

## Restoration Guidelines No. M001

# Maintenance of Architectural Ironwork

### Introduction

Architectural Ironwork is a common feature in the Maltese cultural landscape and can be seen in a number of property types. The most common architectural ironwork elements are balcony handrails, fencing, gates, fanlights and security bars.

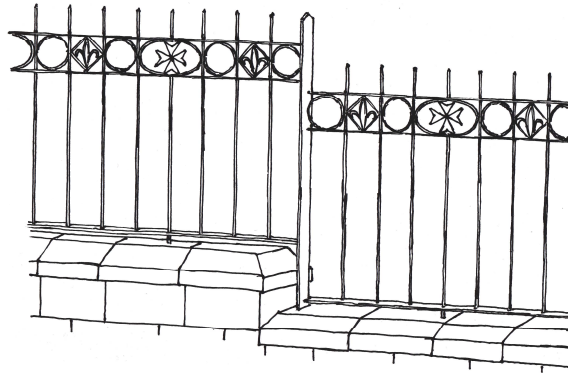
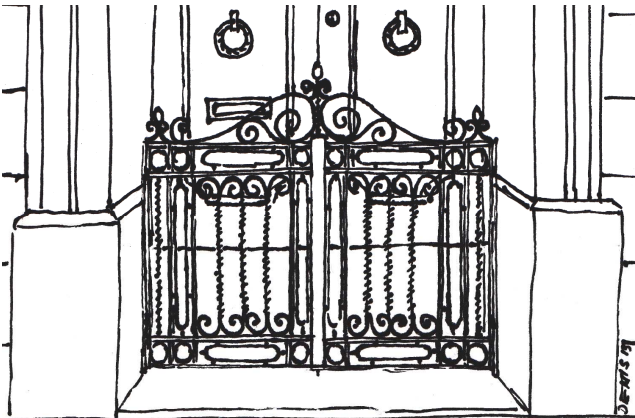
One of the main flaws of ironwork whether cast or forged is corrosion, especially if not regularly maintained. Rust normally appears initially at the most exposed surfaces, joints, and at the fixing junctions to other buildings and structures.

### Prior to commencing work

The maintenance techniques for iron depend on:

- Its current state - Is the iron heavily corroded or does it have a minor rust problem?
- Can the iron be removed from its fixed position and taken for repair in a workshop?
- Is the iron an intricate design with very narrow gaps, or is it a design with wider spaces?

Thus the maintenance and restoration technique adopted will depend on the characteristics of each site on a case by case basis and will depend on how you respond above.



*IMPORTANT: Some of the following techniques are potentially dangerous and should be carried out only by experienced and qualified workers using personal protective equipment in accordance with health and safety regulations and procedures.*

### Cleaning and Paint Removal

When there is extensive failure of the protective coating and/or heavy corrosion exists, the rust and most or all of the paint must be removed to prepare the surfaces for new protective coatings. The techniques available range from physical processes to flame cleaning and chemical methods such as the following:

#### Hand scraping, chipping and wire brushing

These are the most common and least expensive methods of removing small amounts of paint and light rust from iron. However, they do not remove all corrosion or paint as effectively as other methods. Experienced craftsmen should carry out the work to reduce the likelihood that surfaces may be scored or fragile detail damaged.

#### Abrasive cleaning/ Sandblasting

Low-pressure grit blasting is often an effective approach to removing excessive paint build-up or substantial corrosion. It is fast and thorough, allowing in some cases for the iron to be cleaned in place. Adjacent materials such as stone, wood and glass must be protected to prevent damage. In some instances it may be more feasible to remove and relocate the element to a workshop for restoration.

#### Flame cleaning

Flame cleaning of paint and rust from metal requires skilled operators. It can also be expensive and potentially dangerous. It is considered effective on lightly to moderately corroded iron. Wire brushing is usually necessary to finish the surface after flame cleaning.

### Chemical paint removal

Paint removal using chemical compounds can be an effective alternative to abrasive blasting for removal of heavy paint build up. These agents are often available as slow acting gels or pastes. It is strictly recommended to follow manufacturers instructions when in use. Personal Protective Equipment must be worn as they can cause burns. Furthermore, the residual traces of cleaning compounds on the surface of the iron can cause paint failures in the future, therefore ensure the ironwork is thoroughly cleaned with soap detergent and water after use of the chemical. Application on site is generally not recommended.

### Washing, sanding

If the wrought iron is not corroded, one should consider leaving the paint layer and sanding the surface using a fine grade sandpaper to remove defects (such as paint drips) from the previous application and to allow a good bond for the new application.

*IMPORTANT: Following any of these methods of cleaning and paint removal, the newly cleaned iron should be painted immediately with a corrosion-inhibiting primer before new rust begins to form. If priming is delayed, any surface rust that has developed should be removed with a clean wire brush just before priming. Rust prevents good bonding between the primer and the iron surface as well as preventing the primer from completely filling the pores of the metal.*

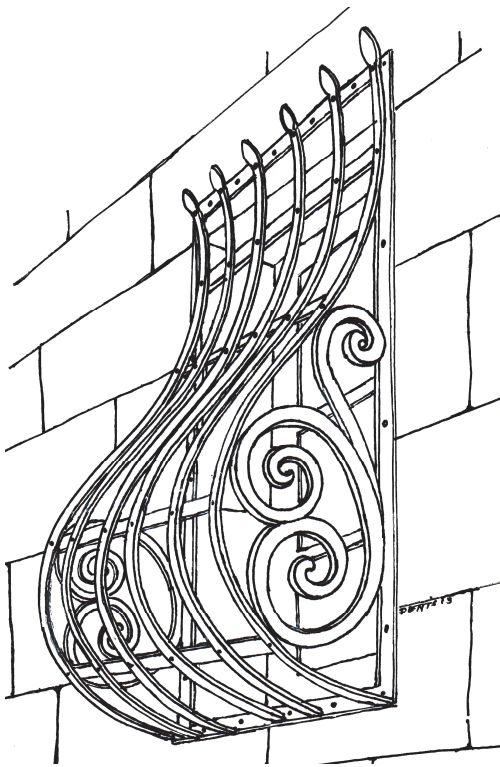
### Painting and Protective Coating Systems

