



# North Shropshire District Council

## TRADITIONAL WINDOWS IN NORTH SHROPSHIRE



***A practical guide to repair and upgrading***

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# TRADITIONAL WINDOWS IN NORTH SHROPSHIRE

*A practical guide to repair and upgrading*

## CONTENTS

### Types of window

*window glass*

*window frames*

### Window details

*side –hung casement windows*

*sliding sash windows*

*glazing bars*

*window ironmongery*

*shutters*

### Repair or replacement?

#### Methods of repair

*recognising defects*

*overhauling timber windows*

*repairing timber windows*

*saving historic glass*

#### Upgrading old windows

*stopping draughts and rattles*

### Replacement windows

### Painting windows

### Do I need permission?

### Where to get advice and information

## INTRODUCTION

Windows are the ‘eyes’ of a building – they let in light and give views out. And like eyes they have a profound effect on the appearance and character of a building’s ‘face’. Original windows are an integral part of the design of a historic building and can be important artefacts in their own right, made with as much skill and ingenuity as a piece of antique furniture.

When it becomes necessary to repair or replace windows in a listed building, or a building in a conservation area, it is important that the work is carried out in a sympathetic and appropriate way to avoid spoiling the appearance of the building and reducing its value.

This booklet gives examples of the types of window commonly found in traditional buildings in North Shropshire and explains their design and construction. Advice is given on appropriate methods of repairing and upgrading timber windows, and on the issues to be taken into account when considering replacement.



*This booklet has been produced by  
The Conservation Section,  
Planning Services Department,  
North Shropshire District Council,  
Edinburgh House, New Street, Wem,  
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## TYPES OF WINDOW

The evolution of domestic window design from the late 1500s was closely related to developments in glass making. Before this time windows in all but the grandest houses consisted of simple openings formed in masonry walls or as an integral part of the structural frame in a timber-framed building. Wider openings were often sub-divided by vertical *mullions* into two or more lights. Taller openings were further subdivided by horizontal *transoms*. Windows would sometimes be fitted with vertical wood or iron bars for security and covered with oiled cloth or sliding or folding timber shutters to reduce draughts.

*An unglazed medieval two-mullion window with wooden bars (only one survives) to keep out intruders*



### Window glass

Towards the end of the 1500s window glass became more readily available, although it was probably not in common use in smaller houses until well into the 1600s. At this time window glass was in the form of *leaded lights* - small diamond or square-shaped panes or *quarries* held together by a lattice of lead *comes*. The quarries were made by blowing molten glass into a hollow sphere which was then cut open and spun rapidly until a thin disc or *crown* was produced. When cool the disc was cut up into regular panes which, because of the limited size of the crown, were small to reduce the amount of waste around the edge.

As glassmaking skills developed it became possible to produce larger crowns – up to 1.6m in diameter – from which larger panes could be cut. These larger panes gradually took the place of leaded lights from the end of the 1600s. The familiar *bull's-eye* occurred at the centre of the crown where it was attached to the iron rod or *pontil* which was used to spin it. Panes containing bull's-eyes were regarded as waste and only ever used in inferior situations such as glazing in service rooms. *Crown glass* was the finest quality window glass and prized for its sparkling, fire-polished appearance. It continued to be made in much the same way until the 1930s.

Another technique for making window glass began to be used in the 1700s. *Cylinder glass* was produced by blowing a long cylinder which was slit along its length then opened out and flattened. The quality of polish of cylinder glass was inferior to crown glass but larger panes could be made. By the early 1800s glassmakers in America and on the Continent had developed this process to produce much larger cylinders and it was this method which led to the large-scale industrial production of window glass. Nearly all window glass was produced by one of these two methods until the later 1800s when more modern and mechanised production processes replaced them.



*Top: leaded light with diamond-shaped panes*

*Above: a stage in the making of crown glass*

*The sparkling and distorted reflections in crown glass add to a building's visual interest*



Left: vertical sliding sash window

Right: side hung casement window



## Window frames

The two main types of traditional window are *side-hung casement windows* and *sliding sash windows*. Within these groups there are considerable variations in design and detail which depend to some extent on the date of the window.

It is not uncommon to find more than one type of window in the same building. This may be because the building has been altered or extended but often it relates to the varying levels of importance given to different parts of the building. For example, the front of the building might have vertical sliding sash windows whilst the back has simple side-hung casements or horizontal sliding sash windows. Service wings usually have simpler, less costly windows than the higher status parts of houses.

Right: Restored 3-light mullion and transom window with leaded lights, iron casements and oak frame. Probably late 1600s.

