Historic England

# Graffiti on Historic Buildings

## Removal and Prevention

# Summary

This publication provides guidance to building owners, conservation professionals, local authorities and estate managers responsible for dealing with graffiti on historic buildings and sites. It describes the types of graffiti and historic materials affected, the legal context for reporting and prosecuting graffiti crime, general advice on removing graffiti, best technical practice expected of specialist graffiti-removal contractors, and prevention measures. It also addresses wider cultural developments, notably the increased public recognition and acceptance of 'street art', and the consequent need to define the boundaries between street art and unwanted graffiti.

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This edition published by Historic England February 2021, and replaces English Heritage 1999 *Graffiti on Historic Buildings and Monuments – Methods of Removal and Prevention.*
Product Code: 50508
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Please refer to this document as:
Historic England 2021 *Graffiti on Historic Buildings: Removal and Prevention*. Swindon. Historic England.

historicengland.org.uk/advice/technical-advice/buildings/

Front cover: Holy Rood Church, The Lawn, Old Town, Swindon (13th century and 1736).

# Contents

# 1 Introduction

Graffiti disfigures historic buildings and sites and their settings, and encourages further occurrences. Its removal can be a complex operation, depending on the nature and condition of the surface affected and the type of graffiti. Inappropriate cleaning by inexpert contractors can cause significant damage to building surfaces and may result in visual disfigurement, including stains and marks. Understanding the nature of historic building materials and graffiti media (materials), and how these interact and respond to cleaning, is essential for effective and safe treatment. This can be achieved if contractors experienced in graffiti removal in historic buildings are employed. After removal, physical and social measures can be implemented to prevent or reduce recurrent incidents.

## Defining graffiti

The word 'graffiti' derives from the ancient Greek word γράφειν – graphein – meaning 'to write'. The term covers a wide range of marks applied to surfaces, from drawings, paintings, stencilling and tags, to random meaningless scribbles and lines. Graffiti may be written, painted, scratched or otherwise applied.

Figure 1:
Inscribed with a compass, the daisy wheel is a distinctive type of apotropaic or witch mark (14th century Saxon Tithe Barn, Bradford-on-Avon, Wiltshire).

## Historic graffiti

Graffiti is part of a long tradition of marking building surfaces for various purposes: social, political, religious and artistic. Examples of graffiti extend back into human prehistory. In England, significant early and dateable graffiti includes numerous Roman examples, such as that seen at Hadrian's Wall, which consists of both text and drawings. Graffiti from subsequent periods includes a vast range of pictures, texts and markings (for example, by makers, masons and carpenters) on religious, secular and domestic buildings.

Ritualistic protection (or apotropaic) marks are commonly found in historic churches and houses, near openings, doorways, windows and fireplaces, apparently to ward off evil spirits. They can also be seen in caves, such as Wookey Hole in Somerset, and in quarries, notably in Bath stone mines, where the soft stone lent itself to marking by the miners. The discovery in 2019 of hundreds of ritual protection marks in caves at Creswell Crags on the border between Derbyshire and Nottinghamshire is possibly the largest number and range of such marks at any single site in the United Kingdom.

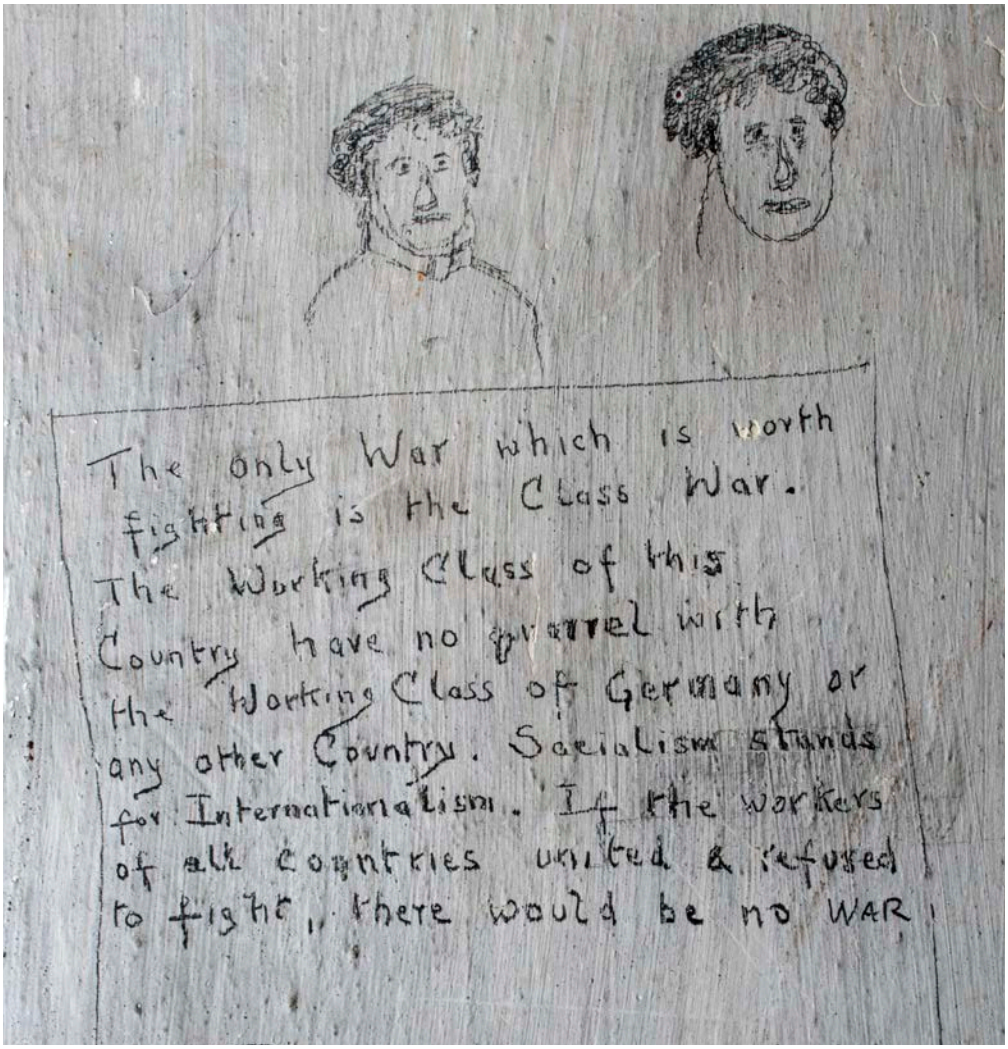
Graffiti of any period may be of historic interest. Among the most evocative examples to survive from the 20th century are those left by imprisoned conscientious objectors during the world wars.

When historic graffiti is encountered, it should be shared with all stakeholders and fully recorded.

Figure 2:
Stonehenge has attracted visitors throughout history and many have left their mark by scratching names, initials or dates on the stones. Nowadays, such action would constitute criminal damage to a scheduled monument.


Figure 3 (top):
Graffiti on a sheet of lead at Apethorpe Palace, Northamptonshire, appears to record work carried out on the gate tower roof by W S Paine. The tradition of marking building surfaces with names and dates of construction and repair work continues to the present day.

Figure 4 (right):
At Richmond Castle, Yorkshire, these drawings and text were created by an unknown conscientious objector in 1915. It is one of the many such graffiti works made on the limewashed walls of the cell blocks of the castle across two world wars.



# 2 Impact of graffiti

## 2.1 The nature of the problem

Graffiti is generally most prevalent in large cities, but incidents of graffiti do occur in rural and remote settings. Posting of unofficial and unwanted adhesive labels and posters, known as ‘fly-posting’, often occurs in the same areas as graffiti.

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Figure 5:
The historic buildings forming the background to this urban skate park in Bristol have been completely covered, as graffitists reach progressively higher up the facades to make the most prominent marks.

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Figure 6:
Railway embankments and bridges are favoured by graffitists. This railway bridge has attracted abundant graffiti due to its isolated location, where the risk of detection is low.

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Figure 7:
In 1996, eight prehistoric stones at Avebury, Wiltshire, were subject to a major graffiti attack, comprising new age/ satanic symbols, just before the summer solstice. The graffiti was successfully removed. In 2001, another two stones were painted in lurid green and red gloss paint, in protest against genetically modified food. Both incidents received national press coverage.

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Figure 8:
Surfaces covered with graffiti are symptomatic of neglect and attract labels and posters.

Graffitists seek surfaces that provide high visibility and a blank canvas. Hard-to-reach and prominent locations, such as bridges, railway embankments, station approaches and canals, are favoured targets. Inaccessible places and disused buildings may present a thrill or challenge to graffitists, who may risk injury or death to apply their work. Tagging is a particular form of graffiti in which the perpetrator applies their own ‘tag’, a signature stylised as a graphic or image. This is intended as a personal identifier and may be associated with marking territory, sometimes as part of urban street gang activity.

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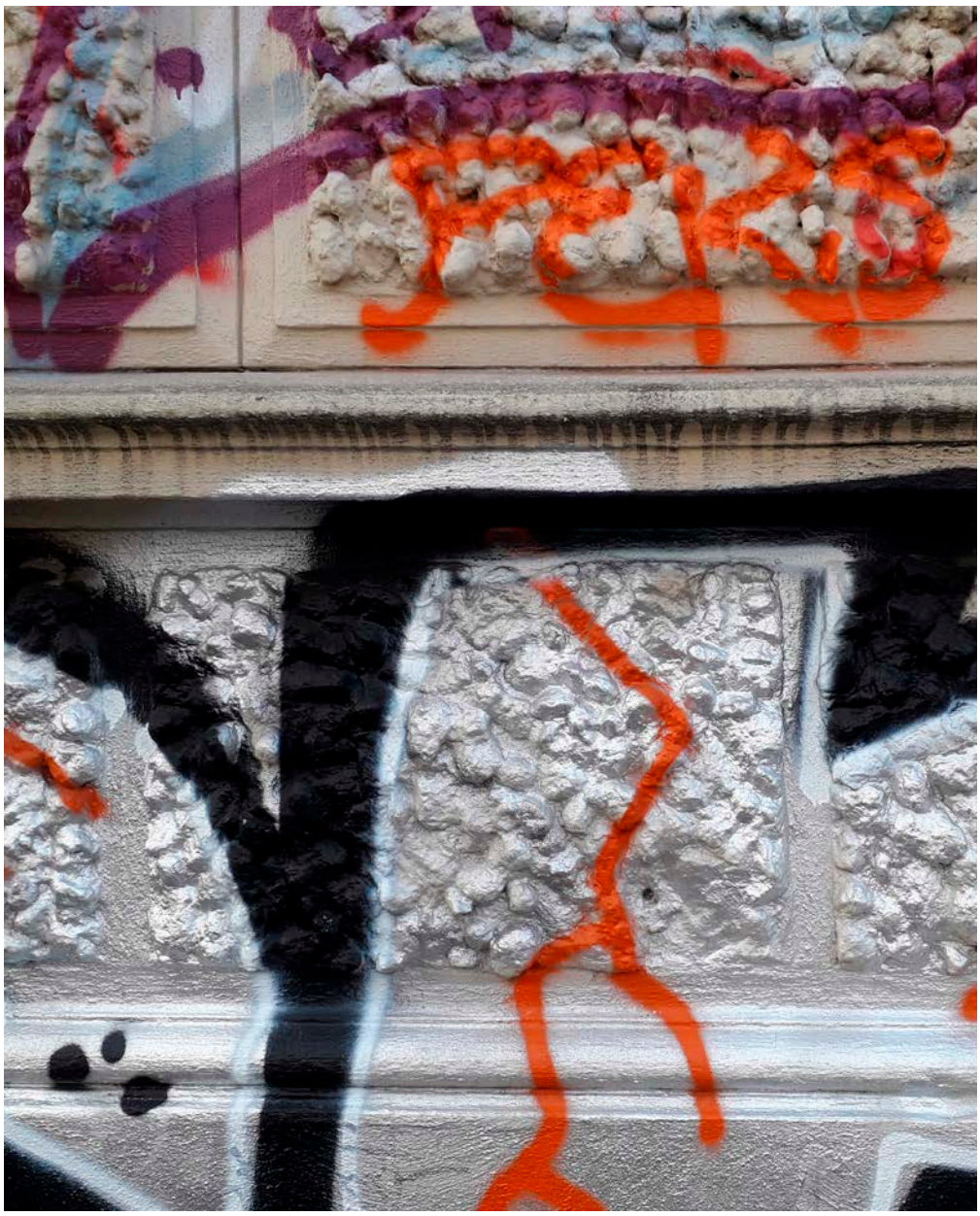

Figure 9 (top):
Where adjacent surfaces contrast in texture, the smoother surface is typically chosen. 9a) The red brickwork surface has been targeted instead of the adjacent rubble stone masonry. 9b) The painted render provides a better canvas than the brickwork.

Figure 10 (right):
Where flat, smooth surfaces are lacking, modern aerosol paint can be used to create the strong contrasts favoured by graffitists, as here on a modelled surface.

Figure 11:
The monument to Winston Churchill in Parliament Square, Westminster, is often targeted during political protests, as here in 2000.


Motivations for graffitists may include the thrill of unlawful activity, artistic expression, promotion of gang identity and political or social protest. Graffiti can also be carried out for more obscure reasons, for example in response to the past or present use or meaning of a ritualistic site.

Often, graffiti can have a substantial visual impact on building facades and, more widely, across entire streetscapes, as well as in parks and gardens, on memorials and ruins. Many structures targeted by graffitists are designated heritage assets, such as listed buildings or scheduled monuments, or buildings

within conservation areas. Therefore, the impact of graffiti on the historic environment can be considerable and harmful. Incidents of graffiti are typically reported in stark terms, as ‘attacks’ or ‘strikes’, which evoke their illicit, anti-social and often offensive nature. Furthermore, graffiti administered without the consent of building owners is illegal. Even with the owner’s permission, it is illegal to apply graffiti to a listed building or scheduled monument without statutory consent.

