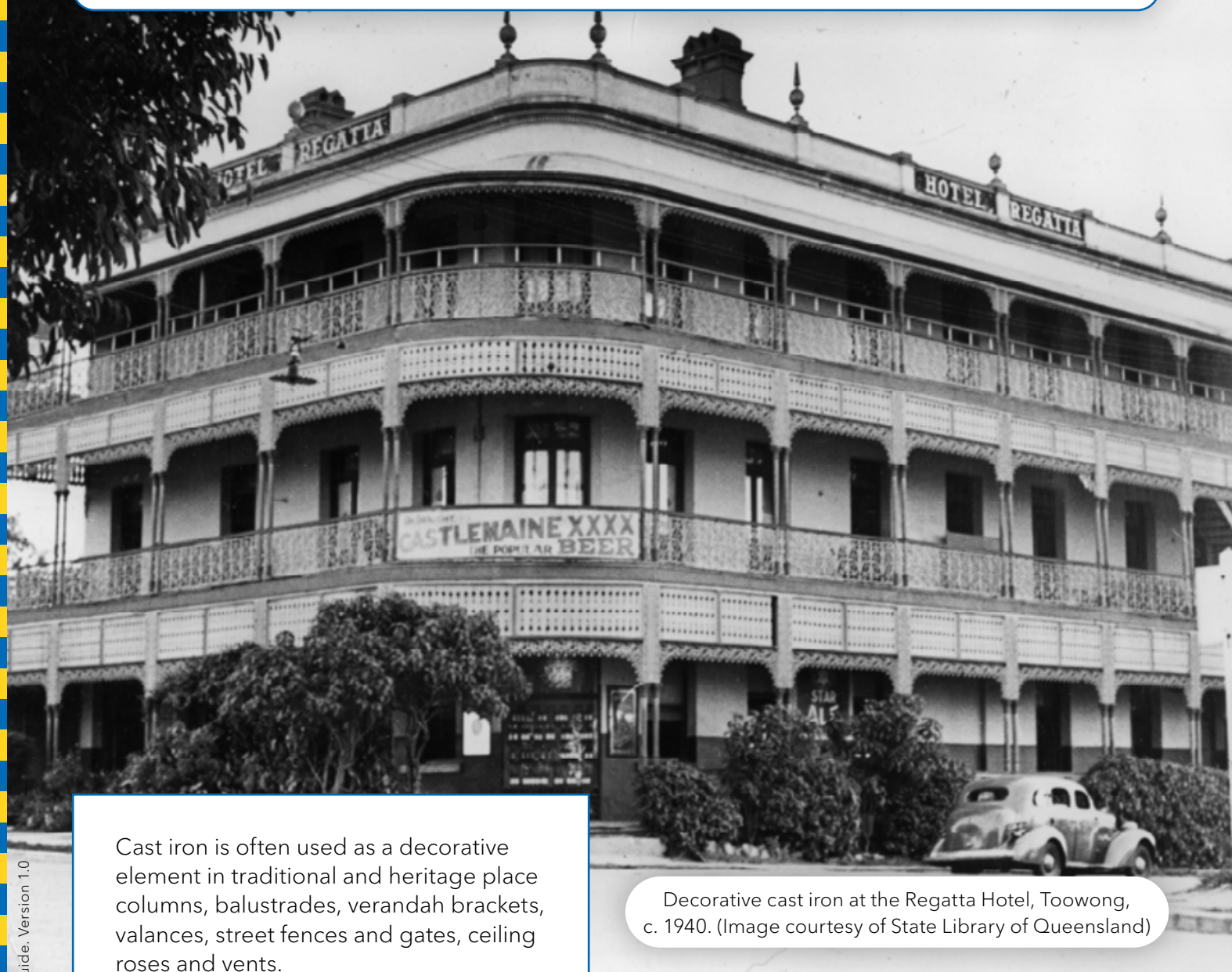


# Maintaining cast iron

A GUIDE TO CAST IRON MAINTENANCE IN BRISBANE'S TRADITIONAL AND HERITAGE PLACES



Cast iron is often used as a decorative element in traditional and heritage place columns, balustrades, verandah brackets, valances, street fences and gates, ceiling roses and vents.

This fact sheet covers:

- a brief history of cast iron used in Brisbane heritage places
- information about cast iron manufacturing
- general guidance for care and maintenance of cast iron features.