## WINDOW DETAILS

### Side-hung casement windows

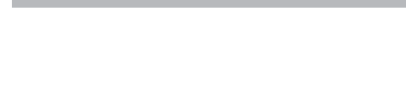
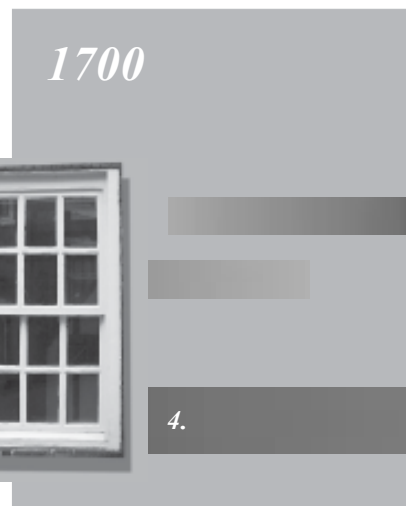
The use of side-hung casement windows in ordinary houses increased in the 1600s, as window glass became more generally available and affordable. Sometimes it is possible to see where grooves or rebates for glazing and opening casements have been cut into the frame of an earlier window. Opening casements made of wrought iron were hung on simple pin hinges spiked into



wood, usually oak, frames and were often fitted with delicately forged fasteners and stays. Leaded lights were fixed to the iron casements with lead rivets and wire. As larger panes of glass became available during the 1700s glazing fitted directly into rebated casements gradually superseded leaded lights. Older flat iron casements were adapted to provide a rebate, sometimes made from zinc, to support the glass and putty.

Below: "Time line" showing the evolution of window design.

1. Unglazed mullioned window. 2. Oak-framed window with iron casements and leaded lights. 3. Classically proportioned oak-framed window with iron casements and leaded lights. 4. Oak-framed vertical sliding sash window with thick glazing bars. 5. Oak-framed window with iron casement. 6. Softwood vertical sliding sash with thin glazing bars. 7. Cast iron window. 8. Softwood casement window. 9. Vertical sliding softwood windows with 'horned' sashes. 10. Steel casement window





Although by the early 1700s this type of window had become unfashionable it continued to be used in lower status buildings well into the 1800s. It enjoyed a revival from the late 1800s in buildings inspired by the Arts and Crafts movement.



*Above left: 2-light oak frame window, late 1600s or early 1700s. The leaded lights were probably replaced in the 1800s. Zinc glazing bars and rebates have been added to support the glass.*



*Left: 2-light wooden casement window without mullions, mid 1800s*



*Above right: 3-light softwood window with mullions, mid-1800s*

*Left: classically proportioned mullion and transom window, late 1600s. Leaded lights have been replaced with wooden casements*





*Below left: cast iron lattice window with a side hung casement and friction stay, mid 1800s*



Cast iron windows started to be manufactured at the end of the 1700s and continued in use throughout the 1800s. Although the majority of these were used in industrial buildings there are occasional examples of cast iron casement windows in houses.



*Above right: industrial pattern cast iron window with a centre pivoted opening section, late 1800s. Earlier windows of this type tend to have smaller panes.*

During the 1920s and 30s the firm W F Crittall first produced casement windows made from hot-rolled steel sections. Widely used by the pioneering architects of the Modern Movement these windows were in keeping with the vogue for healthy outdoor living which swept Europe in the 1930s. Their use in new housing and as replacements in existing buildings became widespread during this period and they remained popular well into the 1960s. They can still be obtained from specialist manufacturers.

*Far right: vertical sliding sash window, about 1720. Early sash windows, which are often made of oak, have thick glazing bars and exposed pulley boxes. Note the recess for external shutters*



*Right: steel casement windows, probably 1930s*

## ***Proportions and arrangement of lights***

In smaller houses from the 1600s to the mid-1800s the characteristic casement window was square or a horizontal rectangle divided into two or three lights, with or without mullions.

Opening casements and fixed lights were usually sub-divided by glazing bars into a number of panes. As techniques for making window glass developed through the 1700s and 1800s pane sizes tended to increase. In earlier windows the lights might be divided into six, eight or even more panes, according to the size of the opening. Lights in later windows might typically be divided into two or three panes.

## **Vertical sliding sash windows**



Vertical sliding sash windows were introduced from the Low Countries in the late 1600s and took the place of mullion and transom windows in high status classical facades. The fashion quickly spread to more humble buildings and sash windows continued to be used in all types of building until the early 1900s. Although the basic mechanism of sash

windows remained the same during this period, some details evolved as fashions changed and as glass became available in larger sizes. These details can help to date sash windows and have a significant effect on their appearance.

Vertical sliding sash windows consist of two glazed sections or sashes which slide in recesses in box frames which house lead or cast iron counterbalance weights. The weights are attached to the sashes by cords or, in the case of very large windows, chains. In early examples the upper sash is sometimes fixed or held by wedges with only the lower sash balanced by weights.