Some graffiti can constitute a hate crime. The police and the Crown Prosecution Service have agreed the following definition of hate crime: ‘Any criminal offence which is perceived by the victim or any other person, to be motivated by hostility or prejudice, based on a person’s disability or perceived disability; race or perceived race; or religion or perceived religion; or sexual orientation or perceived sexual orientation or transgender identity or perceived transgender identity.’

Like litter, once some graffiti is present, more tends to appear. Its presence may embolden potential offenders with the belief that the authorities are neglecting their guardianship of the site, thereby creating an atmosphere of ‘lawlessness’ in which crime and anti-social behaviour can thrive. This may result in further graffiti or other criminal activity in the vicinity. That said, some graffiti incidents are random, especially in places where people loiter or congregate (for example, near bus stops and train stations).

Figure 12:
Once graffiti appears, more tends to follow. In this case, over-painting of graffiti, visible as a band of buff-coloured paint at the base of the render, has failed to deter further incidents.


## Graffiti versus street art

'Street art', also known as 'graffiti art', has shaped the character of some urban areas and has gained recognition as an integral part of their 'alternative' culture and aesthetic. The terms are sometimes used interchangeably by those who identify as street artists. Street art as a visitor attraction is a phenomenon that has grown significantly in recent years in several distinct urban areas, including in Camden Market in London and Stokes Croft in Bristol. Abroad, prominent examples can be found in some areas of New York, where graffiti art originated as part of hip hop music and culture.

Street art is now widely accepted in the mainstream art world and some street artists, such as Bristol's Banksy and New York's Jean-Michel Basquiat, have attained international recognition. Exhibitions of street/graffiti art have been held at galleries in the United Kingdom and abroad. Paradoxically, some prominent works have been vandalised by random marks and fly-posting. Controversial removal or over-painting of some Banksy works by local authorities or their cleaning contractors has received national media coverage.

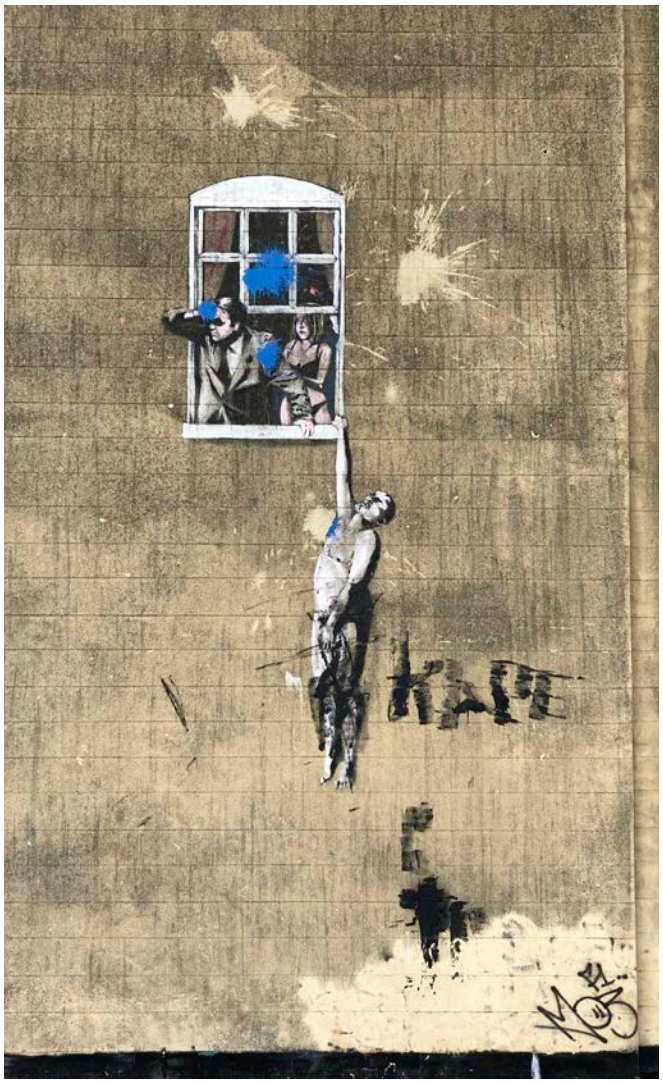

Figure 13:
Banksy's *Well Hung Lover* (2006), Bristol, is among his best-known works. It gained wide public acclaim and press attention, both on completion and in response to subsequent defacement.


Figure 14:
The Greta Thunberg mural on the Tobacco Factory in Bristol is an example of street art designed for a specific site and executed with the consent of the building owner, former Bristol city mayor George Ferguson. It was painted in 2019 by the artist Jody Thomas.

Graffiti as an outlet for expressing views at variance with those of the prevailing establishment is a complex and controversial subject, and beyond the scope of this document. It is important to differentiate graffiti art murals, designed for a specific structure and carried out with the permission of its owner to make a positive contribution to the distinct character of a place, from randomly applied graffiti that is illegal.


Figure 15:
Perhaps the best-known example of modern, historically significant street art is a section of the Berlin Wall, 1.3 km in length. It was created by more than one hundred artists after the collapse of the German Democratic Republic in 1989. It is now a protected monument, known as the Berliner Mauer East Side Gallery, and attracts some three million visitors a year. Vandalism and defacement of these murals have proved to be a significant and challenging issue.

The street art movement has blurred the boundary between graffiti as art and graffiti as an act of vandalism. Street artists typically execute work without prior consent of the building owner; it receives a mixed response, ranging from public approbation to official disapproval.

While graffitists who identify as street artists may regard their work as an art form, members of the public often view it as unsightly and associate it with anti-social behaviour. In many quarters, the growth of street art is blamed for the increase in unwanted graffiti of various kinds. Whatever the artistic merit of the work, graffiti that is unauthorised constitutes a criminal offence.

Street art proposed with the building owner's consent would require planning permission where it is considered an advertisement. In a conservation area, the painting of buildings might be controlled through an 'Article 4 direction'. This is where certain permitted development rights are removed by a local authority to help preserve the character and appearance of an area. This is not automatic but something that can be applied to a specific conservation area. Depending on the scale and coverage, street art could fall into this category. For a listed building, consent is most likely to be required, and for a scheduled monument, consent will always be required. Where street art is proposed, it is advisable to check what permission is needed with the local planning authority.

Regardless of whether the owner of the building has given permission or not, local authorities have the power to remove unauthorised street art.

## 2.2 Risks of inappropriate removal

Graffiti removal carried out by contractors without the necessary skill and experience with historic buildings can cause irreparable damage. Common problems include:

- Graffiti residues remain on the substrate in faded or outline form, known as 'ghosting'. There is often a marked contrast between cleaned areas, which typically appear lighter, and darker uncleaned areas.
- Coloured components of the graffiti medium, such as pigments and dyes, are mobilised, causing fine staining particles to 'bleed' and spread, or penetrate further into porous building surfaces. In such cases, graffiti residues may become very difficult or even impossible to remove completely.
- Incorrect use of high-pressure (abrasive or water) cleaning may damage softer and less durable building materials.
- Scraping surfaces with stiff metal bristle brushes or other tools is likely to scratch and permanently mark them, especially the softer limestones and hand-made bricks that are commonly found in historic buildings.

Figure 16:
This Portland limestone plinth shows ghosting. The outline of graffiti remains legible several years after the original graffiti was removed, even where re-soiling and green organic growth have occurred on the surface.


Figure 17:
This example of ghosting on brickwork shows where the outline of graffiti remains after removal. This typically occurs when high-pressure mechanical (air abrasive) cleaning follows the outline of the graffiti and results in surface alteration.

Figure 18:
Repeated graffiti incidents and cleaning attempts on this Portland limestone masonry have resulted in an unsightly appearance. Faded remains of past graffiti are visible on the lighter, previously cleaned area, which contrasts in colour with the uncleaned masonry above.

Figure 19:
Aggressive mechanical cleaning has damaged these brick faces. Scraping and abrasion have removed the smooth, dark-coloured fireskin, exposing the lighter pinkish and more open-textured body below the surface.

20a

20b

Figure 20 (top):
a) Numerous aggressive cleaning attempts have disfigured and damaged this brickwork, leaving an irregular appearance. Uncleaned sections at the base contrast with the varying shades of cleaned areas above, where soiling and the smooth brick fireskin have been removed. b) The jagged marks extending across the brickwork, often referred to in the cleaning industry as 'wand marks', are typical of the damage caused by pressure washing at an excessively high setting.

Figure 21 (right):
Bath limestone is highly porous, permeable and relatively 'soft'. It is, therefore, susceptible to penetration of graffiti media and residual staining. The use of hard brushes or hand tools results in irreparable scratches.

Such damage is often caused by the hasty recruitment of an inexperienced contractor or rushed attempts at removal, motivated by a concern that any delay in removing graffiti may result in further incidents. However, a balance needs to be struck between rapid removal and effective cleaning by an informed contractor. In some cases, it may be advisable to conceal graffiti with temporary barriers or covers, rather than attempt removal without the necessary resources and skills in place. This may be the preferred solution for graffiti that features offensive text or symbols, or that constitutes a hate crime.

# 3 Graffiti media and historic materials

## 3.1 Graffiti media and methods of application

The most common types of graffiti include aerosol paint, felt-tip markers and ballpoint pens, but the possibilities are endless. Posters and labels are another form of random messages.

### Scratches

Much historic graffiti is of this 'scratched' type and it can be found on all surfaces, from hard glass and stone to soft plaster. Softer stones and brick tend to attract this form of graffiti, due to the relative ease of cutting their surfaces with any sharp implement to hand. The soft red bricks used in gauged (cut and rubbed) brickwork are often targeted in preference to harder facing bricks, where the two types of brick occur in the same building facade. Scratches or inscriptions that have gained historic importance should be distinguished from modern ones, so that they can be preserved.

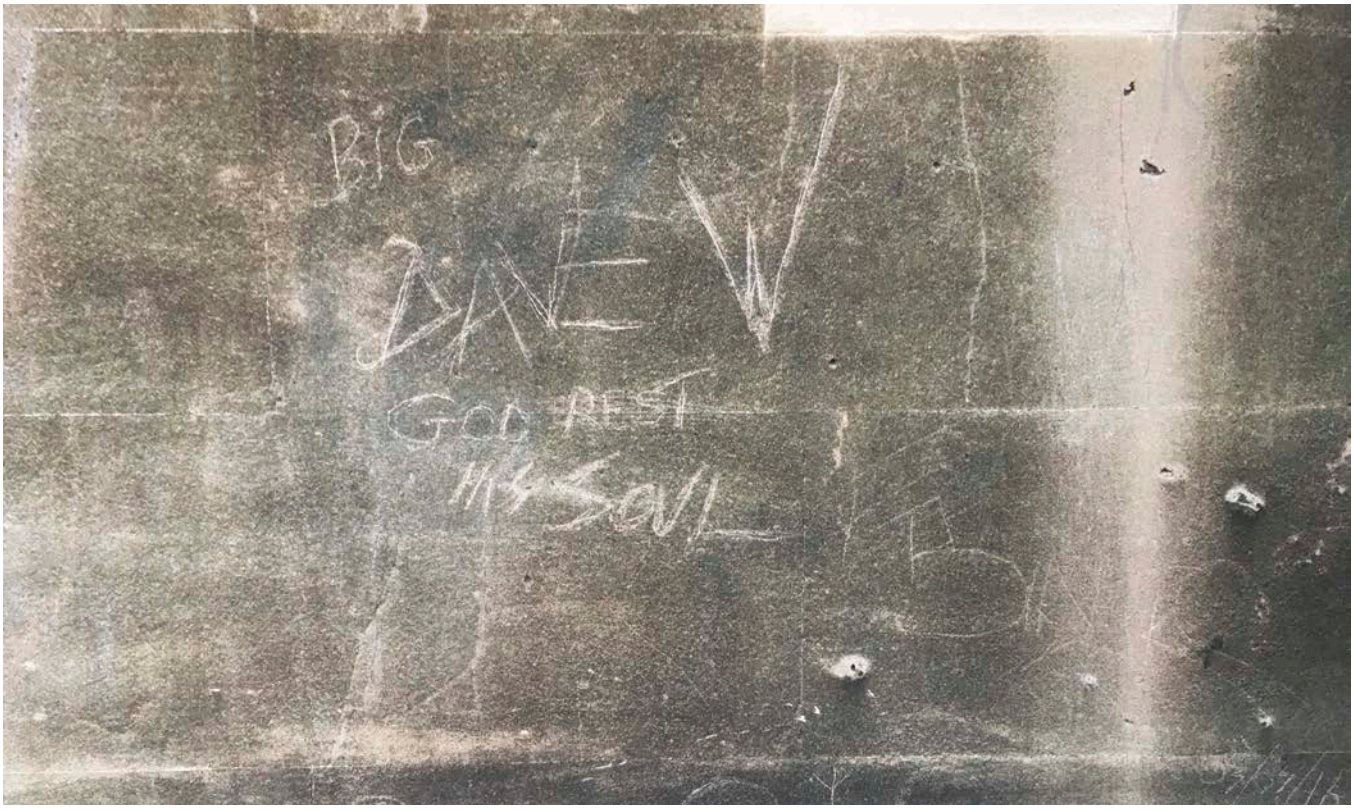


Figure 22:
Marks scratched into a surface with any sharp implement are the most basic form of graffiti. In this case, random marks have been cut through the dark soiling on a wall in a polluted urban environment, exposing the underlying pale limestone.

Figure 23:
Graffiti has been scratched into the smooth glassy surface of faience (glazed terracotta) facing blocks. Located at the entrance to a historic pub, these marks include a game of noughts and crosses and are typical of casual vandalism.

Figure 24:
Cut, gauged or rubbed bricks are softer and more readily etched than other types of historic facing brick. They were surfaces favoured by graffitists in the past.

## Paint

Spray or aerosol paint is now the most common graffiti medium. It can be readily obtained and rapidly applied, is portable and convenient to use, and is available in myriad colours and finishes (matt to shiny, and metallic). Graffiti methods, from tagging to stencilling, have evolved in large part due to the characteristics of spray paint. Incidents of painted graffiti applied by brush are comparatively rare.

