



**PRELIMINARY REPORT ON  
WINDOW REPAIR OR REPLACEMENT 2022**

**AT FELIXSTOWE TOWN HALL  
UNDERCLIFF ROAD WEST  
FELIXSTOWE**

February 2022

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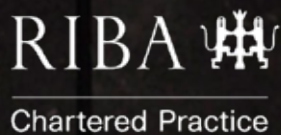
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## FOR PLAICE DESIGN COMPANY

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REV	ISSUE STATUS	PREPARED BY / DATE	APPROVED BY / DATE
Version 1	DRAFT	08-02-2022 SC	08-02-2022 NL





## 1.0 INTRODUCTION

### 1.1 COMMISSION

This report was commissioned by the Assets Committee of Felixstowe Town Council in an email on 2nd December 2021

The Town Council contact is:

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## 1.2 TOWN COUNCIL'S INITIAL REQUIREMENTS

The Town Council's initial requirements for this report to give advice on the replacement or repair of windows include:

- “Thermal Quality” – which we would take as energy efficient - window repair or replacement to install double glazing (aiming to reduce energy costs or use or increase the comfort of the occupants);
- “Environmentally Friendly” – which we take as sustainable (including minimizing carbon footprint);

From the initial discussions and estimates received from installers this would involve notes on:

- Overhauling worn ironmongery and draught seals and mechanical opening (sash cords or springs);
- Matching the existing windows including glazing bars and with similar joinery details;

The windows are to replace existing windows that might have failed due to rot, or in opening or closing. The Town Council has identified these windows and opted to repair or replace them in two phases.

- Phase 1 – windows 1-16 at the front (south – say) & east side elevations;
- Phase 2 – windows 17-24 at the back and courtyard;

This report concentrates on Phase 1.

## 1.3 AIM OF REPORT

The aim of this report is to give some advice and options for the Town Council to consider – to repair or replace some of the windows in the Town Hall.

## 1.4 BRIEF HISTORY OF THE TOWN HALL

The Council has researched the building history summarised as follows:

*Felixstowe Town Hall was built in 1892 for the Felixstowe and Walton Local Board whose boundaries closely resemble those of the current Parish. A Captain Pretymann donated the seafront plot of land and the £1,800 cost of erecting the building at the time was met entirely by the local community. We have photographic evidence of the foundation stone being laid. Prior to 1974, the Town Hall was fully occupied for the purposes of the then UDC. The Magistrates Court was held here from 1975 to 1998.*

*Ownership of the Town Hall transferred to Felixstowe Town Council 2006.*

*Front façade repaired 2009. The later “quality of places awards submission states:.... “Skilled carpenters worked to replicate architraves, mouldings and repair the original sash cord windows, using silicone sealing to the external brickwork, stonework and the unglazed architectural terracotta tiling which showed signs of erosion in the harsh seaside atmosphere”*

*“....the most recent repair to the windows which was in Summer 2015, the windows received new springs, thumb turn locks and a film was applied. Several of the springs that were fitted then are now failing and is one of the reasons we are looking at replacement.”*



### 2.0 FACTORS – NATIONAL GUIDANCE

From Historic England, being the main government source of advice on conservation areas and on technical, architectural, aesthetic, planning matters.

Refer to:

Historic England publications including:

- “Traditional Windows: their care, repair and upgrading”;
- “Energy Efficiency and Historic Buildings: draught-proofing Windows and Doors”;
- “Modifying Historic Windows as part of Retrofitting Energy Saving Measures”

Extract from Historic England “Modifying Historic Windows as part of Retrofitting Energy Saving Measures”

*“Listed building consent and/or planning permission will be required to make changes for some works to buildings that are protected for their special interest. Local planning authorities may have their own helpful web-based guidance and/or local plan policies concerning windows and energy-saving measures which may affect what can be done. Replacement windows must comply with building regulations, and owners should make sure that they obtain a certificate of compliance.*

*Although PVCu replacement windows are popular, their visual character and operational differences make them unsuitable for older buildings, particularly those that are listed or in conservation areas. Because the components used to manufacture PVCu windows are weaker than their timber counterparts, they tend to be much thicker. This, along with different detailing and opening arrangements, can have a significant impact on the appearance and character of older buildings.*

*The service life of PVCu windows is relatively short (<25 years) compared to well-maintained traditional windows (many of which survive for over 100 years). PVCu windows are not maintenance-free, as is commonly believed, and can be difficult to repair. This means they are usually replaced at the end of their service life. Although it is possible to recycle PVCu, this is still not done widely. Therefore, the carbon cost of a PVCu replacement window will be higher than an appropriately upgraded traditional window.”*





### 3.1 PRE-PLANNING APPLICATION ADVICE

Pre-planning application advice from East Suffolk Council planning department; notes on planning guidance from East Suffolk Council.

The Town Council has received advice which says:

In regard to your query; the refurbishment/repair of the windows is unlikely be classed as development unless there would be any changes to the window appearance - this would likely be depend on whether the frames need to be altered in any way to allow for new double glazed units. Replacement of the windows with identical replacements is likely to be considered de minimis, without need for a planning application - but the replacements would need to be of the same materials and have an identical appearance to the existing.

For avoidance of doubt, 'appearance' refers all features of the existing windows including colour, size, aperture, form, profile, glazing arrangement, glazing bar layout, framing and method of opening.

If you would like further clarification, you can send over details of the existing and proposed works and we will be able to provide a more definite response on whether the works will require planning consent or not...(20-9-21 re DC/21/2764).

....

*Prior to submitting an application we would encourage you to consider that information included within our supplementary planning document, Historic Environment (2021); this can be found at the following link:*

<https://www.eastsuffolk.gov.uk/planning/planning-policy-and-local-plans/supplementary-planning-documents/>

The relevant sections of the East Suffolk Council report are shown in italics below with my comments following each section:

#### **Section 10 – Windows, Doors and Porches**

##### **10.4 – 10.6 Thermal Performance**

*10.4 Windows and doors play a major part in retaining the heat of a building. Poorly fitting ones can lead to the loss of heat in winter, which requires extra energy for*

*heating and is environmentally unsustainable However, there are measures that can be taken to reduce heat loss without replacing or greatly altering the window.*

**Architect comments: It might be possible to keep existing windows, and add draught-stripping and replace defective ironmongery.**

*10.5 Ill-fitting draughty windows can be improved by the installation of draught stripping and brush seals or by simple repairs and maintenance to the windows themselves. The use of shutters and heavy curtains will also improve the thermal performance of historic windows. However, it is important to note that it is not desirable to completely draught proof an historic building as ventilation is crucial to its breathability, which in turn is crucial to its well-being. Trickle ventilation hoods in window frames will not be acceptable.*

**Architect comments: this advice is sound, and note the advice on trickle vents is not applicable because the building is not listed.**

*10.6 Secondary glazing is a simple and affordable way of adding sound insulation and reducing draughts. Technology has improved and modern secondary glazing can be, easy to remove and maintain. Special timber casements can be constructed and fixed to the interior of the frame using sections and mouldings to match the primary glazing.....*

**Architect comments: The Town Council have already installed good quality secondary glazing, which has aided the energy efficiency.**

*10.7 Where existing windows are not historic or are beyond repair slimline double glazing will normally be acceptable on an historic building if suitably detailed. Where double glazing is permitted the window frames should normally be made of the same materials that are used in the rest of the building. Where replacement is proposed on public elevations in conservation areas, owners will be expected to reinstate the design of window that was originally fitted at the property, in order to create an authentic appearance. (Installation of) UPVC windows will not be supported on listed buildings but in some cases may be supported on buildings in*





*conservation areas. This includes when a window does not face onto a public thoroughfare or open space and so does not impact upon the appearance of the conservation area.*

**Architect comments: Note that Felixstowe Town Hall is not a nationally listed building. It is within a conservation area but there is no “article 4 direction” (controlling and discouraging window replacements by planning law – see below). East Suffolk District Council does not maintain a local list of eminent or “local list” buildings. These are also termed “non-designated Heritage Assets”.**

Accordingly, there is no requirement for a listed building application.