*Above: vertical sliding sash window, about 1820. The glazing bars and meeting rails are very thin and the pulley boxes are concealed behind the brickwork*

Sashes dating from the late 1600s or early 1700s usually have thick glazing bars (unless the sashes have been replaced) and exposed box frames. From the late 1700s until the mid 1800s the fashion was for larger panes of glass and thinner glazing bars. During this

period the 'six-over-six' type windows (with six panes of glass in each sash) became commonplace and sash boxes were often recessed and concealed behind the walling leaving only a thin strip of wood visible on each side. From about the 1860s larger and thicker panes of glass were used in sash windows. With heavier glass and fewer glazing bars 'horns' were introduced in upper sashes to increase the strength of the joints between the meeting rail and stiles. The existence or otherwise of horned sashes gives a helpful clue about the age of a window.

### **Proportions and arrangement of lights**

Sash windows were particularly suited to the vertical window shape characteristic of classical styles of architecture. The basic proportion for window openings was the 'double square' i.e. the height being twice the breadth. However, this rule was not always strictly adhered to, particularly in vernacular buildings. A method for determining the ideal proportions of individual window panes is shown opposite. Although this method was not always followed, the shape of window panes is usually a vertical rectangle.

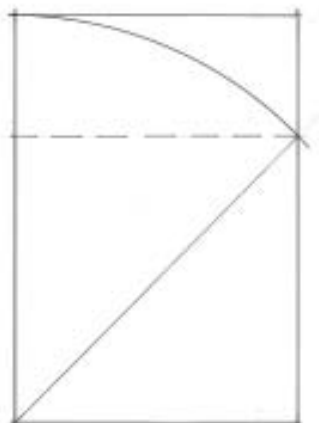
The proportions of the window panes and openings determined the arrangement of lights. The usual pattern until the end of the 19<sup>th</sup> century was for both the upper and lower sashes to be divided into three, four, six (three-over-three) or sometimes eight (four-over-four) lights although other arrangements are sometimes seen. From the end of the 19<sup>th</sup> century larger panes of glass were available and it was common for upper and lower sashes to be divided into two lights each.

Where a large square or horizontal rectangular opening was wanted a 'tripartite' window could be used. This consisted of a central sash window flanked by two narrow sidelights.



*Above: vertical sliding sash window, about 1890. Note large panes of glass. Inset: 'horns' to strengthen joint*

*Below: determining 'ideal' proportions for window pane*

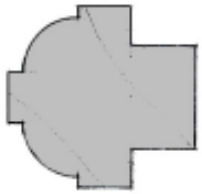






*Above: horizontal sliding sash window, about 1840*

*Below: typical glazing bar profiles*



*Thick, early 18th century type*



*Thin, late 18th century type*



*Ovolo and fillet*



*Bevelled or 'rustic'*



*Lamb's tongue*



## Horizontal sliding sash windows

Horizontal sliding sash windows usually have one fixed and one horizontally sliding sash and are the 'poor relations' of vertical sliding sash windows. As the sashes do not need to be counter-balanced by weights and pulleys this type of window was easier and cheaper to make. Its proportions made it particularly suitable for the square or horizontal rectangular window shape often found in buildings lower down the social scale and in the less important parts of higher status buildings.

## Glazing bars

The thickness of timber glazing bars was gradually reduced from over 25mm in the early 18<sup>th</sup> century to about 12 mm by the early 19<sup>th</sup> century when, having become almost too thin for stability, they were sometimes replaced with cast iron or copper in larger windows. Good quality and inexpensive sheet glass in large sizes became available from about 1840 and meant that fewer glazing bars were required or that they could be omitted altogether. Sheet glass is heavier and thicker than crown or cylinder glass so glazing bars tended to become thicker again at this time.

Glazing bar profiles ranged from plain and simple to elaborately moulded according to the status of the room which the window served. In 18th and early 19<sup>th</sup> century houses it is not uncommon to find two or three different profiles used in the same building with, for example, plain glazing bars in service rooms and servants quarters and moulded ones in reception rooms.

## Window ironmongery

Original ironmongery such as hinges, fasteners, stays and counterbalancing mechanisms contribute to the character and interest of a window.

*Left: iron casement fastener, probably late 1600s*

## Shutters

Wooden shutters were sometimes provided, either internally or externally, for security, privacy and warmth. External shutters, either of board or panelled construction, fold flat against the wall beside the window opening. Sometimes the presence of a recess/rebate in the face of a window frame, usually at ground floor level, indicates that there were once external shutters.



Internal wooden shutters were popular in the C18 and C19 and were often arranged to fold away into boxes either side of the window. Sometimes internal shutters were hung on counterbalanced cords, like sashes, and slid vertically into a compartment beneath the window.

Every effort should be made to retain existing shutters and associated ironmongery.



*Above: external shutters, early 1700s. The window sashes were replaced in about 1880.*

*Left: internal folding shutters, about 1725*



## REPAIR OR REPLACEMENT?

Traditional windows contribute greatly to the character and special interest of old buildings. They should be retained and their working lives extended wherever possible. Although maintaining wooden windows may seem burdensome, recent research carried out by English Heritage shows that in the long term it often costs less to regularly repair and redecorate existing windows than it does to replace them.

The demand for higher standards of insulation and draught-proofing is another reason often given for wanting to replace windows, but there are methods for upgrading existing windows which can be equally effective. Some of these are described in the following section.

