



▲ *Bellevue Homestead, Coominya (QHR600492)*

## BACKGROUND

Corrugated galvanised iron is the most common metal roof cladding found on earlier buildings in Queensland. Larger or more prestigious buildings such as town halls and customs houses may be clad with copper or rolled zinc. While this guideline will focus on corrugated galvanised iron roofing materials the principles also apply to the other metal roof sheeting materials.

## ROOFING REPAIRS UNDER THE GENERAL EXEMPTION (G1)

Roof repairs under General Exemption (G1) must be based on the principle of doing as little as possible and only as much as necessary to retain and protect the element. Repairs must match existing fabric in material, form, dimensions and profile and there must be no damage to significant fabric. Where original roofing elements have been replaced with modern substitutes, reinstate the original if this is known and can be matched exactly.

### Why is it important to take care with repairs to metal roofing and rainwater goods?

- ▶ to ensure that repairs to metal roofing and rainwater goods are carried out in a way that retains the significant fabric;
- ▶ to promote the understanding of early roofing methods and materials by retaining original roofing and rainwater goods details; and
- ▶ to ensure appropriate conservation of metal roofing and rainwater goods.

### Repairs approved under General Exemption (G1) include:

- refixing gutters, downpipes and drains;
- patching roof sheeting;
- inserting slip sheets within the roof covering;
- re-rolling damaged sheets;

- re-nailing loose roof sheeting;
- partial replacement of roof sheeting;
- patching flashings and cappings;
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- patching roof ventilators;
- patching rainwater heads;
- installing reversible leaf guards;
- continuing to paint roofing elements in the existing colour; and
- reinstating roofing elements where original is known and is matched exactly.

### **RECORD REPAIRS, REPLACEMENTS AND ADDITIONS**

Record all repairs, replacements and additions made to metal roofs and rainwater goods.

#### **Corrugated galvanised iron**

The common term 'corrugated galvanised iron' is used to describe two different materials, galvanised wrought iron and galvanised mild steel. Until the end of the nineteenth century all corrugated, galvanised metal sheeting was made from wrought iron. After that time mild steel replaced the iron as steel processing techniques improved. Corrugated iron and steel have been widely used throughout Australia, proving to be strong, durable, relatively light and easily transported.

The short sheets of the matt-finished, galvanised roof sheeting, with their prominent lead head nail fixings, give a visual effect to Queensland roofing that is an important part of our cultural heritage. Modern roofing techniques and materials are not appropriate for registered places with traditional corrugated galvanised iron roofs.

#### **Other profiles**

Typically corrugated iron has a rounded profile, e.g. sheets with eight three-inch corrugations and a ¾-inch pitch, but other profiles may be found especially on later buildings. Other profiles include rib and flat pan. Many of these profiles are stronger and

have a greater spanning ability allowing wider coverage with wider support spacings. This is useful on larger buildings where the sheeting can be fixed with ease and speed.

### **PROLONGING THE LIFE OF A METAL ROOF**

It is important to keep a roof waterproof. Leaking roofs are a major source of building damage. Leaks can have a number of causes including loose flashings or cappings, blocked gutters or downpipes and rusted roof sheets. Water may gain entry where side laps have distorted and lifted. Other common points of entry include seams and joints around flues, vents, skylights and chimneys.

Keep the roof clean. It is good practice to regularly sweep the roof to keep it free of debris. Frequency of cleaning will vary depending on the pitch of the roof, the amount of debris collecting and the adverse effects excessive walking may have on the sheets.

Check regularly to ensure that the roof sheeting is well nailed or screwed down. Loose fixings allow wind to blow rain in and further dislodge the sheeting. Check ceilings and roof spaces for signs of damp.

#### **Patching**

Patching small holes can extend the life of a sheet. A traditional patching technique is lead soldered over the hole.

