

Inspection of timber species and condition 19-21 Castle Street, Reading

A Report To:
Trident

5th Floor
26 Throgmorton Street
London,
EC2N 2AN

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Issue No.: 1

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Client: Trident

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1 Introduction

Dr Andy Pitman, Principal Timber Consultant of Filros Timber Consultancy Ltd (Filros), was contacted by Daksha Mistry, Executive Director, Trident (the Client), requesting an inspection of several timbers at the rear of the property at 19-21 Castle Street, Reading.

On the 29th May 2026, Filros issued a proposed *Scope of Work* to the Client which was accepted by e-mail on 5th June 2026.

The inspection took place on the morning of Monday 15th June. The weather it was dry and sunny. Sophie Jamman, Building Surveyor, Trident was in attendance throughout the inspection.

2 Limitations

1. The findings of this report are based solely upon the information and evidence provided and made available to Filros by the Client and/or the Client's representative(s) at the time that this report was written. Should subsequent information be made known to us we reserve the right to amend our findings.
2. Any information or evidence provided to Filros for the preparation of this report by the Client or the Client's representative(s), or by any third party, has been taken by us at face value, unless we state specifically that we have validated it and include in this report evidence of such validation.
3. This report cannot be used for any purpose other than that for which it is expressly authorised within the contract under which it has been agreed and produced.
4. All advice offered by Filros is offered on the basis that it represents the principles of good practice and that it has not necessarily been validated by Filros.
5. Statements which appear in this report, which address current or likely future risks, and which project or estimate outcomes, are based on reasonable assumptions from empirical evidence. Such statements by their nature involve uncertainties, which themselves carry the risk that actual outcomes may differ materially from any predicted outcomes. Filros does not guarantee or warrant any projections or estimates of risks or outcomes contained within this report.
6. Any contracted rights to confidentiality will be considered null and void should the report be modified in any way by any party without express permission of Filros.

3 Scope of Work

- Filros will visit site and examine the condition and moisture content of the lintel and confirm its timber species. This will be undertaken using decay detection drilling and microscopic examination.
- Filros will examine the nature and condition (including moisture content) of timber 'boarding' to which tiles are fixed.
- Filros will examine condition (including moisture content) of the exposed soleplate adjacent to the door.
- Filros will prepare an independent technical report setting out our findings.

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4 Background

Trident contacted Filros as timber specialists to examine the condition of timbers at the site and establish whether these were suitable for continued use or required repair or replacement. Where repair or replacement is required, then from a conservation perspective Filros understands it is useful for the Client/Conservation Officer to understand the species of timber used.

A copy of Trident's Condition report for 19-21 Castle Street prepared in March 2026 was shared with Filros ahead of the inspection. This Report included under *3.0 Items Identified and Remedial Works* photographs showing the condition of timbers exposed at the base of the door leading onto the passageway in Number 19, Castle Street. These showed timbers in this location to be in poor condition.

The Client also provided a summary of the findings from an inspection by the structural engineer (RSA Design) who recommended a timber specialist be engaged to drill the lintel to determine the extent of decay.

Prior to the inspection small areas of wall had been opened by removal of individual 'tiles' to expose underlying timber/s.

5 Procedures

5.1 Condition and moisture content assessment

The condition of the timbers was assessed by: -

- Probing exposed faces of timbers using a bradawl and by drilling through their cross section using a 1.5mm diameter probe driven into the timber using a battery powered handheld drill. Both techniques were used to examine for softening/loss of structural integrity resulting from decay and/or wood boring insect attack.
- Visual examination of timbers in-situ for change in colour and morphology associated with decay and for holes/tunnels resulting from wood boring insect attack.
- Microscopic examination of small samples removed from site.

Moisture contents of timbers in-situ were assessed using a calibrated electrical resistance type moisture meter (*Protimeter TimberMaster*) measurements were taken using 10mm-long uninsulated pins.