The opening parts of windows often become jammed because of a build-up of paint. Distortion of the frame and missing, worn or damaged beads can

also cause jamming as well as rattles and draughts. Sash cords may become brittle with age or rot and break; window ironmongery, including hinges, pulleys and fasteners, may not operate properly if it is worn or corroded. Dealing with these kinds of defects is relatively simple and well within the scope of the competent *do-it-yourselfer*.

Water penetration and the resulting fungal decay of timber can cause more serious problems. Sills and the lower parts of frames, casements and sashes are often affected. However, a skilled joiner will be able to cut out the rotten timber and splice in replacement sections. If the damage is more extensive the replacement of a complete sash or casement may be justified but this is better than replacing the entire window.

There are many examples of traditional wooden windows in North Shropshire which are over 100 years old. They are still serviceable and will remain so if regularly maintained.

### *Recognising defects*

*Examine windows carefully before redecoration. It is important to identify the precise nature and causes of defects so that the correct treatments can be selected.*

*Check that opening sashes or casements are operable and that ironmongery is in working order. Vulnerable areas should be probed with the point of a sharp knife or bradawl. Typical defects are shown below - moisture is the main enemy:*



*deformation of window caused by structural movement in wall*

*broken sash cords*

*failure of joints caused by timber decay*

*breakdown of paintwork and putty caused by lack of regular maintenance - this allows water to penetrate causing timber decay*

*decay of base of stiles or jambs at junction with cill*

*decay of cill caused by water penetration after breakdown of paint. Water may also creep into the joint between the timber sill and the masonry sub-sill*

## METHODS OF REPAIR AND UPGRADING

### Overhauling timber windows

The purpose of overhauling timber windows is to correct defects caused by general wear and tear. Typically, works include -

- freeing jammed casements or sashes and removing build-ups of paint which interfere with their operation;
- replacing broken sash cords and lubricating pulleys;
- replacing broken glass and defective putties (panes of antique glass which are cracked but not admitting rainwater should not be replaced);
- cleaning and repairing ironmongery to leave in working order and replacing missing items;
- easing sticking sashes and casements;
- replacing missing or worn beads;
- preparation of previously painted surfaces and redecoration.

### Repairing wooden windows

The purpose of repair is to replace or reinforce elements which have decayed to the extent that they can no longer function as intended. The basic principle governing repair is that the works carried out should be the minimum required to correct the defect.

Wherever possible, repairs to window frames should be carried out in situ particularly when the frame is built in and cannot be easily removed without damaging either the window or the surrounding wall. Sashes and casements can usually be removed without damage for repair either on site or in the joiner's workshop.

Where several windows have to be dismantled in the course of repair, it is important always to mark and record the identity of the components before dismantling.

### Spliced repairs

Spliced repairs should be made by cutting out rotten wood and piecing-in timber inserts which are shaped to obtain the maximum strength and to match the existing profiles. The new timber should always be worked to the line of the existing and should follow

