



## DEFECTS REPORT

TINKERS LANE SURGERY  
ROYAL WOOTTON BASSETT  
SWINDON  
SN4 7AT



FOR

TINKERS LANE PARTNERSHIP  
TINKERS LANE SURGERY  
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ROYAL WOOTTON BASSETT  
SWINDON  
SN4 7AT

PREPARED BY

GEOFFREY PRAGNELL  
BUILDING SURVEYOR  
HALLAS & CO WEST LTD.  
ROOM 34  
32 BELL STREET  
HENLEY-ON-THAMES  
OXFORDSHIRE  
RG9 2BH

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## **1.0 Instruction.**

In accordance with your confirmation of instruction dated 24 February 2026, an inspection of Tinkers Lane Surgery, Royal Wootton Bassett was carried out on 4th March 2026.

The primary objective of this inspection was to investigate the reported cracking affecting multiple glazed panels within the timber-framed lean-to extension and to determine the likely cause. This report summarises the observations made during the inspection and outlines the recommended remedial actions.

This report is based on a visual inspection.

The inspection was carried out in clear weather conditions, with an ambient temperature of approximately 13°C at the time of inspection.

## **2.0 Description.**

The property comprises a detached two-storey building currently operating as a general practice medical surgery. The building appears to have been constructed using traditional cavity wall construction with facing brick external elevations.

The roof structure comprises a mix of hipped and flat roof forms and is finished with clay roof tiles and a bituminous membrane covering to the flat roof areas. The roof incorporates projecting eaves with exposed timber fascia and soffit boards. Rainwater goods appear to comprise uPVC gutters and downpipes.

Fenestration throughout the building consists predominantly of double-glazed casement window units. The principal entrance is provided via automated glazed double entrance doors set within a timber-framed glazed entrance assembly.

Most relevant to our instruction, the principal elevation incorporates a single-storey timber-framed glazed lean-to structure which forms an extended waiting area and consultation room.

The structure comprises a series of timber posts, mullions and transoms forming a glazed curtain wall assembly, which supports a mono-pitch glazed roof construction abutting the main external wall of the building at high level.

The roof structure consists of approximately 10mm toughened glass double-glazed panels measuring approximately 2930mm by 765mm. These panels are supported on timber glazing rafters spaced at approximately 739mm centres. The internal height of the structure is approximately 2800mm, with rafter members measuring approximately 100mm by 45mm, draining toward a front gutter arrangement. The framing is formed of painted structural timber members supporting both the roof glazing and the full-height glazed wall panels.

### **3.0 Observation and Comments.**

A visual inspection was undertaken of both the internal and external areas of the property, with particular focus given to the timber-framed glazed lean-to structure located at the south elevation, and more specifically the right-hand side waiting room area where the glazing failures have been reported.

It is understood that reflective film was also installed to glazing panels within the left-hand side consultation room of the lean-to structure. This area was therefore considered during the inspection for comparative purposes only.

The purpose of the assessment was to investigate the reported cracking of several glazing units, which is understood to have occurred following internal works undertaken approximately 12 months earlier, and to determine the likely cause of the glazing failure.

In our considered and conservative opinion, the cracking pattern observed to the glazing panels is consistent with thermally induced stress fractures. Failures of this nature commonly originate at the edges of the glass where the panels are restrained within glazing bars.

The alterations undertaken to the timber structure are likely to have significantly altered the thermal environment surrounding the glazing panels. Whilst the application of solar reflective film reduces solar transmission through the glass, it can also increase heat absorption within the glass itself, resulting in elevated glazing temperatures.

In addition, the sealing of roof openings together with the installation of insulation and a new plasterboard ceiling beneath the glazing is likely to restrict ventilation and reduce effective dissipation of heat from beneath the glass. This arrangement may allow heat to accumulate within the void between the glazing and the ceiling, resulting in elevated temperatures and increased thermal gradients across the glazing panels.

Where glazing panels are restrained within glazing bars, differential thermal expansion caused by such temperature variations can generate tensile stresses at the edges of the glass. When these stresses exceed the inherent strength of the glazing, cracking may occur.

**Recommendations:**

At present, the roof glazing panels remain positioned above the newly installed insulated plasterboard ceiling. As the precise method of fixing and structural support of the ceiling framework was not exposed or verified during the inspection, the capacity of the ceiling construction to support the weight of glazing panels in the event of failure cannot be confirmed. Roof glazing panels of this size and thickness can be relatively heavy and, should a panel fail or become displaced, there is a potential risk that the load could be transferred onto the ceiling structure below.

As a precautionary safety measure, it is recommended that the affected area is cordoned off until a permanent solution is implemented. Consideration should be given to installing temporary hoarding to restrict access beneath the glazed roof structure.