Note that if the proposed windows differ from the existing – even if only in minor detail – a planning application and permission will be required. This might involve submitting plans and elevations of the whole front and side and back and courtyard, together with large scale details of cills, jambs, heads, mullions, meeting rails, glazing bars for each type of window.

### 10.8 - 10.9 Repair

*10.8 In some cases, the whole window can be taken out and rebuilt using a combination of new and salvaged components (e.g. original metal frames and opening lights can often be cleaned up, repaired and reused). Historic timber should be retained wherever possible because it has been grown more slowly and is therefore of a higher quality than more modern timber.*

*10.9 When repairing old windows make sure that the old glass is not lost because historically it can be very important and is much more attractive than modern flat plate glass. Windows should be reglazed using traditional linseed oil putty.*

**Architect comments: Note that this is guidance. However, repair is an option for some windows and this factor is summarized below.**

### 10.25 – 10.29 Window Replacement Guidance

*10.25 Replacement of original, old or rare historic windows will not normally be acceptable. This is because these features contribute importantly to the character of historic buildings and, if maintained, are usually durable for many years, sometimes centuries. There is a presumption in favour of retaining and repairing historic windows – joinery and glazing.*

*10.26 Replacement will only be acceptable where it can be shown by a skilled craftsman experienced in historic windows that they are substantially beyond technical repair. In such a scenario, a facsimile would be acceptable.*

*10.27 Where windows proposed for replacement are, themselves, modern (that is, post-war) replacements, the principle of so doing is acceptable, subject to design. Where modern replacement windows are of a poor design or quality and their replacements will be to an improved design that enhances the historic building, the use of slimline sealed units that permit the use of solid glazing bars can be supported.*

*10.28 Measures to improve the thermal performance of retained windows will be supported – such as the use of brush seals and secondary glazing. Retrofitting sealed units to historic windows is not acceptable in a listed building where loss of historic glazing would cause harm; but can be acceptable in unlisted historic buildings where, by doing so, wholesale replacement and loss of historic joinery is avoided and thermal performance enhanced.*

*10.29 Article 4 Directions restrict permitted development rights, including for work to windows. This means that where Article 4 directions apply, work to replace windows will require planning permission. Article 4 directions apply to that part of a building which fronts onto a highway....*

**Architect comments: The Town Hall is set in the middle of the conservation area, and is a prominent building. To encourage high standards for conservation of the Felixstowe vernacular including windows, it might be advisable to apply high standards to the Town Hall, even though it is not listed or subject to an “article 4 direction”. Applying the higher standard would set an example to other building owners within Felixstowe’s conservation areas.**

# 04 The Existing Windows



## 4.1 THE STATE OF THE WINDOWS

We have made a very brief visual survey of the sixteen existing windows proposed for repair or replacement as phase 1 work, and of the rooms in which they are set. Most of the rooms have windows only facing the sea front; they receive morning and early afternoon sunlight, being on a bearing of 68 degrees (south being 90 degrees).

In effect these are south-facing windows. The council chamber window facing the sea-front gardens accordingly is nearly east-facing.

## 4.2 SURVEY CAVEATS

This was not a full or a detailed survey and standard caveats for condition surveys apply:

*“This report does not investigate or describe asbestos and the prospective purchaser should engage a specialist Asbestos Surveyor to report on asbestos suspected or known to be in the building or on site [Asbestos at Work Regulations etc.].*

*We have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and are therefore unable to report that any such part of the fabric is free from defect. No furniture or floor coverings or floor boards were lifted or removed. No part of the property was forced or laid open to make it accessible. This report is visual.”*

## 4.3 GLAZING

The windows are single glazed double-hung sash windows, probably original softwood painted. The flush cills might be oak or a good quality softwood such as Douglas Fir. The glass is about 6mm thick within the frames- some within quite narrow rebates [7-10mm which gives little purchase (grip) for putty].

## 4.4 INTERNAL LININGS

Internally there are timber sash boxes (to hide sash cords or springs) and reveal linings and architraves and cill boards. All of these are painted and are in fair state. Painting will fall due when each room is repainted – on whatever timescale the Town Council has for internal redecorations.

## 4.5 IRONMONGERY

Ironmongery consists of sash handles, snibs for bottom rail locks, stops to restrict bottom rail opening to about 300mm – is chrome plated – small calibre but in working order. There is no sign of the sash cords which would have operated the upper sashes. Lower sashes are all operated by spring balances within plastic casing and not all of these were tested.

Nevertheless at least four of the sixteen pairs are reported to have failed. These were installed within the last 12 years and appear to suit lighter domestic windows rather than the heavier windows in the Town Hall.

## 4.6 ENVIRONMENTAL COMFORT

To make the staff rooms more comfortable for occupants, secondary glazing (probably aluminium from Selectaglaze) has been added to the front windows. The secondary glazing is good quality and effectively keeps out noise and draughts. There is only one other draught seal – a compressible seal has been added to the soffit (underside of the bottom rail of the bottom sash. There might be other seals but these are not apparent. See later for notes on occupancy comfort. The Clerk’s Office has purpose-made timber-framed secondary glazing from “Solasecure” which is similar to the secondary glazing installed at most of the other windows.

## 4.7 SUNLIGHT BLINDS

All rooms also have vertical blinds, with versatile controls to restrict glare from sunlight, daylight and overlooking. This also reduces direct radiant heat gain.

## 4.8 ANTI-GLARE FILM

Slightly tinted anti-glare film has been added to nearly all the windows and this has some effect. It would not appreciably reduce radiant heat gain from the sun.

## 4.9 REDUCED VENTILATION

At some time- probably this century- the top sash windows have been sealed shut (and painted over) and the only ventilation available is by lifting the bottom sash 300mm at most. See later for occupancy comfort.



## 4.10 HEAT GAIN

It was obvious on the day of the brief survey that with an outside temperature of 12 degrees centigrade (54 degrees Fahrenheit) and a light south easterly wind that occupancy comfort is adversely affected – it was too hot near the windows except with the blinds kept closed. Also some offices had portable fans for use on hot days.

## 4.11 RESULTS OF REDUCED VENTILATION AND HEAT GAIN

Analysis: The recent sealing of the top sash windows has contributed to the reduction in ventilation, and is not adequately compensated by the limited opening available at low level by raising the bottom sash. Also more dust enters at low level, and although the secondary glazing is maintained for easy use, it is still an effort to open this to open the bottom sashes. Blinds and portable fans seem to be used as an expedient solution but might be inadequate.