5.2 Identification of timber species and wood boring insects

Timber species used for the lintel, stud/door frame and boarding were identified by cutting thin transverse, radial longitudinal and tangential longitudinal sections from small pieces of wood removed from site, staining these with 1% aqueous safranin solution, mounting on glass slides and examining under transmitted light at magnifications ranging from x40 – 600 using a microscope. Anatomical features were compared against those listed in microscopic keys.

The wood boring insect responsible for attack of the lintel was determined by examining the size and morphology of frass (larval excreta) and the size and shape of adult emergence holes.

6 Findings

6.1 Condition and moisture content of lintel and associated timbers

The lintel measured 1360mm in length (excluding the bearing ends) by 240mm (width) and 210mm (height). It was manufactured from oak. The front face was coated, with this coating flaking away over large areas. The coating contains emergence holes produced by wood boring insects. This lintel shows extensive brown decay and wood boring insect attack extending across its full width (i.e. front to rear) in several locations which will have resulted in a significant reduction in its strength. Two bore holes for pegs suggests this timber was previously joined to vertical members through mortices cut into this timbers' top edge (refer to Photograph 1). These mortices will have already reduced the cross section in these locations prior to decay/insect attack.

A second timber spanned the passageway beneath the lintel measuring 120 x 120mm in cross section. This timber was also manufactured from oak and had a large crack running top to bottom through the section at approximately mid span adjacent to a large knot. This timber had been extensively decayed by brown rot (refer to Photograph 2) resulting in significant loss in strength. The front of this timber had been overlaid with a softwood board which also exhibited extensive brown rot decay.

The maximum moisture content recorded for the lintel was 16% with that of the lower oak timber 12%.

6.2 Condition and moisture content of timbers supporting the engineered tiles

The boards to which the engineered tiles were fixed were manufactured from pine. These boards were fixed to 50 x 100mm softwood battens to the rear (refer to Photograph 3). Opening work had been undertaken in nine separate locations across the elevation. In three locations there was extensive brown rot decay of the boards which had reduced their strength and fixing holding capabilities (refer to photographs 4, 5 and 7). Boards in other locations were dry and free from evidence of decay and wood boring insect attack. Tile fixings were corroded where boards were decayed indicating board moisture content was elevated at these locations (Photograph 6). Moisture contents of all boards were below 20%.

6.3 Condition and moisture content of timbers adjacent to the door

The cill (horizontal timber running parallel with passageway beneath the brickwork) exhibited significant brown rot decay resulting in up to 50% loss in its cross section which was 200 x 200mm. The post/stud adjacent to the door (150 x 150mm in section) was pine and showed extensive brown rot decay resulting in 50% loss in cross section at its base extending to 350mm in height (Photograph 7). Moisture contents of these timbers were below 20%.

6.4 Timber species

The timber lintel and timber spanning the passageway beneath it had anatomical features consistent with white oak which includes European oak (*Quercus robur* and *Q. petraea*).¹

¹ Hoadley, B. R. 1990 *Identifying wood: accurate results with simple tools*. The Taunton Press.

The boards to which the engineered tiles were fixed and the stud/door frame have anatomical features consistent with European redwood (*Pinus sylvestris*)².

6.5 Wood-boring insect species present in the lintel

The 'bun-shaped' frass, round shape and 3-4mm diameter emergence holes are consistent with attack of the lintel by deathwatch beetle *Xestobium rufovillosum*.

7 Discussion of findings

The extent of decay to the lintel and associated timbers spanning the passageway is significant and these elements require replacement. The extent of decay/damage in the lower timber and board fixed to it means there is currently a significant risk that these may fall into the passageway below injuring pedestrians.

In terms of replacement, then were this to be like for like, it should be undertaken using European oak heartwood that has been air-dried, rather than with green oak (that which has not been dried) to reduce shrinkage of the timber/s used for the replacement. The lintel performs a structural function and likely to require visual strength grading according to BS5756³ and to meet the requirements for THA or THB depending on the requirements of the structural engineer.

Strength classes for oak are assigned in accordance with Table 1 in PD 6693-1: 2019⁴ and are shown in the table below.

