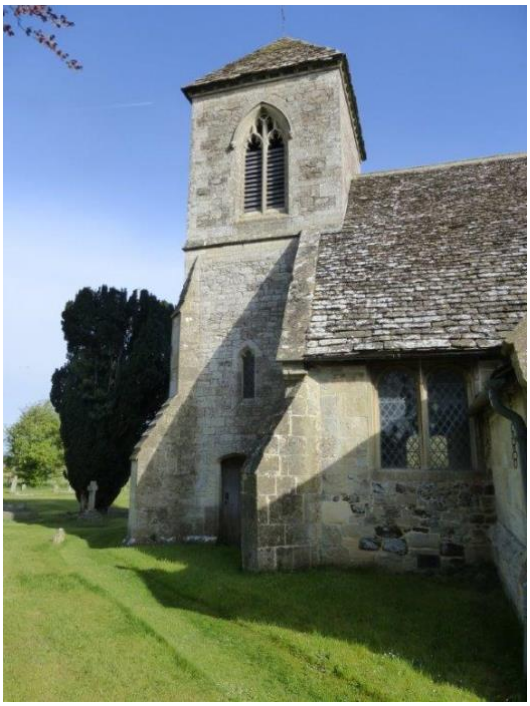
The Church of St Peter, Poulshot

Tower Repairs: Phase II

Bells and Tower Access Improvements

Tender Documents

Incorporating a summary of proposals, specification and schedule of works.



Aug 2021

ST.ANN'S GATE ARCHITECTS

The Close · Salisbury · Wiltshire · SP1 2EB

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St.Ann's Gate Architects Limited Liability Partnership · reg. no: OC344334 · VAT: GB 188 085 427

The Church of Saint Peter, Poulshot: **Tower Repairs: Phase II**
Bells and Tower Access Improvements

1.0 SUMMARY OF PROPOSALS

The Church of St Peter at Poulshot is Grade II* listed: see appendix A. The two-stage stone tower is located at the western end of the nave and dates from 1853. An external door on the south elevation leads to the base of the tower; an internal door provides access to the nave: see Fig 1.

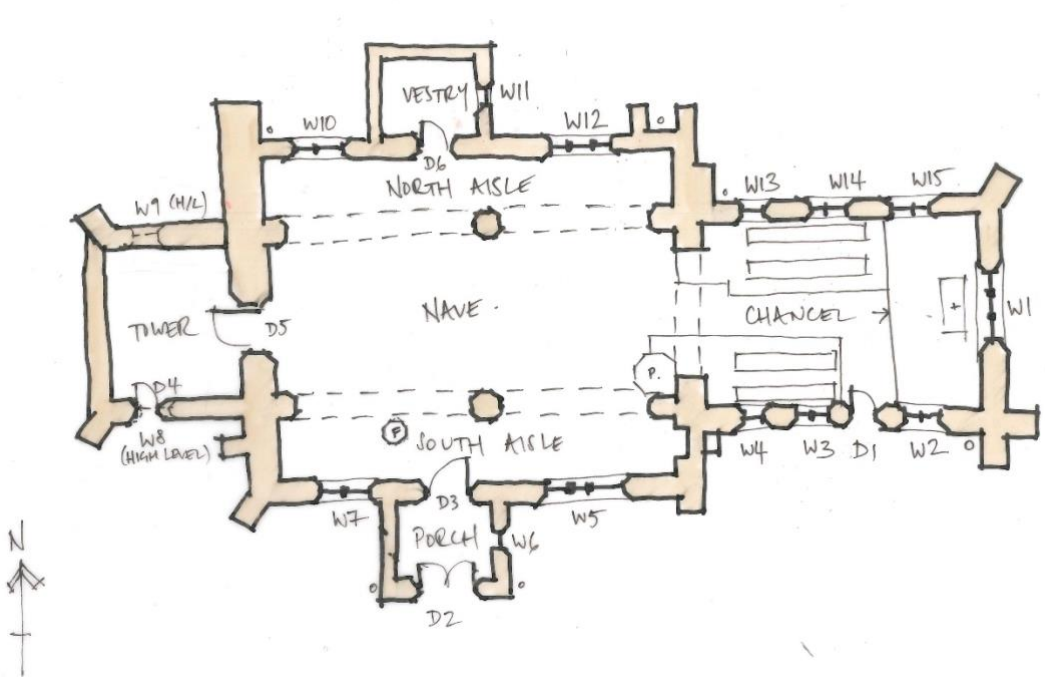


Fig 1. Sketch Plan of Church.

In 2018 the roof to the tower was repaired as part of the first phase of works to restore and repair the fabric of the tower. This has prevention the ingress of water which was damaging the internal fabric of the tower including the bell chamber and bell frame. Also undertaken was the repair of the fixed metal mesh to the window opening of the bell chamber.

The delayed Phase II works will focus of the conservation and repair of the internal fabric of the tower and particular the bell chamber, the bell frame, and the bells.

The Bells

The conditions of the bell chamber and the bell frame have been of concern for many years: see Fig 2 photos. The three bells have not been rung together in living memory although one bell is believed to have been rung up until more recent times. The three bells and their frame were inspected by Nicholson Engineering Ltd in 1997 and a report made on their age and

condition, with options for their future restoration. It was noted in the report that the bell frame and treble bell were listed by the Council for the Care of Churches as being worthy of preservation due to their antiquity (P6 and P7).

As part of the Phase II project, Nicholas Engineer Ltd made a further inspection on the 10th of June 2021 and updated their report accordingly, a copy of which is contained in this application: appendix B. This looked at the various options for the restoration of the bells but concluded that the restoration to full circle ringing was not appropriate due to the small size of the Tower, the importance of maintaining the bell frame and the issues of surrounding tuning and that hanging the bells for stationary chiming was preferable (P14).



Fig 2: photos of the Bell Chamber, the bell frame, and bells.

On the 19th May 2021 the tower fabric was inspected by Andrew Waring, an experienced conservation structural engineer. A copy of his report is also included in this report: Appendix C. Generally, the report was encouraging concerning the fabric of the Tower, but he expressed concern with the return to any full circle ringing of the bells and strongly recommended this option was not pursed. The report also recommended some minor repairs to the west end of the central foundation beam to the Bell Chamber. This is outlined in Andrew Waring report. These repairs will be undertaken by Nicholas Engineering to Andrew Waring specification and detailing.

After careful consideration and discussion with Nicholas Engineering Ltd, Andrew Waring and the churches architects, the church have decided to retain and conserve the existing bells and frame but restore them to stationary electric chiming rather than full circle ringing pearl: quotation No.2 and 2A of Nicholas Engineering Ltd report (P19 and P20).

Tower Access Improvement

Also considered in the Phase II works is the improvement of access to the Sound Deadening Chamber and Bell Chamber from the ground floor of the Tower. At present the access to this level is by a fixed timber ladder set on a small timber platform located in the southeast corner of the tower about 2.7m above the ground floor of the tower. This platform is small, and the ladder and platform are in questionable condition: see Fig 3 photos below. An improvement in access would facility more regular and safer inspection and maintenance of the bell chamber. The proposal is to remove the existing platform and provide a larger timber access platform to the east end of the tower situated at the same level as the existing platform. A new fixed timber ladder can then be fitted with a straight rise to the existing floor hatch to the Sound Deadening Chamber. Guarding and handrails are also proposed to provide greater safety. A propriety aluminium 'loft' type ladder will be fitted to the north end of the new

access platform to facility quicker and safer access to the platform without the need of another separate ladder. The arrangement would also see the repair and refixing of the timber access hatch to the Sound Deadening Chamber with a gas piston stay. The proposed arrangements are shown in detail in the attached drawings 1208-02-201 & 202 to this application.

Fig 3: photos of existing access platfrom and fixed ladder to Sound Deadening Chamber

A Daytime Bat and Nesting Bird Survey Report was commissioned in 2017 before the works to repair the Tower roof: see appendix D. This report states that there was no 'evidence of roosting bats' (P10) due to the 'population of rooks and jackdaws within the boundaries and tower' (P11). The previous works have seen the reinstatement of the wire mesh to the Bell Chamber window openings and the closing of any holes in the roof.

A statement of Significance and Need from the church is included with this report to support this application.

Note: Also included is a copy of the 2016 Tower Survey by Arthur Needham of Vitruvius Conservation: see Appendix E

2.0 SPECIFICATION

NB To be read in conjunction with the drawing and schedule of works.