## 4.12 CONDITION OF THE WINDOWS

The sash windows for their 130 year age, generally appear in remarkably good condition. Some have been repaired with a filler and painted over. There is some rot in windows at some cills, bottom rails, and at the external architraves there. This can be repaired by piece-repairing elements such as the cills. The windows are due for an overhaul including painting externally.

The paint has sealed the upper sashes which no longer operate. The sash springs replacing traditional sash cords and weights also have failed.

All of this is repairable. But the repairs will require a joinery firm experienced with traditional windows.

## 4.13 ADAPTABILITY OF THE WINDOWS

One of the repair estimates obtained by the Town Council is based on routing (gouging) out for double glazing. This is unlikely to be feasible, unless the slimmest double glazing is installed.

The slimmest double glazing from another repair estimate is an innovative glazing system called Fineo at about 8mm thick. See later for technical details. It would probably be feasible to take out 6mm single glazing and route out for Fineo. Check this with the supplier and installer before deciding.

This of course will increase the U-value for thermal transmission of the windows reportedly to 0.7 w/m<sup>2</sup>/deg C again reported as 8 times better than the existing single glazing.

Whilst this might reduce energy costs for the Town Hall, and be a more sustainable solution for the environment, Fineo is costly and— like all double glazing — has to be renewed periodically (the guarantee is 15 years).

Also for much of the year there will be increased discomfort for occupants, due to heat gain from the sun.

To counter the effect of heat gain there are three main alternatives suggested here:

- Overhaul the upper sash windows to open, and reinstate ironmongery there;
- At least as an experiment, each spring dismantle the secondary glazing and reinstate each autumn;
- Install controllable ventilators (not in the window frames as they do not have sufficiently large timber sections).

Note that re-opening the upper sash windows will create draughts even when they are sealed. This is a good factor for the building, less so for occupants in cold weather. Thus in association with this alternative, install a suitable draught-stripping system.

## 4.14 COMPARE ADAPTABILITY OF REPLACEMENT WINDOWS

Replacement windows have the same problems with heat gain as those noted above, for occupants. None of the estimates has proposed controllable ventilators (trickle vents) as standard, but – changing the profile of the window heads this is achievable.

Replacing SGU with DGU units would be the main factor in this.

# 05 Alternative - Option to Repair



## 5.0 ALTERNATIVE - OPTION TO REPAIR

### 5.1 SITE AND EXPOSURE

Consider alternative materials – with factors such as extreme exposure, the Town Hall being a prominently sited building on the coast (*“severe, reflecting part-sheltered or exposed positions ...which may experience wind-driven or salt conditions”* – extract from report by Heriot Watt’s Dr Menzies).

### 5.2 REASONS FOR REPAIR

From the same report by Dr Menzies:

*“...2.3 This report has also attempted to account for window obsolescence due to loss of visual appeal as well as due to functional failure. It is possible for a well-designed window, made of appropriate materials, to perform/function for more than sixty years without any painting or other decorative treatment, but it may be prone to staining, oxidation, and discolouration leading to a perceived need for replacement. For example, the powder coating on an aluminium-clad timber window may break down over time, having little effect on the function of the window, but affecting the visual appeal of the building in which it is installed. In these terms, service life is a function of perception as well as technical performance....”*

The report goes on to say

*“...“The purpose of regular maintenance is therefore to maintain the life of the window by postponing obsolescence in terms of both aesthetic and technical performance.”*

For Felixstowe, the Town Hall may be considered an historic building. There is a presumption with historic buildings that all elements contributing to the essence – the character – should be carefully considered for repair before replacement.

Practical reasons for repair include less cost than replacement, and that on the whole the existing timber is probably better quality than the proposed.

Planning policy reasons include the fact that the Town Hall is in conservation area, and this is also a case of leading by example to other building owners to protect their building in the conservation area – as noted above.

Sustainability reasons are obvious but worth repeating: the energy and carbon content have already been

expended. Note however that timber frames will need periodic repair – no system being maintenance free.

### 5.3 REPAIR SCHEDULES

The Council has sought schedules of repair work and associated costs from several competing contractors. As each schedule of work prepared by each contractor is different it has not been possible to compare directly. Therefore, the following summary and comments are only general.

### 5.4 REPAIR COSTS

The repair costs for windows cannot be accurately costed, although these estimates already received might well be found to be reasonable if only few windows need repair, or if repairs are minor.

Companies that make and install windows are not often experienced in window repairs. It is also much easier and simpler for them to estimate costs to replace windows. It would be prudent to negotiate rates for labour and materials with a company experienced in window repairs, and these can be applied during the project. There will be repairs required that cannot be specified before work starts on site.

Scaffolding is a major cost element in the project, whether it is for repair or replacement.

The Town Council from an initial appraisal consider replacement is needed of at least some windows. However from the brief survey, we feel repairs could be undertaken to most if not all the windows.

### 5.5 ELEMENTS TO REPLACE OR REPAIR

To guide installers and contractors who repair it would be best to give them an idea of the work involved, window by window. Failing that level of specification, at least prepare a schedule of what might be repaired and what might be replaced – some guidance notes are noted here.

A general assessment of replacement elements required regardless would be:

- Ironmongery – particular the mechanism to open and shut (sash springs or sash weights);
- Changing glazing to double glazing;
- Adding anti-glare finish to the glazing that is replaced;
- Draught-stripping;



## 05 Alternative - Option to Repair



Elements that could be repaired or refixed:

- Softwood window frames (depending on the proposed glazing);
- Ironmongery (depending on whether it is light or heavy duty to suit the weight of windows);
- Single glazing (if considered historic, and at minor windows not requiring thermal upgrading);

Repairing elements should be considered for several technical reasons:

- The quality of the timber in 1892 would have been higher than the quality of most softwoods and hardwoods in 2022; we think they have – mostly – lasted 130 years but even if they were renewed (say) after 65 years they have lasted well for softwood;
- Renewable materials such as softwoods is a more sustainable option than PVCu, but repairing existing materials is the most sustainable;
- Traditional ironmongery is usually more robust than modern ironmongery (brass coatings from imported sources tend to be thinner nowadays);
- Sash weights in traditional sash boxes are a proven technology over about 200 years, and can be repaired and the weights adjusted;
- Cheaper than replacement, generally;

Some elements that will require perennial replacement rather than repair include:

- Gaskets/seals;
- Draught seals;
- Sash springs;
- Anti-glare film;
- Sealed double glazed units;

There is no mention in the brief, or within any estimates of the extent of repainting externally, and “touching-in” internally. Few estimates mention the cills. Only two estimates describe the cambered (curved) window heads: but were vague on how these would be treated.

Some windows might be structural – supporting the masonry walls above.

The largest window East facing from the Council Chamber might support the arch above. This and possibly the bay windows should be checked before any orders are placed

- usually the load is transmitted down the mullions to the cills.

### 5.6 SUMMARY OF REPAIR ESTIMATES

The Council has sought schedules of work and associated costs from several competing contractors. As each schedule of work prepared by each contractor is different it has not been possible to compare directly.