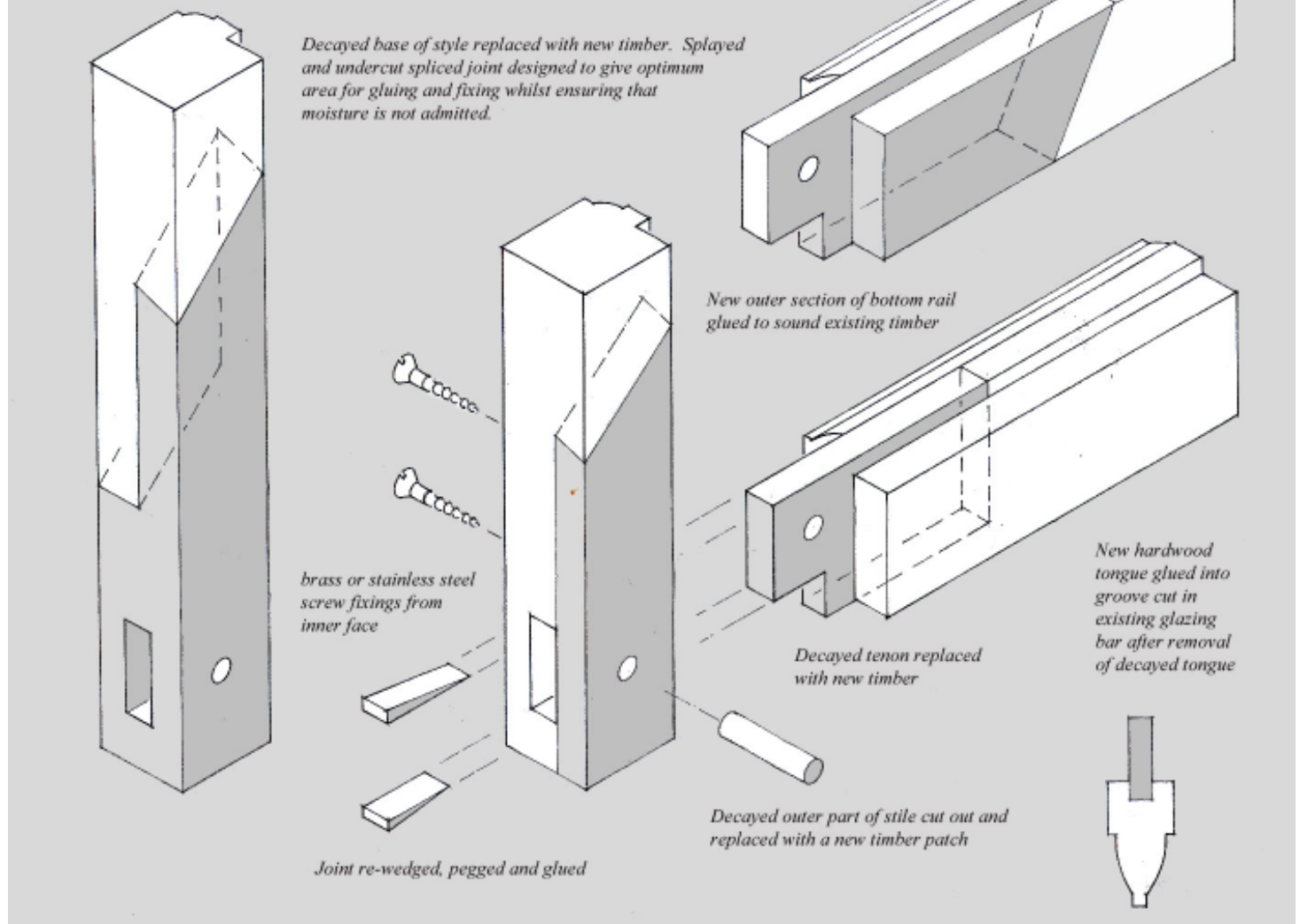


any existing deformations in the line of the window. Excessive trimming of the existing timber should be avoided. Where possible, spliced repairs should be designed so that water is directed towards the outer face of the timber and cannot lie on or enter the repair joint.

Inserts should be made from good quality timber of similar species and moisture content to the parent timber and fitted with the grain orientated to match the existing. This reduces the risk of the insert and the parent timber moving at different rates during damp and dry conditions which could cause failure of the repair joint or splitting. As with all joinery work, timber with defects such as shakes, resin pockets, knots,



## Typical repairs to sash and casement members



heartwood or sapwood should be avoided for use in repairs. Modern softwood has poor inherent resistance to decay and should be double-vacuum impregnated with preservative by the supplier.

Inserts should be glued with a suitable exterior grade adhesive and screwed or pinned with brass or stainless steel fixings, ideally from the inner face of the window.

### Loose joints

Loose joints in otherwise sound joinery should be reassembled, glued and wedged or doweled as appropriate.

### Fungal decay

Treatment of fungal decay in windows should generally follow the recommendations of the Building Research Establishment:-

- Locate and eliminate the sources of moisture
- Promote rapid drying of the affected area
- Remove decayed timber as far as is necessary to carry out repairs
- Treat remaining timber which may be at risk with preservative

## Saving historic glazing

Many windows retain original hand-made crown or cylinder glass. Crown and cylinder glass windowpanes are very thin - typically 1.5 – 2 mm – highly polished and, unlike panes of modern float glass, are not perfectly flat. This produces brilliant, distorted reflections which contribute greatly to the appearance of a building. Crown and cylinder glass can be identified by looking at the shadows cast by the panes on a flat surface when the sun shines through them.

These types of glass are now virtually unobtainable and every effort should be made to retain panes of antique glass even if they are cracked. Because the panes are thin and fragile problems arise when they have to be removed to allow repairs to casements or sashes to be carried out. Old putty can be softened by prolonged and repeated applications of solvent-based paint remover (e.g. "Nitromors"). A better way is to use an infrared heat strip lamp specially designed for this purpose.



Replacement crown and cylinder glasses are available from a specialist supplier but they are very expensive. Horticultural quality glass can sometimes be used as a substitute with the agreement of the Conservation Officer. It is thicker and heavier so counterbalance weights in sash windows may have to be adjusted.

Reglazing in timber sashes or casements should always be carried out using linseed oil putty.

## Weathering the window/wall junction

Traditionally the junction between the window frame and wall was filled with haired lime mortar. Modern mastic sealants should only be used where they can be applied unobtrusively (e.g. behind a planted moulding). Aerosol foam fillers should never be used as these are unsightly and can trap moisture. If frames have been removed for repair it may be possible to insert a damp proof membrane or a proprietary fungicide impregnated building paper to isolate the frame from the masonry.

