermoshield - ceramic coating** (500 micron wet film thickness)

The main difference between the 2 stages in respect to the scope of works, was a far greater focus on waterproofing during stage 2 & less requirement for rust conversion.

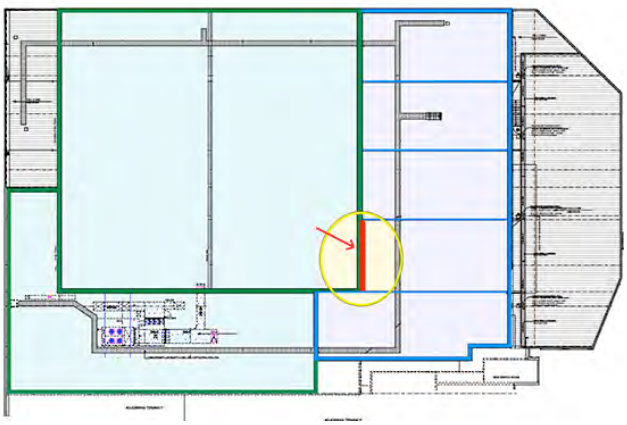
ROOF CONDITION:

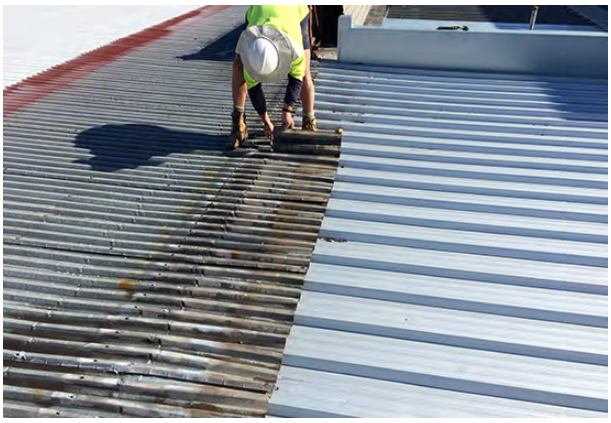
Prior to works commencing, our initial inspections of the stage 1 works were overall very positive as there were no signs of rust re-surfacing whatsoever. Below is a photo & a reminder of how badly rusted the main/original roof had become, compared to 6 months post coating:

If you simply paint over rust, the rust re-surfaces in as little as 1-3days through the paint film. Given there are no signs of re-surface after 6months, we're supremely confident the restoration will remain in great condition up until & beyond the 10year warranty.

On the negative note – the 2nd coat we applied in April wasn't fully dry before a large amount of rain hit the area. This caused areas (of the 2nd coat only) to appear 'flakey' which was evident during our return inspections.

Upon our return, we were of the opinion all roof works were completed and in a condition ready to coat. You can see at the below diagram (blue & green areas being areas we coated), approximately 800mm of roof sheeting was dangling into thin air & wasn't fit for coating:



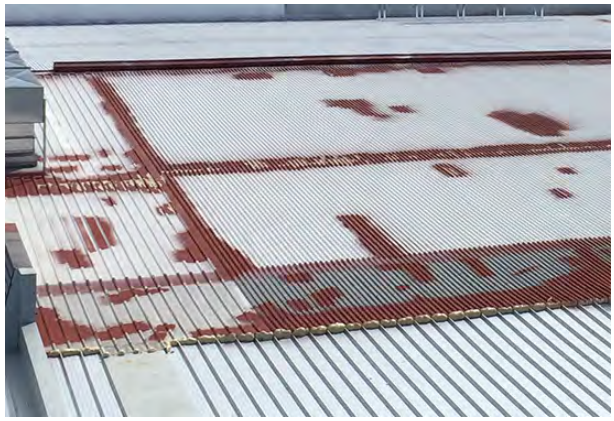
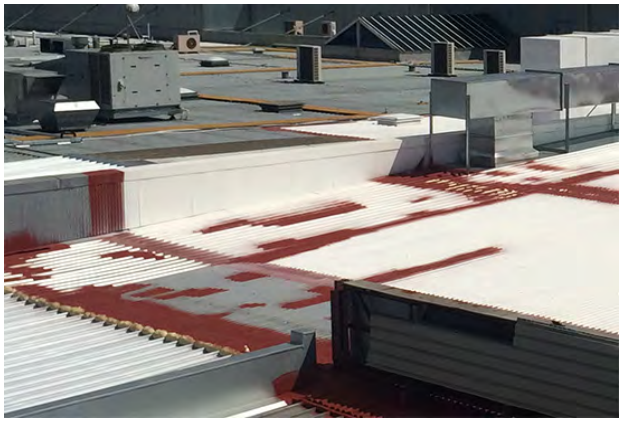


Prior to works, we cut the excess sheet free allowing approximately 150mm of overhang from the last line of screws into the underlying baton & also screwed down any 'spongy' areas.

STAGE 1 – REPAIR WORKS

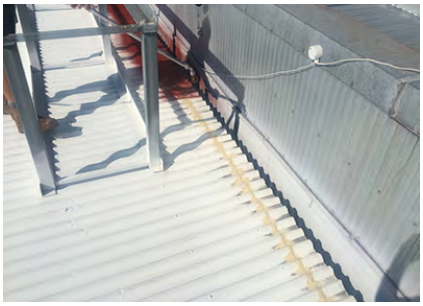
There was excess roof traffic on the finished coating. The installation of HVAC duct work, roof safety walkways, various vents & roof flashing all contributed to the wear. The major damage to the coating was the metal filings left on the roof that formed minor rust on the surface of the Thermoshield coating in isolated areas.

Following power washing (to remove metal filings, general grime & any product flaking), rust inhibitor etch primer was applied due to the minor rust from metal filings.