Repair standards differ – the lowest standard ad hoc epoxy repairs tend to dry out and crack differentially from the timber being repaired; whereas piece-repairs using carefully selected timber with profiles matched to the existing tend to last longer.

Therefore the following summary of each quote can only be general:

### REPAIR (REFURBISHMENT) QUOTES RECEIVED BY TOWN COUNCIL

#### COMPANY A 17-11-2020 averages £395 per window

But this cost appears to be mainly for work on ironmongery:

New sash springs, timber parting and staff beads, nylon brush seals.

No mention of any work on glazing replacement.

*Address timber repairs as necessary would be with a minimal budget and probably is only an epoxy repair applied ad hoc on site.*

*Remove sashes*

*Fit new springs*

*Renew parting and staff beads*

*Draught-stripping – fit nylon brushes*

*Repair timber “as necessary”*

*Ensure smooth operation of mechanism (opening mechanism assumed)*

16no. windows @£395.00	..	£6,320.00
NOT VAT registered	..	£zero

# 05 Alternative - Option to Repair



## No mention of:

Overhaul ironmongery – fasteners and locks  
Scaffolding  
Insurance company requirements  
Priming and painting at repairs  
Full preparation and painting externally  
Easing sealed windows to open

## COMPANY B – 17-2-21 averages £906 per window

This cost appears to be for work on ironmongery and glazing:

- New sash springs, timber parting and staff beads, nylon brush seals, and unspecified draught stripping;
- Glazing is proposed to be “Slimline” which is a reasonable option, but needs a larger seating/bearing so the existing windows would be routed/rebated;

But timber repairs would be extra work at extra cost, including replacing external cills.

This is a reasonable way to estimate but checks are needed on whether the joiner can undertake careful timber frame piece-repairs rather than an epoxy repair applied ad hoc on site.

*Remove sashes/KEEP BOX FRAME  
REMOVE SINGLE GLAZING  
Fit new springs/SPIRAL BALANCES  
Renew PARTING BEADS WITH DRAUGHT SEAL)  
Renew staff beads REBATED TO HOUSE 8MM BRUSH SEAL CARRIER  
(Draught-stripping – fit “DRAUGHT PROOFING” NOT SPECIFIED)  
Repair timber “as necessary”  
SUPPLY AND FIT BRASS FASTENERS AND LIFTS (Not Overhaul ironmongery) – fasteners and locks*

Ensure smooth operation of mechanism (opening mechanism assumed)

16no. windows .. ..	£14,500.00
NOT VAT registered ... ..	£zero

## No mention of:

Overhaul ironmongery – fasteners and locks  
Scaffolding  
Insurance company requirements – sheeting etc.

Priming and painting at repairs  
Full preparation and painting externally  
Easing sealed windows to open

## COMPANY C – 12-4-21- averages £2328 per window

This cost appears to be for work on ironmongery and specialist extra slim glazing:

- *New sash springs, \*timber parting and staff beads, nylon brush seals, and unspecified draught stripping;*
- Glazing is proposed to be “Fineo” which is a reasonable but comparatively expensive option, but needs a slightly larger seating/bearing so the existing windows would be routed/rebated;

But timber repairs would be extra work at extra cost, including replacing external cills. \*Also until the work is started it is not clear which parting or staff beads or sash cords (ropes) etc. will need to be renewed and the estimate here is vague in stating “as necessary”.

This is a reasonable way to estimate but checks are needed on whether the joiner can undertake careful timber frame piece-repairs rather than an epoxy repair applied ad hoc on site.

*Remove ROT AND TREAT WITH WOOD HARDENER – EXTENT NOT SPECIFIED ...Window repairs not specified*

*REPAIR WITH ACCOYA / TRICOYA TIMBER – EXTENT NOT SPECIFIED  
REMOVE SINGLE GLAZING – FIT “FINEO ULTRA THIN”  
GLAZING WIDTH NOT SPECIFIED  
ADJUST WEIGHTS AND PULLEYS – NO NOTE ON WEIGHT OF FINEO  
REPLACE ROPES (SASH CORDS) AS NECESSARY*

*Renew PARTING BEADS AS NECESSARY  
Renew staff beads AS NECESSARY  
(Draught-stripping – fit “DRAUGHT PROOFING” – TYPE NOT SPECIFIED)  
PREPARE AND PAINT ALL WOODWORK – but how many coats?*

*20 year guarantee for timber repairs  
15 year guarantee on “Fineo” glazing  
10 year guarantee on paintwork*

16no. windows...	...	..	£37,240.00
VAT registered			

## 05 Alternative - Option to Repair

Window repairs noted as extra (rate not known)

**No mention of:**

Scaffolding

Insurance company requirements – sheeting etc.

Priming and painting at repairs

Full preparation and painting

Easing sealed windows to open

Overhaul ironmongery – fasteners and locks

Ensure smooth operation of mechanism (opening mechanism assumed)

# 06 Alternative - Option to Replace Windows



## 6.0 ALTERNATIVE – OPTION TO REPLACE WINDOWS

Consider alternative materials – with factors such as extreme exposure, the Town Hall being a prominently sited building on the coast (“severe, reflecting part-sheltered or exposed positions ...which may experience wind-driven or salt conditions” – extract from report by Dr Menzies of Heriot Watt University).

The Council has sought schedules of work and associated costs from several competing contractors. As each schedule of work prepared by each contractor is different it has not been possible to compare directly. Therefore the following summary and comments are only general.

### 6.1 FRAMES

- Painted softwood
- Painted modified softwood
- Painted hardwood
- PVCu
- Powder coated Aluminium (as existing window at back?)
- Other - Steel (as existing Crittall window at courtyard?)

### 6.2 PAINTED SOFTWOOD

The existing window are painted softwood, and like-for-like replacement softwood, properly designed, protective-painted and maintained:

- is a reasonable and obvious option;
- sustainable depending on the source;
- the timber must be carefully selected for durability – for example, best grades of Douglas Fir,

### 6.3 PAINTED MODIFIED SOFTWOOD

There is little difference in appearance and detailing from painted softwood, modified softwood may be defined as heat/chemical treated (see a manufacturer’s website such as <https://www.accoya.com/uk/products/windows-doors/>)

And refer to the report by Dr Menzies of Heriot Watt ... “... modified timber is defined as timber which has undergone acetylation. This technique creates a high performing wood which can be used in demanding outdoor applications, including windows, doors, decking, cladding, and bridges. Wood contains hydroxyl groups

that interact with water according to changes in climatic conditions - the main reason wood swells and shrinks. Acetylation converts these hydroxyl groups to acetyl groups by reaction with acetic anhydride. Naturally grown timbers already contain a proportion of acetyl groups, but the acetylation process increases this proportion significantly and the resulting timber is more dimensionally stable, indigestible (rot resistant) and durable.”

Properly designed, protective-painted and maintained:

- This is a reasonable and obvious option;
- Timber source is important and sustainability is a factor – this is a high energy system;
- requires fairly frequent maintenance;

### 6.4 PAINTED HARDWOOD

There is no difference in appearance and detailing from painted softwood:

- This is a reasonable and obvious option;
- source is important and sustainability is a major factor – as the hardwoods tend to be from tropical forests;
- requires fairly frequent maintenance;

### 6.5 PVCU

There is a difference in appearance and detailing from painted softwood.