Any temporary enclosure should be adequately ventilated and access to the area should be carefully controlled and managed. The potential risks associated with the glazing should be recorded within the site risk register and communicated to relevant personnel to ensure that those accessing or working in the vicinity are aware of the potential hazards.

In light of this, the following options may be considered by the client as potential long-term solutions:

**Option 1:** Replacement of the glazed roof with a lightweight tiled roof.

The existing glazed roof construction could be removed and replaced with a lightweight tiled roof system designed, where practicable, to complement the appearance of the existing roof coverings to the main building.

The proposed roof construction would typically comprise a breathable roofing membrane installed over rafters, timber battens to support the roof covering, lightweight roof tiles and appropriate lead flashing or weathering details at abutments with the main structure.

This approach would significantly reduce solar gain and internal heat build-up within the lean-to structure and remove the risk associated with thermally induced glazing failure. It would also allow the existing ceiling construction to be retained and aligns with the client's design intention to provide shading to the waiting room and reduce solar exposure without requiring substantial internal alterations.

Furthermore, this solution could be replicated to the consultation room area to ensure a consistent approach across the lean-to structure.

It should be noted that the introduction of a tiled roof system will likely impose additional loading on the existing timber structure. As such, input from a Structural Engineer may be required to assess the adequacy of the existing framing and where necessary, design appropriate reinforcement works.



*Image 1: Existing Lean-to Structure (South Elevation).*



*Image 2: Conceptual Option (South Elevation).*

**Option 2:** Removal and redesign of the lean-to structure.

The existing lean-to structure could be removed and replaced with a newly designed extension or glazed structure specifically engineered to accommodate the desired spatial and environmental conditions.

This option would involve a more comprehensive redesign of the structure and would likely require input from specialist consultants to ensure the new construction is suitable for the anticipated structural loads, thermal conditions and the desired design outcome.

Whilst this option would involve greater capital expenditure, it would provide a more robust and permanent long-term solution.

**Option 3:** Periodic replacement of glazing panels.

Alternatively, a further option would be to retain the existing structure and undertake periodic replacement of failed glazing panels as and when failures occur. Whilst this approach may appear manageable from a short-term cost perspective, it does not address the underlying cause of the glazing failures and therefore cannot be considered a long-term solution.

Over time, the cumulative cost of repeated glazing replacements may ultimately approach or exceed the cost associated with implementing Option 1. As such, this approach is not generally recommended other than as a temporary or interim measure.

Should this approach be adopted, the existing plasterboard ceiling framework and its method of fixing should also be inspected to ensure the arrangement has adequate load-bearing capacity in the event of glazing failure, particularly given the uncertainty surrounding the ceiling construction and fixing arrangement. Input from a Structural Engineer may be required to verify the adequacy of the ceiling framework and supporting structure.

**Note:**

It should also be noted that any proposed alterations to the structure may alter the external appearance of the building and may therefore require planning consent from the Local Planning Authority.

Furthermore, any new construction or structural alterations would be required to comply with the relevant requirements of the Building Regulations.

### 3.1 Observations.

#### Observation 1: Cracked Glazing Panels.

Cracking was observed to six internal glazing panes within the roof of the waiting room area of the lean-to structure. The affected panes are located within the section where solar reflective film has been applied to the glazing and where an insulated plasterboard ceiling has subsequently been installed beneath the roof glazing.



*Image 3: Aerial Image of Lean-To Roof.*

The pattern of cracking originates from the edges of the glazing panes and is consistent with thermally induced breakage. This is likely exacerbated by uneven heating and cooling of the glazing and surrounding glazing bars, resulting in expansion and contraction which generates stress concentrations at the edges of the glass.



*Image 4: Edge Damage.*

Additionally, the fern-like patterns observed within the glazing panels may be associated with the adhesive layer of the solar reflective film applied to the internal face of the glass. Solar control films typically utilise pressure-sensitive adhesives to bond the film to the glazing surface, and under conditions of elevated temperatures and prolonged solar exposure, the adhesive layer can deteriorate or distort, resulting in visible patterns within the glazing.



*Image 5: Fern-like patterns.*

It is also worth noting that where glazing is exposed to significant solar gain, particularly within roof glazing arrangements, the temperature of the glass and applied film can increase considerably. Over time, elevated temperatures can cause degradation or visual distortion within the adhesive layer, resulting in irregular or branching patterns visible through the glazing.

Such patterns can sometimes resemble fracture patterns or laminated interlayer deterioration; however, they may in fact be an optical effect caused by adhesive breakdown or stress within the film itself.