In addition to the surface preparation, there was a suspect sheet lap that we heavily waterproofed after a leak was identified in the produce section of the store (directly underneath):


The 33meter sheet lap was heavily reinforced whilst ensuring water freely runs off into the box gutter without pooling. Etch primer was coated over the join & 2 coats of Thermoshield:



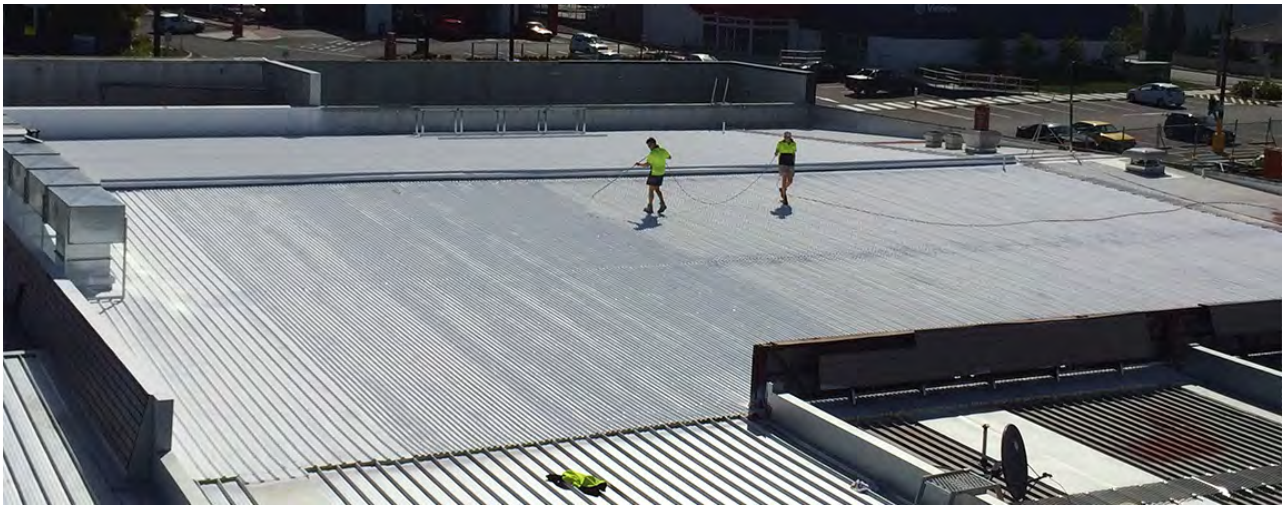
All products used are compatible as they are able to adhere to one another.
The Thermoshield ceramic membrane is the final, crucial element as it provides compressive strength & thermal stability so the coating system & waterproofing measures remain intact.

Below are the photos of the first coat to complete the repairs to damaged stage 1:






Below series of photos demonstrate the second coat being applied:

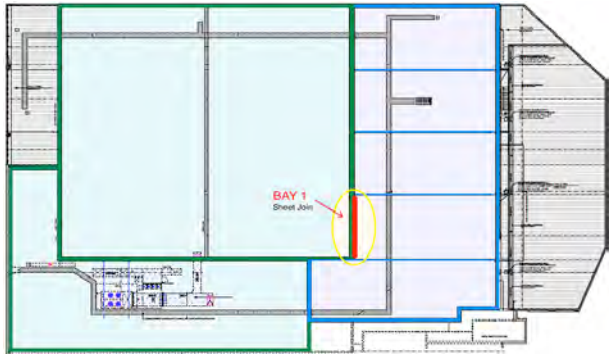


Below is a wider angle photo showing the difference 1st & 2nd coats:

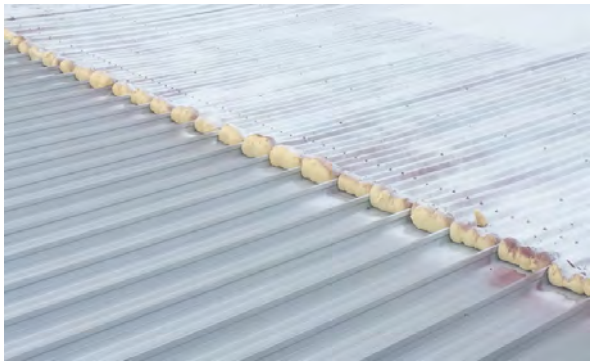
The next section on the report focuses on the comprehensive process that was involved with repairing & waterproofing along the line where the original roof met the flat roof.

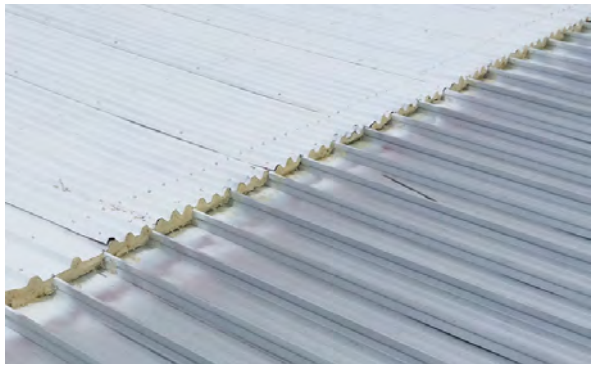
REPAIRS & WATERPROOFING process: 'BAY' 1:

Below 2pages demonstrates the process of repairing the area where the old roof met (overhangs) the new roof.
The process began with cutting off the excess [approx.] 800mm of sheet, leaving 150mm from where it is secured to a baton:



From there, the 150mm of space was filled with expandable foam & when dry was cut back to flat.



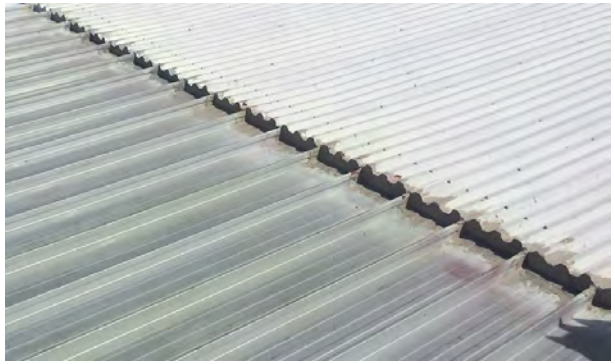


The foam provides a surprising amount of strength & can be walked on without causing movement.
Also, it makes it impossible for water to track back up through the 150mm of space that has now been filled.

REPAIRS & WATERPROOFING process 'BAY 1' continued:

Following the expandable foam, an additional layer of protection was added by applying paintable silicone.