G20 CARPENTRY/TIMBER FRAMING/FIRST FIXING

To be read in conjunction with Schedule of Works and Drawings

TYPE(S) OF TIMBER

2 TIMBER PROCUREMENT

- Timber (including timber for wood-based products): Obtained from well managed forests/ plantations in accordance with:
- The laws governing forest management in the producer country or countries.
- International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
- Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

5 STRUCTURAL SOFTWOOD DOUGLAS FIR FOR PLATFORM BEAMS, GUARDINGS, FIXED LADDER AND HANDRAILS

- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Timber of a target thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber to be well seasoned and free from decay or insect attack.
- Strength class to BS EN 338: C16.
- Treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8, Service life: 40 years.

30 SELECTION AND USE OF TIMBER:

- Do not use timber members, which are damaged, crushed or split beyond the limits permitted by their grading.
- Ensure that notches and holes are not so positioned in relation to knots or other defects that the strength of members will be reduced.
- Do not use scarf joints, finger joints or splice plates without approval.

35 WELL SEASONED SOFTWOOD FOR GENERAL USE

- Free from decay, insect attack (ambrosia beetle excepted) and with no knots wider than half the width of the section.
- Surface finish: Unwrot.
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C.
- Moisture content at time of erection: As clause 450

41 BOLT/ SCREW ASSEMBLIES GENERALLY.

- Designation: in stainless steel grade 316.
- Size: To be confirmed.
- Coating applied by manufacturer: None.
- Nuts and washers: Material grade and finish to suit bolts
- Washer dimensions: Diameter/ side length of washers in contact with timber faces to be minimum 3 times bolt diameter, with a thickness not less than 0.25 times bolt diameter.

211 TIMBER REPLACEMENT:

Timber replacement should be on a like for like basis; any metal fastenings required shall be of stainless steel. Structural members shall not be cut away except where marked by the architect.

WORKMANSHIP

410 DIMENSIONS OF TIMBER:

- As shown on drawings

440 PROCESSING TREATED TIMBER:

- Carry out as much cutting and machining as possible before treatment.
- Retreat all treated timber, which is sawn along the length, ploughed, thicknessed, planed or otherwise extensively processed.
- Treat timber surfaces exposed by minor cutting and drilling with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer, all in accordance with English Nature requirements under section Z12.

450 MOISTURE CONTENT:

- At time of covering to be not more than 22%. Arrange construction sequence and protect timber as necessary during works to ensure that specified moisture content is not exceeded.

510 PROTECTION

- Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
- Store timber and components under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Ensure free movement of air through the stack.
- Arrange sequence of construction and cover timber as necessary during and after erection to ensure that specified moisture content is not exceeded.

JOINTING TIMBER

570 JOINTING/FIXING GENERALLY:

Where not specified otherwise, select fixing and carpentry jointing methods and types as appropriate and to the CA's approval. Fastenings to comply with relevant British Standards.

Material/finish: stainless steel.

630 BOLTED JOINTS:

Locate holes accurately and drill to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.

Place washers under all bolt heads and nuts, which bear directly on timber. Use spring washers in locations, which will be hidden or inaccessible in the completed building.

Tighten bolts so that washers just bite the surface of the timber and at least one complete thread protrudes from the nut.

Check at agreed regular intervals up to Practical Completion and tighten as necessary to prevent slackening of joints.

650 CARPENTRY JOINTS:

Form carpentry joints as appropriate and to the CA's approval, traditionally pegged and accurately cut.

670 FIXINGS AND FASTENERS

All fixings and fasteners to be stainless steel.

ERECTION AND INSTALLATION

770 ADDITIONAL SUPPORTS

Provision: Position and fix additional studs, noggings and/ or battens to support edges of sheet materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings.

Material properties: Additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

784 JOISTS GENERALLY

Centres: Equal, and not exceeding designed spacing.

Bowed joists: Installed with positive camber.

End joists: Positioned approximately 50 mm from masonry walls.

795 TRIMMING OPENINGS

Trimmers and trimming joists: When not specified otherwise, not less than 25 mm wider than general joists.

K20 Timber board flooring/ sarking/ linings/ casings

120 Timber board flooring

Description: To Enlarged Access Platform
Substrate: Douglas Fir Beams
Boards:
Standard: To BS EN 14342.
Wood species: Well seasoned tanalised soft wood (class 3)
Quality: To BS EN 13990, Grade B
Finished face width (exposed width after fixing): 150mm
Finished thickness: 22 mm
Edge profile: Tongued and grooved
Moisture content at time of fixing: 12-16%
Fixing: 50 mm oval brad head nails, two per board.
Fixing centres: In accordance with BS 8201.

230 Timber board

Description: To South Bell Chamber Window
Substrate: External quality treated softwood frame
Boards: Well-seasoned tanalised soft wood (class 3)
Standard: To BS EN 14342.
Wood species:
Quality: To BS EN 1186-3 Class 2, Grade B
Finished face width (exposed width after fixing): 125mm
Finished thickness: 22 mm
Edge profile: Square
Moisture content at time of fixing: 12-16%
Fixing: S/S screws with no less than 40mm bearing into frame two fixings per board to each end
Fixing centres: In accordance with BS 8201.

310 Workmanship generally

Protection during and after installation: Keep boards dry. Protect from dirt, stain and damage until Completion.
Boards to be used internally: Do not install until building is watertight.
Methods of fixing, and fasteners: stainless steel.
Moisture content of timber supports at time of fixing boards: Not more than 18%.

330 Moisture content of timber

Conditions during and after installation: Control ambient temperature and humidity conditions to maintain moisture content at average level specified in BS EN 942, Table B.1 for the relevant service condition until Completion.
Test for moisture content: When instructed, using an approved moisture meter.

350 Treated Timber

Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

370 Fixing boards

Environmental conditions: Do not fix boards when ambient temperature is at or below 0°C, or above 30°C.
Generally: Fix boards securely to each support to give flat, true surfaces free from undulations, lipping, splits and protruding fasteners.
Timber movement: Position boards and fixings to prevent cupping, springing, excessive opening of joints and other defects.
Heading joints: Tightly butted, central over supports and at least two board widths apart on any one support.
Edges: Plane off proud edges.
Exposed nail heads: Neatly punch below surface.

Z10 Purpose made joinery

10 FABRICATION

- Standard: To BS 1186-2.
- Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless
  shown otherwise.
  - Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining
    defects.
- Joints: Tight and close fitting.
- Assembled components: Rigid. Free from distortion.
- Screws: Provide pilot holes. Heads of countersunk screws sunk at least 2 mm below surfaces visible in
  completed work.

20 CROSS SECTION DIMENSIONS OF TIMBER

- General: Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes:
  - Softwood sections: To BS EN 1313-1.
  - Hardwood sections: To BS EN 1313-2.

30 PRESERVATIVE TREATED WOOD

- Cutting and machining: Completed as far as possible before treatment.

- Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution
  recommended by main treatment solution manufacturer.

40 MOISTURE CONTENT

- Wood and wood based products: Maintained within range specified for the component during
  manufacture and storage.

50 FINISHING

- Joinery surfaces: Smooth, even and suitable to receive finishes.
  - Arrises: Eased unless shown otherwise on drawings.
- End grain in external components: Sealed with primer or sealer as section M60 and allowed to dry
  before assembly.

Z12 Preservative/ fire retardant treatment

10 TREATMENT APPLICATION

- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
- Certification: For each batch of timber provide a certificate of assurance that treatment has been
  carried out as specified.

20 COMMODITY SPECIFICATIONS

- Standard: Current edition of the British Wood Preserving and Damp-proofing Association (BWPDA)
  Manual.

40 ORGANIC SOLVENT PRESERVATIVE TREATMENT

- Solution:
  - Manufacturer: to contractor's choice.
    Product reference: to contractor's choice.
  - Application: Double vacuum + low pressure impregnation, or immersion.
- Moisture content of wood at time of treatment: As specified for the timber/ component at time of
  fixing. After treatment, timber to be surface dry before use.

Z20 Fixings/ adhesives

10 FIXINGS GENERALLY

- Integrity of supported components: Types, sizes and quantities of fasteners/ packings and spacings of
  fixings selected to retain supported components without distortion or loss of

support.
- Components/ substrates/ fasteners of dissimilar metals: Fixed with isolating washers/ sleeves to avoid
  bimetallic corrosion.
- General usage: To recommendations of fastener manufacturers and/ or manufacturers of components, products or materials fixed and fixed to.
- Appearance: As approved samples.