The most common and effective way to preserve architectural ironwork is to maintain a protective coating of paint on the metal. For the paint to adhere properly, the metal surfaces must be absolutely dry before painting. Unless the paint selected is specifically designed for exceptional conditions, painting should not take place if relative humidity is above 80 per cent and should not be applied when there is rain in the air.

Prior to paint selection, consult manufacturer's technical specifications to ensure compatibility between the surface conditions, primer, finish coats, and application methods. A key factor to take into account in selection of coatings is the variety of conditions on existing and new materials on a particular building or structure.

Historical analysis of paint samples may help to determine original or traditionally acceptable colour schemes. In this case please consult a professional in the field.

Lead-based paints are not considered acceptable under any conditions owing to their toxic effects.



### Application methods

Brushing is the traditional and most effective technique for applying paint to iron providing good contact between the surface and paint. This method is also effective for filling pits, cracks, and other blemishes in the metal. Other methods are not considered historically appropriate and should be avoided.

### Mechanical Repair

For elements that are riveted together the same technique should be used in the method of repair. Elements may be welded together and it is recommended that a rusted section is repaired rather than the whole element replaced. This work should be undertaken by a skilled craftsman.

### Replication and Replacement

The replacement of iron components is at times the only practical solution when such features are missing, severely corroded, damaged beyond repair, or where repairs would be only marginally useful in extending the functional life of an iron element. This work should be undertaken by a skilled craftsman.

Replication and replacement should be on a like-with-like basis only.

## Dismantling and Assembly of Architectural Components

It is sometimes necessary to dismantle all or part of an iron structure during restoration if repairs can not be successfully carried out in place. Dismantling should follow the reverse order of construction and re-erection should occur in the order of original assembly. Documentation of the structure should be carried out before dismantling using a numbering system where required. The use of an annotated photograph is often the easiest way to document.

### Maintenance

A successful maintenance program is the key to the long term preservation of any historic property and its components. Records should be kept in the form of a maintenance log as well as painting records for selecting compatible paints for touch up and subsequent repainting.

The primary purpose of the maintenance program is to control corrosion. As soon as rusting is noted, it should be carefully removed and the protective coating of the iron renewed in the affected area.

### Summary

The successful conservation of iron architectural elements and objects is dependent upon an accurate assessment of their condition and the problems affecting them;

The selection of repair, cleaning and painting procedures is important;

It is at times necessary to undertake repairs to individual elements and assemblies;

In some cases badly damaged or missing components must be replicated;

Long term preservation of architectural iron depends on timely repairs and regular maintenance.

### References

A list of references can be found at: <http://www.mepa.org.mt/heritageguidelinesforrestoration>

### Notes

This and other Restoration Guidelines have been prepared by the Malta Environment and Planning Authority for promoting good practice for restoration works pursuant to the Structure Plan for the Maltese Islands, 1990 and the Urban Conservation Area Design Guidance, 1995.

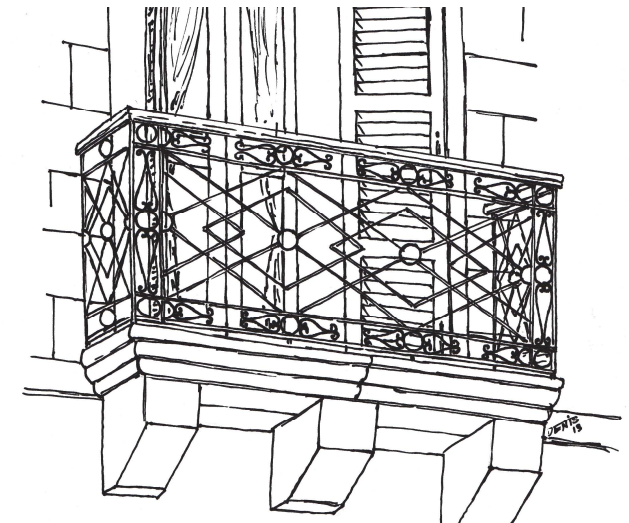
Other Restoration Guidelines available from <http://www.mepa.org.mt/heritageguidelinesforrestoration> can help you ensure that all conservation work required is carried out according to best practice.

Every effort has been made to ensure that the information contained in this document is correct. Any suggestions or for additional information please send your comments or request to <http://www.mepa.org.mt/contactusform?id=21>

The information provided in this document is intended for information purposes only. The use of products or materials is to adhere to manufacturers' technical specifications. All works whether on site or in a workshop must comply with relevant health and safety regulations as well as other related regulations and legislation.

*THE WORKS CONTAINED IN THIS DOCUMENT ARE CONSIDERED 'MAINTENANCE' AND DO NOT REQUIRE A PERMIT OR NOTIFICATION.*

If this document is to be utilised as part of the submission of a Restoration Method Statement, please submit: clear indication of items to be restored, reference to this document as required and any additional interventions or departures from this guidance which should be supplemented in the Restoration Method Statement.



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