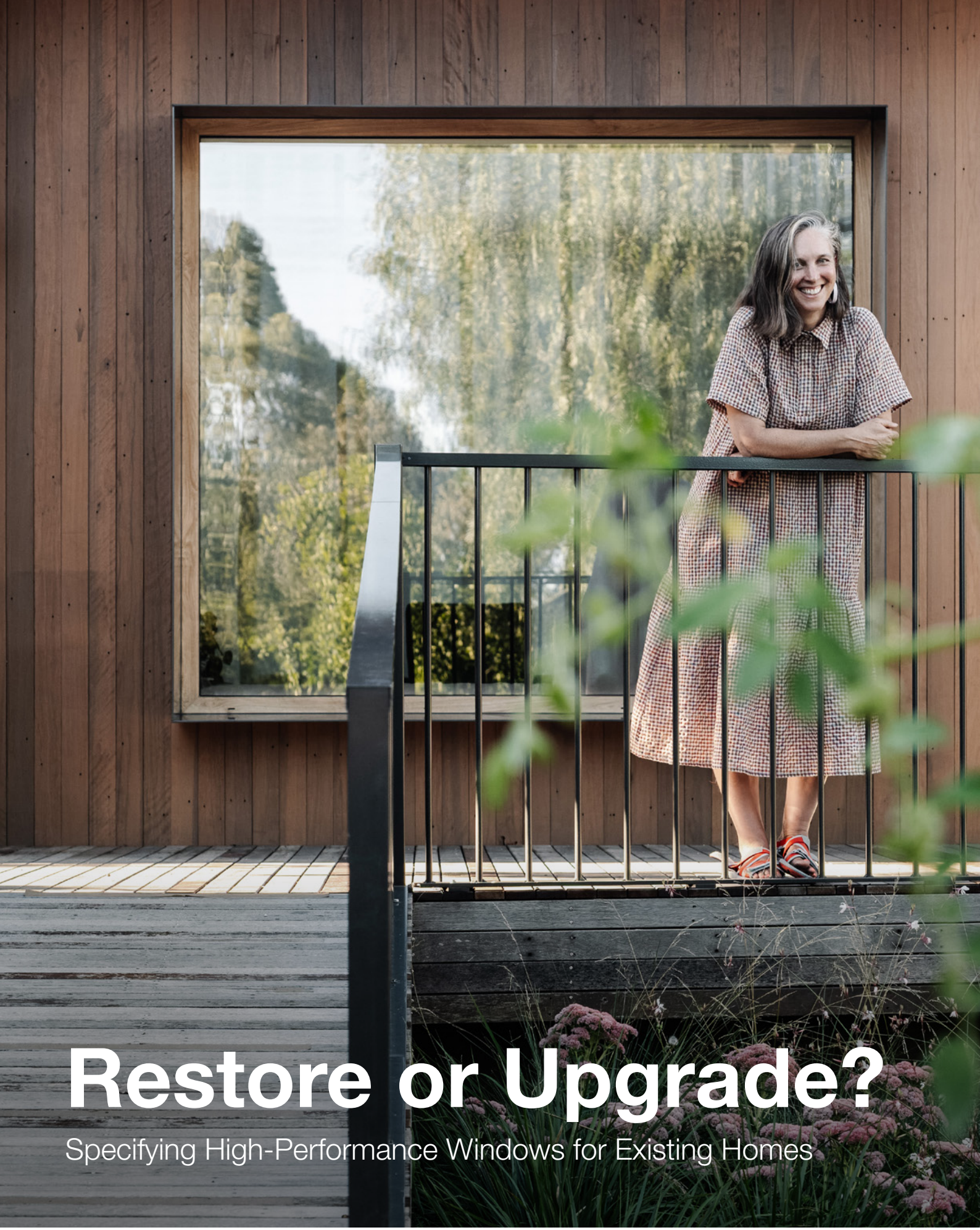


Restore or Upgrade?

Specifying High-Performance Windows for Existing Homes

BINQ World Standard





“From a thermal performance perspective, the original windows are usually the weakest part of an older home's envelope.”

Introduction

Most renovations of existing homes reach a point where the windows have to be either restored or updated. In character and heritage settings, the usual response is like-for-like restoration: strip, repair and reglaze the original window system so the facade looks as it always has.

Restoration preserves appearance, but it also preserves performance. A restored single-glazed timber window goes back into service with the same glass, the same frame and, in most cases, the same air leakage paths it had when it was built. On a project where the walls, roof and floor are being upgraded to current standards, this often leaves the windows as the weakest part of the envelope. The other option is to replace the old window with a high-performance solution that retains the home's character while bringing the glazing up to the standard of the rest of the building.

This paper sets out the factors that should inform that choice: the physical and planning constraints of existing homes, the realistic ceiling on restoration, the performance metrics that matter most on a given project and what to look for when specifying a replacement window for an existing building.

