Whitesales Rooflights

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A Guide to Replacing Heritage Rooflights

Heritage rooflights provide an aesthetically-pleasing and effective source of natural daylight. However, there is strict regulatory best practice when it comes to replacing them. Contravening regulatory requirements in the replacement of heritage rooflights can be a costly mistake, with construction teams having to re-undertake replacements compliantly, if key standards are not observed.

The following guidance provides a comprehensive overview of the required approach to replacing these valuable historic features, to ensure that structural changes are compliant, and serve to complement the style of the building.

Key Learning outcomes

- Recognise the criteria for satisfying listed building consent
- Identify different period styles
- Understand how to match existing layouts with modern performance
- Know how to re-use decorative features
- Understand the different options for glazing on heritage rooflights

1.0 Meeting the criteria to satisfy listed building consent

As with all potential changes to a listed building, replacement of heritage rooflights is governed by specific criteria which serves to maintain the period aesthetics of the structure. As a bare minimum, any new rooflights fitted need to match both the shape and size of the existing fittings. Further conditions for compliant replacement depends upon the status and historic listing of the building, which may require additional more detailed features to be replicated.

The following rooflight features may be subject to restrictions, depending upon the building being restored:

- Framework material
- Glazing bar spacing
- Glazing seal
- Glazing finish
- Pitch/slope degree.

When it comes to replacing heritage rooflights, each of the above criteria is required to maintain the same dimensions and finish as the original. As a result, Historic England suggests that repair to any historical windows is often better than replacement, especially if the glass is rare. However, if the windows are not of particular interest, and can be replaced in a way that complements the building in an appropriate style, replacement may be approved. Sensitive selection of an appropriate rooflight which retains the period style and qualities of the original will ensure that the completed replacement will be compliant.

All replacement rooflights also need to meet various standards for performance and durability. They also need to be compliant with environmental performance criteria. Government regulations state that if heritage rooflights have deteriorated to the extent that repair is no longer viable, replacements should be fitted in the same plane as the originals, with the profile and dimension matching the originals. If applicable, meeting rails need to be in the same position, and mullions (vertical dividers that separate windows) should be retained. It is also important to retain the original method of opening the rooflight.

Each listed building has its own distinct features, meaning that there is no set list of changes that can or cannot be made.

Somerset House was built in the neo-classical architectural style and has a very distinct designs of rooflights.

2.0 Identifying the different period styles of heritage rooflights

Throughout the history of England, and the associated evolution of architectural styles, different designs for rooflights have emerged. Conservation-style replacement rooflights have specific – and unique – qualities that Planning Officers will be looking out for to assess compliance. For example, for Victorian-style rooflights, features are designed around the cast iron skylights that were popular in that era. They include a top-hinged, rather than centre-pivoted opening, silicone fronting which is designed to replicate the appearance of putty, a central glazing bar and glazing clips located at the base of the rooflight.

Period rooflights tend to feature a black central glazing bar and low-profile external flashing, both features of which can be reproduced faithfully when selecting the ideal replacement from currently-available modern styles.

Although there are very few rooflights from previous eras which have maintained their original state of repair and functionality, sympathetic replacements are able to represent them in their original form. The responsibility of sympathetic replacement lies with the modern designers, to ensure that this careful consideration of design is carried out compliantly and effectively.

Rooflight styles from the early 1800's featured a mixture of timber and metal constructions and wire cast glazing.

3.0 Matching existing layouts with modern performance

In addition to ensuring that replacement heritage rooflights meet all of the criteria for aesthetic compliance with the listed building, they also need to meet modern requirements for performance. All new rooflights are required to meet the standards, for:

- Thermal performance
- Fragility
- Building emissions rates (such as air permeability and leakage characteristics)
- Fire resistance
- Powder coating (unleaded paint)
- Seals (non-asbestos).

The relevant legislation applying to rooflight standards are:

- BS EN 14351-1:2006+A2:2016 (This standard identifies material-independent performance characteristics for windows, including roof windows)
- BS 6375:2009 (This a series of standards that provide advice on the selection of performance characteristics and doorsets in relation to BS EN 14351)
- BS 4873:2016 (The specification for aluminium alloy windows and doorsets)
- BS 644:2012 (The specification for fully-finished, factory-assembled timber windows and doorsets)
- BS 6510:2010 (This is the specification for steel-framed windows and glazed doors)
- BS 7412:2007 (The specification for PVC-U windows and doorsets).

As well as the standards above, replacement rooflights may require additional features which weren't available to the original designers, such as natural and smoke ventilation.

Reuse of the existing decorative features for heritage rooflights enables the fitting to maintain its unique period characteristics. However, many historic decorative features are complex to replicate, and are therefore often removed, repaired and then reinstalled, in conjunction with the new modern rooflight. Details such as a lattice framework or finials can then be maintained to preserve the attributes of the original.

New roof lights should replicate traditional roof lights in design, low profile framing and structural glazing bars, coloured to blend in with roof finish and be flush fitted.

Modern rooflight designed with minimal glazing bars, junctions and ridge detail to closely match original Victorian cast iron crittal style rooflights.

4.0 Glazing bar options for heritage rooflights

In traditional heritage rooflights, the existing glazing bars are typically very narrow. As a result, it can be challenging to meet the modern specification for durability such as impact resistance. Narrow glazing bars do not perform to an adequate standard for load bearing.

In heritage rooflights with a crittal glazing bar design, there is either little or no thermal performance or impact resistance. This renders the design unsuitable for modern standards.

When it comes to flush opening sections, the designs for the proposed replacement rooflight requires careful detailing and design, to achieve the same aesthetic result as the original, while ensuring compliance with modern specifications.

Bespoke glazing bar designs can be extruded, but this is a costly solution and manufacturers require minimum production quantities to ensure that the product is financially viable. This is not always possible with smaller rooflights.

Heritage rooflights are undoubtedly a key element of a period building, reflecting the preferences in design of previous eras. While it requires careful design planning to maintain compliance, the completed replacement will afford greater durability and safety, while maintaining the aesthetic quality of the original structure.

Bespoke Ogee heritage glazing bar developed specifically to match existing profile. Existing design features retained with modern performance values.

5.0 Repair or replacement

Whilst historic England and other conservation bodies recommend opting for repair over replacement, this is not always the most viable option. Often rooflight repair specifications call for the following:

- Replacement of broken panes
- Repair of seals / putty glazing beads
- Repainting of glazing bars

Repairing rooflights can present the following challenges:
- Old rooflight seals and glazing putty are often brittle and when disturbed will disintegrate, making it very difficult to remove.
- Old glazing bar rebates designed for single pane fragile glazing will often not accept the new modern thicker glass panes
- Many old rooflights contain asbestos elements which therefore require trained operatives to handle them.
- Old frameworks are not impact-resistant which makes working on and around the structures very dangerous and require specialist and costly access equipment.

It is normally the recommendation of a rooflight manufacturer that existing rooflights are replaced. New rooflights will come with a guarantee that won't be offered by a company carrying out repair works.

Rooflights were replaced on Somerset House following extensive condition report and feasibility study on repair option which demonstrated cost-favourability and practicality towards replacement.