#### **Temporary repairs**

When lap sheets have rusted around their fixings, the insertion of a slip-sheet can extend the life of the roof covering. This can be a metre length of matching profiled corrugated sheeting placed under a rusted lap joint. It protrudes 100mm below the lap joint and is secured on the adjacent corrugate.

#### **Damaged sheets**

Corrugations in sheets that have been damaged may be repaired by re-rolling. Check with sheet metal firms who may still have rollers of the correct dimensions.

**When replacing sheets look at the underside for brand names - this may help date the place or any repairs or alterations made to it.**

### Partial replacement

Where a few sheets or a small section of roof sheeting needs replacing, do so with material matching the profile and appearance of the existing sheeting. Second-hand sheets may be appropriate. If it is not possible to match the existing, new sheeting may be required. If so, move sheets around on the roof so that complete pitches or sections are of sound older material while other pitches or sections are of the new sheeting.

### COMPLETE REPLACEMENT

**Complete replacement of roof sheeting and/or guttering is not part of General Exemption (G1) and must have approval by the Queensland Heritage Council.**

**The replacement roofing may be approved under an exemption certificate if it matches existing fabric and does not impact on the cultural heritage significance. If not, a development application will be required.**

## GENERAL PRINCIPLES FOR ROOF REPAIRS UNDER GENERAL EXEMPTION (G1)

- Always repair rather than replace.

### Roof sheeting

- Patching or replacement should match the existing in material, form, dimensions and profile. Second-hand roof sheeting in good condition may be appropriate but ensure corrugations match exactly. New profiles have slightly different sized corrugations and some second-hand sheets may also be different.
- Install replacement roof sheeting in short lengths matching the existing to retain the visual texture of the roof.

- Laps of replacement roof sheeting should coincide with existing laps.
- Ensure roofing materials are compatible, e.g. do not use zincalume roof with galvanised guttering as this will lead to corrosion.
- Do not use Colorbond sheeting.
- Where the patina-ed checkerboard pattern of corrosion on a roof is considered important, repair rather than replace sheeting.
- Where new sheeting is required to replace part of the roof of a significant building, using steel with a heavier zinc coating (Z600) may be the best option for matching the original galvanised corrugated sheeting. This can be cut in short lengths to retain the horizontal shadow line created by the overlap.

### Gutters

- If there have not been eaves gutters on the place do not add them.
- Replace only those parts that are damaged or missing.
- Colorbond-finished, modern profile gutters should not be used.
- Gutter brackets should have the correct profile. Re-use existing brackets if possible. Modern brackets should be avoided.
- Where fixed to fascias, brackets should be carefully fixed to the fascia and should not pierce through the back-face of the timber.
- It is important that gutters slope towards the outlets (a minimum gutter fall of 1 in 500 is recommended). Without this slope ponding may occur, reducing the life of the gutter.
- Gutters generally fail at the joints. Remove rusted areas and re-solder joints.\* Small leaks may be repaired with silicon but makeshift repairs are unlikely to last.

\*As it is becoming increasingly difficult to locate plumbers skilled in soldering, small amounts of pop-riveting in situ repairs are permitted.

**Downpipes and rainwater heads**

- Replace like with like, e.g. round downpipes with round downpipes.
- If appropriate, downpipe locations should be as originally intended. If downpipes are missing locate the discharge outlets in the gutters indicating original location of downpipes.
- If downpipes require replacement, replace only those parts that are damaged.
- New rivets should be painted to match the adjacent paint surfaces.
- Downpipe fixings (either straps or spiked hooks) should match the existing and should be painted to match the adjacent paint surfaces.
- PVC replacements should not be used.
- The finish should match the existing. Colorbond finish should not be used.
- Rainwater heads should be carefully patched if damaged.
- Run-off should be directed away from the building.

**Roof decoration**

- Retain originals.
- Do not add embellishments such as acroteria, cresting or finials unless they were part of the original design.
- Only add decorative details where documentary or visible evidence exists. Ensure an exact match.