## UPGRADING THE PERFORMANCE OF OLD WINDOWS

### Stopping draughts and rattles

Old windows are often criticised for being draughty and rattling and this is a reason commonly given for wanting to replace them. However, the performance of old windows can be improved significantly by carrying out repairs and installing draft seals. A wide range of seals is available which can be fitted unobtrusively to both casement and sash windows. A number of companies offer a nation-wide repair and upgrading service for wood and metal windows. Gaskets, seals and other draughtproofing components can also be purchased for DIY installation. Good quality draftstrips can last for more than 20 years provided they are not painted over.

Studies carried out by English Heritage have shown that the cost of repairing and upgrading windows is significantly less than replacing them and the financial investment is quickly compensated for in terms of energy saving, comfort, and noise and dust exclusion.



*Above: Distorted and brilliant reflections are characteristic of handmade crown and cylinder glass.*

*Right: A specialist infrared lamp being used to soften old putty. Radiant heat is absorbed by the putty but passes through the glass which remains relatively cool and does not crack. Once softened by heating putty can be carefully removed*



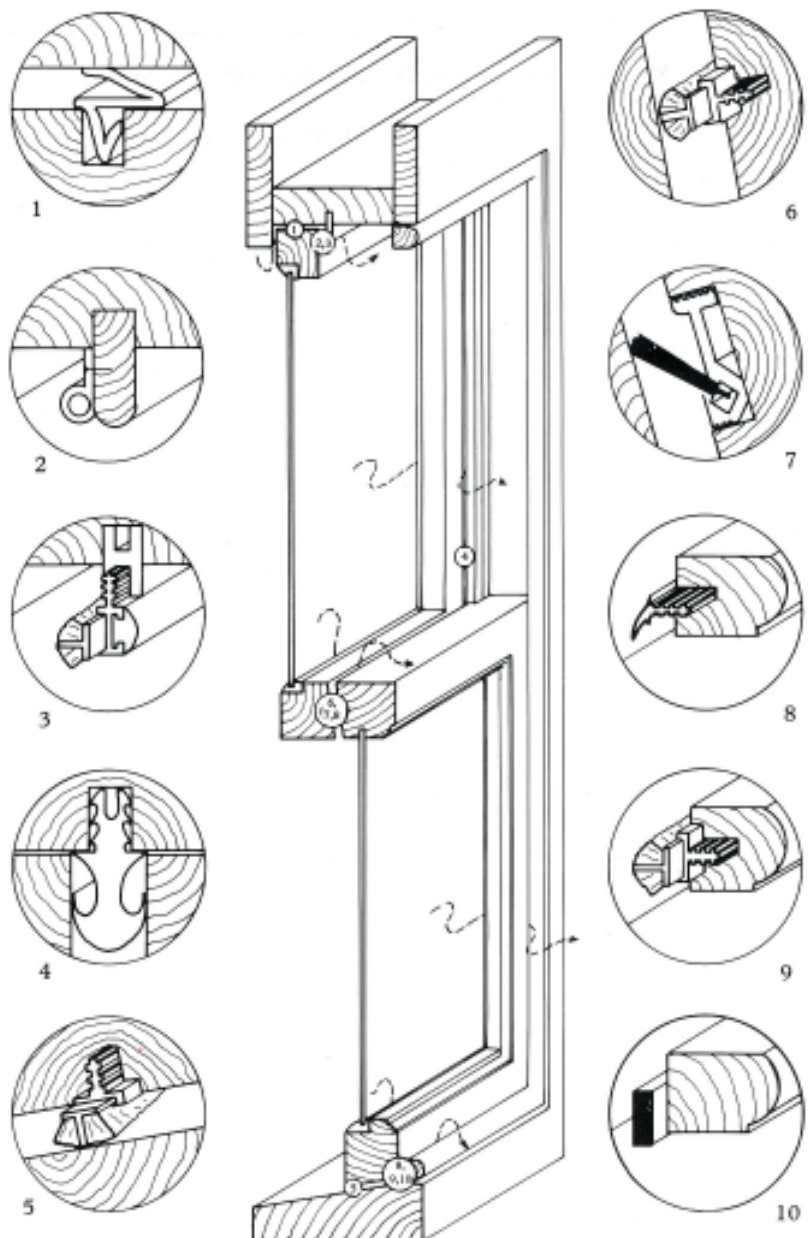
Timber windows, if properly maintained, can last for over 50 years and after that time can be overhauled. There are many examples of traditional wooden windows in North Shropshire which are over 100 years old and still serviceable.

## Double glazing

Installing double-glazing has been one of the most fashionable home improvements over the past 20 years. However, in old buildings it is rarely economical and studies by English Heritage have shown that it can take at least 60 years for energy savings to cover the cost of double-glazing.

It is seldom possible to install sealed double glazed units into old casements and sashes as the glazing rebates are usually too shallow, particularly in windows with very fine glazing bars. If double-glazing is required it should be in the form of secondary glazing. Secondary glazing is relatively easy to install and can be reasonably unobtrusive if the divisions in the secondary glazed panels correspond with those in the window itself.