- is a reasonable option;
- sustainability is a major factor – as PVCU has a limited life and is not readily repaired;
- ironmongery requires maintenance;
- planning permission would be required due to difference in detailing leading to a difference in appearance;
- Resistance of the skin of PVCU to salt attack can be a problem which frequent washing down might ameliorate; otherwise expect some scouring and texture tending to matt;

### 6.6 ALUMINIUM

(including aluminium/timber composites which is subject of the technical report by Dr Menzies of Heriott Watt – referred to in this report)

- Technical reports – and aluminium window suppliers - advise against aluminium within 6 miles of the sea.



# 06 Alternative - Option to Replace Windows



Salt oxidizes aluminium leading to degradation of the surface. Powder coated (Paint-protected) aluminium windows have been installed in the Town Hall at moderately sheltered position, and rely on the paint finish remaining intact to protect;

- sustainability is a major factor;
- planning permission would be required due to difference in appearance;
- Is not a reasonable option (although the existing powder coated windows have performed);

## 6.7 OTHER - STEEL

Steel windows (including Crittall type windows) are subject to the same considerations as Aluminium.

Crittall windows have been installed in the Town Hall at a sheltered position, and rely on the paint finish remaining intact to protect.

- Is not a reasonable option (see aluminium);
- Thermal bridging problems reduces energy efficiency;

## 6.8 GLAZING

Existing windows are single glazed, with timber beads. There are now a range of options for replacement glazing or replacement windows including the glazing. Estimates received from suppliers/sub-contractors approached by the Town Council encompass most of the options.

### Factors to consider include effects on the frames:

- Double glazed units (DGU) are thicker than single glazed units (SGU) which changes the bead design, and causes complications at glazing bars;
- DGU's are twice as heavy as SGU's and some window frames need to be thicker and with stronger joints to cope;
- DGU's require heavy duty ironmongery to open and close;
- Current building regulations require some windows to have safety glass in case of someone falling against the window (normally this does not apply to windows and glazing already installed);
- The windows to the Council Chamber and main rooms are large and might require hoists if they are to be replaced with factory sealed units;
- DGU's do not last long – the average life is as low as 8 years;

## 6.9 GLAZING TYPES

To be as close to the general appearance of the existing windows, glazing options should be as slim as the

existing single glazing which would probably be 4-8mm thick. From estimates so far received are as follows:

- 28mm Pilkington Optiwhite 28mm (no further details);
- 24mm Pilkington “K” 4/16/4 clear toughened (safety glass)

With duplex bar (argon) warm edge spacer; A Rating

- 24mm unspecified 4/16/4 clear toughened (safety glass at lower sash only)

With unspecified edge spacer – but noted as black (which is obtrusive);

- 24mm 4/16/4 “low iron soft clear” (safety glass “tuff” as an option)

With white (argon) warm edge spacer;

- 24mm Pilkington “K” 4/16/4 clear toughened (safety glass)

No note on warm edge spacer; 10 year guarantee;

- 8mm Fineo “K” 4/16/4 clear toughened (safety glass)
- With duplex bar (argon) warm edge spacer;

## 6.10 HEAT LOSS AND GAIN

For heat transmission the proposed U-value for glazing is normally as follows:

- 24-28mm DGU's proposed...  
about 1.2 w/m<sup>2</sup> deg C
- 4-6mm Single glazing...  
about 5.7 w/m<sup>2</sup> deg C
- Older 4/12/4mm double glazing (DGU's)...  
about 2.8 w/m<sup>2</sup> deg C
- 8mm Fineo thin double glazing...  
about 0.7 w/m<sup>2</sup>/deg C

The Town Council could also consider slimline DGU's which would be nearer the appearance of the existing single glazing, including glazing beads. For slimline, 12-16mm DGU's achieving U-value of about 1.6 w/m<sup>2</sup>/deg C. Try “Sashlite”:

[https://www.uaglass.co.uk/ultra-thin-double-glazed-units-sashlite/?gclid=EAlaIQobChMI3s392Nrt9QIVw49oCR0jRA88EAAYASAAEgK2IfD\\_BwE](https://www.uaglass.co.uk/ultra-thin-double-glazed-units-sashlite/?gclid=EAlaIQobChMI3s392Nrt9QIVw49oCR0jRA88EAAYASAAEgK2IfD_BwE)

# 06 Alternative - Option to Replace Windows



It might also be possible to mount these within some of the existing window frames, but some frames are probably too thin.

Also consider installing glazing with anti-glare (tinted) properties, rather than applied film.

As noted above there is a problem with heat gain. This can be ameliorated with adequate ventilation control – such as openable windows unimpeded by secondary glazing.

The Town Council could experiment by temporarily taking down secondary glazing and rely on only the proposed double glazing.

## 6.11 CONTRACTOR ESTIMATES

The Town Council has approached various established suppliers/sub-contractors for proposals and estimates:

### COMPANY A 24-8-21

TOTAL 18 WINDOWS (numbering starts at #2)  
(quote is for 16 windows at £42,813.33 net)  
10 year warranty  
FENSA  
HARDWOOD not specified

Double glazed 24mm DGU's, windows rated "A Plus 8"

Toughened glass ("bottom" only)

Fasteners - "Polished Chrome Brighton" handle

Extra security required – reuse existing ironmongery?

Extra – "push ventlock" ??? Is this trickle vent?

SEE questions on Company C phase 1

### COMPANY B – ESTIMATE - HARDWOOD

TOTAL 24 WINDOWS

painted hardwood  
(reported as sapele or meranti painted)

Spiral "Balance" to sliding sashes

Sash Horn

Sash box removed and making good in softwood

Fasteners - "Gold" handle colour

Double glazed – "A RATED" but unspecified  
("Curved plates" at Council Chamber) – assumed to be cambered heads  
"GEORGIAN BARS" AT COUNCIL CHAMBER - check if real bars

### COMPANY B – ESTIMATE – SOFTWOOD – SIBERIAN LARCH

TOTAL 24 WINDOWS

Hardwood with spiral "Balance" to sliding sashes  
Sash Horn

Sash box removed and making good in softwood  
"Gold" handle colour

Double glazed  
("Curved plates" at Council Chamber) – see above  
"GEORGIAN BARS" AT COUNCIL CHAMBER - see above

### COMPANY C – PHASE 1 ESTIMATE – 21-9-21 £60,204.59 net

HARDWOOD - TOTAL 17 WINDOWS

Including replace 1 window under the chamber at £3,954.62.

If 16 no. windows .. .. estimate is £56,249.97

Hardwood with spiral "Balance" to sliding sashes  
Sash Horn Sash box removed and making good in softwood

"NOT SPECIFIED" handle colour

Double glazed 24mm DGU's, windows not rated - but with "duplex bars (Argon) warm edge spacer" and with U values ranging from 1.35 to 1.52

Clause 2) the paint specification e.g. primer, undercoat, top coats – is not clear;

Clause 4) excludes supply and fix internal or external architraves, linings. Sub-cills or window boards;

Clause 8) Probably hand-painting also required on site to touch in;

Clause 6) Making good excludes decorating inside and out;

No mention of scaffolding, lifting windows up to ¼ ton weight etc.