Background

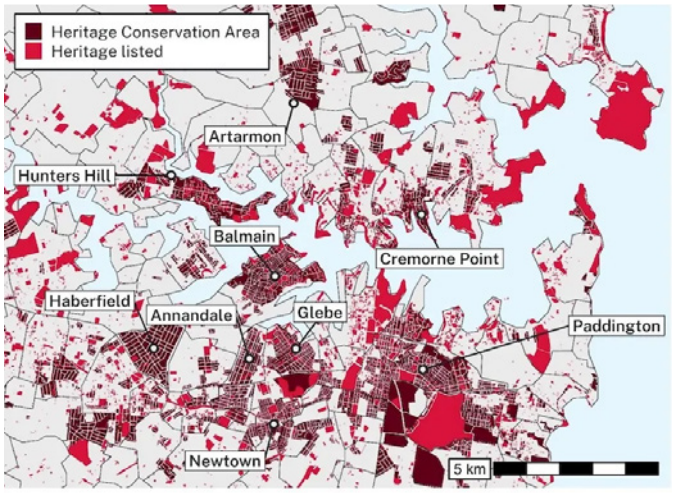
Much of Australia's residential building work now happens in existing homes rather than on new sites. Renovations and additions to older houses, particularly in established character and heritage suburbs, make up a large share of what architects and designers are asked to deliver. Many of these homes are protected by heritage listings or overlays, while many more sit within neighbourhood character controls that govern how they can be altered.

These older homes were built to very different performance expectations. Most still rely on their original single-glazed windows in timber or early aluminium frames, with no thermal break and limited sealing.

NCC 2022 raised the minimum energy efficiency standard for new homes to 7 stars under NatHERS. Existing homes are not required to meet this standard, but new additions generally are (subject to state variations, including BASIX in NSW). It has also become the benchmark that clients and designers use to judge a renovation. Achieving 7 stars typically depends on high-performance glazing,[1] among other design elements targeted at improving the thermal performance and energy efficiency of a home.

Figure 17: Blanket historic zoning stops more people living in Sydney's most valued locations

Heritage-protected areas of inner Sydney, 2021



Note: If a place is both heritage listed and in an HCA, it is marked as heritage listed. HCAs are created in councils' local environment plans. Heritage-listed places receive specific protection by inclusion on either State or Commonwealth heritage registers or in local environment plans.

Source: DPHI.

Constraints in existing homes



Specifying windows for an existing home involves constraints that rarely arise on a new build. They generally fall into three groups: the physical fabric of the home, the planning controls that apply to it and the project budget.

- **Physical fabric.** Replacement windows have to fit openings that were built for something else. Original openings often vary in size and shape. Wall construction also limits the options. Double-brick, timber-framed and weatherboard walls each have different reveal depths and fixing points, and they need different approaches to flashing and sealing. A frame that is deeper than the original can change how the window sits in the wall.
- **Planning controls.** Heritage overlays, heritage conservation areas and neighbourhood character controls often apply before performance is even considered. Where windows are visible from the street, councils typically expect the original appearance to be retained. That can mean matching materials, sightlines, glazing and sash proportions. Some councils treat like-for-like restoration as the default and require any replacement to be justified.
- **Cost.** Clients often compare the cost of replacement with the cost of a basic repair. The more useful comparison is with a high-standard restoration, which, as the next section shows, can cost much the same while delivering much less performance.

Restoration often falls short

From a thermal performance perspective, the original windows are usually the weakest part of an older home's envelope. According to the Australian Government, windows can account for up to 40% of a home's heating energy loss and up to 87% of its heat gain.[2]

Restoration does little to change this. A timber sash can be restored to a high standard, but it keeps its single glazing and any existing air leakage issues. Gaps around the sashes and at the frame-to-wall junction let in draughts. Single glazing also produces cold interior surfaces in winter, which contribute to condensation. Over the remaining life of the building, the result is uneven indoor temperatures and higher heating and cooling costs. Security is another issue: original hardware rarely offers the forced-entry resistance of modern multi-point locking.

Raising a window's performance to a modern standard requires upgrades that restoration may not consider, including:

- **Insulated glazing units:** A sealed double- or triple-glazed unit with low-e coatings and an SHGC (Solar Heat Gain Coefficient) suited to the orientation.
- **A low-conductivity frame:** Timber, uPVC or thermally broken aluminium, designed to carry an insulated glazing unit.
- **Compression seals:** Continuous gaskets between the sash and frame.
- **A sealed perimeter:** An airtight, flashed junction between the frame and the wall.

Restoring heritage joinery properly is also expensive. Skilled, labour-intensive work, often involving timber splicing, sash rebuilding, reglazing and new hardware, is required. Once these items are considered, a high-standard restoration can approach the cost of replacement, without the improvement in performance.

When to restore or upgrade

The right choice depends on two things: how far the existing windows fall short of the project's performance targets and which aspects of performance matter most.

What is your performance ceiling with the existing window?

Start by comparing the existing window systems with what the project needs to achieve. That might be a NatHERS rating, a comfort target or an operating cost goal. Restoration and weather sealing can close a small gap, but rarely a large one. In cold and mixed climates, Renew estimates that double glazing can reduce window heat loss by 60% or more compared with single glazing.[3] Restoration cannot deliver an improvement on that scale.