Windows with internal shutters are not usually capable of being secondary glazed but if the shutters can be used or heavy curtains provided the need for double-glazing is significantly reduced.



1 Plastic or sprung metal 'V' or 'Z' strip 2 Glued or pinned silicone rubber tubing 3 Parting bead (Ventrolla) 4 Parting bead weatherstrip (Mighton) 5 Bottom sash/sill brush (Ventrolla) 6 Meeting rail brush (Ventrolla) 7 Brush for meeting rails (Draftseal) 8 Standard weatherstrip (Mighton) 9 Staff bead or button rod (Ventrolla) 10 Silicone seal (Draftseal)

## REPLACEMENT WINDOWS

### Design and materials

An existing traditional window should only be replaced after it has been agreed with the Conservation Officer that it is *truly* beyond practical repair. The replacement window should match the form, detailing and operation of the original window in all respects. It will be necessary for the maker of the new

*Above: draught seals for sash windows (from "Draught-proofing and secondary glazing" English Heritage "Framing Opinions" Leaflet 1)*

*Left: Brush type draught seal in sash window*

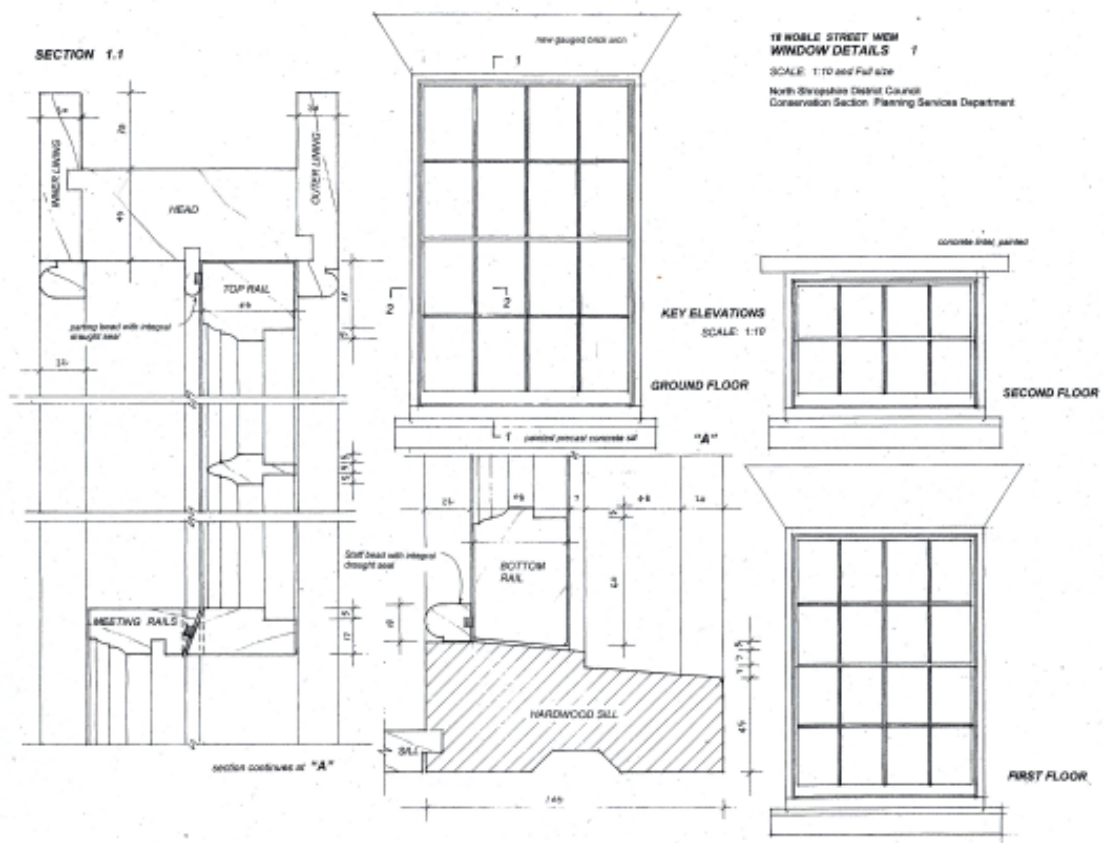




*Above: Historically inappropriate windows in an early 19th century terraced house.*

*Above right: Detailed working drawing for replacement windows. The design and details have been taken from surviving original windows in the same terrace.*

*Right: Appropriate windows reinstated.*



window to accurately copy the profiles of all the window components including head, jambs and cill of the frame and the stiles, rails and glazing bars of the sashes or casements. Old glass should be carefully salvaged and reused. Where practicable ironmongery should also be overhauled and reused.

look for examples in other buildings of the same style and period. The Conservation Officer will be happy to advise you and can provide you with detailed drawings of typical types of traditional windows.

Counterbalancing springs should not be used in replacement sliding sash windows as a substitute for pulleys and weights as this significantly alters the detailing and appearance of the window.