Figure 25:
Spray or aerosol paint is the most common type of graffiti medium in current use. Its characteristics – the speed and ease with which it can be carried and applied – make it an ideal graffiti medium. It has distinctive, very fine droplets of paint at the edges and forms a coating of variable width and depth, depending on proximity of the spray head from the surface and speed of application.

Figure 26:
This graffitist's kit consists primarily of canisters of aerosol paint. Liquid paint, applied by roller, is also included to quickly efface pre-existing graffiti on the target wall and create a blank canvas for new work.

Paints typically consist of a colourant (pigment or dye), a binder (resin or polymer), a filler or thickener, and additives (for example, emulsifiers, biocides, pigment dispersants). These components are borne either in water or in an organic solvent carrier. Most modern craft or decorative paints contain waterborne acrylic resin, but others include water- or solvent-borne vinyl, alkyd and polyurethane binders. Other less common organic binders in industrial paints include epoxies, polyamides, silicones and bitumen.

The majority of decorative and even automotive paints are now waterborne, thanks to environmental pressure to reduce volatile organic compounds (VOCs - chemicals that evaporate at ambient temperatures and are toxic to health). However, for the moment, some industrial paints are still reliant on hydrocarbon (for example, white spirit, xylene) and oxygenated solvents (for example, alcohols, acetone, methyl ketone). Evaporation of the solvent promotes cross-linking (bonding of polymer chains that makes a material insoluble) of the binder and constituents to form a solid coating or film that is insoluble in water.

Repeated applications of paint will ultimately reduce the water vapour permeability of the material to which they are applied.

## Food dye

These colourants derive from natural (vegetable) sources, inorganic pigments, organic and metallic compounds, and synthetic coal-tar substances. When they are dissolved in water, the colour remains. Food dyes are marketed as liquids, powders, gels and pastes. When used as a graffiti medium, they are commonly thrown or sprayed in liquid form. As a result, they are formless blotches, unlike conventional graffiti.

## Nail varnish

Nail varnish is one of the few types of graffiti media that may be carried regularly and is available for spontaneous use. It consists of a polymer, usually nitrocellulose, dissolved in a solvent, with colourants. Plasticisers are added to prevent cracking or chipping. More recent gel polish formulations are based on a methacrylate polymer and do not dry but are cured by ultraviolet light.

## Markers and pens

While paint can be applied to surfaces of any type or texture, felt-tip markers and ballpoint pens are only effective on smooth surfaces. They come in a variety of tip widths and this, along with pressure on application and flow of ink (dye solution), dictates the form and quantity of graffiti.

Figure 27:
Marker pens tend to be used on smooth surfaces, such as terracotta. Their tips form comparatively fine lines, suitable for small scribbles. However, graffitists generally favour aerosol paint, which can cover much larger areas.

Felt-tip markers contain either water- or solvent-based dyes. The inks of ballpoint pens are chemically similar. The colourants are either water based or oil based, and include significant proportions of resins to make the inks more viscous. The concentration of colourant is usually greater in ballpoint pens than in felt-tip markers. Some coloured inks may bleach in strong sunlight, but they rarely disappear completely or to an acceptable level.

Ballpoint pens may also cause damage by scratching surfaces.

## Waxy substances

Waxy substances, such as crayon, lipstick and coloured pencils, are rarely used nowadays for graffiti due to the availability of other media that can create much larger and bolder markings.

Wax crayons or coloured pencils may be manufactured from petroleum-based or natural waxes and oils. Other components, fillers and colourants, such as china clay and pigments, can affect how they bond to surfaces and how readily they can be removed. Wax crayons made of petroleum-based wax are relatively easy to remove, whereas those based on natural wax, stearin and china clay can be more difficult because of the higher proportion of pigment.

## Chalk

Chalk is not a common graffiti medium. In general, chalk consists of compressed whiting (calcium carbonate), or sometimes compressed gypsum (calcium sulphate). Additives include colourants, clay and glue or shellac.

## Pencil

Pencil graffiti was relatively common during the past two centuries, but it is now very unusual. Traditional 'lead' pencils, in use since ***c***.1800, consist of graphite powder and clay, and optionally carbon black, which is pressed and fired. Pencil marks on soft and heavily textured surfaces may cause damage, depending on the pressure applied.

## Flame

Low-temperature smoky flames, for example from petrol cigarette lighters or matches, can be used to deposit soot (carbon) on surfaces. High-temperature (smaller and brighter) flames can permanently damage surfaces, especially those composed of organic material, such as paint or timber.

## Adhesive posters, labels and stickers

Fly-posting commonly uses adhesives, such as wallpaper paste (based on starch or methylcellulose in water), wheat paste (flour, sugar and water) or animal glue, for ready-made posters. However, self-adhesive ('sticky') labels are widely available, with a variety of adhesives formulated according to the intended use. These range from water-soluble, low-strength adhesives for office use, to water-insoluble and very durable (organic resin) adhesives for permanent application in an external environment.

## 3.2 Historic materials affected by graffiti

The nature and condition of historic materials (or substrates) determine the relative ease or difficulty of removing graffiti completely. This issue is addressed more fully below (see 5.1 Identifying materials, their significance and condition).

### Glass and vitrified/glassy surfaces such as glazed brick and tile

Window glazing and glazed brick, tile and faience (glazed terracotta) all have smooth and impermeable surfaces, which means that graffiti can generally be readily removed from them. However, their mortar joints may have different properties and typically prove more difficult to clean (see Mortars, plasters and renders below).

Figure 28 (left):
Faience has a smooth, non-porous surface, which means that graffiti, such as the spray paint in this example, does not penetrate the glaze or body of the material.


Figure 29 (right):
The glass in this red telephone kiosk has been defaced with spray paint, marker pen and adhesive stickers. Glass surfaces resemble ceramic glazes (of faience and tile) in their smoothness and lack of permeability. However, thin glazing is far more vulnerable to damage during graffiti removal than glazed ceramics, particularly if superheated water is used.

## Metals

Structural steel and wrought and cast iron are routinely painted, which means that graffiti can generally be removed using the methods suggested for other painted surfaces. However, heavily corroded surfaces can be rough and may absorb graffiti media. Unpainted ferrous and other metals (copper, lead, zinc) may rely for their durability on the corrosion resistance of a factory-applied treatment or naturally patinated surface. Inappropriate methods of removing graffiti may damage this protective layer or trigger on-going corrosion of the metal, caused by a change of pH or electrical conductivity.

Both architectural and sculptural brass and bronze are routinely patinated (deliberately coloured by chemical alteration) and then stabilised with wax or lacquer. Inappropriate cleaning can harm this surface. Consequently, an experienced metals conservator is usually required to remove the graffiti and re-treat the surface.

## Stone and unglazed brick masonry

These porous masonry materials tend to absorb marks deeply into surface pores, making complete removal difficult. Consequently, they pose the greatest challenge. Many porous masonry materials are soft and vulnerable to natural weathering, often leaving them friable and eroded, which increases the risk of damage during the cleaning process.

Figure 30:
Soft and porous materials, such as Bath and other Jurassic limestones, are highly susceptible to staining and damage by standard graffiti removal methods. This Bath Stone masonry bears the marks of past cleaning attempts: a mottled or blotchy pattern across darker surfaces; ghosting within the lighter coloured areas subject to more recent cleaning attempts; and a whitish bloom over the cleaned areas.

### Unglazed terracotta and tiles

Unglazed terracotta and tiles (including encaustic tiles) are very porous and may, therefore, absorb graffiti pigments, making total removal difficult. Pigments from aerosol paint and impermeable markers can penetrate into the substrate, and ghosting may remain even after cleaning.

### Mortars, plasters and renders (lime and cement based)

Lime-based mortars were used in historic structures for bedding and pointing masonry, and for external render and internal plaster finishes. They are among the most porous and permeable materials found in historic buildings, and so are highly absorbent and vulnerable to damage by most graffiti removal methods. Stronger lime mortars and cements were used for the same external applications from the 19th century, and these can also be slightly absorbent of graffiti media, depending on their porosity and degree of surface weathering.

### Concrete

Historic concrete (based on lime or cement) can be significantly more permeable than the modern material, depending on its composition and weathering. Although modern Portland-cement-based concrete is hard and dense, its surface porosity – and thus its vulnerability to damage by graffiti removal – varies depending on the surface finish. Exposed aggregate and shuttered finishes differ in porosity and vulnerability to damage by graffiti removal.

### Timber

Timber doors are commonly targeted in graffiti attacks. Surface texture can vary greatly, depending on the door's condition and the presence of coatings. Paint helps reduce the absorption of graffiti media and acts as a barrier to protect the underlying timber during cleaning. Removing graffiti from painted timber is, therefore, easier than removing it from unpainted wood.

### Painted surfaces – plain and decorative

The properties of painted surface coatings vary greatly. For example, limewash and distemper paints can be harder to clean, as they are more absorbent of graffiti media, compared with acrylic or resin-bound paints.

Painted substrates of all types may retain historic paint stratigraphy. It may be significant in terms of the evolution of the building's decoration over time. This is particularly true for more ancient buildings. Such stratigraphy is vulnerable to damage during graffiti removal.

# 4 Responding to graffiti

## 4.1 Actions to take after a graffiti incident

### Record the graffiti with photographs

A photographic survey should be made to record general views of the area and details of the graffiti, the substrate and its condition. Include a photographic scale, if available, or an improvised one (such as a newspaper or water bottle) placed within the affected area. If the perpetrator has left any items (paint canisters, stencils and so forth) at or near the scene, photograph these, too. Photographic evidence is important for proof of the offence, intelligence and demonstrating impact. It may also be necessary for insurance claims. In some cases, a tag or stylistic evidence may enable the perpetrator(s) to be identified.

### Secure any evidence

If items such as graffiti equipment or discarded cigarette butts have been left at the scene by suspected perpetrators or if surfaces such as doors may have been touched by them, keep them dry and undisturbed before contacting the police. It may be possible to use forensic techniques, such as DNA or fingerprint analysis, to identify suspects from such evidence.


Figure 31:
Police appeal on social media to identify a perpetrator of criminal damage against a national heritage assest. This encourages the public to come forward with information and reminds them to report other similar incidents within the area. It also raises general awareness of 'heritage crime' and that the police are proactively promoting the reporting of such incidents.

## Report the incident to the police

When a graffiti incident takes place, there is no legal obligation to report it to the police, but doing so could bring a criminal to justice. Some building owners or managers may be reluctant to report minor graffiti. However, it is worth considering that the incident may form part of a wider pattern. Reporting it may enable the police to identify the perpetrator(s) of more serious offences or take other preventative measures. It is particularly important to inform the police of any graffiti that constitutes criminal damage to national heritage assets, is a hate crime or contains threats, abuse or insults (see 4.3 Prosecuting graffiti crime). Most fly-posters are advertisements, but if a poster causes damage or has offensive content, for example incitement of hatred, it should be reported to the police as well.

If a crime is in progress, call 999. Do not attempt to challenge the perpetrator during a graffiti attack, or take photographs, or otherwise risk your own safety in any way. If a graffiti offence has already occurred, call the local police force on 101 or report it on their website. The police may then appoint a crime scene investigator to take photographs or remove items left by perpetrators for forensic purposes. If a crime scene investigator has not visited the site by the time you are ready to start removing the graffiti, check with the police whether a visit is intended before proceeding with cleaning. You may need a police report to make an insurance claim.

Figure 32:
In some circumstances, covering graffiti is preferable to its hasty removal, particularly when it presents technical or other challenges. Most importantly, covering graffiti provides time to organise removal trials while protecting surfaces from further vandalism, as here, on a defaced prehistoric stone at Avebury, Wiltshire, in 2001.

### Cover the graffiti

Where graffiti is offensive, for example where it constitutes a hate crime, cover it until it can be removed. This can be done in a variety of ways, depending on the site and location. Methods of temporary cover include:

- Sheeting (hessian or other opaque material). It may be possible to wrap sheeting around a free-standing structure and tie it in place, or drape sheeting over a wall and secure it with weights. Otherwise, it may be necessary to fix the covering using wedges and screws carefully positioned in the wall.

- Free-standing barriers (for example, temporary fencing panels fitted with opaque sheeting) can be used where it is not possible to fix sheeting to the structure without damaging it.

### Check with the relevant authorities for advice about statutory consents

Removing graffiti may not be contentious in itself, but cleaning methods can cause irreversible damage. Therefore, consent will usually be required for removing graffiti from listed buildings and scheduled monuments before work can start. See Historic England's guidance on listed building consent and scheduled monument consent. For buildings in conservation areas, you may need consent depending on the degree of local planning controls in place. Many historic buildings are neither listed nor within a conservation area. Removing graffiti from such buildings is not subject to statutory controls.

Check with the relevant authority before removing any graffiti (see 8 Where to get advice):

- Listed buildings and buildings in conservation areas: contact the local planning authority.

- Scheduled monuments: contact the regional office of Historic England.

- Churches managed by the Church of England, Roman Catholic Church, Methodist and United Reformed Churches or the Baptist Union of Great Britain: contact the appropriate church authority (these are exempt from the requirement to apply for listed building consent).

Before granting consent, the authority may ask to see a sample of the surface after it has been trial cleaned, in order to assess the proposed removal method (see 5.7 Removal trials and their evaluation).

Where the prolonged presence of graffiti is likely to encourage further criminal activity or where the graffiti itself is offensive, cover the graffiti (as described above) and seek any necessary consent as a priority. If this is not possible, liaise with the relevant authority to explore the possibility

of commencing cleaning work before consent is given. However, make sure to procure appropriate specialist advice and services (see 2.2 Risks of inappropriate removal and 4.4 Obtaining professional advice).