Draught-stripping not described

# 06 Alternative - Option to Replace Windows



**COMPANY E – PHASE 1 ESTIMATE – 19-04-21 @**  
estimates below

UPVC TOTAL 16 WINDOWS

“Charisma Rose” – not suitable

“Ultimate Rose Midi” £30,867.31 net but 16no. totaled?  
10no. described

Double glazed 24mm DGU’s, windows not rated in quote  
but “A” rated for three window types... - with “Low Iron  
Soft Clear White (Argon) warm edge” and with U not  
noted for each window but typically 1.49  
Lower sash appears to be safety glass (“Soft clear Tuff  
White warm edge Argon”)

Not specifically mentioned - Sash box removed and  
making good in softwood  
“NOT SPECIFIED” handle colour

Ironmongery noted as “Acorn” Locks (white)  
Plus “offset pole eye x 2 – white”

**No mention of:**

Scaffolding, lifting windows up to ¼ ton weight etc.  
Draught-stripping not described but shown on some  
drawings

Frames appear to be unequal size sashes  
Glazing bars will be within the glazing & applied  
“Georgian” or similar

# 07 Average Estimated Capital / Installation Costs



## 7.0 AVERAGE ESTIMATED CAPITAL/ INSTALLATION COSTS

### 7.1 CONTRACTOR'S ESTIMATES

The Town Council has sought a number of estimates for installation at 2020/21 prices, (net costs quoted including double glazing, installation, and scaffolding etc.). These are out-of-date and material costs will have increased considerably.

### 7.2 AVERAGE ESTIMATED COST PER WINDOW

Hardwood windows

16 no. for £51,373 - £59,288 - £56,250

average £3,477 per window

Modified softwood windows – assume same cost as hardwood

Average £3,477 per window

Softwood windows as estimates

Unclear estimates – one estimate summarized by the Town Council, is £70,740 for 24 larch softwood which results in

Average £2,948 per window

Another with special glazing is £37,240 for 16no. (at £2,328 average per window). Expect these to be about 70% of hardwood costs at £2,434 average per window

PVCU 16 no. £20,768 - £25,739 - £30,867 - £24,144 - £17,800 for council average £1,491 per window.

### 7.3 CAVEATS WITH COST IMPLICATIONS

- note that some proposed windows are not the same design as the existing – in particular PVCu windows;
- accordingly planning permission will be required based on accurate scale drawings of the windows to be submitted; there is a cost for survey and proposals
- none of the estimates informs the extent of public liability held by the installer;
- none of the estimates describes temporary scaffolding or tower or hoisting arrangements;

- none of the estimates allows for a building regulation application for windows with improved thermal performance, but some companies are FENSA registered which is a rough equivalent;
- none of the estimates allows for a pavement licence from the Suffolk County Highways to site the temporary scaffolding or tower or skip;
- ownership of land – the gardens and buildings North of the council chamber should be confirmed and permission sought from the owner for temporary access to repair;
- none of the estimates describes likely requirements from the Town Council's insurance company – such as temporary debris netting or metal sheeting or alarm systems;
- none of the estimates describes CDM (Construction Design and Management) regulation requirements and their company's provision for health and safety – although this work and costs might be within the estimates;
- none of the estimates describes the need – and cost – for anti-glare film or glazing;
- The estimates from some of the contractors, do not allow for making good between proposed and existing – and the need for elements such as architraves, cill boards internally, refixing secondary glazing and blinds
- few of the estimates describe ironmongery to be secure against burglary – possibly also an insurance requirement;
- VAT registration – the Town Council would normally be able to reclaim VAT if the installer charges.



# 08 Factors - Life Cycle Costs



## 8.0 FACTORS - LIFE CYCLE COSTS

### 8.1 LIFE CYCLE COSTS

Life cycle costs, are linked to carbon footprint costs and to sustainable materials and energy in extraction, manufacture, transport, use, maintenance and disposal.

This is not a direct link but generally as life cycles shorten, carbon footprint increases and materials tend to be less sustainable. Disposal costs (skip hire, waste fill charges) will be an increasing factor.

This section relies on extracts from:

“Whole Life Analysis of timber, modified timber and aluminium-clad timber windows”

Prepared and published by Heriot Watt University (Research Gateway)

For the Wood Window Alliance 2013

By Dr Gillian F Menzies, Institute for Building and Urban Design, Heriot Watt University:

1.1 This report analyses the Service Life Planning (SLP), Whole Life Costing (WLC) and Life Cycle Assessment (LCA) of factory-finished timber, modified timber and aluminium-clad timber window frames (herein referred to as timber based windows) designed to Wood Window Alliance (WWA) criteria, under various exposure and maintenance conditions

#### 2.2 Life Cycle Assessment (extracts)

PVCU (various tests) - .. .. . 25-35 years  
(around 25 years for most PVCU – less at exposed locations)

Timber (SW) 35-56 years (defect free softwood from sustainable source)

Report by Dr Menzies .... .. 56 years

Modified Timber (not calculated but based on maintenance cycles – see below) – probably 50-70 years

Report by Dr Menzies .... .. 68 years

Sub-factors –

- Apply flexible micro-porous protective paint
- Factory controlled glazing and coating systems

### 8.2 MAINTENANCE FREQUENCIES – FOR SEVERE EXPOSURE

For protective paint coats, the following cycle can be derived:

Timber (SW & HW))	..	..	..	4 years
Modified timber	..	..	..	6 years
PVCU (renew complete)..	..	..		25 years

But these might need to be reduced for (say) the front elevation to the sea because of “ – extreme exposure”.

based on

[https://pure.hw.ac.uk/ws/portalfiles/portal/4378394/Final\\_report\\_SLP\\_WLC\\_and\\_LCA.pdf](https://pure.hw.ac.uk/ws/portalfiles/portal/4378394/Final_report_SLP_WLC_and_LCA.pdf) .....

also from Dr Menzies at Heriot Watt

*The results in Table 2.4 agree with an analysis concluded by the BRE which states that “if a modified timber window built to the principles of best practice, factory finished using quality coatings, installed by competent contractors and linked to a recognised best practice maintenance and care package it will provide a window of outstanding durability and dimensional stability that would meet a 60 year service life requirement.”*  
[Correspondence between BRE and Accsys Technologies, December 2010]

Since Life Cycle Costs are a major factor in deciding costs, the Town Council will should consider over what number of years they are expecting the windows to last. Also the Town Council could consider the option of repairs rather than renewing timber frames

As the Town Council are strongly considering PVCU windows, then it would be reasonable to base life cycle costs on these.