The silicone was applied smoothly to ensure water couldn't pool at any point. The silicone was also applied back up onto the sheet so that water wasn't able to sit on the edge of the sheet:



Finally, 2 coats of Thermoshield was applied to ensure all of the waterproofing measures remained well sealed beneath the protective, non-permeable membrane Thermoshield provides:

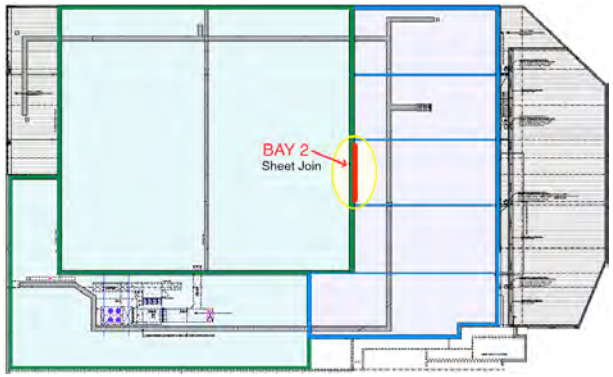


REPAIRS & WATERPROOFING process: 'BAY' 2:

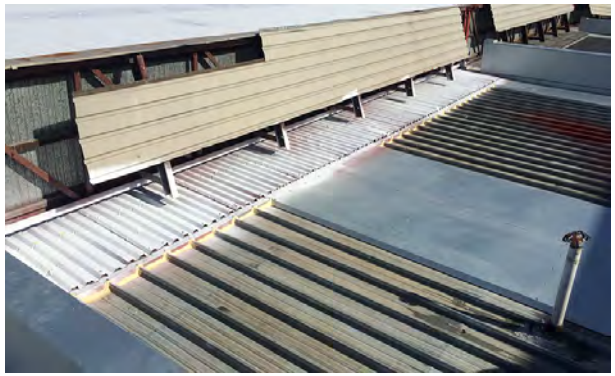
The below area of roof was left "*as is*" as there weren't any replacement or repairs.

The flashing that joins the two roofs was major cause of water ingress in many areas where it actually forced water to run back into the store, rather than onto the below roof. The flashing angle in areas didn't allow water to run onto the below roof.

* Area of the roof



* Bay 2 – wider angle



* Caulking flashing / roof sheet joint

* Expandable foam

* All external foam cut back off

* Closer up view of cut foam

REPAIRS & WATERPROOFING process 'BAY 2' continued:

The next steps involve heavily sealing along the sheet ends whilst ensuring water run off is promoted & completed unimpeded.

Often silicone is applied heavily on the sheet join, which causes water to back up & pool. This causes accelerated corrosion & leads to more problems. We apply both on the joint & up onto the sheet then smoothed evenly so that it's almost undetectable & water flows off.

* Silicone applied & carefully smoothed

* Silicone on all foam & over joins

* Etch primer applied over silicone

* Silicone 'down slope' & well sealed

* Silicone so smooth, almost cant see it

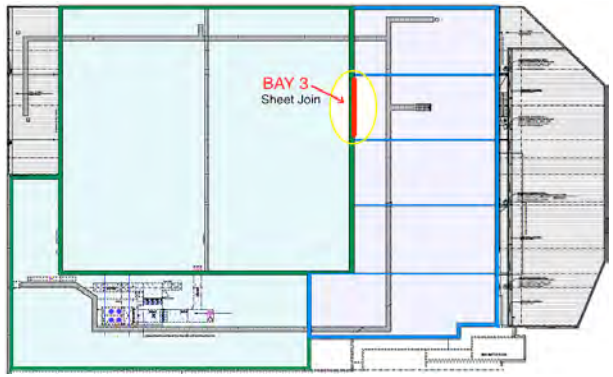
* Wider angle of finished area

REPAIRS & WATERPROOFING process: 'BAY' 3:

Bay 2 & 3 are separated by a flashing but could almost be seen as a single, larger 'bay'.

The process is all but identical except for bay 3 being more prone to waterproofing concerns. Directly below the bay in store (in aisles 8 & 9), there were multiple areas where water was being collected in buckets. Below is the process that successfully remedied all water ingress:

* Area of the roof

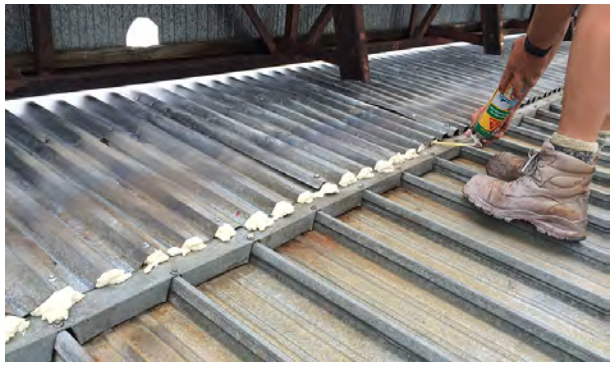


* Bay 2 – wider angle

* Caulking flashing / roof sheet joint

* Silicone 'down slope' & well sealed

* Silicone so smooth, almost cant see it



* Wider angle of finished area

REPAIRS & WATERPROOFING process 'BAY 3' continued:

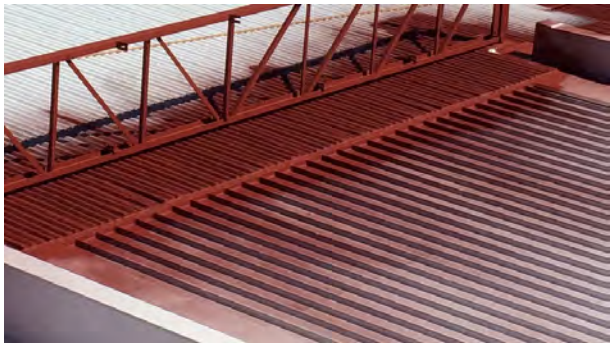
The next steps involve heavily sealing along the sheet ends whilst ensuring water run off is promoted & completed unimpeded.

Often, silicone is poorly applied & 'stands proud' which causes water to back up & pool. This causes accelerated corrosion & leads to more problems. We apply both on the joint & up onto the sheet then smoothed evenly so that it's almost undetectable & water flows off.