25 FASTENER DURABILITY
- Fasteners in external construction:
  - Fasteners not directly exposed to weather: Of corrosion resistant material or with a corrosion
    resistant finish.
  - Fasteners directly exposed to weather: Of corrosion resistant material.

30 FIXINGS THROUGH FINISHES
- Penetration of fasteners/ plugs into substrate: To achieve a secure fixing.

35 PACKINGS
- Materials/ function: Noncompressible, noncorrodible, rot proof to take up tolerances and prevent
  distortion of materials/ components.
- Locations: Not within zones to be filled with sealant.

50 PELLETED COUNTERSUNK FIXINGS
- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Pellets: Cut from matching timber, grain matched, glued in to full depth of hole and finished flush
  with surface.

60 ADHESIVES
- Storage/ Usage: In accordance with manufacturer's and statutory requirements.
- Surfaces: Clean. Regularity and texture adjusted to suit bonding and gap filling characteristics of
  adhesive.
- Finished adhesive joints: Fully bonded. Free of surplus adhesive.

The Church of Saint Peter, Poulshot: **Tower Repairs: Phase II, The Bells and Tower Access Improvements**

4. FULL SCHEDULE OF WORKS

to be read in conjunction with preliminaries, specification, and drawings

STAGE A: WORKS TO BELLS		
1.00	**BELLS PRELIMINARIES**	*pricing column:*
1.01	Site set up/wc/messing facilities: Electricity and water: supply is available from church by agreement with Employer. Water is available from an external tap located at the base of the tower. Electrical outlets are in the tower at ground level.	
1.02	Compound and site facilities: Access to the tower for the contractor will be via the ground door situated in the south side of the tower. The extent of the contractor's compound is to be agreed. The contractor is to provide all welfare facilities for the duration of the works.	
1.03	Site supervision: Working site foreman to be always on site.	
1.04	Security and safety measures: The contractor will be responsible ensuring the site is secured at the end of each day or when not occupied. This is to be agreed with the client before the start of the works.	
1.05	Any temporary internal access to the high levels of the Tower	
1.06	Insurances:	

1.07	CDM compliance Provide all necessary Risk Assessments and Method Statements (RAMS) before start of works and act as Principal Contractor for duration of works.	
2.00	**ENABLING WORKS**	
2.01	The Structural Engineer has identified some small repairs required to the timber foundation beams to the Bell Chamber: Refer to Structural Engineers Report dated 27th May 2021. The Exact details are to be agreed onsite with Andrew Waring and to be carried out by Nicholson Engineering Ltd.	
2.02	Clear nesting debris from floorboards to the Sound Deadening Chamber and Bell Chamber.	
2.03	Once bells are removed allow for architect to inspect Bell Chamber floor and to schedule repairs to flooring to chamber.	
2.04	Removal of fixtures and fittings within the ground floor of the Tower to safe location within church as identified by client. Reopen south facing door to ground floor of tower for access. Provide any signage or barriers as required for safe access to and from church from road. Temporarily seal door to the church Nave to prevent unauthorised access and ingress of dust. Access to the interior of the tower is through a door on the southern tower elevation.	
2.05	Carefully remove the existing fixed ladder to the intermediate first floor or bell chamber floor. The ladder is to be refitted after completion of works.	
2.06	Ground floor of bell chamber is to have temporary protective covering of plywood.	
3.00	**REPAIR WORKS TO BELLS & BELL FRAME BY NICHOLSONS ENGINNERING LTD**	
3.1	Basic conservation works to be undertaken to all three bells by specialist operators to restore them to stationary chiming. The three bells to comprise the tenor, treble and second.	

3.2	The works are described in detail in Nicholson Engineering Updated Report dated 9th July 2021: Quotation option No 2 with Supplementary Quotation Option 2A (P19 to 20).	
3.3	The careful dismantling of the three bells and lowering them to the ground floor ringing chamber of the tower. Requires temporary dismantling of bell chamber floor by removal of floorboards.	
3.4	Careful cutaway, drill out and entirely remove all remains of original cast-in crown staples from the heads of the bells using mobile drilling rig in ground floor of tower. Drill in new central stress-relieving holes through bells though which new independent crown staples may be fitted.	
3.5	Make and fit new iroko deadstocks for all three bells with stainless steel mounting brackets and forged new stainless-steel bell-supporting strapwork.	
3.6	Provide and install internally mounted electro-magnetically operated hammer for all three bells complete with stainless independent crown staples with insulating washer between it and inside of bell. Provide an AstroPCE fully programable control unit with a DCFF77 antenna with digital interface and all necessary components contained in a weatherproof enclosure. Provide a four-channel radio remote control system with 3 x remote fob controls.	
3.7	Stock the bells down with deadstock and fit and tighten new strapwork. Hoist bells into tower and rehang in existing bellframe. Install new hammers and leave in correct set and adjustment. Install new interface unit in Sound Deadening Chamber and connect to hammers using heat resisting cable.	
3.7	Install the AstroPCE in ringing chamber connect up a CAT5 cable between control position and interface unit. Install switched fused spur at control position and connect to the AstroPCE. Install second switched fused spur at the interface unit position and connect to the unit.	
3.8	Programme the system to client requirement. Test and commission system and demonstrated to client how to use.	
3.9	Provide all necessary health and safety, electrical installation certificates and building manual documentation to the client and church architect.	

3.10	On completion refix all temporary fixtures and fittings. Reopen west door. Remove all protection. Clear and remove all debris from works to Tower.	
4.00	**CONTINGENCY**	
4.01	General contingency sum.	£2,500.00
5.02	Total	
	VAT at prevailing rate	
	TOTAL	

STAGE B: Access improvements to Bell Chamber & installation of new internal timber louvres to south window opening to Bell Chamber.

1.00	**PRELIMINARIES**	*pricing column:*
1.01	Compound and site facilities: Allow for any welfare facilities for the duration of the works such as a porta-loo: there are no toilets in the church or nearby. Electricity and water supply is available from church by agreement.	
1.02	Access: Allow for any access equipment required during the works.	
2.00	**ENABLING WORKS**	

2.01	Allow for removal of fixture and fitting within the ground floor of the tower to safe location within church as identified by client.	
2.02	Allow for the careful removal of the existing access timber platform and fixed timber ladder within Tower ground floor level to Sound Deadening Level. Allow for making good as required.	
2.02	Ground floor of Tower is to have temporary protective covering of plywood during works.	
3.00	**ACCESS IMPROVEMENTS Refer to architects' drawings 1202-02-201 & 203 and specification.**	
3.1	Supply and install new timber access platform on east side of Tower as shown on drawings. Platform to be constructed out of well-seasoned Douglas Fir with tanalised softwood floorboards: refer to specification. Platform to be bolted to existing stonework with stainless steel fixings. To include new timber handrail to be a minimum of 900mm above level of platform. This to be constructed from well-seasoned Douglas Fir and firmly bolted to edge beam of platform with stainless steel fixings.	
3.2	Supply and install new fixed timber access ladder to Sound Deadening Chamber as shown on drawings. Include for handrail on inner (east) side of ladder as shown. To all be constructed from well-seasoned Douglas Fir. All fitting to be stainless steel.	
3.3	Allow for £300 Provisional Sum for supply and installation of proprietary retractable aluminium access loft ladder to new access platform.	**£300**
3.4	Allow for repair and refixing of existing floor hatch to sound Deadening Chamber as shown on drawings. To include supply and fitting of new stainless-steel hinges and gas piston stay (110°) to existing timber hatch and new stainless-steel handrail to side of hatch opening. Include for removal of existing ferrous metal stay/handle to hatch opening.	
3.5	Supply and fit new internal tanalised softwood louvre boards fitted into treated external quality timber frame to inside of west facing Bell Chamber window opening, as shown on drawings. All fittings to be stainless steel. Allow for 1.3mx1.8m.	

3.6	On completion remove temporary protection and access equipment from Tower. Clear all debris from site including any temporary porta-loo etc. Replace fixture and fitting removed during works.	
5.00	**CONTINGENCY**	
5.01	General contingency sum.	£250.00
5.02	Total	
	VAT at prevailing rate	
	TOTAL	
6.00	**EXTRA OVER COST**	
6.01	Allow for extra over cost for structural carpentry to be constructed out of well-seasoned European Oak in lieu of Douglas Fir; platform beams, guarding and fixed ladder and handrail.	

