

Technical Justification for the Replacement of Internal Timber Glazed Screens – Fire Safety and Statutory Compliance

1. INTRODUCTION

Following the recent comments received from the Council's Built Heritage Officer (Keith Frost) regarding the proposed replacement of the existing internal timber screens (Option 1B), this document has been prepared by Ayre Chamberlain Gaunt (ACG) who are acting as the Building Regulations Principal Designer under the Building Safety act 2022 on behalf of the University of Reading.

While we acknowledge and respect the Heritage Officer's desire to retain the original fabric or exact dimensional replicas, we must clarify the statutory limits regarding life-safety and Building Regulations compliance. The existing screens cannot be certified, and exact replication of the existing softwood profiles with new glazing cannot achieve compliance through certification.

The accompanying letter from our Fire Engineers (Stantec) confirms that destructive testing of the existing frames is not a viable route to compliance. Furthermore, to address the specific technical suggestions raised by the Heritage Officer, this note provides the necessary architectural and statutory justification as to why a component-based approach (such as simply installing a 7mm fire-rated glass) is technically unviable.

2. STATUTORY FIRE SAFETY REQUIREMENTS & APPROVED DOCUMENT B

The refurbished URS Building will accommodate students, staff, and visitors at a higher occupancy rate than it was originally designed for. Consequently, the fire escape strategy relies on these internal screens to perform a critical life-safety function.

Under the Building Regulations (Approved Document B), the screens are engaged in the following capacities:

- **Means of Escape & Protected Routes:** The screens form the physical enclosures for the primary stair cores, lightwells, and Level 1 corridor/gallery. These routes must remain tenable for occupants to evacuate safely.
- **Fire Resistance (Compartmentation):** All screens and doors enclosing the stair cores must achieve a minimum 30-minute fire rating for both *integrity* (stopping flames) and *insulation* (stopping heat transfer) (EI 30).
- **Smoke Resistance:** The timber screens across the Level 1 corridor and lightwells require full-height smoke retarding construction to prevent the rapid spread of toxic smoke through the building's central voids into the surrounding spaces.

As a statutory requirement, the University of Reading and its insurers cannot accept a derogation on life-safety elements. Compliance must be demonstrated through third-party certification (e.g. Certifire).

3. THE USE OF FIRE RATED GLAZING ALONE

The Heritage Officer has suggested that the use of a commercially available 7mm fire-rated glass would allow the existing thin timber frames to be retained or exactly replicated. This is fundamentally incorrect from a regulatory and fire-engineering perspective.

Fire performance is not determined by the glass alone; it is determined by the tested assembly as a whole which results in certified system that can be replicated to achieve compliance.

To obtain certification, a fire-rated screen must be tested and installed as a complete, integrated system. This includes:

1. **The Glass:** Must be certified for the specific integrity and insulation requirements.
2. **The Timber Frame:** Must possess the minimum density (often requiring hardwood) and minimum section thickness to resist charring for the required duration without collapsing and dropping the glass.

3. **Beads and Fixings:** Specific dimensions, angles, and steel fixing lengths are mandated by test data to ensure the glass is held in place under extreme heat.
4. **Seals and Fire Stopping:** Intumescent tapes and seals must be present between the glass and bead, and critically, between the outer frame and the surrounding structural wall.

Inserting a 7mm fire-rated glass pane into an untested historic softwood frame, or an uncertified replica, does not create a 30-minute fire-rated screen. Under fire conditions, an uncertified frame will warp, char, or burn through prematurely, causing the fire-rated glass to fall out of the opening, thereby instantly failing the compartmentation. Without test data proving that the specific combination of timber species, frame dimensions, glass, and fixings works together, Building Control will not be able sign off the building for occupation.

4. ACTIVE VS. PASSIVE FIRE MEASURES

It has been queried whether active fire safety measures (such as sprinklers) could be relied upon to offset the need for the screens to be replaced.

While active measures form part of the building's holistic fire strategy, they cannot be used as a direct substitute for the required physical (passive) fire-resisting and smoke-resisting construction of protected escape stairs. Building Regulations Part B mandates that vertical escape routes (stair cores) must be physically protected by fire-resisting construction to ensure a safe, sterile route out of the building. Active suppression systems mitigate fire growth, but they do not negate the statutory requirement for physical compartmentation and smoke stopping along designated escape routes.

5. THE NECESSITY OF THE REPLACEMENT APPROACH

On the basis of the approved fire strategy, the replacement of the screens is the *only* viable route to achieving a robust, certifiable fire safety solution that allows this building to be safely occupied.

6. CONCLUSION AND ARCHITECTURAL RESPONSE

We have exhausted all avenues to retain the existing screens. Because the timber profiles must be increased in mass and density to meet a certified test standard, an exact replica is impossible.

Our proposed Option 1B is the direct result of engaging with this technical reality while prioritising heritage sensitivities. By slightly widening the new hardwood mullions (to achieve certification) but reducing the number of glazed panels per typical bay from six to five, we have successfully maintained the original solid-to-glass ratio, rhythm, and distinct verticality that characterizes HKPA's original design. This approach was supported by the LPA during pre-application discussions (August 2025) as the most appropriate way to retain the visual feature of the screens while complying with modern safety standards.

We trust this clarifies that the replacement of the screens is not an aesthetic choice, but a statutory life-safety requirement.