* Silicone applied & carefully smoothed

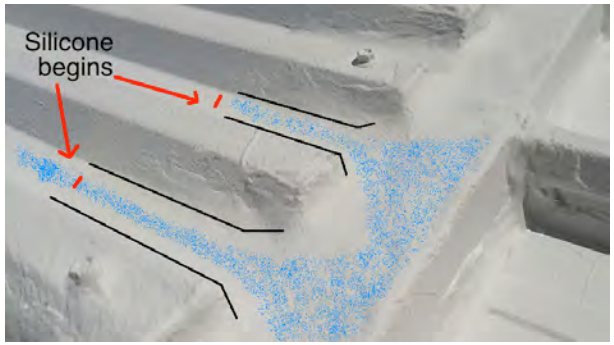
* Silicone on all foam & over joins

* Etch primer applied over silicone



* Silicone 'down slope' & well sealed

* Silicone so smooth, almost cant see it



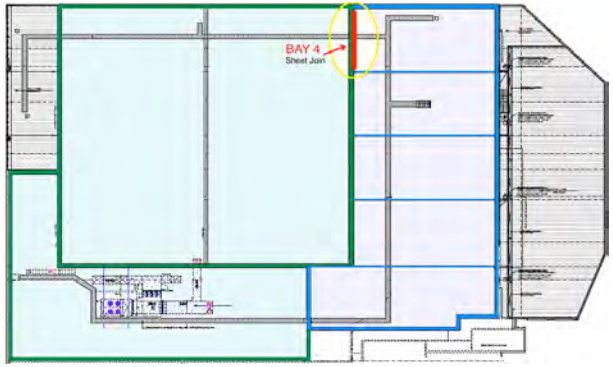
* Wider angle of finished area

REPAIRS & WATERPROOFING process: 'BAY' 4:

Again the process is almost identical to the previous bays however, the photos focus more strongly at the silicone & priming stages.

Bay 4 sheet join was also a major source of water ingress with evidence of several 'band aid' repair attempt. Prior to rust conversion & waterproofing measures, additional screws were driven in to better secure the sheets & remove the spongy areas.

* Area of the roof



* Bay 4 – prior to works

* Expandable foam cut to match profile

* Foam cut to edge of flashing

* Silicone applied over join & smoothed

* Silicone far up the sheet, promoting run off

REPAIRS & WATERPROOFING process 'BAY 4' continued:

Next steps prepares the area for coating beneath the Thermoshield ceramic coat.

Below photos show the etch priming coat over the silicone. The red etch priming coat demonstrates how smooth the silicone application is by making it all but very difficult to spot in parts. By then coating over the red with a contrasting colour, we are very confidently able to see the protective membrane is able to seal the waterproofing measures beneath.

* Etch primer over silicone

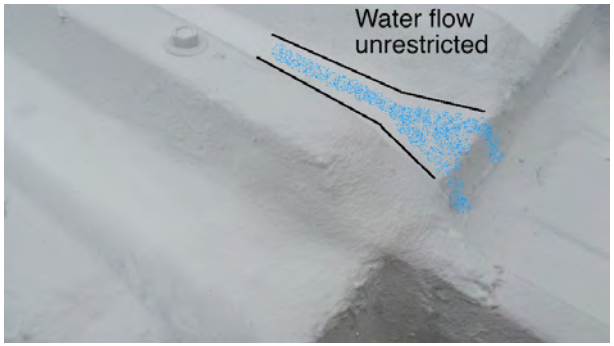
* Close up – silicone well smoothed

* Water to flow onto lower roof

* Finished coat

* Silicone almost impossible to spot in areas

* Water flow promoted, not restricted

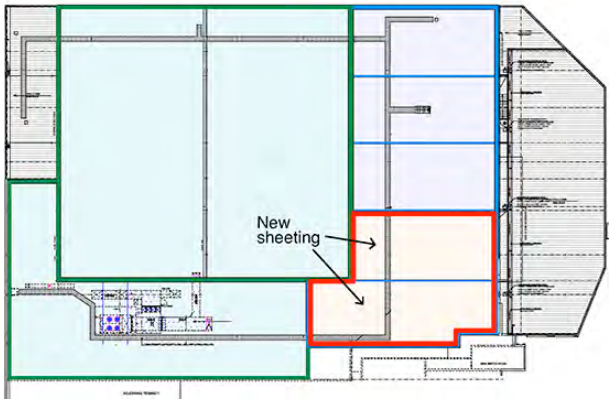


STAGE 2 – COATING NEW ROOF

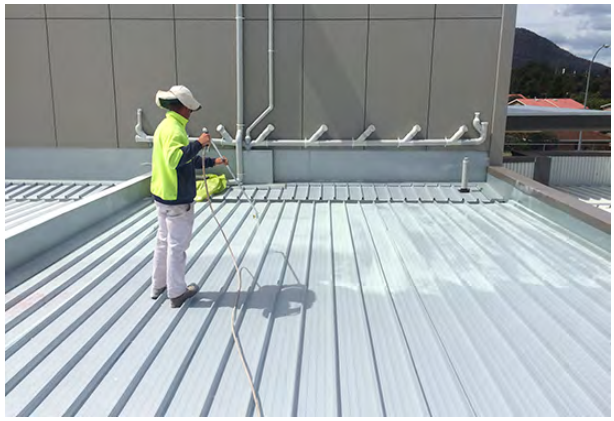
The below new zincalume roofs were installed over [two] of the existing aged roofs:

Brand new zincalume is a more difficult metal to coat than the galvanised steel sheeting. Power washing is required to remove any residue milling oil from manufacturing & a two part water based etch primer is applied to ensure maximum adhesion.

* New roof location

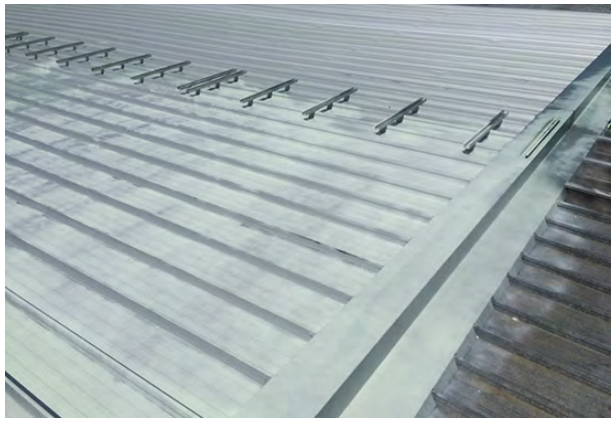


* Etch priming new zincalume



* Etch primer ‘misted’ on

* Appears light green, dries clear



Thermoshield ceramic coating then applied over the etch priming:

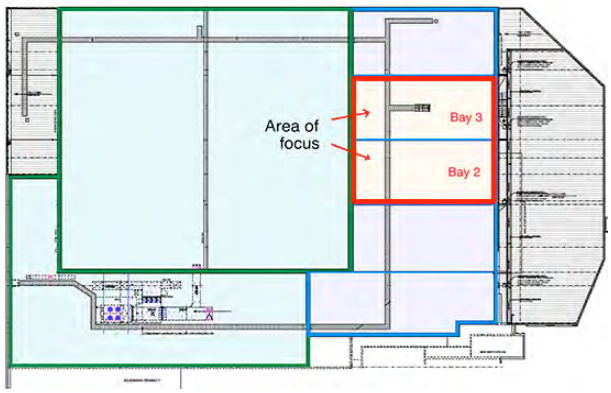


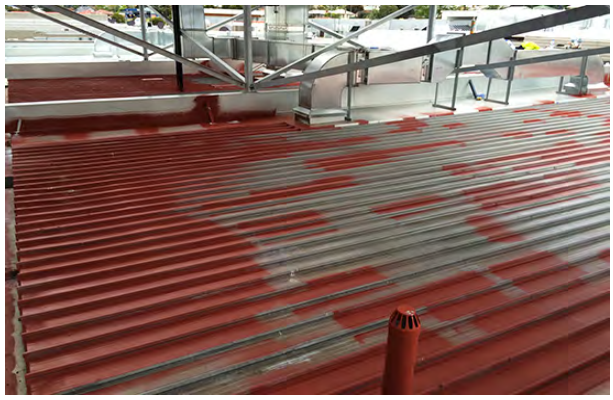

Then moving over to the neighbouring, new roof:

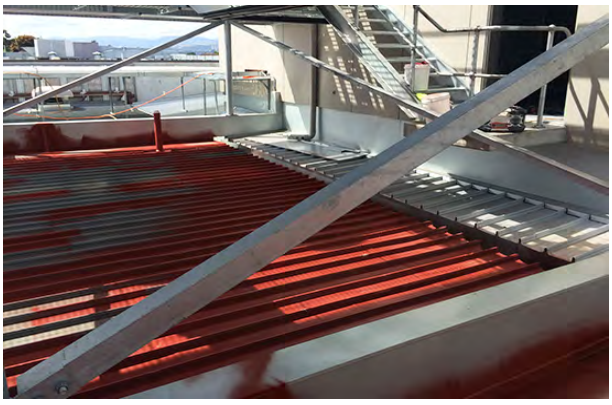


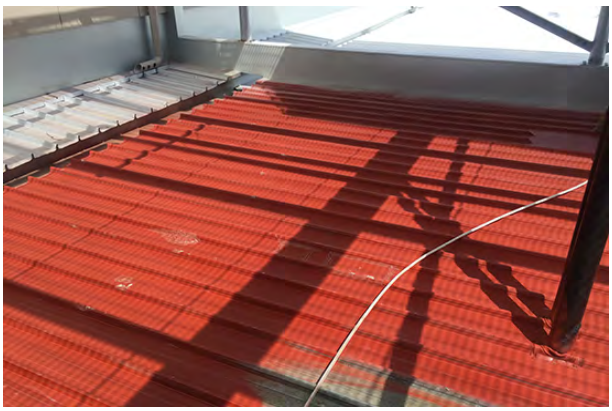

STAGE 2 – COATING EXISTING ROOFS

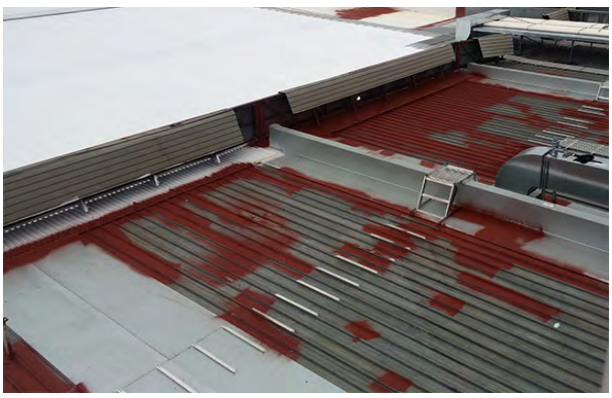
Works then moved to restoring the existing sheeting.
Below photos shows the rust conversion that followed power washing & waterproofing:



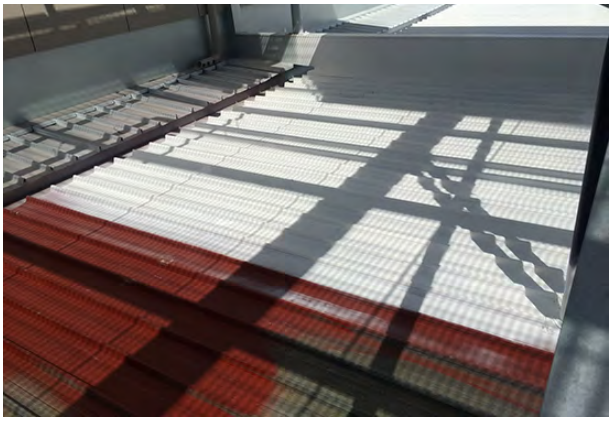


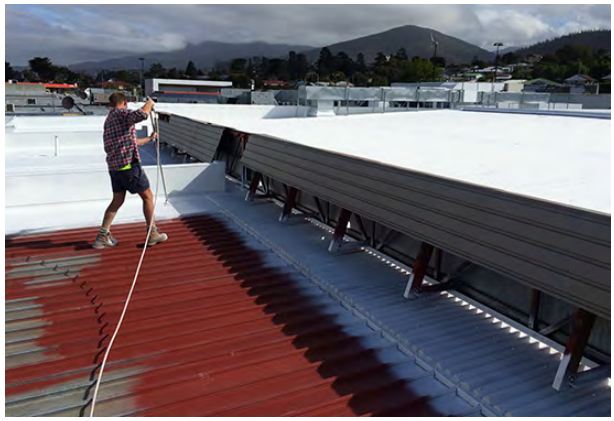




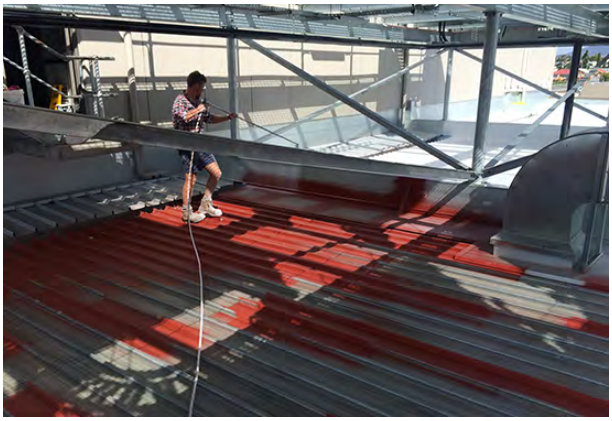


Following the rust conversion, the Thermoshield coating was applied over to provides a protective membrane to remove any water & oxygen exposure to the underlying metal:





* First coat beginning:



* First coat completed:

Below photo shows a wider angle of ‘bays 1 & 2’ - following the completion of the first Thermoshield coat:

ADDITIONAL WORKS – Removal of the roof mounted awning

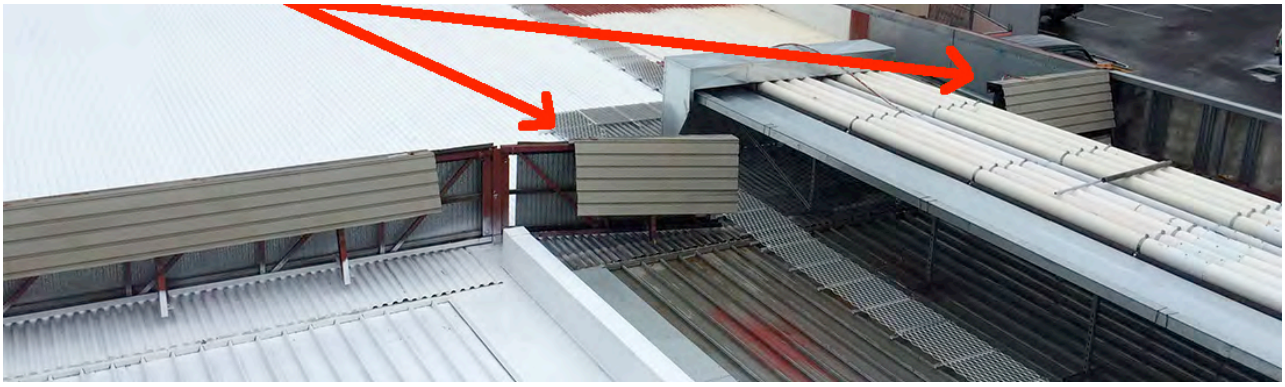
We offered to remove a troublesome wall/awning in order to access the underneath sheeting in order to waterproof & coat.

The process was to completely remove two small sections, then strip the remaining areas back to the frame & commence a protective coating for aesthetic purposes.

* Section removed

* Section removed

Located at the below area of the roof:



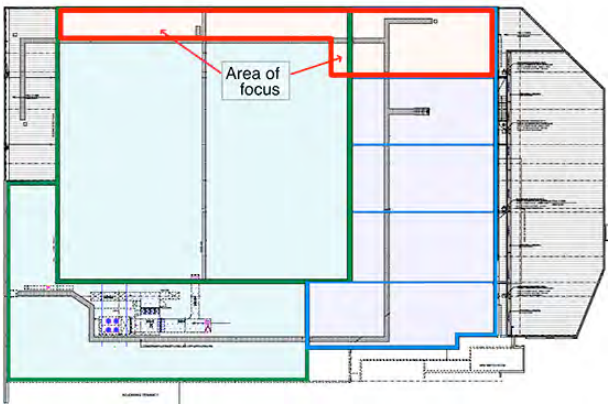
The rest of the wall was stripped back to the frame:

The timing wasn't ideal, given the Thermoshield coating had been finished in the area however, us removing it then re-coating the surrounding area was a better result than a crew of guys tramping over the coating & waterproofing.

STAGE 2 – COATING REMAINING EXISTING ROOFS

Works then moved to the last area of the roof. We had been holding off this area so capping could be installed. However, no one turned up to install it, so we had no choice but to continue..

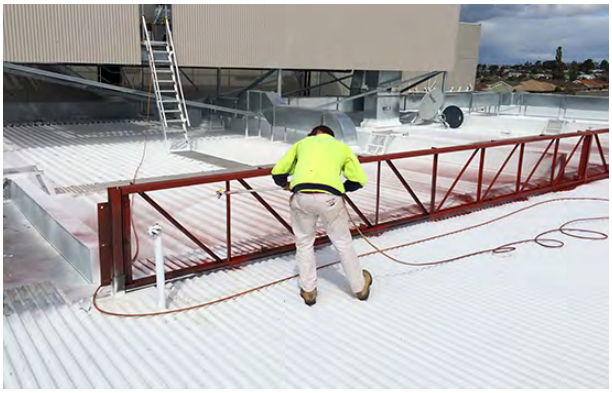
* Area of the roof



* No capping had been installed

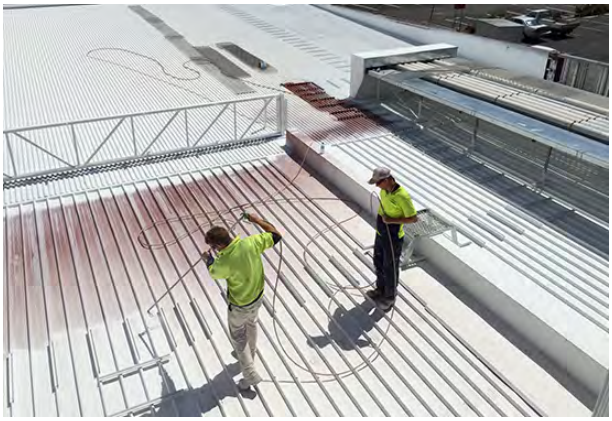
Below photos show the awning frame after it had been power washed, rust converted & etch primed. You can see the overspray onto the 2nd Thermoshield coat, which needed touch-ups.