## 4.2 Responsibility for removing graffiti

Local authorities are generally responsible for removing graffiti and fly-posting from public buildings, monuments and street furniture. They cannot remove offensive graffiti or fly-posters from private property without the owner's permission. However, they can require a property owner to remove graffiti or fly-posting that has a detrimental effect on the quality of life of those in the locality, by means of a community protection notice (under the Anti-social Behaviour, Crime and Policing Act [ASBA] 2003). If an owner fails to carry out such removal, the local authority can undertake the work and recover the costs.

Some local authorities offer a free or subsidised service to remove graffiti from private property, if requested by the owner. They may also provide various removal services for unwanted posters. The owner would still have to request statutory consent from the relevant authority, though, if needed.

As part of the graffiti removal service, local authorities often subcontract cleaning work to private companies, and the technical methods are frequently generic: that is, not tailored to suit historic buildings. Local authorities typically provide this service subject to the building owner signing a waiver form, which indemnifies the authority against any responsibility (claims, liability) for damage that may be caused. For example, such forms may have terms regarding prior inspection and the use of power or high-pressure washers, to the effect that the authority or its cleaning contractor cannot be held responsible for assessing the condition of the building and the suitability of removal methods used.

If the owner wishes to accept local authority assistance, it is their responsibility to confirm the suitability of the proposed removal method and to assess it in terms of the advice given in this guidance. If in doubt, it is advisable to contract a graffiti removal service that has proven experience in historic buildings.

For substantial graffiti, it is always prudent to obtain professional advice and to use expert graffiti removal services (see 4.4 Obtaining professional advice). The objective is to ensure that the work is carried out to a good standard, while avoiding the pitfalls that commonly occur in poor cleaning practice.

## 4.3 Prosecuting graffiti crime

Making graffiti on a building without the owner's consent, whether it is in public or private ownership, is an act of vandalism and is illegal. It may lead to prosecution under one or more laws, depending on the nature of the graffiti.

In addition, making graffiti on a heritage asset (scheduled monument, listed building, World Heritage site or conservation area) constitutes a heritage crime. Heritage crime is defined as 'any offence which harms the value of England's heritage assets and their settings to this and future generations'. The Sentencing Council identifies damage to heritage assets as an aggravating factor when offenders are sentenced, reflecting the seriousness with which such matters are viewed. See Historic England's Guidance for Sentencers: Heritage Crime (2017), and Heritage Crime: A Guide for Law Enforcement Officers (2016).

Local authorities also have a range of powers to take action against graffitists, including requiring the offender to help remove the graffiti.


Figure 33:
Graffiti was applied to a wall of the Chapter House of Westminster Abbey (a scheduled monument) during an anti-war demonstration in Parliament Square in September 2015. The perpetrator was successfully prosecuted.

## 4.4 Obtaining professional advice

Most graffiti removal can be managed by a specialist cleaning contractor with experience in historic buildings. If the building or site is a designated heritage asset and has a significant and sensitive substrate, advice from a conservation professional (accredited architectural conservator, historic buildings surveyor or architect) may be needed. Details can be found in professional directories (see 8 Where to get advice, and Historic England's guidance on finding professional help).

General graffiti removal contractors may not have an understanding of the nature of historic substrates and may apply techniques indiscriminately (see 2.2 Risks of inappropriate removal). They commonly carry out maintenance cleaning on robust surfaces of modern buildings, paving and industrial structures, typically employing high-pressure or high-volume water washing and abrasive cleaning equipment that could harm sensitive historic fabric. Therefore, it is important to procure advice and cleaning services from professionals who specialise in historic buildings. They should be able to provide named operatives, photographic case studies and detailed methodologies of similar work undertaken on other historic structures. The advice in this guidance outlines the standard that a contractor should be expected to meet.

Before engaging a contractor, you should also contact the building insurer because there may be specific requirements or restrictions in place, for example on contractor accreditation. The contractor should confirm that they understand, will adopt and will comply with any specific statutory requirements (listed building or scheduled monument consent).

# 5 Removing graffiti

## 5.1 Identifying materials, their significance and condition

A range of issues needs to be addressed before removing any graffiti. First, the substrate material should be identified, including where several materials are present. It is particularly important to distinguish between surfaces that are porous and absorbent and those that are non-porous, impermeable and non-absorbent, in relative terms. This is especially true for masonry. There is considerable variation in historic building stones: from hard and impermeable granites, tough but porous gritstones, to softer stones with a range of porosity, such as chalk and Bath limestone. Similarly, historic bricks vary from soft and porous hand-made bricks to much denser and harder machine-made ones.

Second, the significance of the substrate material(s) needs to be assessed. The heritage designation status of the building will offer some guidance, but it should be noted that the relative significance of building components may vary. For example, a building may have significant early hand-made brick as well as modern cement render with no heritage value.

Third, condition and risk assessments should be carried out. These entail understanding the relative vulnerability of surfaces to graffiti removal, and how surfaces may be altered or damaged by proposed cleaning methods. Heavily weathered or eroded surfaces will be more vulnerable to harm during cleaning than those in sound condition. Surface soiling may also have a significant effect on how surfaces respond to cleaning.

## Assessing the viability of removing graffiti

The following is a checklist of issues that need to be considered by the owner/client or their professional advisor and the graffiti removal contractor before work can commence.

### Owner/client or their professional advisor (in conjunction with the graffiti removal contractor, as required).

What is the significance of the surface and what will be the impact of cleaning on its heritage values?

- Establish whether the building is listed, a scheduled monument or in a conservation area
- Identify the types of materials affected and whether they are historic or modern
- Assess their condition
- Determine whether cleaning will harm the substrate, if necessary by discreet testing (see 5.7 Removal trials and their evaluation)
- Identify any potential areas of water ingress into the building fabric
- Weigh up the benefits of cleaning against the risks of harm, and how harm may be prevented or reduced by using the most sensitive methods available
- Consider the likelihood of the graffiti encouraging more acts of vandalism

### Graffiti removal contractor (in conjunction with the owner/client or their professional advisor).

How will cleaning affect the public, workforce and environment?

- Evaluate access
- Determine whether the cleaning process can be safely contained (for example, waste water discharge regulations)
- Decide if reliable protection measures are achievable (for example, protection for adjacent dissimilar surfaces, openings and – if a water-based method is proposed – potential sites of water ingress)
- Understand the health and safety issues
- Establish the level of risk for the public, workforce and environment

## 5.2 Assessing visual impact

It is important to assess the visual impact on the whole building facade of removing areas of graffiti. Surfaces alter with external exposure and accumulation of atmospheric particulates and organic growth (algae, lichen), a process variously known as soiling or development of 'patina'. Removing graffiti is likely to also remove some underlying soiling, thus creating 'cleaned' and 'uncleaned' areas.

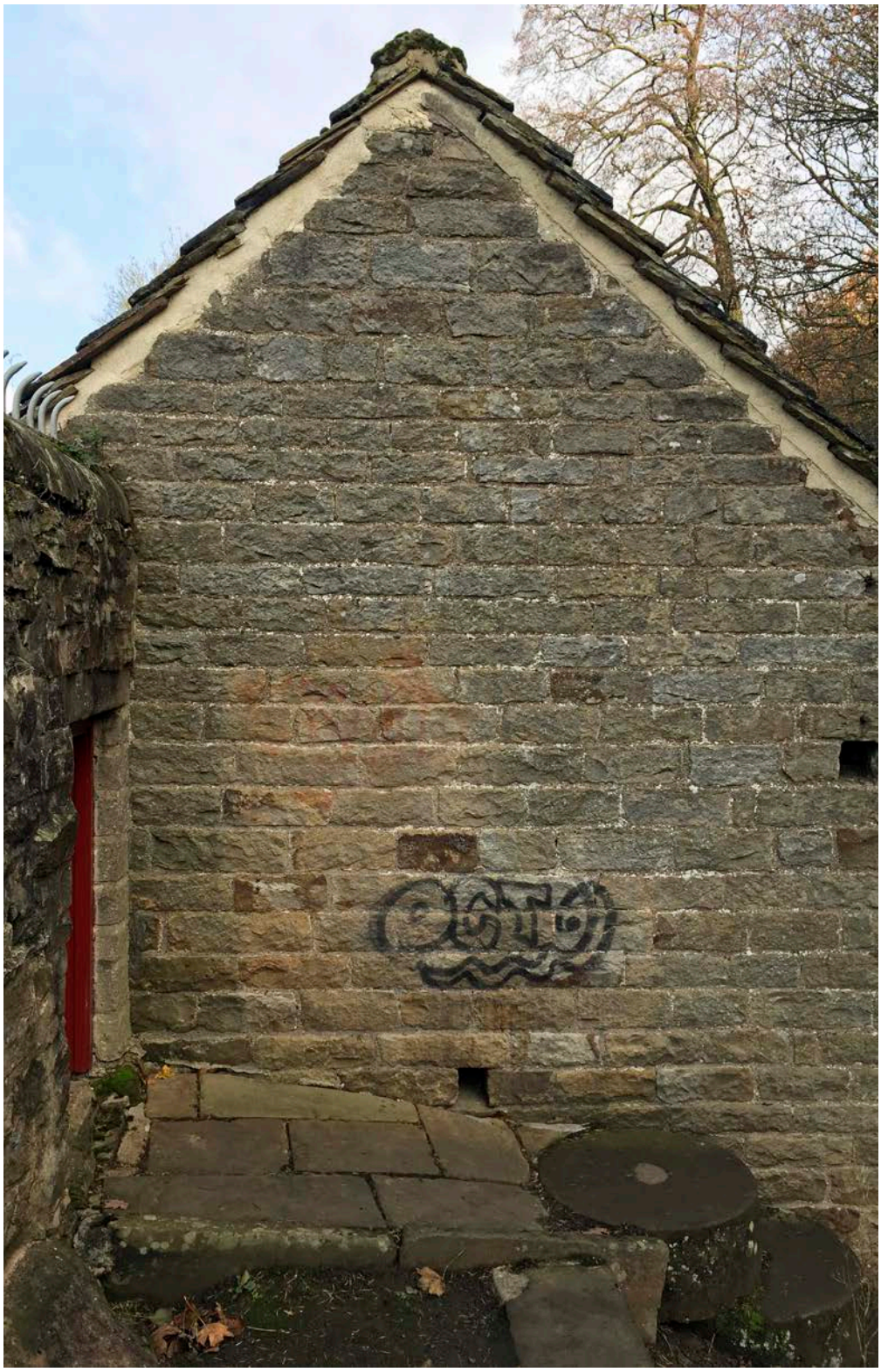

Figure 34:
This facade illustrates the typical difference between a cleaned section, in a lighter colour, and surrounding uncleaned masonry, where darker surface soiling remains.


Figure 35:
When cleaning stone ashlar, it may be preferable to treat an entire section, respecting architectural lines. The jarring contrasts on this wall could have been prevented by cleaning down to ground level and across to the vertical projections.

In such cases, it may be better to treat a wider area to avoid this visual contrast. Depending on the design of the building elevation and the nature of the graffiti, it may be advisable to follow architectural lines in cleaning. Formal ashlar masonry and elaborate facades composed of distinct vertical bays with horizontal elements (moulded bands or cornices) merit this consideration. Alternatively, where there is a lack of architectural line, the cleaned area can be left amorphous, and increasingly diffuse towards its perimeter.

## 5.3 General approaches to removing graffiti

Materials and methods of cleaning that pose the least risk of damage to the substrate(s) and adjacent building surfaces should always be chosen. Cleaning substances and equipment that are hazardous to the health of cleaning operatives and others should be avoided. This includes cleaning residues and wash water run-off.

In general, the solubility of the graffiti media and the porosity and permeability of the substrate determine how easy it is to remove the graffiti. The more porous and open-textured the substrate, the greater the potential for staining media (pigment particles, dyes) to penetrate the surface. Attempts to remove graffiti that include dissolving or mobilising such media may result in distributing them deeper into or further across the surface.

It is best to tackle painted graffiti as soon as possible, when it is easier to shift. After application, loss of the carrier induces hardening and cross-linking of the binder, but these processes take time to complete. Waterborne paints rely on surface active agents (surfactants) to hold the binder in suspension, and once the paint has been applied, these slowly weather out over the following months.

Figure 36:
On this bridge, graffiti covers the sandstone masonry piers and the painted iron structure. It is likely that different cleaning methods would be required on each substrate.

Graffiti is often applied over more than one type of surface. The impact of any proposed cleaning method(s) should be tested on all substrate materials and adapted as required. It is important to adjust the cleaning approach to avoid damaging the weakest, most vulnerable material. For example, weak lime mortar in masonry joints often responds differently to cleaning methods than some stronger masonry units (hard stone, glazed brick or faience).

A record should be kept of all costs incurred in remedying the graffiti damage (trials and eventual removal) for insurance purposes. The police are also likely to request this if court proceedings take place.

## 5.4 Site protection

The contractor should protect sensitive parts of the building from the cleaning process. These include window and door openings and masonry defects (fractures, open joints) where water penetration may occur; dissimilar surfaces (metal, glass, timber) that may respond differently to cleaning methods and materials; and adjacent porous fabric at risk of staining from cleaning residues. Plastic sheeting should be placed over vulnerable areas and secured in position using fabric-backed adhesive tape, which can be removed without leaving adhesive residues and without damaging the surface. Water penetration into cracks can be avoided using sponge rinsing, dry steam or vacuum recovery (a method used when cleaning building interiors). Geotextile sheets should be fixed on the ground at the base of the structure. They will trap and collect particles and waste removed with rinse water, thus preventing staining to any paving and avoiding contamination of ground water or watercourses.

## 5.5 Health and safety

Proprietary graffiti removal products that have been formulated for lower human and environmental risk (rather than those used in wider industrial applications) should also pose lower risks to historic building fabric. Recent developments in fragrance and cosmetics chemistry have influenced the formulation of cleaning products, including paint softeners and graffiti removers. This has resulted not only in 'new' reagents, but also in methods of enhancing the performance of milder ones.