Decorative cast iron at the Regatta Hotel, Toowong, c. 1940. (Image courtesy of State Library of Queensland)

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## Approvals

### Works to Local heritage places

Some cast iron projects may require a development approval.

Brisbane Local heritage places are protected under the Heritage overlay of the local planning scheme, *Brisbane City Plan 2014* (City Plan).

If your property is a Local heritage place, you may require approval. Works that will have more than a minor impact on the cultural significance of a heritage place require development approval.

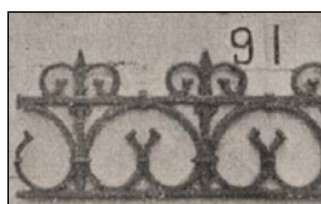
Minor works that have no impact, or no more than a minor impact, on the cultural significance of a heritage place may be eligible for an exemption certificate.

Before starting a project, visit [brisbane.qld.gov.au](http://brisbane.qld.gov.au) and search 'heritage properties' and 'heritage exemption certificates' or call Brisbane City Council on 3403 8888 and ask to speak with a Planning Information Officer.

For more information about heritage places and their values search [Local Heritage Places online](#).

### State heritage places

The Queensland Government is responsible for assessing and approving works on State heritage places, which are places identified in the Queensland Heritage Register and are important to Queensland. For more information, visit [qld.gov.au](http://qld.gov.au) and search 'changing or developing heritage places'.



## About cast iron

### Early cast iron in Australia

Australia's earliest cast iron was first imported from England around the 1830s. By the 1870s most of the country's cast iron was manufactured locally with the first decorative patterns registered in Queensland. Early cast iron designs were mostly fine decorative work developed from earlier elaborately shaped wrought ironwork.

In May 1882, *The Queenslander* reported the rapid growth of iron foundries in Brisbane with 2 large foundries employing nearly 300 workers, and several smaller foundries.<sup>1</sup> This changed in the 1890s when a recession caused the steady decline of foundries. By the 1920s, cheaper decorative timberwork reduced decorative ironwork manufacturing.

#### 1860s-1890s

Australian cast iron designs echoed traditional classical and floral motifs and decorative ironwork featured in the Victorian era. At this time, filigree-style verandahs were made almost exclusively from cast iron and their delicate appearance gave rise to the term 'cast iron lacework'.

#### 1890s-early 1900s

Art Nouveau curves and organic forms inspired cast iron designs and the Federation era's nationalistic spirit promoted the inclusion of native flora and fauna elements. By 1910, cast iron patterns had become simpler and less fashionable.



Cast iron balustrades (top left), brackets and valances (top right), and details (left).<sup>2</sup>

<sup>1</sup> Scientific Useful (1882, May 20). *The Queenslander* (Brisbane, Qld. : 1866 - 1939), p. 621. Retrieved July 11, 2025, from <http://nla.gov.au/nla.news-article19784313>

<sup>2</sup> John Crase & Co, *John Crase & Co.'s New book of designs of ironwork*, The Co., Brisbane, c. 1900.



## Cast iron manufacturing

Cast iron elements are made by melting iron and pouring it into a mould. This process is called 'casting', and traditionally used wood, plaster, or metal patterns in sand moulds packed in a flask. Casting allowed for the easy creation of intricate shapes, unlike wrought iron that is heated, hammered and worked into shape.

Different casting methods like 'double-face casting' and 'single-face casting' were employed to produce specific designs efficiently. A double-faced cast utilised a mould with upper and lower sections to create both sides of the element, whereas a single-faced cast employed an open-top mould to generate a raised design on one side and a smooth surface on the other.

Single-faced castings were more common in Queensland as they used less material, making them cheaper and lighter. When installed, the hollow side faced inwards.



Foundry worker at the Atlas Foundry, Russell and Merivale Streets, South Brisbane c. 1915 (top) and Harvey & Son Foundry, Margaret Street, Brisbane c. 1905. (Image courtesy of State Library of Queensland)



## Maintaining cast iron

Good quality, well-coated cast iron corrodes less when regularly brushed and kept dry. To preserve cast iron effectively, applying a thin layer of fish oil-based coating or steel-compatible paint is recommended.

### Lead paint

WARNING: Do not inhale paint dust. Older paints may contain lead. Wear a respirator mask with appropriate safety rating when removing paint. Visit the Queensland Government website for more information about '[Lead-based paint](#)' and '[Working with lead-based paint](#)'.