* Frame coated for rust converter



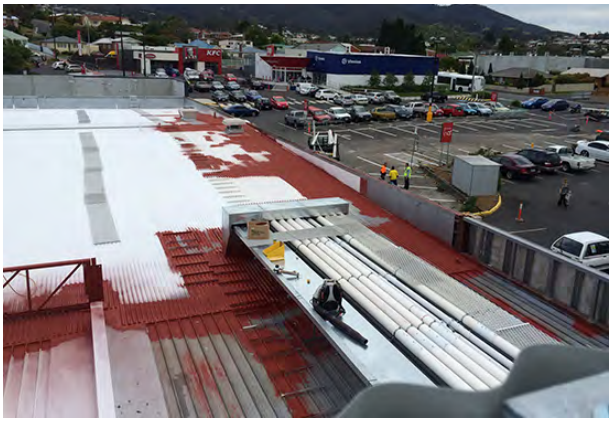
* Extent of overspray for touch-ups

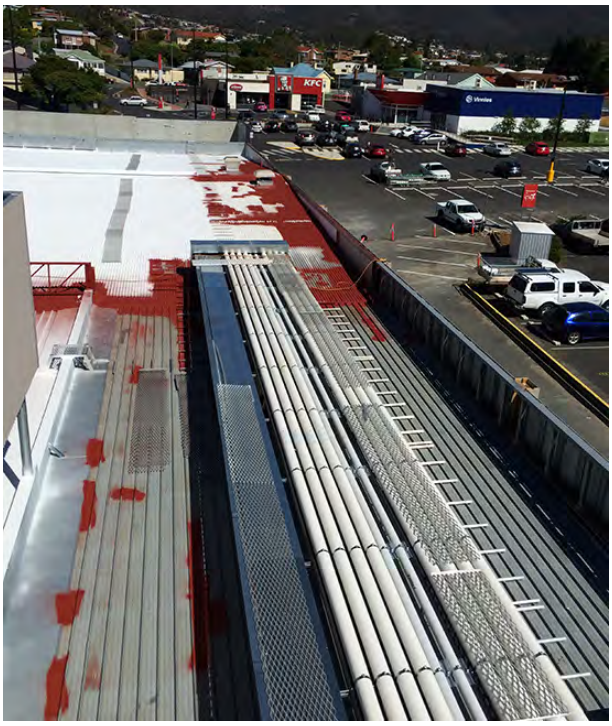
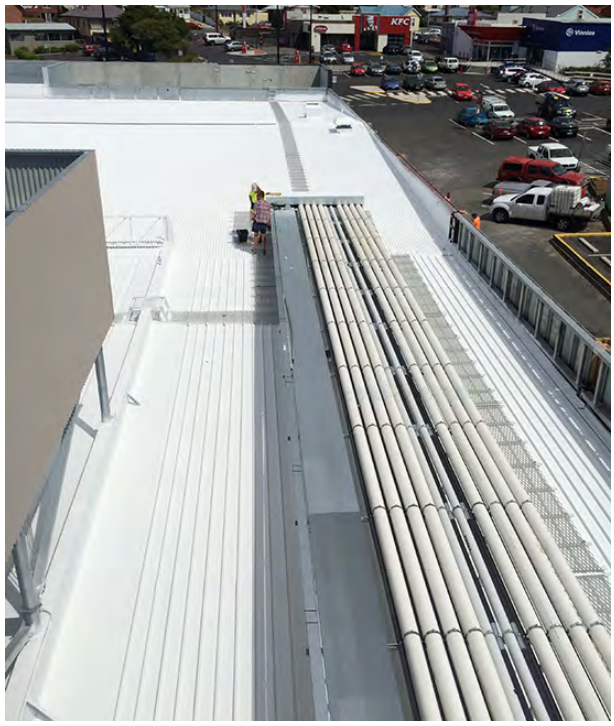
* Overspray touch-ups



* Finished awning frame

Below are a series of progress photos, then finished product of the same location:



Below are two finished photos of the of the above area in focus:


PROJECT COMPLETED:

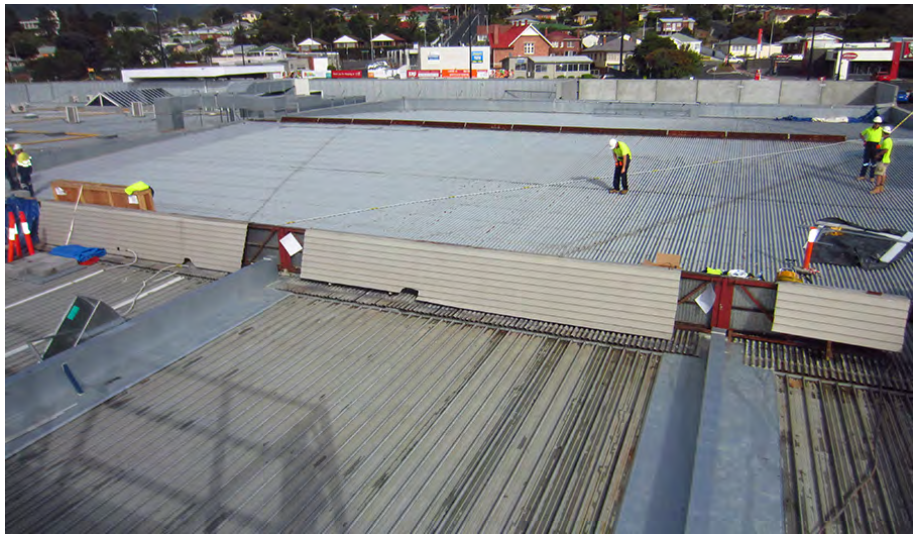
Below you'll find various photos to demonstrate the completed coating works.
A result we at Thermoshield are delighted with!

BEFORE & AFTER examples:

To finish, I'll try to demonstrate as many areas for comparison across the full project.

Below series shows a before, during & after shot of where the Woolworths roof meets neighbouring roof:

* ’Before’ – prior to stage 1 works:



* ‘After’ – completed coating system:

* ’Before’ – prior to stage 2 works:

* ‘After’ – completed coating system:

* ‘During’ – taken during stage 1 touch-ups

* ‘After’ – completed coating system:

* ’Before’ – prior to any work

*’During’ – post rust conversion

* ‘After’ – full coating system completed

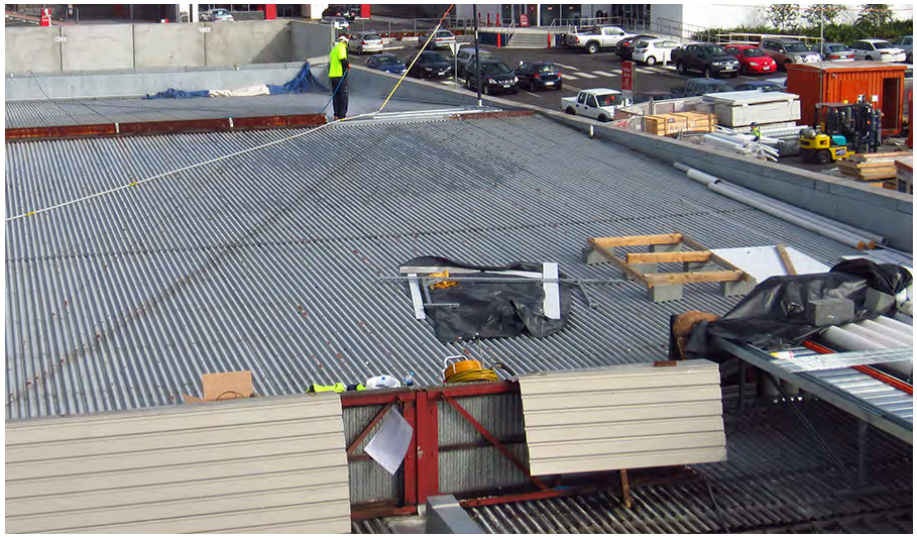
* ‘During’ – taken during stage 1 rust conversion works