The hazards associated with chemical cleaning depend on the exact product and methodology adopted. According to Control of Substances Hazardous to Health (COSHH) regulations, the Health and Safety at Work Act and other statutory guidance, any hazards must be identified and measures implemented to protect operatives, passers-by and the environment.

There are also social aspects to health and safety. In contexts where urban street gangs operate and use graffiti, removal contractors may be at risk of hostility. Police advice should be sought if this is a concern.

## 5.6 Principal methods of removing graffiti

Graffiti removal methods are typically the same as or variants of general cleaning and paint-stripping techniques and may be broadly categorised under four headings: mechanical, water, chemical and laser. In practice, these categories are often used in combination: for example, chemical treatment followed by water rinsing. Mechanical and water-based methods can also be sub-divided into manual and powered methods.

### Mechanical cleaning

#### General principles

Mechanical cleaning includes solid contact methods: brushing, scraping and abrading. They are only likely to be suitable for superficial graffiti and adhesive on robust surfaces. They cannot remove sub-surface residue (ghosting) without damage to the substrate. Damaged and disfigured surfaces on historic structures are a reminder of the risks of mechanical (especially abrasive) cleaning, and the adverse effects are readily visible on stone and brick masonry and timber, in particular.

#### Manual methods

These include hand-held brushes, scrapers, abrasive sponges and fibre pads (including melamine sponges). Rubbing with an abrasive block is a recognised cleaning method, but it is best avoided when removing graffiti because there is a high risk of damaging the substrate. For brushes, natural or nylon bristles are recommended. Wire brushes can damage many substrates, but they are occasionally needed to remove stubborn residues from hard surfaces such as metal. Such brushes must be non-ferrous and have very

fine (<0.25mm) bristles. They can be used dry, but are normally used wet, with water acting to soften or rinse any residue (see Water cleaning below). Manually brushing a chemical softener gel into the affected area is perhaps the single most important technique to mobilise graffiti.

### Powered methods

Percussive (hammer-action) tools, rotary or oscillating abrasive sanders, and rotary wire brushes are too aggressive and are not suitable for the sympathetic removal of graffiti from historic buildings.

### Compressed-air-driven abrasive methods

Abrasive particles in a flow of compressed air can be directed onto a surface to wear away a coating. The method relies on the coating being significantly less resilient than the underlying substrate, but with paint this is often not the case. Thicker flexible coatings are resistant to abrasion and, as such, the method may not remove graffiti completely and may cause pitting of the substrate. The method is ineffective to remove ghosting and is, therefore, inappropriate for marker pen graffiti.

Effectiveness is generally determined by the choice of abrasive cleaning equipment, including nozzle shape and size, air pressure, and the shape, size and hardness of the abrasive particles. The duration of contact (dwell time) and working distance between the nozzle and substrate are critical.

Air abrasion can be used wet or dry; the choice is usually governed by whether water or dust poses the greater containment issue. Water may aid the paint softening process, but it is also possible that the substrate may be softened or damaged by water. The decision is therefore made ‘case by case’, but generally favours using water.

The terms ‘sand blasting’ or ‘grit blasting’ are frequently and unfairly used to describe all air abrasive cleaning. Sand (silica) is rarely used on health and safety grounds due to the risk of inhalation, and grit blasting best describes very coarse abrasives and high pressures, more applicable to heavier industrial applications. For removing graffiti, the abrasive is a synthetic or natural material capable of erosion when in moving contact with a coating or substrate. It must be of fine particle size (normally <0.18mm) and low to moderate hardness (2.5–4 Mohs), although at least as hard as the coating. Recycled glass is a popular abrasive, but softer natural calcite or dolomite are more commonplace examples for cautious masonry cleaning.

When working with polished or glazed substrates, the abrasive must be at least as soft as the softest constituent to avoid pitting. With hard abrasives, polished or glazed surfaces are far more likely to lose their characteristic finish than unglazed or unpolished ones. Granite is regarded as hard because its principal constituent is quartz (7 Mohs), but it also typically contains mica (2.5–3 Mohs). Consequently, the overall polish of granite can be damaged by hard abrasives.

Figure 37:
More robust surfaces, such as granite, are less vulnerable to damage caused by most cleaning methods. However, any cleaning system that employs pressure must be used with care and be subject to trials to ensure safe and effective use. High-pressure washers, for example, can cut surfaces at higher pressure settings, posing a risk even to robust materials.

It is now understood that the successful use of abrasive methods depends on a fortuitous combination of substrate and coating characteristics, combined with a high degree of operator skill, experience and empathy to correctly select and implement the working parameters.

## Specialist abrasive methods

### Micro air abrasion

Small-scale systems are available for decorative and delicate surfaces. The typical piece of equipment is known as an air abrasive pencil, which uses fine (10–90µm) abrasive powder. Although the procedure minimises damage, it is slow and retains the other limitations typical of all air abrasive methods. Because of the high level of skill required, micro air abrasion is normally the preserve of the conservator.

### Walnut shell abrasive

Crushed walnut shells, delivered at lower pressures, can be relatively benign if used correctly. However, because of nut allergies a risk assessment for staff and visitors is needed before work can commence. The low density and hardness of crushed walnut shells can be either beneficial or harmful. Consequently, the efficacy of walnut shell abrasive is more difficult to pre-judge and needs to be established by trial. It might be most appropriate for smooth substrates with a delicate patina (non-ferrous metals, timber, signage, statuary).

### Dry ice

This is a form of air abrasive cleaning in which solidified carbon dioxide pellets are propelled by compressed air. Dry ice can be used to remove coatings from timber, although it tends to raise the grain when used for paint removal. Upon impact, the pellets sublimate (turn from solid to gas) almost immediately, with minimal abrasion. Because the dry ice turns to gas, the only solid residue generated is the removed paint. However, as the compressed air pressure is very high, and it is not possible to dampen the process with water, the atomised paint is difficult to contain and can be blown over a wide area. The extreme cold of the dry ice (minus 60°C) will embrittle soft or sticky residues, helping to remove them. However, it will also induce freezing in damp substrates and may cause frost damage. Carbon dioxide is an asphyxiant and so care must be taken to maintain sufficient ventilation in enclosed spaces.

### Soda blasting

Sodium bicarbonate (baking soda) can be used as a gentler abrasive medium, in 'soda blasting'. Nevertheless, it can still raise the grain of timber. Sodium bicarbonate granules have low density and so the spent material has a habit of spreading far and wide. It is possible to limit this spread by adding water as the air/soda mixture leaves the nozzle. However, as sodium bicarbonate is semi-soluble, it can be absorbed into porous substrates and subsequently form salts during cycles of wetting and drying. Its use with porous substrates should therefore be limited.

Like walnut shell, sodium bicarbonate abrasive comprises relatively large but soft granules and will work best with poorly attached paints on smooth substrates. Its principal benefit is that it is soluble and non-toxic and can be washed down the foul drain.

### Water-driven abrasive methods

Attachments that add abrasive to the water flow before it exits the nozzle are available for pressurised water cleaning equipment (see Water cleaning below). Although water is used, in this case it is the abrasive that defines the application. In the past, the metering of the abrasive was relatively crude, and consequently the abrasive flow was usually excessive, erratic or both. Reliable equipment is now available, but all of the characteristics, choices and caveats that apply to air abrasive methods also apply to water-driven options.

## Health and safety

Abrasive cleaning raises a number of specific hazards and the onus is on the employer, or contractor, to assess the risk posed by using abrasives, and to implement appropriate controls in accordance with current legislation.

### Noise and dust

To protect operators from harmful noise and dust, personal protective equipment [PPE] will be required for all abrasive cleaning systems. For dry abrasive cleaning, respiratory protective equipment [RPE] may also be needed.

Dust may need to be controlled using sheeting or extraction systems to prevent nuisance to the surrounding area. The noise impact on the wider environment should also be considered.

### Siliceous abrasives

The use of siliceous aggregate (sand) for abrasive cleaning has been linked to silicosis. It is therefore banned for most blast cleaning. However, a loophole in the legislation permits its use as an abrasive for cleaning buildings, bridges and other similar structures, but the COSHH Regulations regarding containment of the silica dust produced are so demanding as to be all-but impossible to comply with; so, in effect, the use of siliceous abrasives for cleaning buildings is outlawed. Even when used with water for wet abrasive cleaning, the risk of dust inhalation when cleaning up spent abrasive makes its use impracticable. There are a number of alternatives to silica sand that can be successfully used for abrasive cleaning.

## Water cleaning

### General principles

Only clean, potable water should be used to remove graffiti, because there is a risk of bacteria or disease in natural water supplies that poses a health hazard. Also, excessive minerals, salts or nutrients may be present in natural water. Water from a man-made water feature may have been chemically treated, and this may adversely affect masonry. Recycled water should also be used with caution for similar reasons, unless it has already been returned to a potable condition.

Warm water is a more effective solvent than cold and should be used where facilities allow. A hot tap will normally achieve a maximum of 55–60°C. Many cleaning agents are difficult to clear from the substrate by manual means unless the rinse water temperature exceeds 40°C. However, hot water may cause glass to crack, especially at low ambient temperatures.

When removing graffiti, water is generally used to rinse off chemically softened residue. Hot pressurised water may soften and remove paint on its own, but this depends on the chemistry of the graffiti medium. Cold pressurised water alone is rarely capable of sympathetic removal, except for the most superficial graffiti.

Other environmental factors to consider when water cleaning externally are the weather and ambient temperature. Masonry should never be cleaned with water when there is a risk of frost. This usually means that cleaning should stop when the temperature is 5°C and falling, and may recommence at 3°C when the temperature is rising.

Where water-based methods are proposed, any junctions in masonry facades, such as door and window openings where water penetration could occur, must be protected with plastic sheeting secured with fabric-backed tape. This masking is also essential on adjacent surfaces to prevent absorption of staining particles and colourants from contaminated rinse water. Water management systems must be in place to handle water run-off from surfaces.

### Low-pressure water

BS 8221-1:2012 defines low pressure as ≤17 bar. Domestic water supply pressure is typically 3–4 bar. Low-pressure water is most important for general masonry cleaning, where it is frequently effective when combined with brushing or other mechanical agitation.

Dried and cured paint, especially that used for graffiti, is rarely water soluble at ambient temperatures. However, there may be a window of opportunity to remove waterborne paint using water and brushing alone, before it has had time to fully cure.The rate of hardening depends on the ambient conditions (temperature, humidity, air movement), but for the first few hours the paint will be highly susceptible to removal by rain or washing. Even when the water carrier is fully dispersed, the surfactant can take months to wash out of the coating, during which time low-pressure washing may be effective, particularly if combined with rigorous mechanical agitation or raised temperature.

### High-pressure water

BS 8221-1:2012 defines medium to high pressure as 17–69 bar. A domestic pressure washer may be capable of exceeding this, and industrial machines are typically two to four times this maximum pressure. It is, therefore, vitally important that the pressure of any equipment is fully adjustable. The pressure at the surface is normally much lower, and is determined by the following parameters: nozzle spray angle (typically 25–65°, wider angle = lower surface pressure), spray shape (typically a flat ‘fan’), and the distance between the nozzle and the substrate. Cleaning intensity is also affected by nozzle aperture (larger aperture = higher flow rate), dwell time and water temperature. It is strongly advised that spinning ‘pencil jet’ or ‘turbo’ nozzles are not used. As with abrasive systems, relevant experience and skill are necessary for sympathetic use.

Figure 38:
In hot water washing systems, water is superheated, pressurised and delivered to the surface via a nozzle. The principal variables in this type of water washing are: working distance from the surface, water temperature and water pressure.

Figure 39:
a) and b) Graffiti removed using a superheated water system alone. The success of this depends on several factors: the type of paint (if it is heat sensitive), the texture and resilience of the surface, the presence of soiling (which may act as a natural anti-graffiti barrier), and the relative colours of the paint and substrate.

Figure 40:
a) and b) It may be possible to use pressure water washing to completely remove graffiti from faience, as its non-porous, smooth and glassy surface does not normally absorb graffiti media.

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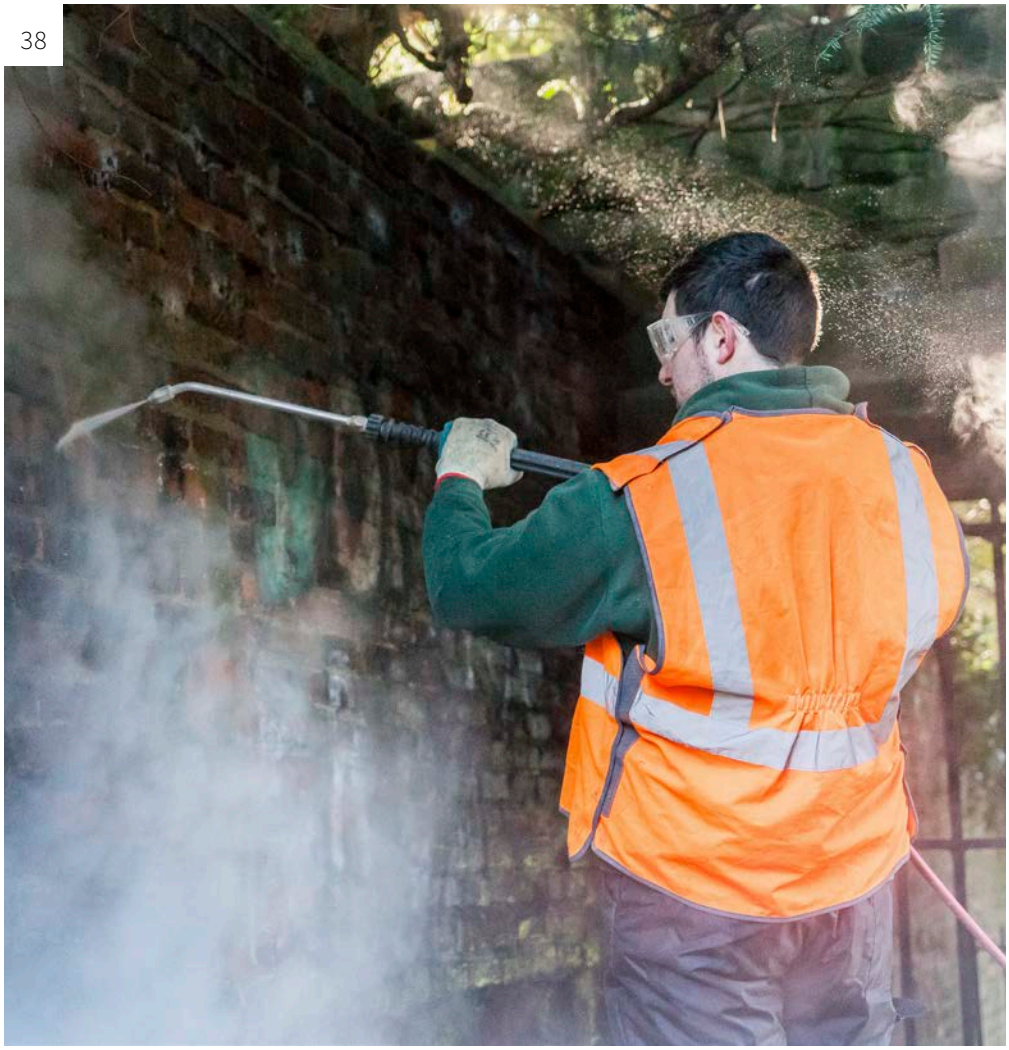


39a

39b

40a

40b

Cold systems operate at just above the incoming water temperature, but a hot system is able to raise this much further by means of a 'heat exchanger' (usually fuelled by diesel or kerosene). Most professional hot machines are capable of attaining 60–90°C output, but 'superheated' machines may reach 150°C at high pressures. These very high temperatures further increase the solvency of the water and the spray may become more diffuse, thus exerting a lower surface pressure. Like 'sand blasting', the term 'steam cleaning' is now an ill-defined colloquial term, unreliable as a technical definition. It is, therefore, inappropriate to quote it in specifications.