APPENDIX A: LISTING: CHURCH BUILDING

CHURCH OF ST PETER

11 contributions

Overview

Heritage Category:
Listed Building

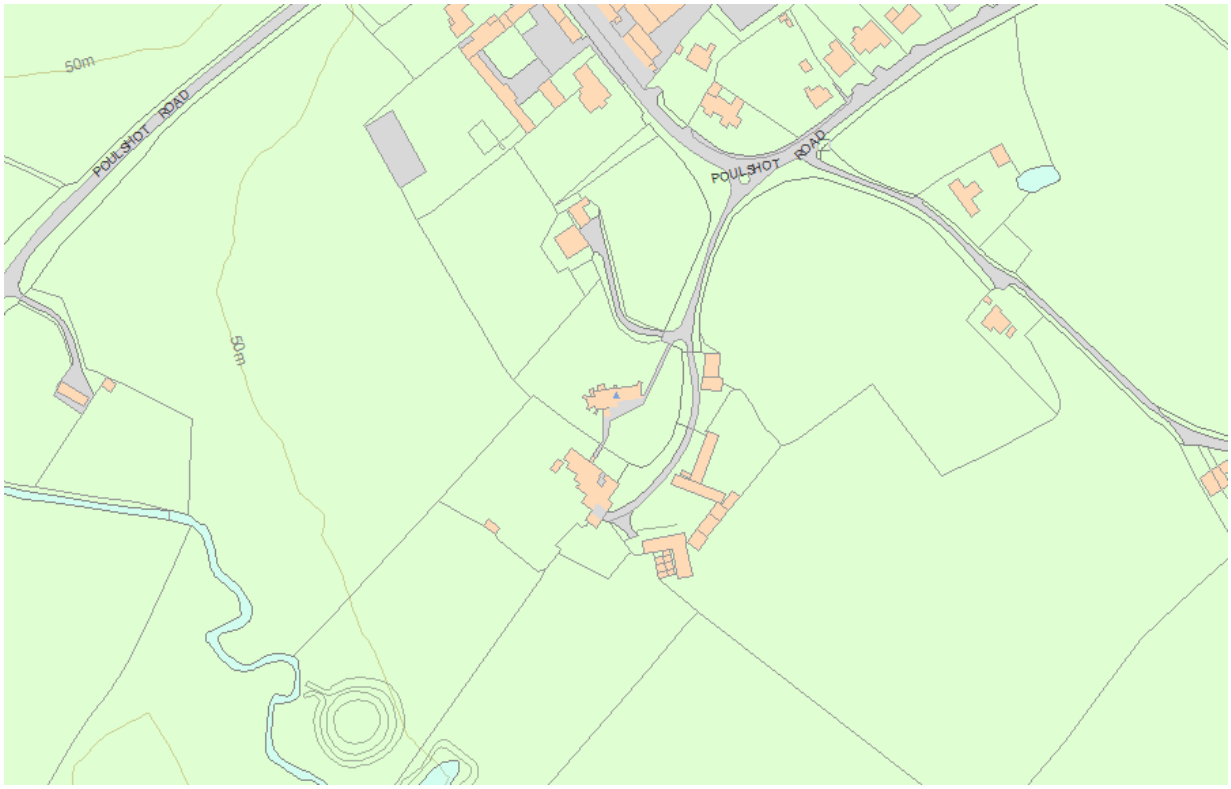
Grade:
II*

List Entry Number:
1272991

Date first listed:
19-Mar-1962

Statutory Address:
CHURCH OF ST PETER

Map



Location

Statutory Address:

CHURCH OF ST PETER

The building or site itself may lie within the boundary of more than one authority.

District:

Wiltshire (Unitary Authority)

Parish:

Poulshot

National Grid Reference:

ST9642658809

Details

ST 95 NE POULSHOT TOWNSEND

7/198 Church of St Peter 19.3.62 II*

Anglican parish church, C13 to C15 with west tower of 1853. Rubble stone and ashlar with stone slate roofs and coped east gable. Nave with continuously roofed aisles, south porch and C19 north vestry, chancel and west tower. Tower is 2-stage with 2- light bell-openings, moulded cornice and pyramid roof. Three- window nave has south side 2-light leaded window with arched lights C16 or C17, large projecting gabled south porch with moulded plinth and moulded round-arched doorway, possibly C16, and 3-light C15 or C16 flat-headed window with cusped lights. Angle buttresses. North side has similar 2-light, C19 gabled vestry and similar 3- light, but with stone coped gable over. Heavy north-west angle buttress, two north-east buttresses. Chancel has pointed cusped single light each side, then large 2-light, that to north with hood and Y-tracery, that to south replaced by plain C17 chamfered mullion window with hoodmould, then flat-headed 2-light C15 or C16 cusped window. Similar east end flat-headed 3-light. South side has low pointed doorway. Interior: 2-bay arcades with octagonal piers and 2-chamfer arches Narrow aisles with various C12 capitals

inset. C20 nave roof. West end wall has 2 cusped lancets in deep reveals and narrow centre door. Depressed-arch recess or blocked door to left. Pointed arched north door, now to vestry. Pointed arches at east end of each aisle, that to north aisle with rood stair. Two- chamfer chancel arch, inner order stopped on short wall shafts on head-corbels. Chancel has trussed rafter roof and south wall piscina and recess. (N. Pevsner Wiltshire, 1975)

Listing NGR: ST9642658809

Legacy

The contents of this record have been generated from a legacy data system.

Legacy System number:
446795
Legacy System:
LBS

Sources

Books and journals
Pevsner, N , The Buildings of England: Wiltshire, (1975)

Legal

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

APPENDIX B: Report by Nicholas Engineering Ltd prepared in 24/4/97 and updated on 9th July 2021.

NICHOLSON ENGINEERING LTD

Works: Church Bell Works, St.Swithin's Road, Bridport, Dorset. DT6 5DW
Telephone (01308) 422264 Facsimile: (01308) 427172
Correspondence: Walton, Woodmead Road, Lyme Regis, Dorset. DT7 3AB
Telephone (01297) 445865
Email: bells@nicholsonbellhangers.com
Website: www.nicholsonbellhangers.com

Church of St.Peter Poulshot

Contents:

Church Bellhangers of Distinction

Registered in England No 3047073
VAT Reg.No. 651 2463 55

Customer Charter

The majority of our work is for churches worldwide, other work including clock chimes in secular buildings. We are ourselves active members of our own churches and have between us served variously as Churchwarden, Ringing Master, Organist, Fabric Officer and PCC member. As such we know, understand and appreciate the unique nature of any work to churches and the often conflicting requirements which exist when working on a historic building which is also a living place of worship. We also appreciate the essential need to undertake any work to the very highest standard, both in offering only the very best to the Glory of God and recognising that our work is likely to have to stand the test of time over the decades and centuries to come. It is our privilege to work upon some of the nations' finest and most historic buildings small and large and to become part of the history of the communities we serve.

- ❖ The quality of the service we offer is second to none. Our Managing Director Andrew Nicholson is freely available to discuss your requirements or concerns before, during and after any work is complete.
- ❖ We are pleased to welcome visitors to our works to view our facilities and to see work in progress. It would be wise to make prior arrangements before visiting.
- ❖ We promise that, unless the specification has been changed by mutual agreement, when a quotation is accepted and dates agreed the price offered will be the price you pay. We never charge "extras".
- ❖ We insist on using only the very finest materials and equipment available.
- ❖ Only the casting of bells is sub-contracted albeit designed by us, all other work being under the care of our own dedicated and skilled team of craftsmen.
- ❖ We will ensure that any disruption to your place of worship is kept to a minimum while we are working there. We recognise that funerals may occasionally have to take place while we are at the church and will ensure that materials are stored as discretely as possible and that work ceases while the service is in progress.
- ❖ We will at all times treat your place of worship with the care and respect it deserves.
- ❖ Upon completion of any work we will clean away all mess and rubbish from the site and leave all as we found it.
- ❖ We will conform to all current Health & Safety regulations while we are working at your church.
- ❖ Upon completion of any work we will fully test all and leave ready for use. Where any new equipment has been installed we will provide instruction on its care and use.
- ❖ Our work carries a full ten year guarantee on all new parts, the only exceptions being those parts liable to wear and tear unless failure has been due to faulty workmanship or materials. Our guarantee assumes that any installation will be subject to proper maintenance. We are pleased to offer maintenance contracts.
- ❖ Whilst we may not initially be the cheapest available, we offer true long-term value for money and superlative standards of service.
- ❖ We take great pride in offering work of the very highest quality and guarantee total satisfaction to all our clients.