What are your performance priorities?

The decision to restore or upgrade windows often depends on which aspect of performance matters most to the project. Below are some considerations.

- **Acoustics:** Restoration combined with secondary glazing can perform well, because a wide air gap between the two layers of glass is effective at reducing noise.
- **Thermal comfort and solar control:** Replacement is usually the more efficient route. A new window can be specified with a U-value and SHGC to suit each orientation.
- **Condensation:** Condensation depends on warm interior surfaces and effective seals. Insulated glazing units in low-conductivity or thermally broken frames address both directly.

Weighing up other factors

Heritage controls generally focus on appearance rather than on the original fabric itself. Where a council will accept a replacement that matches the original appearance, the choice is not necessarily between character and performance. Modern window systems can now replicate period details, including timber construction, glazing bars, sash proportions and slim sightlines, while using insulated glazing units and contemporary seals.

The condition of the existing fabric also matters. Sound original sashes make a stronger case for restoration than decayed ones that need extensive rebuilding. Where a high-standard restoration costs close to the price of replacement, the argument for keeping the original windows' performance is significantly weaker.

On many projects, the answer is a combination of the two. Street-facing windows may be restored or replaced with heritage-matched units, depending on what the controls allow, and windows on the rear and side elevations are replaced with the system that best suits the performance targets.





Getting the specification right

Once the upgrade path is chosen, the result will depend on the specification. Below we discuss some of the key design and specification considerations to ensure you achieve the expected level of performance.

Not all double glazing is equal. An insulated glazing unit's performance depends on its cavity width, gas fill, low-e coating and spacer type. Two units, both described as "double glazed", can perform quite differently.

The glass is not the whole window. Glass performance figures describe only the glazing unit. The frame, the edge of the glass and air leakage through the window all affect the result. A high-performing glass in a conductive or poorly sealed frame will underperform. For this reason, specifications should refer to whole-window values. NatHERS assessments use whole-window U-value and SHGC, typically taken from AFRC-certified data.[4] WERS ratings report these values, together with air infiltration, for the complete window.[5]

U-value, SHGC and air infiltration work together. A low U-value limits heat transfer through the window, but any air leakage will undermine performance. SHGC should be chosen to suit each orientation (e.g., higher values for north-facing windows in cooler climates, lower values for east- or west-facing windows).

Choose materials that are suitable for the site. In a heritage setting, the choice between timber and uPVC depends on the application. Timber is easier to match to the period appearance and slim sightlines that heritage controls often require, but it requires periodic maintenance. uPVC offers low conductivity, good airtightness and minimal maintenance, but its profiles and appearance may be difficult to match to a heritage building.

Installation can decide overall performance. In existing homes, the junction between a new frame and an old opening is where much of the performance can be gained or lost. Openings that may have some irregularities, whether it be in size or shape, or in how they interface with the existing wall construction, need to be resolved. Perimeter sealing and flashing details need to be considered and documented in the specification.

Upgrading an existing home with BINQ

Replacing the windows in an existing home is an opportunity to improve the performance of the whole building to modern standards. That improvement depends on specifying a complete, high-performance window: the glass, frame, seals and installation working together.

BINQ manufactures window and door systems in Melbourne, using Australian timber and uPVC frames based on European system design and engineering. Both frame materials have low conductivity and are available in systems that combine double or triple glazing with effective air sealing. Together, these features address the heat loss, draughts and condensation associated with original single-glazed windows. The systems also improve acoustic performance, and multi-point locking provides high levels of safety and security.

For existing homes, BINQ has the capability to manufacture to order, offering custom-built solutions to match specific project plans. Architects can specify windows to suit the non-standard openings and period sightlines found in older homes. This allows timber windows facing the street to match the original proportions, while uPVC can be used on less visible elevations. Local technical, installation and after-sales support helps ensure the interface between the new frame and the existing opening performs as specified.

Where like-for-like restoration would leave a home with its original performance, this approach allows designers to keep the home's character while bringing its windows up to current performance standards.



“Replacing the windows in an existing home is an opportunity to improve the performance of the whole building to modern standards.”

References

1 Australian Glass & Window Association. “7-Star Energy Efficiency: Optimising Window Selection for 7-Star Homes.” AGWA. https://www.agwa.com.au/common/Uploaded%20files/AGWA/Technical/AGWA%20Guides/7%20Star%20Energy%20Queensland.pdf (accessed 6 October 2026).

2 Australian Government. “Glazing.” YourHome. https://www.yourhome.gov.au/passive-design/glazing (accessed 6 October 2026).

3 Renew Australia. “Windows and glazing.” Renew. https://renew.org.au/sustainable-living/windows-and-glazing (accessed 6 October 2026).

4 For more information, see the Australian Fenestration Rating Council website at https://afrc.org.au.

5 Australian Glass & Window Association. “Windows Energy Rating Scheme.” AGWA. https://www.agwa.com.au/Members/Members/Technical-Resources/WERS.aspx

All information provided correct as of October 2026.

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