Given that solar reflective film has been applied to the glazing panels, it is considered possible that the patterns observed are associated with deterioration or thermal stressing of the film adhesive rather than being solely attributable to the glass pane itself.

Moisture was observed within several double-glazed units, indicating failure of the perimeter seals to the glazing units.



*Image 6: Condensation on Glazing Pane.*

Failure of the perimeter seals allows moisture ingress and loss of the insulating cavity within the glazing unit, which can alter the thermal behaviour of the glass and contribute to increased thermal stresses. Whilst not typically the primary cause of cracking, such conditions may exacerbate the likelihood of thermally induced glazing failure.

Cracking was observed only to the glazing panels within the waiting room area where the insulated plasterboard ceiling has been installed beneath the roof glazing. No cracking was observed within the consultation room section of the lean-to structure, where no ceiling installation has been undertaken, with the exception of a historic crack noted to an external glazing pane which is understood to pre-date the works.



*Image 7: Consultation Room Internal.*



*Image 8: Consultation Room External (External Cracked Pane).*



*Image 9: Waiting Room Internal.*



*Image 10: Waiting Room External (Internal Cracked Panes).*

Using a thermal imaging camera for comparative assessment, the surface temperature of the glazing within the consultation room was recorded at approximately 60°C at the time of inspection. It should be noted that the external ambient temperature on the day was approximately 13°C, and therefore glazing temperatures are likely to increase significantly during warmer periods and under stronger solar exposure.



*Image 11: Consultation room glazing temperature recorded at 60.1°C (thermal imaging comparative assessment).*

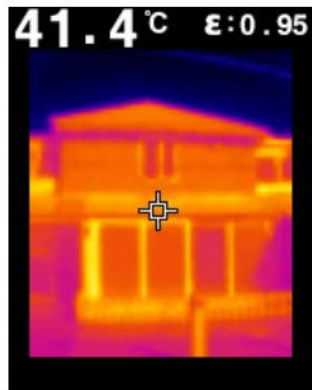


*Image 12: Waiting Room Glass Temperature (External).*

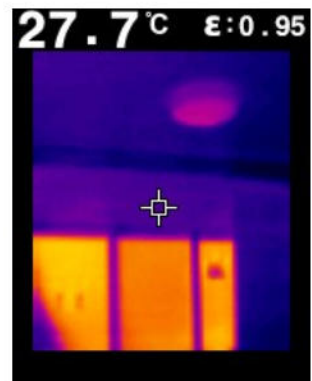


*Image 13: Waiting Room Ceiling Temperature (Internal).*

With the installation of insulation and a plasterboard ceiling beneath the roof glazing in the waiting room, the opportunity for heat to dissipate from beneath the glazing has been substantially reduced. As a result, heat is likely to accumulate within the void between the glazing and the ceiling, meaning the glazing within the waiting room is likely to be exposed to considerably higher temperatures during periods of solar gain.

It is also worth noting that timber structures are subject to natural movement resulting from changes in temperature, variations in moisture content, and external forces such as wind loading. Where glazing panels are tightly restrained within the surrounding timber framing, such movement can introduce additional stresses to the glass. If the glazing is installed with limited tolerance for movement, any expansion, contraction or minor deflection of the timber framing may place the glass under tension, which can contribute to cracking.

It was also noted that a crack was present within a glazing panel forming part of the entrance canopy where solar reflective film had been applied.



*Image 14: Cracked Glazing.*

The adjacent glazing panel, however, did not exhibit similar cracking. This may suggest that the application of the solar reflective film could be influencing the thermal behaviour of the glazing, potentially restricting the natural thermal flexibility of the glass and contributing to increased stress within the pane.



*Image 15: Different Applied Films.*

**Observation 2: Timber Decay (Other Observation).**

In the interest of our client, we draw attention to timber decay observed to the end section of a timber rafter within the canopy structure at the front entrance.



*Image 16: Timber Decay.*

This is considered likely to have arisen as a result of persistent wetting of the timber, likely associated with deteriorated or failed seals allowing moisture ingress. Prolonged exposure to moisture can progressively break down the timber fibres, leading to the development of timber decay over time.

Additionally, a fungal fruiting body was observed on an adjacent timber rafter, which is indicative of fungal activity and suggests the presence of prolonged moisture exposure within the timber.



*Image 17: Fungal Fruiting Body.*

**Recommendations (Observation 1 & 2):**

As a precautionary measure, the client should consider installing temporary hoarding within the waiting room area to restrict access beneath the glazed roof structure. This is advised due to the uncertainty surrounding the fixing arrangement and load-bearing capacity of the existing plasterboard ceiling framework, which was not exposed or verified during the inspection. Restricting access will reduce the risk to occupants in the event of glazing failure or displacement.