New leaded lights should always be made in the traditional manner. Strips of lead stuck over a single sheet of glass look nothing like the real thing and is not an acceptable substitute.

Where an historically inappropriate window is to be replaced the new window must be carefully designed and detailed to be in keeping with the period and architectural style of the building. It may be possible to base the design on old windows which survive elsewhere in the building or it may be necessary to





It is important to remember that modern softwoods are far less durable than those used in the past. Replacement softwood windows should therefore be treated with preservative before painting using a double vacuum impregnation system ("Vac-Vac"). When hardwood is used for cills or for complete windows it is important to ensure that a durable species such as English oak or iroko is specified. Many types of hardwoods used in the joinery trade are no more durable than softwood (e.g. meranti)

## PVCu windows

The appearance and character of PVCu windows *always* makes them unsuitable for use as replacements in Listed Buildings and in Conservation Areas. PVCu windows are assembled from factory-made components designed for rigidity, thermal performance and ease of production. Their design, detailing



and operation make them look completely different to traditional timber windows.

In addition, there are significant environmental and human health hazards associated with the manufacture, use and disposal of PVC products.

An argument often used in favour of PVCu windows is that they require no maintenance. Recent research carried out by *Building* magazine indicates that the long-term maintenance costs of PVCu are only about 25% less than for softwood windows. Exposed plastic surfaces become dull and discoloured after a time and special paints are now produced to re-decorate weathered PVCu. It will also be necessary to replace gaskets and seals during the lifetime of the window.

## PAINTING WINDOWS

With the exception of early unpainted oak-framed windows, traditional windows were always painted to protect the timber and for aesthetic reasons. If paintwork is allowed to deteriorate it is not only the appearance of the windows which suffers; water penetrating the paint film can cause the underlying timber to



*Far left: Traditional timber vertical sliding sash window. Note the slender glazing bars, narrow meeting rails and the similarly proportioned panes of glass. Compare this with-*

*Left: a PVCu replacement window. Framing components are disproportionately fat and unmoulded; glazing bars are dummies inside the double-glazed units.*

decay. Putty also becomes brittle and prone to cracking after a time. These problems are best avoided by regular inspection and redecoration of the painted surfaces.

Modern timber windows are often coated with wood stains. However, the appearance and character of this type of finish make it unsuitable for use on

traditional joinery in listed buildings and conservation areas. High performance paints designed specifically for use on exterior woodwork are now widely available and are more durable than general purpose house paints.

## DO I NEED PERMISSION?

### Listed building consent

Listed building consent is required to alter the design, material or colour of any windows in a listed building. If window repair or replacement is being considered please consult the Conservation Section, Planning Services Department at North Shropshire District Council as soon as possible before undertaking any works.

### Planning permission

Planning permission is normally required to alter windows in all buildings which are not single dwelling houses. Planning permission is also required to alter windows in a single dwelling house if it is in a conservation area where an "Article 4 Direction" has been made. The Planning Services Department will advise you if you need to apply for planning permission and/or listed building consent. Please check before carrying out any works.

### Building regulations

Approval under the Building Regulations must be obtained for replacement windows. To comply with the Building Regulations replacement windows may have to incorporate features, such as egress hinges, double glazing and trickle ventilation, which can affect the appearance and character of traditional windows. The visual impact of these features can be minimised by careful design and detailing. In listed buildings a more flexible approach to meeting Building Regulation requirements is permitted so that the appearance of original windows need not be altered.



## WHERE TO GET ADVICE AND INFORMATION

### Advice

Practical advice on all aspects of building conservation is available from the Conservation Section, Planning Services Department at North Shropshire District Council. Tel 01939 238433 or 238434.

For advice about the Building Regulations please contact the Building Control Section at North Shropshire District Council. Tel 01939 238423.

### Useful publications

*Living and working with old buildings in North Shropshire.*

North Shropshire District Council.

Tel 01939 238429

[www.northshropshiredc.gov.uk](http://www.northshropshiredc.gov.uk)

Andrew Townsend and Martyn Clarke.

*Repair of wood windows. Technical pamphlet 13.*

Society for the Protection of Ancient Buildings, 37 Spital Square, London E1 6DY.

Tel 0207 377 1644.

[www.spab.org.uk](http://www.spab.org.uk)

*Framing Opinions* leaflets.

English Heritage, 23 Savile Row, London W1X 1AB.

Tel 0207 973 3000.

[www.english-heritage.org.uk](http://www.english-heritage.org.uk)

*The Georgian Group Guides:*

*No1 Windows.*

The Georgian Group, 6 Fitzroy Square, London W1T 5DX.

Tel 0207 377 1644.

[www.georgiangroup.org.uk](http://www.georgiangroup.org.uk)

*Care for Victorian Houses: No 9 Timber Windows.*

The Victorian Society, 1 Priory Gardens, Bedford Park, London W4 1TT.

Tel 0870 774 3698.

[www.victorian-society.org.uk](http://www.victorian-society.org.uk)