Strength class for oak

Timber Grade	Strength class
THA	D40
THB	D30
TH1	D30
TH2	D24

With respect to the boards to which the engineered tiles are fixed, then Filros recommends their condition be assessed following removal of the tiles. The same would apply to the battens to their rear to which these are fixed. Where decay is localised then Filros would recommend sections of board/batten could be replaced. Replacement should be with softwood, preservative-treated for Use Class 3⁵. Where any cutting is undertaken on site it is important cut ends are treated using end grain wood preserver. A treatment certificate should be sought from the timber supplier to ensure timbers have been treated to meet the requirements of Use Class 3. Preservative treated European redwood is readily available.

With respect to the cill and post then these will require localised repair or replacement using European redwood treated to Use Class 4. The higher level of treatment (preservative retention and depth of penetration) reflects the greater risk of these timbers 'wetting up' in service due to their location at the base of the wall.

² C Jacquot 1955 *Atlas d'Anatomie des bois des Conifères*. Institut National du Bois

³ BS 5756:2007+A2:2017 Visual strength grading of temperate hardwood - Specification

⁴ PD 6693-1:2019 Recommendations for the design of timber structures to Eurocode 5: Design of timber structures – Part 1: General – Common rules and rules for buildings

⁵ BS 8417: 2024 Preservation of wood. Code of practice

It is important to point out that at present all timbers inspected were dry, i.e. their moisture contents are below the 20% decay threshold and are therefore not actively decaying. For that reason, the decay can be considered historic.

With respect to attack by deathwatch beetle, then this wood boring insect is often associated with attack of decayed/decaying oak. It is Filros's opinion that provided the replacement oak is heartwood and air dried that there will be little risk of it being attacked by this insect.

8 Conclusions

Filros concludes the following:

- (i) The lintel spanning the passageway and associated timbers are European oak and significantly degraded by brown rot fungi and/or deathwatch beetle and require replacement.
- (ii) Since the lintel is structural, it should be replaced using strength graded European oak heartwood following consultation with a structural engineer.
- (iii) The lintel and associated timbers should be air dried to prevent the level of shrinkage associated with green (i.e. undried timber).
- (iv) The extent of decay in timbers beneath the lintel means there is a risk of these detaching and falling into the passageway and presents a risk to pedestrians.
- (v) The boards to which engineering tiles are fixed and the cill and stud/door frame are European redwood and show extensive brown rot decay in some locations which has reduced their strength and ability to hold a fixing.
- (vi) The condition of the boards, battens to rear and full extent of the cill should be investigated following removal of tiles, render and course of bricks overlying the cill. Where decayed timbers should be replaced using preservative treated redwood treated to Use Class 3 or 4 depending on location.
- (vii) All timbers inspected were presently below 20% moisture content and decay can be considered historic i.e., it is no longer active

9 Authorisation

	Prepared by:	Check by:
Signature:		
Name:	Dr Andy Pitman	Phil O'Leary
Title:	Director	Director

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Appendix I

Photographs



Photograph 1 Lintel (top) and associated timbers beneath it . Note wood boring insect emergence holes through white coating and coating flaking away from timbers. Surface of lintel 'picked away' revealing wood boring insect tunnels. Note peg in hole (arrowed)

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Photograph 2 Timbers beneath lintel showing fractures associated with slope of grain (arrowed) with extensive decay/failure of overlying timber fixed to its face



Photograph 3 Boards to which engineered tiles are fixed in good condition in this location. <20% moisture content and free from decay. Fixings show location of batten to rear.

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Photograph 4 Board showing extensive but historic brown rot attack (cuboidal cracking and red brown colouration of wood)



Photograph 5 Board showing extensive but historic brown rot attack (cuboidal cracking and red brown colouration of wood)

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Photograph 6 Corroded fixings for engineered tiles indicating boards through which they were fixed were of high moisture content

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Photograph 7 Decayed cill with probe in place and decayed stud/door framing to right. Note cementitious render to face of cill

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