Report dated 24/4/97

GENERAL

Access to the church is by level gravel paths leading to the south porch. A grassed area of churchyard gives access from the main path to the tower south door.

The church possesses a two-stage tower situated conventionally at the west end of the building. There are diagonal buttresses to the south-west and north-west corners. The north and south walls are effectively buttressed by the west walls of the nave aisles which are themselves buttressed. There is a lightning conductor which runs to ground on the south side.

The ground floor area formerly functioned as a ringing chamber when the bells were last rung. At 17' tall the chamber is a little taller than optimum though not excessively so. The chamber is lit by glazed windows to north and south. There was originally a window to the west which has subsequently been walled up. The tower south door opens to some 30" wide and thus the larger bells would not pass through, though it would be possible to get the treble through by tipping it on its side. There is a door in the east wall leading into the body of the church, this door measuring only 27" wide and thus there is no way any of the bells would pass through. In the ceiling is a central trapway with timber ladders leading up and providing access. The chamber measures 7' 8" east-west x 8' 0" north-south. The church electricity meters etc. are situated in the north-east corner.

The first floor chamber is 6' 3" tall to the ceiling and measures 7' 3" east-west x 8' 3" north-south, the east wall in particular being very irregular. There is electrical wiring passing up between the bellframe foundation and the east wall and then through a hole in the bellchamber east wall into the nave roof space. A timber ladder leads up to a man-access trap in the north-east corner.

The bellchamber is about 12' tall and there is a short spire which is open above. There are no roof timbers which would be adequate for lifting any of the bells, though it would not be difficult to insert lifting joists such as to rest upon the tops of the walls using some packing. There are sound openings to all except the east face of the chamber, all wired to exclude birds. The sound openings average about 41" wide and thus any of the bells would pass through if required following temporary removal of the central mullion and slate louvers etc..

We noted some structural distress in the form of cracks running up through the tops of all three sound openings. The cause of these cracks is not clear. There are also signs of localised distress between the tower and the original west wall of the church onto which the tower appears to have been added with little or no bonding.

BELLS

The church possesses a ring of three bells all as follows;

bell	diameter	weight	note	date	founder
Tenor	36 1/2"	8 1/2cwt	A (flat of)	1606	John Wallis, Salisbury
Second	33 1/8"	7cwt	B (flat of)	1606	John Wallis, Salisbury
Treble	30 1/4"	5 1/2cwt	C# (slightly flat of)	c.1450	Medieval Bristol foundry

The bells were all made with canons or supporting loops which they retain and from which they are at present still hung. The bells were also all made with cast-in crown staples, the crown staple being the part from which the clapper hangs. These staples or their remains are still in place although false crown staples have been fitted to the tenor and treble by fixing through holes cut in their crowns. It should be noted that cast-in crown staples and their remains are by far the most common cause of old bells becoming cracked. The staple is of wrought iron while the bell is of bronze and cracks are caused by a combination of differential expansion between the two metals and corrosion and consequent expansion of the wrought iron staple. It is now normal practice to remove such staples whenever possible.

The tenor bell has been quarter-turned at some time. Wear at the present strike points varies, by far the worst worn being the treble with wear of about 10% of total thickness, 10% being generally considered to be the wise maximum. It should also be noted that the clapper to the treble is striking the bell far too low which is likely to crack the bell.

All three bells are tonally individually good although the treble has a slight "beat". None of the bells has ever been tuned and all may thus be described as maiden bells. As will be seen from the table above, the strike notes of the bells are not well in line, the treble being conspicuously sharp with respect to the other two bells.

All three bells seem sound at present with no obvious cracks though only complete dismantling would allow a proper examination to be made.

The treble bell is listed by the Council for the Care of Churches as being worthy of preservation due to its antiquity.

FRAME

The bellframe is of oak and consists of sills, curved braces, kingposts and long frameheads all mortised together and pegged. The south frameside to the treble has scissor braces rather than curved braces. There are also some iron fittings to the bellframe though probably largely of later date. The bells are laid out such that the treble swings east-west with the remaining two bells swinging north-south. The bellframe is supported by three foundation joists which run north-south and rest on narrow offsets to the tower walls. In addition, the joists are also supported by stone corbels.

The major part of the bellframe may well date from the installation of the second and tenor bells in 1606 and considering its design, it is not likely that the frame is any later than 1606 and it is quite possible that it is a good deal earlier. It is apparent that the frame has been extensively repaired on at least two occasions the last being probably towards the latter part of the last century. The repairs then included the replacement of the treble frameheads and the south brace to the treble. It also seems that either the frame was constructed from second-hand timbers, or else such timbers have been used in its repair, most probably in the 18th century.

The design and layout of the bellframe is hardly ideal and would in our view not prove satisfactory for full circle ringing. In particular, the framehead to the south side of the treble is not continuous as is normal and it is consequently difficult to see how the width of the pit to the treble could remain stable with the tenor and second bells being rung.

It is apparent that the frame has never proved truly satisfactory as evidenced by the repairs and additions which have been made over the years.

The bellframe is listed by the Council for the Care of Churches as being worthy of preservation due to its antiquity.

FITTINGS

The bells all hang from elm headstocks fitted with strap gudgeons running in plain brass bearings let directly into the frameheads. The wheels are of traditional timber construction and the pulleys consist of simple rollers. All the bells were originally fitted with stays, sliders and runner gear though the sliders are now of wrought iron and the stay to the treble has been fitted to the same side of the headstock as the wheel. The clappers are of wrought iron, those to the treble and second having wooden tops and that to the tenor having a crude plain top. The treble and tenor clappers hang from false crown staples fixed through holes cut into the crowns of the bells, the second clapper hanging from the original cast-in crown staple.

The headstocks are now generally in very poor condition, that to the treble being perhaps the worst with much serious rot at its north end. The headstock to the second shows more general decay and attack by wood boring insects. The headstock to the tenor is in only fair condition.

The wheels are in completely derelict condition and quite beyond any further use, as are the pulleys.

The stays sliders and runner gear are all of crude manufacture and in poor condition and not suitable for any further use.

The clappers are of crude manufacture and in poor condition. The treble clapper is striking the bell far too low and very close to the lip of the bell, with a consequent risk that the bell may become cracked. The clapper is rather too long and the crown staple is very loose the combination of which has produced this situation.

RECOMMENDATIONS

The bell installation is in a derelict condition and is certainly not such as to allow any of the bells to be rung full circle. It is understood that the treble bell has been in use and rung by swing-chiming. Whilst the condition of the gear is generally such that swing-chiming the treble is probably reasonably safe, the fact that the clapper strikes too low is likely to crack the bell. We are of the opinion that even to swing-chime the two larger bells would be unwise. We therefore have to recommend that all ringing of any of the bells should cease until remedial works have been put in hand.

It should be possible to tighten the crown staple to the treble and adjust the length of the clapper as necessary in order that the treble bell may again be sounded by swing-chiming. Nevertheless even swing-chiming is only likely to be possible in the relatively short term due to the general condition of the remainder of the gear.

Overall there seems no alternative to having the bells completely rehung if they are all to continue to serve the parish for very much longer. If the bells are to be hung for swing-chiming they will need to be hung in a completely new bellframe with all new fittings. Such a frame should ideally be installed under the existing frame, though regrettably there is not space to allow this with all three bells hung on one level. It is most unlikely that permission to remove and discard the existing bellframe would be forthcoming as otherwise the new frame could be installed in its place when there would be enough space to allow the bells to housed upon one level. There would therefore seem to be three alternatives:

1. Rehang the bells in the existing bellframe, the bells to be hung dead and thus not able to be swung. The bells to be fitted with trigger action Ellacombe-type chiming hammers.