The client may wish to consider the following longer-term solutions:

**Option 1 : Replacement of Glazed Roof with Tiled Roof Construction.**

The existing roof glazing could be removed entirely and replaced with a lightweight tiled roof construction. This approach would allow the existing plasterboard ceiling within the waiting room to remain in place and would also provide the opportunity to install a similar ceiling within the consultation room, thereby supporting the client's design intention to reduce solar gain and provide improved shading to the internal areas.

In implementing this option, the client should be mindful that the introduction of a tiled roof covering may increase loading on the existing timber lean-to structure. As such, structural assessment and potential reinforcement of the timber framing may be required. In addition, replacing the glazed roof with a tiled roof would materially alter the appearance of the structure and may therefore require planning consent from the Local Planning Authority. Building Regulations approval would also likely be required.

**Option 2 : Removal and Redesign of the Lean-To Structure.**

As a more comprehensive long-term solution, the client may wish to consider removing the existing lean-to structure entirely and constructing a newly designed extension or glazed structure better suited to the operational requirements and long-term aspirations of the surgery.

Alternatively, although not considered a preferred long-term solution, the client may choose to replace the currently cracked glazing panels and continue to monitor the performance of the remaining glazing. Under this approach, further panels would be replaced on a reactive basis as failures occur, allowing time for the client to plan and allocate funding toward a more permanent solution in the future.

Should this approach be adopted, consideration should also be given to inspecting the existing plasterboard ceiling framework and its method of fixing to confirm that it has adequate load-bearing capacity. Reinforcement of the ceiling framework may be required to ensure it can safely accommodate any potential loading associated with glazing failure or displacement.

**Additional Maintenance Observations:**

With regard to the additional observations noted during the inspection, it is recommended that the areas of timber decay identified within the entrance canopy structure are addressed. This may involve localised splice repairs or resin repair systems, depending on the extent of deterioration. Any failed or deteriorated seals should also be repaired or replaced to prevent further moisture ingress and to reduce the likelihood of continued wetting of the timber elements.

#### **4.0 Conclusion & Recommendations.**

Based on the observations made during the inspection and the information provided regarding the works undertaken prior to our instruction, it is our professional opinion that the cracking observed to the glazed roof panels is consistent with thermally induced stress fractures originating from the edges of the glazing where the panels are restrained within the glazing bars.

The works undertaken beneath the glazed roof structure, including the application of solar reflective film to the internal face of the glazing, the sealing of the openable roof light, and the installation of insulation and a plasterboard ceiling within the waiting room area, are considered likely to have altered the thermal behaviour of the roof glazing assembly. In particular, the introduction of insulation and the ceiling construction has reduced the ability for heat to dissipate from beneath the glazing, potentially allowing elevated temperatures to develop within the void between the glazing and the ceiling.

In combination with the solar reflective film applied to the glazing, which can influence the thermal absorption characteristics of the glass, these alterations are considered likely to have increased thermal stresses within the glazing panels during periods of solar exposure.

This conclusion is further supported by the comparative observation that cracking was identified only within the waiting room area where the ceiling installation has been undertaken, whilst the consultation room section of the lean-to structure, where the glazing remains exposed beneath the roof structure, did not exhibit similar cracking (with the exception of a historic crack to an external pane).

On the balance of probabilities, it is therefore considered that the recent alterations undertaken to the lean-to structure have contributed to the development of elevated thermal conditions within the roof glazing assembly, resulting in thermally induced glazing failure.

## **5.0 Third Party Clause.**

In accordance with our standard practice, we must state this report is confidential to the party to whom it is addressed and their professional advisors, and no responsibility is accepted to any third party whether under the Contracts (Rights of Third Parties) Act 1999 as amended or otherwise for the whole or any part of its contents. Neither the whole, nor any part of this report, or any reference thereto, maybe included in any document or statement, nor published or reproduced in any way, without our prior approval in writing as to the form or context in which it will appear.

## **6.0 Limitations.**

Given the limitations of access, we were unable to inspect concealed areas of the property. As such, we cannot definitively confirm the absence of defects that may become apparent in the future. Due to site constraints, we were unable to inspect every area of the property in detail, but we have conducted a thorough examination of representative sections to inform our report.

We accept no liability for any losses, damages, or further issues arising from a partial implementation of our recommendations or from any interpretations or uses of this report outside the scope of our intent.

### **Prepared by**

Geoffrey Pragnell  
Building Surveyor  
Hallas & Co. West



### **Approved By**

Chris Zacharias MRICS  
Director  
Hallas & Co. West