### Dry steam

A wide range of proprietary machines is available. They are normally electrically powered and range from inexpensive domestic models of modest heat output to very expensive industrial machines requiring a substantial three-phase electrical supply. Small professional systems typically operate at a pressure of 4–6 bar, a temperature of 150–180°C and water consumption of 2–5 litres per hour. They are particularly suitable for interior use, but can also be adopted for exterior work on a modest scale.

## Management of water run-off

For external works, it is usually necessary to establish the destination of surface water drainage. This may also be needed for internal works, where water is collected and directed to the outside of the building. There is a statutory obligation to prevent the discharge of solid matter or chemical effluent (theoretically this could include tap water) into a watercourse, standing water (pond or lake), ground water or coastal water.


Figure 41:
Mobile graffiti removal equipment normally consists of a pressure washer, with component parts, hoses, compressor and water tank, all contained within a service vehicle. Water run-off from cleaning is typically directed into surface water drains. Consequently, chemical cleaners containing toxic environmental contaminants should not be used in mobile cleaning operations, unless waste water can be contained and disposed of separately.

A permit is required to discharge trade effluent to a sewer, and also any significant solid matter (dry paint, abrasive, clay and so forth), oil, fat or other waste that might impair or block the drainage system. Chemical residue must be non-toxic, free of heavy metals and non-corrosive (pH<10). In some cases, neutralisation or dilution may be sufficient to allow normal disposal into the sewer. Non-compliant residue will require specialist collection and disposal.

Polythene membranes are useful for collecting and directing residues, and fine-pore woven or non-woven geotextile can be used for separating solids from liquids.

## Chemical cleaning

### General principles

Chemical treatments can be more discriminating than mechanical ones, and can also reach within the substrate's sub-surface. However, chemical reagents may be hazardous to health or the natural environment, and datasheets for any proposed chemical products should always be reviewed as part of a risk assessment.

Solvent-based paint softeners can be used for removing organically bound (but not mineral) paint, felt-tip marker inks and ballpoint pen. They should remove the binder, release any thickener or filler and clear all or the majority of the pigment, as long as the substrate is dry before application.

There are few alternatives for removing any remaining pigment (ghosting), other than a dilute bleach, alkali or acid. For such secondary treatment, the surface must be pre-wetted to reduce the depth of absorption and only a short dwell time (a few minutes) is required. This procedure may be deemed unnecessary if the ghosting is faint or inoffensive. Chemical reagents are usually activated during the dwell time by agitating the surface with a brush. Hot pressurised water or dry steam is best for rinsing, as this normally helps emulsify the chemically softened residue and flushes it out of the surface pores.

Proprietary reagents are generally supplied in clear gel or liquid form, which enables progress to be monitored. Manufacturers' technical datasheets should specify the application method, typically either by brush or spray. These products can often be converted to a paste or poultice using appropriate thickeners. Thicker consistency enables the treatment to be applied to vertical or overhanging surfaces and allows extended dwell times without constant monitoring and topping-up. Poultices also encapsulate the mobilised residue, keep it in suspension and avoid further 'bleed' or spread. Chemically impregnated wipes are also available for smooth impervious surfaces.

Figure 42:
Graffiti was removed from masonry beneath a bridge, adjacent to a river. The damp stonework was treated with superheated water, immediately followed by a light application of graffiti remover gel onto its warm surface. It was left until semi-dry and then rinsed. The weather was dry, which allowed the rinsed residue to evaporate rather than be deliberately washed away (the roadway had a waterproof asphalt covering and no surface drainage). In view of the river location, further chemical removal of ghosting was not attempted, as contaminated rinse water could not be contained.


Figure 43:
Graffiti on limestone masonry, with remnants of limewash, removed with chemical gel alone. The graffiti was mainly of solid colour and metallic aerosol paints, with a smaller tag of an artist's 'paint pen' or 'acrylic crayon'. a) Wall before graffiti removal. b) Applying the proprietary graffiti remover gel. c) Low-hazard graffiti remover gels need a dwell time of one to two hours. Agitation with a brush allows the mobilised binder and pigment to be taken up into the gel and act more effectively. Occasional brush agitation continued to completion. All of the visible pigment was mobilised and it was not necessary to resort to ghost treatment. d) Graffiti removal was complete, 1 hour 15 minutes after commencement. A superheated water system was used to carry out the final rinsing at a high temperature setting (140°C), moderate pressure setting (50 bar) and extended working distance. Care was taken to minimise the removal of soiling and limewash, by allowing the reagents to do nearly all the work.


Figure 44:
Chemical removal of aerosol graffiti on plaster and brickwork. a) The left half shows graffiti before removal and the right half shows the graffiti completely removed. b) The surface was carefully pre-washed with superheated water, which removed some graffiti and pre-warmed the surface in the cold weather. Alcohol ester graffiti remover gel was then applied, with a 1.5-hour dwell time and occasional brush agitation. The area was then rinsed and treated with hypochlorite gel ghost remover (five minute dwell). c) Application of dilute acetic acid gel was needed as a further ghost remover (five minute dwell). d) After final rinsing and drying. All washing and rinsing was carried out using superheated water and a vacuum recovery attachment (due to the sensitive local environment: bats, fauna and a river).

The dwell time of chemical agents must be established by trials (see 5.7 Removal trials and their evaluation) and kept to the successful minimum. If temperature or humidity changes significantly during the operation, the dwell time may need to be adjusted. For example, dwell time is shorter at higher temperatures. Chemical cleaning should not be carried out at extremes of temperature (below 6°C or above 25°C).

The depth of penetration of a chemical agent depends on its viscosity and the porosity of the substrate. Typically, a poultice graffiti remover can only extract colourant from superficial pores. To date, it has proved difficult to formulate a poultice medium that can make contact with paint lodged in tiny pores, while also holding sufficient solvent in its mass to loosen the bond between the paint and the substrate.

Chemically softened graffiti must not be allowed to dry out before removal. Activated and re-hardened residue can be very difficult to remove, and subsequent attempts at complete removal may entail methods that damage the substrate.

### Organic solvent-based cleaning agents

Hydrocarbon-based solvents are widely used in proprietary graffiti removal products. They should be applied to dry surfaces, as water restricts their effectiveness to some extent. They do not present the same risks of soluble salts and surface damage outlined below for alkaline and acidic compounds, but do present other serious considerations – flammability, toxicity to health, and the need for PPE, ventilation and other measures to mitigate risks to health and safety – that need to be taken into account.

Perhaps the most universal paint removal solvent in common use has been methylene chloride or dichloromethane (DCM). This solvent is exceptionally volatile and fast acting and will dissolve the great majority of resinous coatings, including epoxy. It is not readily soluble in water and normally requires special measures for disposal. It is potentially very hazardous to health (possibly carcinogenic to humans) and can only be used by specialists under licence in the United Kingdom (it is actually banned in many countries around the world). Consequently, DCM has been largely superseded by the development of other more environmentally friendly and less hazardous reagents, including certain ketones (especially acetone), alcohols (especially benzyl and isopropyl alcohols) and glycols and dibasic esters (both alcohol sub-categories). N-Methyl-2-pyrrolidone was, until recently, adopted as a safer alternative to DCM, but it is now classified as a 'potential human reproductive hazard' and has been generally withdrawn as a paint softener. Experience also appears to show that the use of DCM (also xylene and possibly others) too early in the removal process can make any remaining residues especially difficult to remobilise once dried out. So, there are good technical and health and safety reasons to treat DCM as a product of last resort.

### Alkaline, acid and bleach-based cleaning agents

Strongly alkaline paint strippers and degreasers (principally sodium and potassium hydroxide) break down oil-based films by means of saponification (conversion of a fat or oil to a soap). They can then be rinsed from the surface using hot water, and the surface neutralised with a mild acid such as acetic acid. Consequently, they are very effective at removing oil-based (normally fish and seed oils) paints, especially industrial rather than craft or decorative paints. However, since most modern graffiti is unlikely to be of this type, organic solvent-based formulas are generally more appropriate. Strong alkalis can be used to degrade pigment residues (ghosting) and, in fact, this is their main role in graffiti removal. Hypochlorite-based bleach also effectively degrades pigment. Although strong alkalis and bleaches are both best avoided, bleach is easier to rinse and offers less aggressive side effects, on balance.

Acetic acid has already been mentioned as a neutraliser, but it can also be effective as a ghosting remover. However, in either role, it should be used at relatively low concentration. In white vinegar, this is typically five per cent. Formic acid is found in some acid/solvent formulations, where it is used to degrade certain binders. Although an 'organic' acid, it should still be treated with caution. Hydrofluoric acid may be present in some graffiti removers, albeit in low concentrations.


Figure 45:
Removal of ghosting is not always fully successful.
a) Graffiti on this sandstone was treated with a superheated water spray, graffiti remover gel, ghost remover, acetic acid and hot water rinse.
b) Some ghosting persisted.

Alkaline and acidic cleaning agents both risk damaging limestones and sandstones. Even when neutralised, these agents can leave residues of potentially harmful soluble salts in the pores of the substrate. Acids will dissolve calcium carbonate and may remove the polished finish from marble and polishable limestones. The high crystallisation pressure of sodium

hydroxide salt as it precipitates out of solution during drying can lead to disaggregation in both limestones and sandstones. This risk can be reduced, but not eliminated, by completing the treatment with a 'plain' poultice (made with water only: that is, without other chemical activation) and meticulous rinsing. However, surface efflorescence and corrosion by subsequent salt crystallisation may still result. Ideally, chemical graffiti removers should be as near to neutral as possible (pH7): highly alkaline or acidic cleaning products should be avoided, if practicable.

### Health and safety

#### Volatile organic compounds

Volatile organic compounds (VOCs) are chemicals that evaporate, become airborne at ambient temperatures and are toxic to health, mainly through inhalation. Modern paints are often described and marketed based on their VOC content, but only in very general terms such as 'low VOCs' or 'virtually VOC free', as assurance they are safe to use.

Graffiti removal products (cleaning chemicals, poultices) may contain VOCs, and datasheets should be consulted prior to use, to ensure protective and preventive measures (such as appropriate PPE or ventilation) are followed.

In addition to posing a risk to human health, VOCs are flammable, are likely to adversely affect the natural environment and need to be handled and disposed of accordingly. These factors should be considered when planning graffiti removal work.

## Laser cleaning

Laser cleaning devices, such as the Q-switched Neodymium YAG (Nd:YAG) laser, produce highly directional beams of near-infrared radiation that are delivered to soiled surfaces in short (10ns) pulses at a wavelength of 1064nm (invisible to human sight). This produces a few hundred millijoules of laser radiation and cleans the surfaces by ablation, vaporisation, physical micro-abrasion and other erosive processes.

Controlled use by a specialist will minimise the risk of harm to the surface. However, if the energy level is set too high, discoloration and pitting of the surface, or an uneven dappled appearance, can occur. The pulse length is also important. Longer duration pulses can lead to a cracked and crazed glassy layer forming on the surface of terracotta, for example. This is caused by the prolonged conduction of heat, resulting in revitrification.

Figure 46:
Paint is removed using a Nd:YAG laser. By varying the wavelength of the beam and the area covered by it (by changing the distance of the beam emission to the substrate surface), the optimum fluence (joules of energy per square centimetre) can be achieved.

Laser cleaning can be effective when removing residue from light-coloured and sensitive substrates. However, the high cost of laser cleaning means that it is used only in very special cases. Powerful machines may achieve rates of 2m$^2$ per hour, but the norm is considerably less and so cleaning is slow compared to other systems. There are also health and safety restrictions: the cleaning area must be enclosed to protect the public and the operatives.

## 5.7 Removal trials and their evaluation

No matter how apparently simple the task, a contractor experienced in cleaning historic buildings should always carry out trials before the full execution of work. This is a cost-effective way of determining the best cleaning method, the level of removal that can be safely achieved, and the standard that is visually acceptable to all parties: client, contractor and all stakeholders.

Removal trials on very important historic buildings with sensitive substrates should be overseen by a conservation professional, in collaboration with the graffiti removal contractor (see 4.4 Obtaining professional advice).