**Fastenings**

- Lead head nails are hard to obtain but try to use traditional lead head roofing nails or galvanised slot-headed roofing screws and lead washers on those parts of a roof that contribute to the building's appearance.
- Box head nails are accepted in high risk cyclone areas and where lead heads cannot be obtained.
- Modern hexagonal nut-headed screws should only be used on less visible parts of a roof.
- Nail holes can be soldered over or washers added to fixings to cover enlarged holes.

- Ensure fixings are compatible with other materials.

**Flashings/cappings**

- Conserve original lead or galvanised iron flashings. Match existing when totally failed and need replacing.
- Carefully match details such as gable rolls if they require repair or replacement.

**Roof ventilators**

- Patch damaged roof ventilators.

**Painting**

- Do not paint a roof that has never been painted.
- If a roof has always been painted continue to paint in the existing colour.
- Maintaining a sound paint film prolongs the life of corrugated roofing even when much of the zinc coating has been lost from the sheet. Rust converters, alkyd based primers containing anti-corrosive pigments and special primers for use over zinc coatings are readily available.

**MATERIALS - COMPATIBILITY AND APPROPRIATENESS**

Where repair or replacement is required it is essential that repair materials match the existing. Modern alternative metal sheeting may be different in sheet length, surface finish, corrugation size, profile and dimension.

Galvanised or zinc-coated steel is still manufactured in Australia and is available in a range of thicknesses and strengths, and in several different weights (thicknesses) of zinc coating. For details, contact Fielders Steel Roofing [www.fielders.com.au](http://www.fielders.com.au)

**Ripple iron**

Ripple iron, manufactured today as "mini orb", is a smaller profiled corrugated sheet

commonly used to clad window awnings, walls, ceilings and sometimes the building exterior. It does not have the strength of traditional larger profiled corrugated iron and is not suitable for roofing or foot traffic.

### Zincalume – why not?

Use of Zincalume is not permitted under General Exemption (G1). Zincalume has a different surface texture from a galvanised coating and retains its gloss for much longer than zinc. The gloss finish is out of keeping with the matt appearance of traditional zinc. Zincalume cannot be soldered. The joins in the gutters must be pop-riveted and sealed with silicone. This is a further change in appearance from previously soldered joins.

Zincalume is incompatible with and may cause corrosion to many other traditional roofing materials such as galvanised iron gutters and downpipes and traditional lead flashing.

### Sheet lengths

Modern production methods enable corrugated sheeting to be produced in longer lengths than earlier sheeting. The modern availability of the longer sheets allows roofs to be covered in a single row of sheets with no overlapping transverse joins, eliminating a major potential source of corrosion.

This may have advantages for some vulnerable roofs but the practice needs to be weighed against the change in appearance that full-length sheets will bring. **Use long lengths where the roof is not visible from the ground.**

**Where the roof is visible from the ground, sheeting may be replaced with short length sheets.** Have the sheets cut and install the roof sheeting in short lengths matching the existing to retain the texture of the roof. Particularly on steeply sloping roofs the short sheet joins are visible as shadow lines. This provides a distinct horizontal element

to the appearance of many roofs and their loss may lead to a change in the character of the roof.

If the roof is visible from the ground and it is proposed to replace short length sheets with longer sheets lengths, this is **not** covered by General Exemption (G1) and will require approval by the Queensland Heritage Council.

### Corrugation sizes

Corrugation sizes of modern sheetings vary slightly from those used traditionally. It may be necessary to use second-hand goods to ensure an exact match. When repairing or replacing sheeting always match the profile of the corrugations.

### ACKNOWLEDGMENT

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## FURTHER INFORMATION

For further information about metal roofing please contact:

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### APPLICATION FORMS:

Exemption certificates [www.epa.qld.gov.au](http://www.epa.qld.gov.au)  
Development applications [www.ipa.qld.gov.au](http://www.ipa.qld.gov.au)