* ‘After’ – completed coating system:

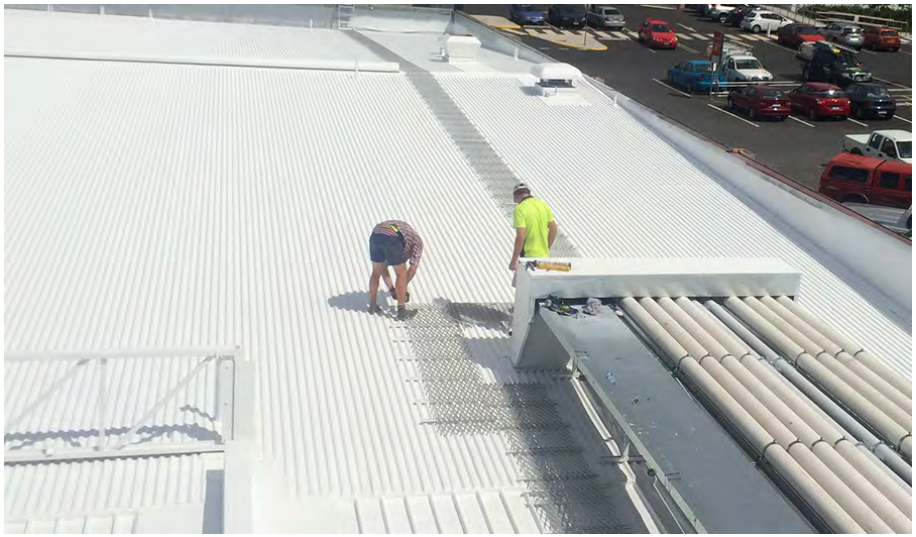
* ’Before’ – prior to stage 2 works:

* ‘After’ – completed waterproofing & coating system:

* ‘During’ – taken during stage 1 power washing



* ‘After’ – completed coating system:



* ’Before’ – prior to any work

*’During’ – post rust conversion

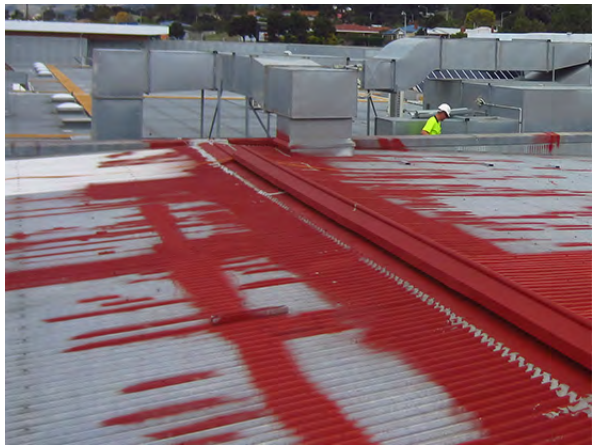
* ‘After’ – full coating system completed

* ‘Before’ – a horrendous attempt at waterproofing

* ‘After’ – heavily waterproofed, smoothed & sealed

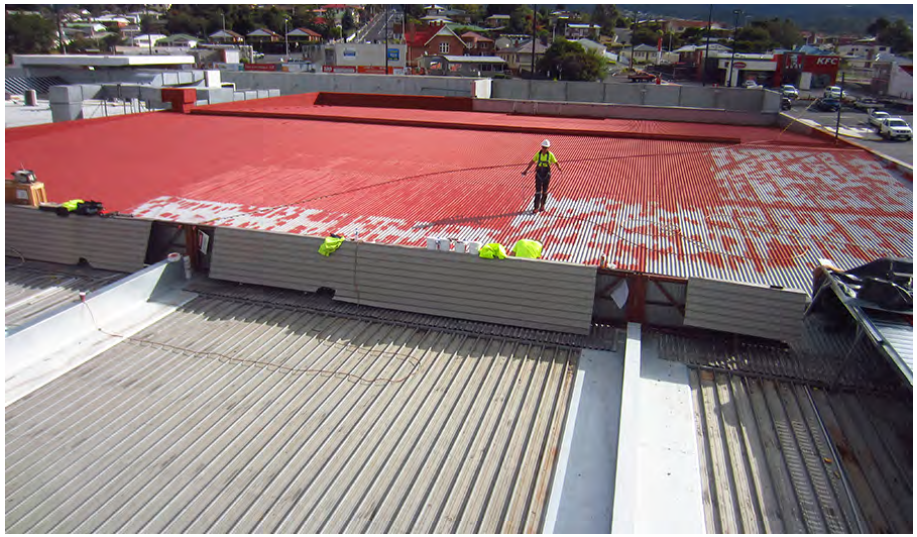
* ’Before’ – prior to any work

*’During’ –rust conversion



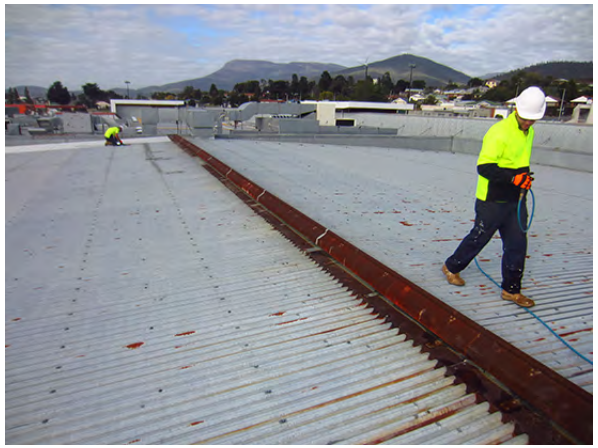
* ‘After’ – looks like as good as new

* ‘During’ – after rust conversion, during rust inhibitor primer



* ‘After’ – full coating system completed

* ’Before’ – prior to any work



*’During’ –rust conversion & primer coats

* ‘After’ – like new appearance