2. The bells to be hung as in no.1 but from new steel joists installed in the present intermediate chamber.

3. The existing bellframe to be hoisted up into the very top of the tower and retained and preserved there. There would then just be space underneath to install a new bellframe at the present level such that the bells could be either swing-chimed or even hung for full circle ringing as at present. With the bells hung at the present level there would be room to install up to five bells upon the same level assuming that the existing three bells would form the three larger of that ring of five.

One further alternative would be to either mothball or entirely dispose of the two larger bells and have the treble rehung for swing-chiming in the intermediate chamber.

Any restoration of these bells should include the complete removal of the existing cast-in crown staples so far as possible. If the bells are to be rehung for full circle ringing and augmented we would also recommend that the bells be carefully and sympathetically retuned to bring the strike notes and main partial tones into proper alignment. Should the tuning of all three bells not be allowed on conservation grounds, the least which could be done would be to tune the treble in isolation, the strike notes of the larger two bells being less out of line.

One hurdle which will have to be overcome in any restoration of these bells is the route by which they are to leave and return to the tower. The doorways at ground level are not wide enough to allow the larger bells through. The only workable solution would be to

temporarily remove the louvers and central mullion to one of the sound openings such that the bells could pass through freely. The tower would have to be scaffolded on the side of the opened sound opening and the scaffold would need to incorporate a substantial lifting point.

CONCLUSION

We very much regret having to be the bearers of bad tidings in that the ringing of the treble bell should cease.

There is no doubt that the restoration of these bells is long overdue with the core of the installation being something like 390 years old with relatively little having been done since. It could certainly be said that the installation has given remarkably good value for money.

We are confident that if the bells were to be rehung in line with any of the three main proposals outlined above, they would then be capable of serving the parish for many years to come. There can be no doubt that the rehanging and augmentation of the bells in a new frame would provide the parish with a fine ring of bells, this being the best solution although naturally at the greatest cost.

I trust that the above report is of help and that we have been of assistance to the parish in this matter. If there is anything further we can do to help do please let us know.

Andrew Nicholson
24th April, 1997.

Update on Report

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On 16th September 2002 we undertook a full tonal analysis of the bells. The frequencies of the principal and main partial tones are as follows, all expressed to the nearest half hertz:

Bell	Hum	Fundamental	Third	Fifth	Nominal
Tenor	215.5	426	521.5	617	872
Second	241	473	583	739.5	972.5
Treble	278.5	505.5	641.5	798	1070

Looking at the nominal or principal notes, it is immediately clear that the bells nowhere near being in tune one with the other. Taking the nominal of the tenor as the keynote or reference point as is usual, the second is a little flat and the treble is extremely flat. It is the alignment of the various partial tones or harmonics which determines the tonal quality or timbre of any musical instrument, bells being no exception. The alignment of the fundamental is the most critical to the tone of a bell and should be an exact octave below the nominal or half its frequency, a sharp fundamental making a bell sound very acid and a flat fundamental imparting a sour quality to the sound. The hum note is the next in importance and should be two octaves below the nominal or one quarter of its frequency, sharp hum notes tending to reduce resonance and fullness of tone, flat hum notes being mercifully rare. The third harmonic should normally be a minor third above an accurately aligned fundamental although some sharpness of this harmonic can be a benefit as it imparts brightness to the sound. The fifth harmonic is generally very weak in amplitude and not normally a major cause for concern. Analysis of the various partial tones shows the following to be the case;

Tenor
The hum note is a little flat, the fundamental is a little flat, the third harmonic is slightly sharp and the fifth harmonic is a semi-tone flat. Despite the flat hum note and fundamental, tonally this bell is very fair.

Second
The hum note is slightly flat, the fundamental is a little flat, the third harmonic is a little sharp and the fifth harmonic is somewhat sharp. Tonally this bell is very fair.

Treble
The hum note is approaching a semi-tone sharp, the fundamental is a semi-tone flat, the third harmonic is a little sharp and the fifth harmonic is slightly flat. On paper this bell looks good and one might expect it to be tonally good. Unfortunately this is not the case, due principally to split upper harmonics of large amplitude; tonally this bell is veery poor indeed.

The overall musical effect when the three bells are rung together in peal will sound distinctly uncomfortable, partly because of the very flat nominal to the treble but also because of the poor tonal qualities of the treble.

TUNING

It would in theory be perfectly feasible to put these three bells into tune with each other, at the same time correcting the alignment of the great majority of their partial tones or harmonics. In practice, however, there are a number of issues to consider;

1. There is a natural presumption against tuning any listed bell, the treble being so listed. There are relatively few bells from the medieval Bristol foundry in the Salisbury diocese and it is very unlikely that a faculty could be obtained for its tuning.
2. Although the tenor and second are not listed, the age of the bells makes it very likely that the Church Buildings Council and other heritage bodies would raise objections to the tuning of these two bells.
3. The doorway between the church and tower is very narrow and none of the bells could pass through; tuning could only be undertaken in our works using specialised machinery.

Although the second is flat relative to the tenor, it is not badly so and could be left as it is. As a result, both the tenor and second could be left untuned.

Turning to the treble, particularly if the bells are to be augmented to five or six, in our view the only way forward will be to replace it with a new bell sized a little smaller, as a result of which it would just be possible for it to pass through the doorway. The current bell will need to be retained, either in the base of the tower or else in the old bellframe. The new bell should be designed and accurately harmonically tuned to agree in pitch with the tenor and second.

With the three bells put into acceptable tune, it would be a straightforward matter to cast and tune additional bells to match should the parish so desire.

BELLS

All the bells seem to be sound, with no obvious cracks or other significant damage, though it should be noted that only complete dismantling would allow a proper examination to be made.

FRAME

Apart from the continuing accumulation of dust, the bellframe condition remains essentially unchanged.

FITTINGS

Corrosion of the ironwork has become worse over the last 24 years and the majority is now very near the end of its useful life, in particular the strapwork by which the bells are supported from their headstocks. As far as we could see all is currently safe but the matter can clearly not be left for very much longer.

The need for rehanging these bells with new fittings, whether for full circle ringing or for stationary chiming, is now acute.

POSSIBLE WAYS FORWARD

BELLS

As part of any work to these bells, it is very important that the existing cast-in crown staples be cut away, drilled out and entirely removed and central stress-relieving holes drilled through which new independent crown staple can be fitted. This is a standard conservation technique with all old bells, by which the chances of them becoming cracked in their crowns would be greatly reduced.

FULL CIRCLE RINGING PEAL, POSSIBLY AUGMENTED TO FIVE OR SIX

It is understood that there are those in the parish who would like to see the bells restored for full circle ringing and possibly augmented in number to five or six. With that in mind, we have spent a good deal of time considering how the bells might be accommodated.

The first point we must make is that the basic design of the current bellframe makes it unsuitable for full circle ringing, this being compounded by its condition. The situation is, however, complicated by the fact that the bellframe is of considerable age and of some antiquarian interest and importance; as a result it is very unlikely that a faculty would be granted for its removal and destruction. We have looked at the possibility of housing the bells lower in the tower, though unfortunately the chambers below bellchamber level are significantly smaller in plan and are of insufficient size to house a bell installation. The only way forward we can propose would be to hoist the current bellframe as high up in the bellchamber as possible and support it at that level on new joists. This would release the space which the bellframe currently occupies and we can confirm that with careful design it would just be possible to house a peal of five bells hung upon one level. Unfortunately, there is no way a sixth bell could be accommodated.

In considering this option, it should be remembered that ringing bells full circle would require a team of skilled bellringers, it taking the average person at least a couple of years to acquire the necessary skills.

STATIONARY CHIMING

Because they would not be swung, the only loads to be accommodated are the static weights of the bells and their fittings. The existing bellframe would be perfectly capable of dealing with the static loads.

The bells would be equipped with internally mounted chiming hammers hung from independent crown staples. The hammers could be either electrically or manually operated.

If electrically operated, the hammers would be driven by a programmable control unit which would be installed in the base of the tower. The system would include a radio remote control unit which, using a small hand-held fob, could be used to start and stop up to four pre-programmed sequences from anywhere in the church and for a short distance outside. The control unit could be programmed to provide a vast range of facilities, the following being but a few examples;

- Peals of bells of varying length
- Single calling or "five minute" bell
- Slow speed funeral toll
- Sanctus
- Angelus
- Hour strike
- Quarter chime

Any programmed sequence could operate either automatically at chosen times of the day/week/month/year, or manually from either the control position or using the remote control.