Trials should proceed in stages, beginning with the mildest methods and only progressing to more aggressive ones if required (for example, from initial use of hot water only, to a weak chemical cleaner, to a stronger chemical cleaner). The trial areas must be representative, but kept as small and as discreet as practicable. All methods, materials and ambient conditions of each trial need to be carefully noted and photographed.

Ideally, the client or their representative should monitor the progress of cleaning trials, to ensure they are carried out to a good standard, safely and effectively. Once the trials are complete, cleaned surfaces should be viewed when dry and again after several days. They should also be compared to adjacent graffiti-free areas to inspect for evidence of alteration and damage to the substrate.

The aim of the trials is to find an agreed method of removing the graffiti, summarised in a concise method statement and risk assessment. This should define the location, types and extent of graffiti, and the nature of the substrate, as well as the method of cleaning, including all equipment and materials to be used. Logistical issues (surface protection, site access, barriers to limit access/protect members of the public or building users) should all be addressed. The trial area of the chosen method should be left in place as an 'exemplar': that is, a reference standard that all subsequent cleaning should match.

## 5.8 Removing specific types of graffiti

This section describes typical approaches to removing graffiti from historic substrates. Where the substrate is particularly significant and in poor condition, a conservator experienced in the specific material should be consulted in advance. This is also the case where important historic paint stratigraphy is likely to be damaged by the removal process.

### Scratches

Scratch marks are permanent. Incised markings can perhaps be filled or coloured, but re-profiling should be avoided. Historic glass may break if attempts are made to polish out the marking. Historically important incisions should be distinguished from modern ones before any work commences.

### Paint

Once paint is dry, it can be difficult to determine its precise composition without complex and expensive analysis. This is warranted only in exceptional cases: for example, where valuable artworks have been defaced by graffiti. Instead, targeted *in situ* spot tests with softeners are used to establish which removal method may be effective.

Painted graffiti is invariably organic in nature, the chemistry of the resin or polymer binder being the primary factor that affects how it may be removed. The characteristics of other components are generally of less concern, although the size of particles contained in paint may have an impact on removal. For example, metallic spray paints contain relatively large particles, which are less able to penetrate the substrate pore structure.

Removal methods are determined by the main composition of the paint:

- **Decorative paints** – manufactured primarily for architectural (coatings on buildings) and craft use

  Spray paint formulated for craft or decorative use typically has an acrylic binder, carried in either an organic solvent or water. Once dry, it is no longer soluble in water; it may be insoluble or only slightly soluble in its original organic carrier.

  Most graffiti in this medium can be softened, and occasionally completely removed, using steam or hot water. Depending on the substrate and paint formulation, secondary treatment may be necessary for remaining pigments, to prevent ghosting.

  Other organic solvents or methods – combined with hot water – are generally required to remove decorative paints. Proprietary removal products typically contain a blend of solvents to dissolve the graffiti medium for which they were designed.

- **Industrial paints** – formulated for the automotive and other industries where greater durability is required

  These may contain alkyd, epoxy, silicone or polyurethane binders. They may not respond to initial steam or hot water washing and normally require pre-softening with a chemical paint softener (liquid, gel, poultice). Softened paint is then mechanically removed (using suitable hand tools) and collected.

  Organic solvents may be necessary to soften some industrial coatings, but they are very slow to denature when mixed with rinse water. Instead, the residue should be scraped off and collected and the solvent allowed to evaporate. Alternatively, a solvent may be applied in a poultice. This is especially effective to draw out absorbed oil, resin or silicone residue.

  As for decorative paints, secondary treatment is often necessary to remove traces of pigment and to prevent ghosting.

  Alkaline paint removers can be effective in removing oil paints, especially industrial rather than craft or decorative paints.

### Food dye

Normally water soluble, food dyes can be highly penetrating and can induce water-insoluble staining on drying. It is a common scenario to think that the dye has been removed, only for the staining to reappear overnight or with further drying.

Porous substrates will usually require the application of poultices to draw out the dye and constrain it over a series of visits. Once the bulk has been removed, the residual stain can be treated as normal paint or ink ghosting, but it may require additional reagents such as dilute ammonia.

### Nail varnish

This is formulated to be resistant to hot water washing and many common chemical cleaners, including those found in normal graffiti removers. It can be removed by applying traditional proprietary nail varnish remover thickened into a poultice.

### Markers and pens

Felt-tip markers contain either water- or solvent-based dyes. As felt-tip marker residues contain proportionally more dye than binding medium, it is likely that solvents/graffiti softeners will dissolve the binding medium and most, but perhaps not all, of the dye. Dye is generally more penetrating and, once dissolved, more inclined to spread. Consequently, a poultice may be more effective.

Generally, traces of dye remain in surface pores and require secondary treatment. Black and red dyestuffs are particularly tenacious and difficult to remove. It is quite usual to be left with sub-surface ghosting, requiring secondary chemical treatment to degrade pigment residues.

It can be difficult to mobilise ballpoint pen ink without spreading the colourants across the surface. A solvent poultice is often an effective method of simultaneously mobilising and encapsulating the colourants.

### Waxy substances

Wax can be dissolved in certain solvents, but is then at risk of being absorbed into the substrate. Dry steam or superheated water will soften and displace the wax, thereby allowing it to be absorbed into fibrous cloth or geotextile.

### Chalk

Chalk is relatively easy to remove using gentle brushing or water washing.

### Pencil

Ease of removal will depend on the characteristics of the substrate. It may be possible to erase pencil marks from hard dense surfaces using traditional rubbers.

### Flame

Carbon is highly resistant to chemical dissolution and is normally displaced using soapy water and manual scrubbing. Burnt surfaces usually require special assessment and treatment.

### Adhesive posters, labels and stickers

Warm, hot or superheated water is effective in dissolving poster adhesive, especially animal glues. Initial softening with water means that less scrubbing or scraping is required to remove posters, provided the adhesive is water soluble. Scraping with hard, sharp or pointed metal tools, and without pre-wetting, is likely to cause damage.

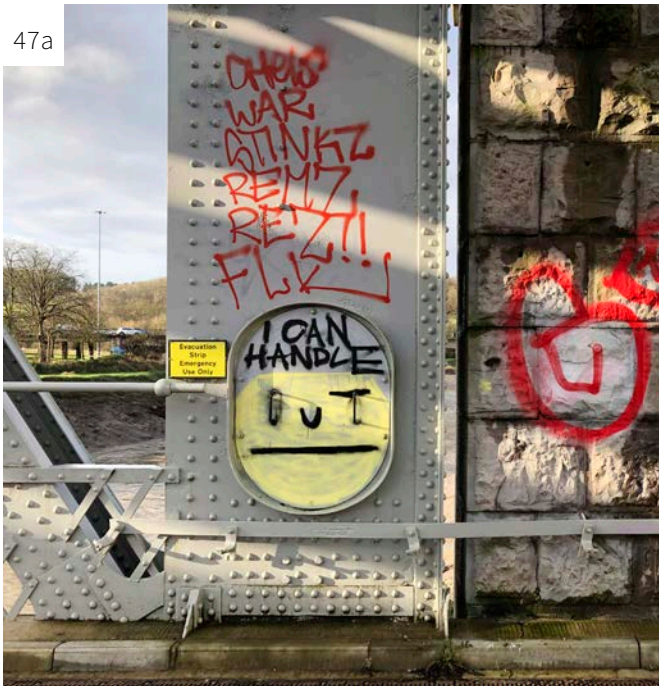
Where insoluble adhesive residues remain after water cleaning, it may be possible to remove them using an oxygenated organic solvent, or a proprietary product made for this purpose. Such products contain one or more organic solvents, blended to suit specific resin types. A wide range of resins is used in the manufacture of adhesive labels, so it is difficult to predict which product might be effective. These should be tested initially on a small area.

## 5.9 Over-painting as an alternative to removing graffiti

Graffiti on sound, previously painted masonry, render, metalwork or timber may be over-painted to avoid the difficulty of removing it. In general, new coatings should match existing finishes, or otherwise be compatible with them in terms of formulation and properties (including moisture permeability). Paint manufacturers' guidance on substrate compatibility and recommendations for preparing surfaces and applying coatings should always be closely followed. The number of coats needed to conceal the graffiti will depend on the covering power of the paint, and site trials may be necessary to establish this. It will normally be preferable to repaint the entire architectural feature or element, not just the area directly affected by graffiti, as this will make the inevitable variations in shade and texture less conspicuous. However, an extra coat or two of paint may be needed over the graffiti itself before repainting overall.

Where graffiti has been applied to surfaces with significant historic paint finishes (for example, polychromy), an accredited conservator should be engaged to give advice and carry out treatments.

47a




47b

Figure 47:
a) and b) Over-painting is not always entirely effective in masking all of the graffiti. A single coat of paint is unlikely to conceal underlying graffiti completely.

Figure 48:
a) Graffiti applied to limewash on a sandstone wall. It can be over-painted with fresh limewash. However, the retreatment will be more durable if the graffiti is first removed by hot-washing. b) To make any subsequent graffiti easier to remove by hot washing, a wax based anti-graffiti coating was applied to the limewash. However, the wax will need to be removed if the surface is limewashed again.

48a

48b

# 6 Preventing graffiti

## 6.1 Buildings and other assets at risk

Many types of substrate may be successfully cleaned once, or infrequently, but most surfaces, especially those of softer stone and brick, are unlikely to withstand repeated cleaning without damage. It is, therefore, best to consider the complete range of measures that may be used to prevent unwanted graffiti, from anti-graffiti coatings and obstructing access, to engagement with graffitists.

Local context is an important factor. Depending on the significance of the building or structure, and the persistence of offending, general crime prevention advice can be requested from the local police neighbourhood team, or guidance can be sought from a police crime prevention officer or advisor, from a similarly accredited independent advisor, or from a local authority community safety or anti-social behaviour advisor. However, they are unlikely to have expertise in dealing with historic buildings or assets and will need to be guided on certain issues, such as any requirements for dealing with historic fabric and compliance with heritage protection legislation.

Before moving to solutions, it is advisable to undertake a simple assessment to establish what the risk of future crime against the heritage asset is likely to be. See Historic England's heritage crime risk assessment tool and heritage crime prevention guidance.

Once graffiti appears, more is quite likely to follow. In the case of tagging, especially, visibility is important. The rapid removal or covering of graffiti signals to perpetrators that it will not be tolerated and that there will be a swift reaction. Disused and derelict buildings are particularly at risk. No or poor maintenance suggests neglect, a lack of respect for historic fabric and that there is unlikely to be a response to vandalism. It is important, therefore, for building owners and managers to maintain empty buildings in good condition and respond quickly to graffiti. Construction sites also very often attract graffiti: their hoardings provide a blank canvas, and barriers and scaffolding offer some cover from detection. See Historic England's guidance on the management of vacant buildings.


Figure 49 (top left): A derelict building in east London has become a veritable magnet for all kinds of graffiti and fly-posting, acting as an anti-social billboard.

Figure 50 (top right): In the case of this listed tobacco warehouse in Bristol, disuse, lack of security, inadequate perimeter fencing and a relatively isolated urban location have led to repeated incidents of graffiti.

Crime prevention is not simply about physical security (sometimes referred to by criminologists as 'situational crime prevention'). Social crime prevention measures – involving local people and others who care about heritage – can also be effective ways to reduce crime (see 6.3 Social graffiti prevention measures).

## 6.2 Physical graffiti prevention measures

There is no universal solution to prevent incidents of graffiti, and physical crime prevention measures have inherent limitations. Some even require statutory consent. Prevention measures need to take account of various factors, such as the site, the nature of local criminality and the degree of natural guardianship provided by staff, local residents and passers-by.

Not all measures need be expensive. Sometimes simple actions, such as improving surveillance of an area by cutting back foliage or enhancing illumination at night, can be very effective.

In other cases, technology may assist. Installation of CCTV security cameras, where suitable, may deter or prevent the recurrence of graffiti. Motion detectors that trigger security lighting or alarms may also help in certain circumstances. Such measures obviously depend on available resources and a commitment to maintain and monitor the equipment.

Temporary covers to conceal new graffiti have been discussed above (see 4.1 Actions to take after a graffiti incident). Consideration should also be given to making historic surfaces less accessible and attractive as a 'canvas'. This can be done in various ways, depending on the structure and its site. For larger and more complex sites, it may be helpful to consult a landscape architect or designer on natural measures. Specialist police crime prevention design advisors may also be able to assist.

An example of this type of approach is to deter access by the strategic placement of shrubs, spiky plants, planters or other landscape elements close to building surfaces that have been subject to graffiti. This type of 'defensive planting' can be an attractive way of deterring graffiti in certain locations, but it needs to be employed selectively on heritage sites, subject to other factors; for example, it can create damp walls by inhibiting moisture evaporation.

Installation of fences and barriers may also be recommended. However, these may be seen by graffitists as a challenge to overcome, thus contributing to the thrill of illicit access. Also, unless these are well designed, they are likely to detract from the historic structure and, in historic contexts, may require statutory consent. Advice should be sought from the local authority planning department or relevant determining authority as to whether a particular crime prevention measure needs permission or consent (see 4.1 Actions to take after a graffiti incident). The local authority or other relevant authority will assess the risk to the site and the impact of the measure. When considering an application for consent, there will be a preference for measures that are inconspicuous and do not harm the fabric of the building or structure.

### Anti-graffiti coatings

Where there are repeated incidents of graffiti and an associated risk of damaging surfaces from recurrent cleaning, anti-graffiti coatings are often employed. Numerous proprietary anti-graffiti coatings of varying composition are available. They are all clear, colourless and transparent, designed to be impermeable to graffiti media (paint, inks, dyes), and so prevent graffiti from penetrating surface pores. Proprietary graffiti barriers may be described using terms that indicate their intended function and durability, such as 'sacrificial' or 'permanent'.