### 8.3 LIKELY LIFE CYCLE FOR PVCU

These are approximate and simplified calculations. Accordingly consider costs including installation at:

Year 25 - PVCu replaced once

Year 50 - PVCu replaced twice, SW timber replaced once or timber piece-repaired

Year 75 - PVCu replaced three times, modified timber replaced once, best quality hardwood replaced once or timber piece-repaired



## 8.4 MAINTENANCE PERIODS AND COSTS FOR REPLACEMENT

The following are likely maintenance periods and costs including access. The tables below are based on Softwood (SW) replacement at 100% base cost and other materials being less (PVCU) at a lower percentage or more expensive (HW) at a higher percentage:

Softwood painted every 4 years (£250 or 10%)  
 Modified softwood painted every 6 years (£250 or 10%)  
 Hardwood painted every 4 years (£250 or 10%)  
 Ironmongery or DGU glazing part repaired every 8 years (£500 or 20%)

Not costed – but PVCU can be painted to maintain the appearance

## 8.5 MAINTENANCE PERIODS AND COSTS FOR REPAIR

Comparing costs with window-piece repairs is an educated guess, but assume from previous work and estimates for the Town Council:

Softwood painted every 4 years (as above)

Repair every four paint cycles ... every 16 years (as history)  
 And assume approximate average of £400 per window

Install Fineo extra slim glazing assume cost £800 per window

Renew extra slimline glazing every 16 years (as guarantee)

Install good quality traditional ironmongery

### Repairs expected life 56 – 130 years

Repair Year 1 Install Fineo glazing	Paint Year 4	Paint Year 8	Paint year 12	Paint DGU year 16 repair	Paint Year 20	Paint Year 24	TOTALS Year 25
40%	10%	10%	10%	40%	10%	10%	130%

## 08 Factors - Life Cycle Costs



### 8.6 TABLE OF APPROXIMATE COMPARITIVE COSTS AT 25 YEARS

#### **SOFTWARED expected life 56 years**

Buy Year 1	Paint year 4	Paint, ironmongery DGU year 8	Paint year 12	Paint, Ironmongery DGU year 16	Paint year 20	Paint, Ironmongery DGU Year 24	TOTALS Year 25
100%	10%	30%	10%	30%	10%	30%	220%

£2,434 net base cost = 100%

#### **MODIFIED SOFTWARED expected life 68 years**

Buy Year 1	Paint year 6	ironmongery DGU year 8	Paint year 12	Ironmongery DGU year 16	Paint year 18	Paint, Ironmongery DGU Year 24	TOTALS Year 25
140%	10%	20%	10%	20%	10%	30%	240%

#### **HARDWOOD expected life 68 years**

Buy Year 1	Paint year 6	ironmongery DGU year 8	Paint year 12	Ironmongery DGU year 16	Paint year 18	Paint, Ironmongery DGU Year 24	TOTALS Year 25
140%	10%	20%	10%	20%	10%	30%	220%

#### **PVCU expected life 25 years**

Buy Year 1		ironmongery DGU year 8		Ironmongery DGU year 16		Renew Year 25	TOTALS Year 25
61%		20%		20%		61%	162%

# 09 Conclusion and Recommendations



## 9.0 CONCLUSION AND RECOMMENDATIONS

9.1 Part of the Town Council's brief is for more energy efficient windows. This is usually achieved by installing double glazing.

However, there is already secondary glazing for all but one of the sixteen windows and this provides good thermal insulation and draught exclusion.

9.2 Installing any type of double glazing (DGU) with the current arrangements of secondary glazing and blinds will greatly increase heat gain, and this will increase discomfort of the occupants on hot days. This discomfort relates to being environmentally "friendly", as occupants might use the fans often – with some energy costs - and still not achieve a comfortable environment.

9.3 Standard double glazed (DGU's) probably would not fit within the existing windows. The innovative extra thin glazing "Fineo" would probably fit within the existing windows, and could of course fit within replacement hardwood or softwood windows. It is unlikely that PVCu window suppliers can adapt their products to suit "Fineo".

9.4 As a solution to the thermal quality - the energy efficiency of the windows, Fineo is considered to be almost as efficient as triple glazing, but adequate controllable ventilation would be required to compensate.

9.5 Adequate controllable ventilation is suggested in section 4 above – part repeated here:

*... upper sash windows to open, and reinstate ironmongery there;*

*... At least as an experiment, each spring dismantle the secondary glazing ...and reinstate each autumn;*

*...Install controllable ventilators (not in the existing window frames as they do not have sufficiently large timber sections).*

9.6 Following decisions on glazing, and ventilation options, the Town Council can then decide on whether to repair the existing or to renew, then selecting a material. No material is maintenance free, and some materials cannot be repaired.

9.7 At this stage, based on the initial requirements of "Thermal Quality" and being "Environmentally friendly", and in being an example in a conservation area, and with cost effective capital expenditure, the best option appears as:

- Repair existing windows and install Fineo glazing with heavy duty ironmongery.

9.8 If the Town Council has considered replacement windows and has the budget,

- The best environmentally friendly option appears to be modified softwood.

A Planning application would probably be required for most types of double glazing.





## 10.0 REFERENCES/APPENDIX

### 10.1 Town Council data:

- “Window quotations further information”
- Repair windows – quote from company a
- Repair windows – quote from company b
- Repair windows – quote from company c
- Renew windows – hardwood quote from company A
- Renew windows – hardwood quote from company B
- Renew windows – softwood quote from company B
- Renew windows – hardwood quote from company C
- Renew windows – PVCu quote from company E
- Renew windows – PVCu quote from company F
- Renew windows – PVCu quote from company G
- “Quality of Place Awards, Felixstowe Town Council, Supporting Statement”

## 10.2 FACTORS – GUIDANCE

Historic England publications including “Traditional Windows: their care, repair and upgrading” and “Energy Efficiency and Historic Buildings: draught-proofing Windows and Doors”;

<https://historicengland.org.uk/images-books/publications/traditional-windows-care-repair-upgrading/heag039-traditional-windows-revfeb17/>

### 1. Introduction

#### 1.1 The pressures for change

*The pressures that threaten traditional windows come from many different sources. Probably the most significant of these is the replacement window industry that relies on PVC-u windows for almost all of its business. The industry has invested heavily in marketing over a long period and as a result has persuaded many homeowners that their old timber windows are rotten, draughty, and beyond economic repair, whereas in most cases minor repairs and some upgrading would have allowed them to remain fit for purpose and serviceable for years to come. Replacement plastic (PVC-u) windows pose one the greatest threats to the heritage value of historic areas, particularly in towns and villages. Despite attempts at improving the design of these windows they are instantly recognisable because they cannot match the sections and proportions of historic joinery.....*

*...However, the idea that old windows are ‘worn out’ is driven largely by a culture of replacement and fashion rather than by an actual assessment of their condition and performance. Traditional windows are often completely replaced to improve a building’s energy efficiency when many simple thermal upgrading options, such as draught-proofing or secondary glazing, are usually available at much less cost. In the case of listed buildings and those in conservation areas, owners can often be under pressure to adapt windows to accommodate double glazing, which in most cases ends up in their complete renewal or inappropriate adaptation.*

#### 1.2 Why is repair better than replacement

*Traditional windows can often be simply and economically repaired, usually at a cost significantly less than replacement. For timber windows this is largely due to the high quality and durability of the timber that was used in the past (generally pre-1919) to make windows. Properly maintained, old timber windows can enjoy extremely long lives. It is rare to find that all windows in an old building require new sections. Many historic components continue to give service after 150, 200 or even 250 years. Traditional metal windows can also usually be economically repaired and their thermal performance improved, avoiding the need for total replacement. The whole-life environmental costs of replacement will be much greater than simply refurbishing. It will take many years before savings on heating offset the large amounts of energy used to make PVC-u windows in the first place. Repairing traditional windows rather than replacing them is not only more sustainable but makes better economic sense, particularly when the use of shutters or secondary glazing to improve their thermal performance is taken into account.*

*“Energy Efficiency and Historic Buildings: draught-proofing Windows and Doors”; Relevant extracts include:*

#### Summary

*This guidance note provides advice on the principles, risks, materials and methods for improving the thermal performance of existing windows and doors by draughtproofing. Draught-proofing is one of the most cost effective and least intrusive ways of improving the comfort of occupants and reducing energy used for heating with little or no change to a building’s appearance. It also has the added benefit of helping to*



reduce noise and keeping out dust. Research has shown draught-proofing can reduce air leakage from windows by between 33% and 50%, therefore significantly reducing the heating requirement needed for the room.....