If manually operated, ropes from the hammers would be led down through the tower to an Ellacombe chiming frame installed on one of the walls in the ground floor chamber of the tower. The bells could be easily sounded by one person, no particular skills being required. It should however, be remembered chiming in this way involves some physical exertion and most people find they reach their limit after about five minutes and then need to take a rest.

CONCLUSION

There can be no avoiding the fact that a bell rung full circle ringing will produce a much fuller sound than if sounded by stationary chiming. However, partly because of the small size of the tower, the important early bellframe and the issues surrounding tuning, we feel we must question whether restoration for full circle ringing is appropriate in this particular case. Hanging the bells for stationary chiming would seem to have much to offer, particularly if electrically operated.

Whether hung for full circle ringing or stationary chiming, the bells would in mechanical terms be put into new condition. As such, the parish could expect the installation to serve it well for very many years to come before major work is again required.

I trust that the above report is of interest and assistance. If there is anything further we can do to help do please let us know.

Andrew Nicholson

Managing Director

9th July, 2021.

Quotations

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QUOTATION NO.1 – RESTORE THE BELLS, REPLACE THE TREBLE WTH A NEW BELL, AUGMENT TO FIVE WITH A FURTHER TWO NEW BELLS, AND HANG ALL FOR FULL CIRCLE RINGING IN A NEW BELLFRAME

Design and make a new steel supporting grillage for the existing bellframe. Send the steelwork for hot-dip galvanizing and then have all powder coated to maximise protection against corrosion.

Travel to the church with all necessary tools and equipment.

Dismantle the three bells and lower them to the ground, leaving the remains of their fittings permanently stored in the intermediate chamber.

Excavate pockets in the walls for the new supporting grillage for the bellframe high up in the bellchamber. Install temporary lifting steels at the top of the bellframe and install our lifting tackle. Hoist the bellframe high up in the bellchamber, leaving the existing bellchamber floor and joists in-situ. Install the new foundation joists in the pockets in the walls and build them in using the excavated stone and lime mortar manufactured by Rose of Jericho. Lower the bellframe down onto its new foundation.

Transport our mobile drilling rig to the church and assembly it in the ground floor chamber of the tower. Cut away, drill out and entirely remove all remains of the original cast-in crown staples from the heads of the bells. Using the drilling rig, drill central stress-relieving holes through which new independent crown staples may be fitted. Dismantle the drilling rig and transport it back to our works.

Hoist the current treble up into the tower and leave it in the old bellframe in its new position, the bell to be supported by a pair of seasoned oak bearers set across the frame sills.

Have three new bells cast from copper and tin to be the treble, second and third of five. The bells to be carefully designed, cast and accurately tuned to the very highest standards, the bells to be made to match the current tenor and second. The completed peal of five to form a single, cohesive instrument.

Make a new headstock for each of the bells, those to the existing tenor and second to be of canon-retaining type, all fitted with steel gudgeons set in true alignment, those to the smallest three bells to be made with staple adjusting screws for setting and maintaining even clappering. Send the headstocks for hot-dip galvanizing and then have them powder coated so as to provide industry-leading protection against corrosion.

Provide new heavy duty double row self-aligning ball bearings housed in cast iron plummer blocks. Fit the bearings to the new headstocks and charge with the correct lubricant before closing.

Make new wheels consisting of air-dried English oak spokes, ash soles steamed to shape and oak shrouds, all secured together with stainless steel screws. Each of the wheels to be provided with a pair of steel angle braces. All securing bolts to be of galvanised steel.

Make completely new pulleys consisting of cast nylon sheaves each running on two ball races all housed in hardwood boxes.

Make new stays and steam-bent sliders of finest quality ash, together with new hardwood runner boards and steel slider pins.

For each of the bells make a completely new clapper and crown staple consisting of a malleable iron clapper fitted with a Tufnol bush resiliently mounted in neoprene rubber, together with an independent crown staple fitted with a stainless steel hinge pin and with an insulation pad for fitting between the staple and the crown of the bell. The clappers to be carefully machined to the correct profile so as to emulate the performance characteristics of the best wrought iron clappers.

Provide a set of new bellropes, each consisting of a pure wool sally in a choice of colours together with a natural fibre tail for comfortable handling and with the benefit of a pre-stretched polyester top end machine-spliced into the body of the rope.

Construct an entirely new bellframe consisting of a double foundation of steel joists with lowside framesides built up from them, all such as to contain the five bells upon one level. The foundation joists to incorporate full-strength splices to avoid the need for double depth holes to be excavated in the tower walls. The whole of the bellframe to be extensively braced both horizontally and vertically. All steelwork to the bellframe to be sent for hot-dip galvanizing and to then be powder coated, this combination providing industry-leading levels of protection against corrosion. All bolts to the bellframe to be of spun galvanized steel.

Erect the whole of the bellframe, bells and ringing fittings in our works and carefully check and test all before dismantling for dispatch.

All ungalvanised steelwork to be primed as appropriate with a heavy zinc-rich primer and all then painted with two coats of top-quality machinery enamel.

All timber parts of the ringing fittings to be treated with a heavy application of exterior grade bat friendly preservative.

Transport all to the church.

Cut pockets in the walls for the new foundation joists. Cast concrete padstones true and level into four of the pockets.

Hoist the new foundation joists into the tower and install. Shutter up the pockets and fill all with concrete, ensuring that all is well-consolidated and that no voids are left.

Once the concrete has cured sufficiently, return to the church.

Assemble the remainder of the bellframe.

Stock the bells down with their headstocks and accurately balance each bell with its headstock, turning the largest two bells to present unworn surfaces to the blows of their clappers. Drill through the heads of the bells and fit spun galvanized steel supporting bolts together with insulation washers for fitting between the bolt heads and the insides of the bells.

Hoist the bells into the tower and hang true and level in the new bellframe. Assemble all the ringing fittings, test each bell and adjust for even striking and correct set at handstroke and backstroke.

Drill down through the floors for the bellropes in their new positions and fit turned and polished hardwood rope bosses. Where the ropes pass down through the intermediate chamber, install drawing pulleys where any rope is drawn away from the vertical and fit flapping boards.

Fit the ropes and adjust to a convenient length.

Try out the bells with capable local ringers and make any final adjustments which might be required.

Leave all ready for use.

We are prepared to undertake the whole of the above works, including time on site and in our works, materials, transport, men's' accommodation and expenses etc., for the sum of:

£88603

SUPPLEMENTARY QUOTATION NO.1A – ELECTRIC CHIMING SYSTEM

Install an electromagnetically operated chiming hammer to each of the five bells, the hammers to be externally mounted and positioned such that when at rest they are clear of the bells and their fittings.

Provide an AstroPCE fully programmable control unit together with a DCF77 antenna to ensure accurate timekeeping and automatic changes for summer and winter time. The AstroPCE to have a simple two position switch and red/green LED's which the ringers can use to disable the hammers when the bells are to be swung.

Make a digital interface unit together with all necessary components, all contained in a weatherproof enclosure.

Provide a four channel radio remote control system which, using a small hand-held fob, can be used to start and stop up to four programmed sequences from anywhere in the building and for a short distance outside.

Install the interface unit in the intermediate chamber and connect up the hammers using heat resistant cable.

Install the AstroPCE in the ringing chamber. Connect up a CAT5 cable between the control position and the interface unit.

Install a switched fused spur at the control position and connect up the AstroPCE. Install a second switched fused spur at the interface unit position and connect up the unit.

Programme the system as the parish requires.

Provide an electricians' installation/test certificate, all electrical work being undertaken by our in in-house fully qualified electrician.

Provide an instruction manual.

Test and commission the system and leave ready for use.

If done in conjunction with quotation no.1, we are prepared to undertake the whole of the above works, including time on site and in our works, materials, transport, men's' accommodation and expenses etc., for the sum of:

£6102

QUOTATION NO.2 – UNDERTAKE BASIC CONSERVATION WORK TO ALL THREE BELLS AND RESTORE THE EXISTING TREBLE FOR STATIONARY ELECTRIC CHIMING

Travel to the church with all necessary tools and equipment.

Dismantle the three bells and lower them to the ground, leaving the remains of their fittings permanently stored in the intermediate chamber.

Transport our mobile drilling rig to the church and assembly it in the ground floor chamber of the tower. Cut away, drill out and entirely remove all remains of the original cast-in crown staples from the heads of the bells. Using the drilling rig, drill central stress-relieving holes through which new independent crown staples may be fitted. Dismantle the drilling rig and transport it back to our works.