### Surface preparation

- Identify the original colour scheme before removing paint from cast iron. Seek guidance from a heritage specialist if needed.
- Prepare the cast iron surface by removing loose, flaking and deteriorated paint to ensure adhesion of new protective coatings.
- Only strip paint if the thickness of existing layers obscures cast iron details.

### Abrasive cleaning and sandblasting

- Carefully sandblast cast iron to remove paint and surface rust. Low-pressure abrasive grit blasting or sandblasting are most effective.
- Avoid using heavy shot or grit blasting that can damage decorative details.
- Test a small area to determine the grit size and air pressure (max. 60-70 psi).
- Avoid using copper slag for sandblasting as it may cause electrolytic reactions that cause corrosion when in contact with moisture or water.

### Chemical strippers

- Use specialist tradespeople experienced in chemical stripping.
- Strip paint by acid pickling or with a chemical paint remover containing methylene chloride or potassium hydroxide.
- Remove or neutralise all traces of cleaning compounds to safeguard new paintwork.

### Galvanising

- To enhance protection, galvanise cast iron before painting or powder coating, particularly in coastal regions or areas prone to salts, air pollutants, or acid rain. Modern galvanising provides a thin, even protective coating that does not obscure cast iron details, unlike dip galvanising that produces a thick and uneven coating.

### Primer

- Apply a corrosion-inhibiting primer after paint removal before new rust forms. Rust can occur in minutes to hours depending on environmental conditions.

### Coatings

- Maintain a protective coating of paint to preserve cast iron.
- A traditional coating process includes applying a priming coat, undercoat and 2 coats of oil-based enamel or micaceous paint where required, such as where items are exposed to UV or other corrosive environmental factors.
- Alternative coating methods include spray painting, paint bath dips with excess brushed off, or powder coating.

### Repairing

Common cast iron problems include badly rusted or missing elements, impact damage to connections and attachment loss.

- Research the nature and extent of problems before commencing repairs.
- Opt to preserve and repair historic ironwork instead of replacing it if damage is minor.
- Handle and protect cast iron carefully during construction due to its brittleness and susceptibility to fracturing under pressure.

## Graphitisation

Graphitisation is microstructural damage that occurs over time due to factors like lack of paint, exposure to acid rain or seawater, or failed caulked joints.

Because corroding cast iron retains its shape and appearance, graphitisation only becomes apparent when surface scraping reveals disintegrating iron. Replacement is often the only solution.

### Graphitisation repair:

- is usually more expensive than replacing with a new casting
- can sometimes be achieved with iron bars and screws or bolts
- may involve using iron or steel to reinforce or replace deteriorated elements
- can be accomplished by experienced welders using brazing or special nickel-alloy welding to repair major cracks or splice new cast iron in place.

## Fixings

- Use zinc plated or galvanised steel screws for fixing cast iron or aluminium.
- To avoid corrosion, do not use brass with cast iron or stainless steel with aluminium.
- To avoid galvanic corrosion, ensure cast iron does not contact copper or lead-coated copper.

## Duplicating and replacing

- Replace components that are missing, severely corroded or damaged beyond repair.
- Use early photos and physical evidence such as marks on verandah posts to identify and reinstate the original materials and design.
- Search the site for remnants of intact original sections to use as a casting pattern.
- Engage a pattern maker to replicate the original pattern. Wood or plastic patterns should be larger than the original to compensate for 1% iron cooling shrinkage.
- Select a suitable pattern from identical or similar buildings if no evidence is available.
- Search second-hand shops for old cast iron patterns for reproduction.
- Search iron foundry catalogues for matching pattern designs that can be copied.

## Cast aluminium as a replacement for cast iron

- Use cast iron to maintain authenticity. If unavailable, substitute with cast aluminium, which is generally cheaper and more available than cast iron. Aluminium panels cast from iron originals will be smaller due to shrinkage.
- Maintain coatings to avoid white-oxide corrosion.

## Useful references

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- Heritage Victoria, [Metalwork](http://www.heritage.vic.gov.au/__data/assets/pdf_file/0021/505263/Metalwork.pdf), Heritage Council Victoria, 2001, [www.heritage.vic.gov.au/\\_\\_data/assets/pdf\\_file/0021/505263/Metalwork.pdf](http://www.heritage.vic.gov.au/__data/assets/pdf_file/0021/505263/Metalwork.pdf)
- John Crase & Co, Minor repairs metalwork. In *John Crase & Co.'s New book of designs of ironwork*, The Co., Brisbane, 1900.

## Disclaimer

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