....

Windows and doors should be assessed for repairs before embarking on any draughtproofing measures. Traditional windows and doors can almost always be repaired, even if in very poor condition.

**The Energy Efficiency publication also highlights....**

## **Energy Planning**

Before contemplating measures to enhance the thermal performance of a historic building it is important to assess the building and the way it is used in order to understand:

- „ the heritage values (significance) of the building
- „ the construction and condition of the building fabric and building services
- „ the existing hygrothermal behaviour of the building
- „ the likely effectiveness and value for money of measures to improve energy performance
- „ the impact of the measures on significance
- „ the technical risks associated with the measures

This will help to identify the measures best suited to an individual building or household, taking behaviour into consideration as well as the building envelope and services.

## **1.3 Can old windows be made energy efficient?**

An increasing focus on energy efficiency makes older windows particularly vulnerable. Windows are generally presumed to account for 10-20% of the heat loss from buildings, although this will vary greatly from one building to another, depending on the size and number of openings in relation to the external wall area. In many older buildings, windows are small relative to wall areas so the cost of double glazing will seldom be covered by energy savings within the lifetime of the insulated glazed units. The thermal performance of traditional windows can be improved significantly by draught-proofing or secondary glazing. Further benefits can be gained simply by closing curtains, blinds and shutters - measures that can produce the same heat savings as double glazing. Measures to improve the thermal performance of windows are described in more detail in Section 5 of this guide.

## **HISTORIC ENGLAND**

*“Energy Efficiency and Historic Buildings - Application of Part L of the Building Regulations to historic and traditionally constructed buildings” 8-12-2017*

*“....Part I of the building regulations applies....*

*When changes are to be made to controlled fittings or services Controlled fittings are windows, external doors, roof-lights and roof windows. Controlled services are space-heating and hot-water systems, mechanical ventilation and cooling, and fixed artificial lighting....”*

*“...Ensure U-values and areas of openings comply U-values of thermal elements and controlled fittings should meet the minimum required in the Approved Documents for any particular circumstance. For dwellings this is a basic but inflexible method of achieving compliance, but may be modified subject to certain criteria...”*

*“...The two principal areas of risk when upgrading older buildings to meet the requirements are: „ causing unacceptable damage to the character and appearance of historic buildings „ causing damaging technical conflicts between the existing construction and changes to improve energy efficiency To allow appropriate mitigation of both of the above risks, Approved Documents L1B and L2B contain some exemptions for historic buildings, as well as circumstances where special considerations should apply....”*

*“2.4 Buildings which are ‘exempt’ from the requirements Certain classes of historic buildings are expressly exempted from the need to comply with the energy efficiency requirements of the Regulations where compliance would unacceptably alter their character and appearance. These are listed under paragraph 21(3) of the Regulations and paragraphs 3.6 and 3.7 of the Approved Documents L1B and L2B, and comprise buildings which are:....”*

*“...Buildings in conservation areas “In a conservation area designated in accordance with section 69 of that Act”. Conservation areas are ‘any areas of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance’. Conservation area designation encourages authorities to implement conservation policies over these sensitive areas. In a conservation area, the main emphasis is on external appearance. Surface materials (walls and roofs) and the details of windows, doors, and rooflights are all extremely important. Changes to*



*these may need planning permission, especially if they are subject to an Article 4 direction under the Town and Country Planning Acts. Consent is usually needed for the demolition of buildings in a conservation area. Planning permission is not needed for internal alterations to unlisted buildings.*

*While not all buildings in a conservation area will be of historic interest, many have original external features that contribute to the significance of the conservation area as a whole. Removing such features could therefore have an adverse impact on its overall character...."*

From the building regulation requirements relating to replacement windows it follows that EITHER the window replaced are a match for the existing and do not require building regulations approval (and maybe thermal upgrading) OR a building regulations application is required, together with thermal grading and calculations to quantify the upgrading, and associated fees and council charges.

## HISTORIC ENGLAND

*"Energy Efficiency and Historic Buildings: Draught-proofing windows and doors" 29-4-2016*

### "Summary...

*This guidance note provides advice on the principles, risks, materials and methods for improving the thermal performance of existing windows and doors by draughtproofing. Draught-proofing is one of the most cost effective and least intrusive ways of improving the comfort of occupants and reducing energy used for heating with little or no change to a building's appearance. It also has the added benefit of helping to reduce noise and keeping out dust. Research has shown draught-proofing can reduce air leakage from windows by between 33% and 50%, therefore significantly reducing the heating requirement needed for the room. Historic windows and doors make a major contribution to the significance and character of historic buildings and areas so every effort should be made to retain them rather than replace them. Windows and doors can tell us a lot about the history of a building, changing architectural taste and style, social hierarchy, building economics, craft skills and technical advances. Older buildings are prone to heat loss through cracks and gaps which develop as various building elements move and distort over a long period. This is often the case for windows and doors which can be a major source of heat loss. However, less than a quarter of the heat*

*lost through a typical traditional window escapes by conduction through the glass, the rest is by draughts (air infiltration). Since draughts make people feel colder, the occupants often turn up the heating and run it for longer. Windows and doors should be assessed for repairs before embarking on any draughtproofing measures. Traditional windows and doors can almost always be repaired, even if in very poor condition...."*

### "....1.2 Repair or replace?

*Traditional timber and metal windows and doors can almost always be repaired usually at a cost significantly less than replacement. Repaired originals will also have character and historic value which a replica window would not have. Total replacement of a window or a door even as an exact replica may require consent if the building is listed.*

## 1.4 Preparing to repair

*Before windows are removed for repair they should be carefully recorded, at least with photographs and some basic measurements. Sashes, casements and other parts should be labelled to ensure that they go back in the correct positions. ...The timber used in the past to make windows and doors was of a high quality and very durable. Many Georgian and Victorian windows are still in place today whereas modern softwood windows can need replacement after only twenty years.*

*Repairing windows is the best way of maintaining the visual character and architectural significance of a building's elevation and can add to its value. Before starting any upgrading work such as draught-stripping or the addition of secondary glazing, assess what repairs are needed to make the windows fully operational. Windows decay over time so regular maintenance, cleaning and painting is always a good investment...."*

*"...5.3 Secondary glazing Secondary glazing is sometimes chosen more for its draught-proofing qualities than for thermal and noise insulation; particularly where other solutions are not feasible, for example when gaps are too large to seal, the windows are too significant to alter, or to protect stained glass. If secondary glazing is installed, the original windows should not be draught-proofed to help avoid condensation occurring...."*





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