These coatings are designed to facilitate cleaning, to make it easier to remove graffiti by washing, without recourse to other more complex removal methods. Normally, graffiti barriers are formulated so they can be removed by high-pressure hot water or steam washing. In the case of coatings described as 'sacrificial', removing graffiti from a treated surface will typically also remove the coating at the same time. Therefore, these coatings need to be reapplied once the graffiti has been removed.

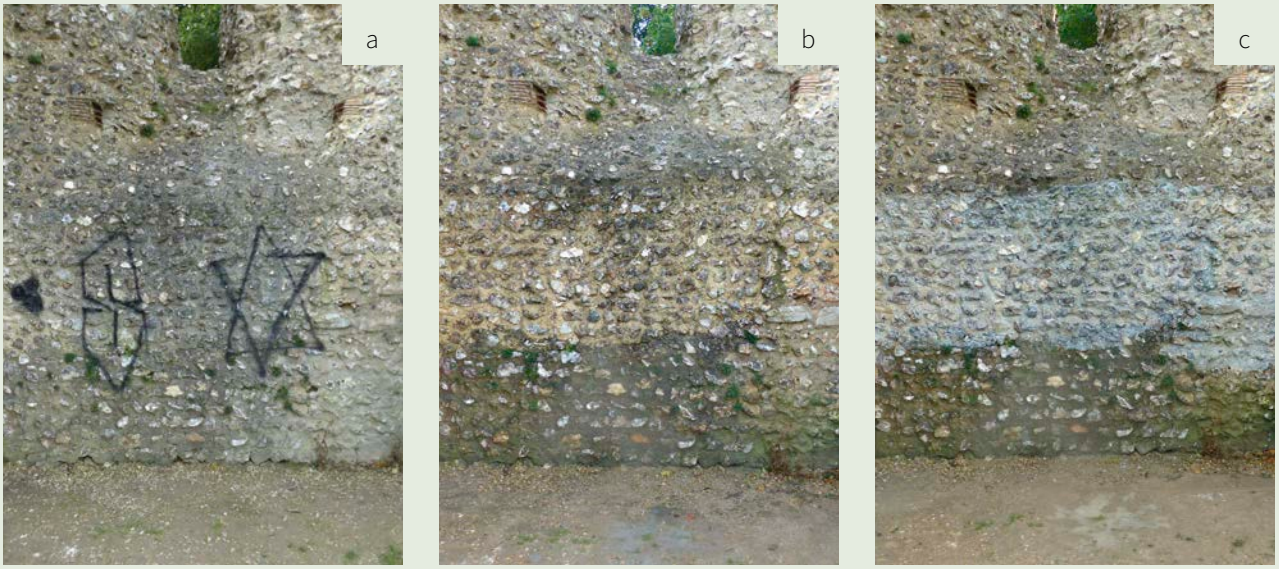



Figure 51:
Internal walls of the Great Tower, Ludgershall Castle, Wiltshire (13th century), a scheduled ancient monument.
a) Graffiti before removal.
b) The wall after graffiti removal.
c) The wall after application of a wax graffiti barrier. Masonry was allowed to partially dry before applying the coating. The wax remained opaque until it fully dried. When a wax coating is added to a wet or damp surface, a permanent 'bloom' can result. This can only be eliminated by removal of the wax.

Sacrificial coatings of this kind are typically based on aqueous wax emulsions and, in general, are more appropriate for historic structures than coatings described as 'permanent', 'long term' or 'highly durable'. Aqueous waxes are water miscible when first applied but immiscible once dry. However, the wax deposit can be softened and displaced by very hot water/steam under pressure or combined with brushing. They are invariably sacrificial and microporous and will weather back in time, normally after a few years. Where there is naturally high water movement from within the substrate, the wax coating will fail (yield in small flakes) rather than seal the surface.

Graffiti barriers should be applied after cleaning (normally by hot water washing) and once the surface is dry. In practice, surfaces may remain damp for protracted periods after cleaning, particularly in unfavourable ambient conditions of low temperature or high relative humidity.

Depending on the moisture content of the surface, wax anti-graffiti coatings may remain opaque for a short time after application. Some opacity may return temporarily during wet weather or under damp conditions. Even in ideal dry conditions, treated masonry surfaces normally appear slightly darker than adjacent untreated surfaces. Sometimes the coating may become more visible as it degrades and becomes partially detatched, but these visual effects generally lessen with time (over a few years), as the coating weathers and soiling and organic growth reappear. More rarely, visual difference may disappear altogether.

Permanent coatings may impart a durable shine or gloss to treated surfaces and should be avoided.

Although coatings may be advertised as reversible, removable or sacrificial, in practice it is not usually possible to remove all traces of a coating from surface pores of masonry. Remnants of graffiti barriers will remain, depending on factors such as their solubility in hot water and their tenacious nature (for example, their bond to the substrate). The properties of the coating may alter over time by weathering.

Copper-alloy statuary, such as bronze, is often coated with protective spirit-based microcrystalline wax, which is both stable and durable. It acts as a graffiti barrier and is relatively easy to remove with pressurised hot water and steam. It is heated prior to application to ensure optimal penetration and is applied in several coats.

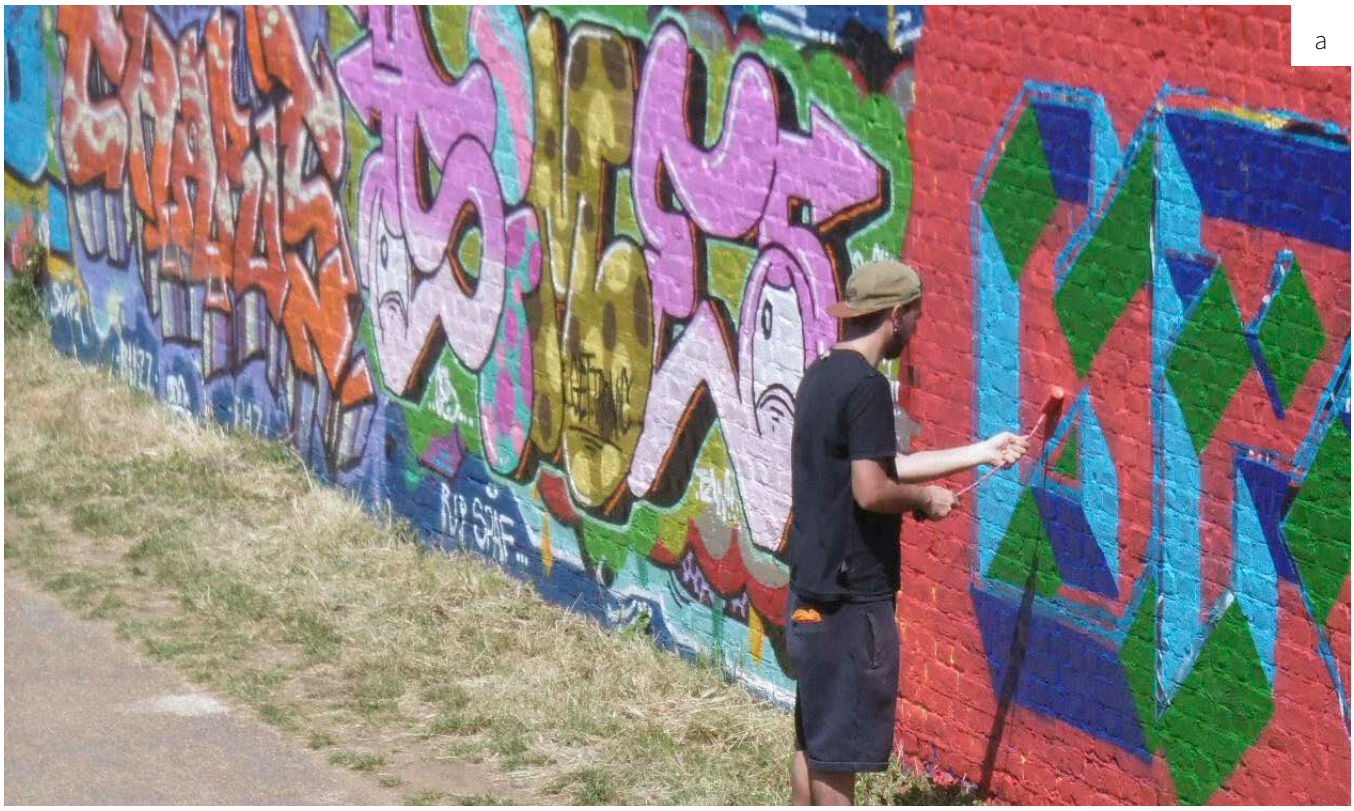
## 6.3 Social graffiti prevention measures

Building local appreciation and understanding of the historic environment is probably the most effective way of preventing graffiti. Encouraging people to learn about, visit and care for heritage assets is an excellent way to ensure that they are watchful for and will report suspicious or anti-social behaviour. Historic England is working with constabularies around the country to introduce Heritage Watch schemes. These enable the public to report and share information on crime, suspicious behaviour and damage they observe at heritage assets in their community or while out and about (see 8 Where to get advice). Engagement with young people via primary and secondary school curricula and other youth groups, to encourage them to help to reduce graffiti incidents, also has a part to play.

Additional approaches are needed in areas that experience challenging graffiti and anti-social behaviour problems. There, targeted initiatives to divert people away from criminal activity and to encourage a sense of care and respect for heritage sites may be suitable. For example, this might involve engaging with graffitists to convince them of the harm that criminal activity can have on historic structures and the potentially serious risks and sanctions they face if involved in this behaviour.

Graffitists may be encouraged to participate in community art projects in authorised locations. Some local authorities have provided walls for graffitists to produce their artwork legally, mainly on a trial basis. Oxford City Council launched a trial scheme in 2016 and Bristol the following year. Free wall schemes engage with graffitists, encouraging them to consider where graffiti is applied and its wider impact. Such projects need to be based on sound evidence-based research about ‘what works’. Specialist advice from police crime prevention officers, local authority anti-social behaviour officers or probation officers is vital to ensure that projects are appropriately focused and effective.

A reliable and efficient system for reporting and safely removing graffiti needs to be established and continuously managed by maintenance personnel. This requires frequent and regular inspection of areas and a quick response to graffiti using appropriate removal techniques. Some local authorities have mobile phone apps or online reporting systems that enable photographs of graffiti and associated details to be uploaded so that councils or police can respond more quickly. A responsive and consistent programme for graffiti removal tends to encourage graffitists to go elsewhere.



a

b

Figure 52:
a) and b) Graffitists routinely paint sections of this London canalside wall each weekend, over-painting that done the week before. Walls such as this act as informal free graffiti areas, but this activity is still illegal, as the owner's consent has not been given.

# 7 References

## 7.1 Historic England publications and web pages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historicengland.org.uk/images-books/publications/conserving-war-memorials-cleaning/heag147-conserving-war-memorials/

Historic England *The Development of the Heritage Crime Programme in England*
historicengland.org.uk/whats-new/debate/recent/heritage-crime/heritage-crime-programme/

Historic England 2017 *Guidance for Sentencers: Heritage Crime*. Historic England
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Historic England 2018 *Heritage Crime Risk: Quick Assessment Tool*. Swindon: Historic England
historicengland.org.uk/images-books/publications/heritage-crime-risk-qat/heag191-heritage-crime-risk-quick-assessment-tool/

Historic England *Listed Building Consent*
historicengland.org.uk/advice/planning/consents/lbc

Historic England *Practical Building Conservation* series

This series of fully illustrated books published by Routledge provides detailed guidance on understanding, deterioration, assessment and repair. More information is available at historicengland.org.uk/pbc

The books in the series relevant to graffiti are:

*Concrete* (2013)

*Earth, Brick & Terracotta* (2015)

*Glass & Glazing* (2012)

*Metals* (2012)

*Mortars, Renders & Plasters* (2012)

*Stone* (2012)

*Timber* (2012)

Historic England *Reporting a Heritage Crime*
historicengland.org.uk/advice/caring-for-heritage/heritage-crime/report/

Historic England *Scheduled Monument Consent*
historicengland.org.uk/advice/planning/consents/smc/

Historic England 2018 *Vacant Historic Buildings: Guidelines on Managing Risks.* Swindon: Historic England
historicengland.org.uk/images-books/publications/vacanthistoricbuildings/heag183-vacant-historic-buildings/

## 7.2 Other publications

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Verhoef, L G W (ed) 2019 *The Soiling and Cleaning of Building Facades*. Abingdon: Routledge

Whitford, M J 2016 *Getting Rid of Graffiti: A Practical Guide to Graffiti Removal and Anti-graffiti Protection*. Abingdon: Routledge

# 8 Where to get advice

## 8.1 Useful organisations

Heritage Watch (Historic England in partnership with Country Eye) has made reporting heritage crime quick and easy with a free app:
www.heritagewatch.co.uk

Advice about graffiti and fly-posting can be found at:
www.mylawyer.co.uk/graffiti-and-fly-posting-a-A76076D35092/

Advice informing graffiti artists of legal repercussions can be found at:
inbrief.co.uk/offences/graffiti/

## 8.2 Finding a conservation professional

Building Conservation Directory
www.buildingconservation.com

ICON Conservation Register
www.conservationregister.com

Register of Architects Accredited in Building Conservation (AABC)
www.aabc-register.co.uk

The Royal Institute of British Architects (RIBA) Conservation Register
www.architecture.com/working-with-an-architect/conservation-register

Royal Institution of Chartered Surveyors (RICS)
www.rics.org/uk/surveying-profession/career-progression/accreditations/building-conservation-accreditation/

# 9 Acknowledgements

## Text

Historic England gratefully acknowledges the contributions from Andy Bliss and the peer reviewers of this document.

## Images

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Figure 31: Rural, Wildlife and Heritage Crime Team, Devon and Cornwall Police

Figure 33: Dean & Chapter of Westminster

Figures 37-39, 42-45: © Restorative Techniques

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Figure 51: Restorative Techniques © English Heritage Trust

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HEAG288
Publication date: v1.0 February 2021 © Historic England
Design: Historic England

< < Contents