Hoist the tenor and second up into the tower and leave them safely supported on seasoned oak bearers.

Make a new iroko deadstock for the treble, all properly proportioned and well finished and complete with stainless steel mounting brackets. Forge up new stainless bell-supporting strapwork for the treble.

Provide an internally mounted electromagnetically operated hammer for the treble complete with a stainless steel independent crown staple, the crown staple to have an insulation washer for fitting between it and the inside of the bell.

Provide an AstroPCE fully programmable control unit together with a DCF77 antenna to ensure accurate timekeeping and automatic changes for summer and winter time.

Make a digital interface unit together with all necessary components, all contained in a weatherproof enclosure.

Provide a four channel radio remote control system which, using a small hand-held fob, can be used to start and stop up to four programmed sequences from anywhere in the building and for a short distance outside.

Transport all to the church.

Stock the treble down with its deadstock and fit and tighten the new strapwork. Hoist the bells into the tower and rehang in the bellframe.

Install the new hammer and leave it correctly set and adjusted.

Install the interface unit in the intermediate chamber and connect up the hammer using heat resistant cable.

Install the AstroPCE in the ringing chamber. Connect up a CAT5 cable between the control position and the interface unit.

Install a switched fused spur at the control position and connect up the AstroPCE. Install a second switched fused spur at the interface unit position and connect up the unit.

Programme the system as the parish requires.

Provide an electricians' installation/test certificate, all electrical work being undertaken by our in in-house fully qualified electrician.

Provide an instruction manual.

Test and commission the system and leave ready for use.

We are prepared to undertake the whole of the above works, including time on site and in our works, materials, transport, men's' accommodation and expenses etc., for the sum of:

£11054

SUPPLEMENTARY QUOTATION NO.2A – REHANG THE TENOR AND SECOND AND EQUIP THEM WITH ELECTRIC HAMMERS

Provide and install new deadstocks and hammers to the tenor and second, all as described for the treble.

Undertake additional programming for the extra two hammers.

Test and commission the hammers and leave ready for use.

If done in conjunction with quotation no.2, we are prepared to undertake the whole of the above works, including time on site and in our works, materials, transport, men's' accommodation and expenses etc., for the sum of:

£4783

QUOTATION NO.3 – UNDERTAKE CONSERVATION WORK TO ALL THREE BELLS AND REHANG THEM FOR STATIONARY MANUALLY OPERATED CHIMING

Travel to the church with all necessary tools and equipment.

Dismantle the three bells and lower them to the ground, leaving the remains of their fittings permanently stored in the intermediate chamber.

Transport our mobile drilling rig to the church and assembly it in the ground floor chamber of the tower. Cut away, drill out and entirely remove all remains of the original cast-in crown staples from the heads of the bells. Using the drilling rig, drill central stress-relieving holes through which new independent crown staples may be fitted. Dismantle the drilling rig and transport it back to our works.

Make a new iroko deadstock for each of the bells, all properly proportioned and well finished and complete with stainless steel mounting brackets. Forge up new stainless bell-supporting strapwork.

For each of the bells make an internally mounted manually operated trigger action chiming hammer together with an independent crown staple, the crown staples to have insulation washers between them and the insides of the bells.

Provide bellropes consisting of short pure wool sallies in a choice of colours together with a pre-stretched polyester top end.

Make a finely crafted seasoned oak chiming frame, all well finished and given a beeswax finish.

Transport all to the church.

Stock the bells down with their deadstocks and fit and tighten the new strapwork. Hoist the bells into the tower and rehang in the bellframe.

Install the new hammers and leave them correctly set and adjusted.

Mount the chiming frame securely on one of the walls in the ground floor chamber, securing it in position using stainless steel resin anchor bolts.

Drill down through the floors in the tower and install pulleys wherever required to properly guide the ropes from the hammers to the chiming frame.

Install the ropes and adjust them to the correct length.

Test and commission all and leave ready for use.

We are prepared to undertake the whole of the above works, including time on site and in our works, materials, transport, men's' accommodation and expenses etc., for the sum of:

£15915

EXCLUSIONS

Quotation no.1 specifically excludes any work which might be required in modifying or replacing the existing ladders and hatchways as may be required.

Quotation no.1 specifically excludes any repairs or replacements which may be required to the bellchamber floor.

POSSIBLE REDUCTIONS

If the parish is able to provide the fit, able-bodied assistance of two persons to assist with all the site work, we would be pleased to make a reduction as follows;

Quotation no.1	£10043
Quotation no.2	£2998
Quotation no.3	£3674

In considering the provision of such assistance the parish must realise that the work would be dirty and would involve a degree of heavy lifting and working at height, for all of which those assisting must be prepared and suited. Provided some basic health & safety criteria are adhered to, those assisting would be fully covered under the terms of our employers' liability insurance.

TERMS

For the above quotations we would require one third payment with order, one third upon commencement, with the balance due immediately on completion of the works according to this specification.

All prices are based upon current costs but will be held firm if accepted in writing within 90 days.

VAT

VAT is chargeable in addition as applicable at the rate current at the time. Provided the church is a listed building, the PCC should be able to make a retrospective application to the Listed Places of Worship Grant Scheme for a grant equal to the VAT paid.

GUARANTEE

For these works we would be pleased to offer a full ten year guarantee, the only exceptions being those items subject to wear and tear such as ropes, stays and sliders, except where failure is due to faulty workmanship or materials. All guarantees are given on the basis that the installation would be subject to full and rigorous maintenance and in particular that all fixings are kept fully tightened at all times.

FACULTY

A faculty will be required before these works may be commenced.

INSURANCE

We carry full public, products and employers' liability insurance in the sum of £10,000,000.

I trust that the above quotation is of interest and we look forward to being favoured with your valued instructions.

Andrew Nicholson

9th July, 2021.

APPENDIX C: Report by Andrew Waring of Andrew Waring Associates dated 27th May 2021

ANDREW WARING
ASSOCIATES

Our Ref: 11495.1/ADW/LL

27th May 2021

Mr C King
St Anns Gate Architects
The Close
Salisbury
Wiltshire
SP1 2EB

Dear Christian

RE: St Peters Church, Poulshot
Tower Report

Further to our joint site visit of 19th May 2021 I now write to report upon my findings relating to the western tower and bells installation.

1.0 Inspection

The bell tower ties at the western end of the nave and is clearly a later addition. The infilled windows in the nave west wall are a clear indication of this.

The tower is of relatively small plan area measuring some 2.8 metres by 3.4 metres internally. The walls are of stone throughout, some 850mm thick in the lower stage and slightly thinner at high level due to a set-back on the inner face at bell chamber level.

The lower stage is some 5.6m from ground level to the underside of the sound deadening chamber floor. The masonry is all in good order with no signs of cracking or movement.

The sound deadening chamber floor comprises timber joists, 175mm deep, spanning north to south with a central bell hatch trimmed into the floor. The joists have 22mm boards, both above and below the joists.

The chamber is some 2.1m high to the underside of the foundation beams beneath the bell chamber floor. The masonry walls are again in generally good order with only minor cracking in evidence.

The bell chamber floor, and indeed the bell frame, is supported on three main timber foundation beams, one at each edge and one central, spanning north to south across the tower, supported on stone corbels set in the external walls.

CONSULTING CIVIL AND STRUCTURAL ENGINEERS

Address & Registered Office: The Old Brewery House, Portersbridge Street, Romsey, SO51 8DJ
Tel: (01794) 524447 Email: mail@awaromsey.co.uk Web: awaromsey.co.uk

Andrew Waring Associates is the trading style of Andrew Waring Associates Ltd. Registered in England & Wales No.4596312
Directors: Andy Simpson MEng(Hons) CEng MICE & Mark Kent BEng Hons, MSc
Technical Director: David Stott BTech (Eng)
Consultants: Andrew Waring BTech (Eng) CEng MICE MIStructE, Nigel Challis BEng (Hons) CEng MIStructE, Tony Mayhew BEng MSc DIC CEng MIStructE

Transverse beams then span east to west which support the bell frame. Most of the beams were in reasonable condition with only one showing marked decay.

The tower then extends a further 4 metres or so above the floor level with arched window openings on three sides. There is a pyramidal roof to the top of the tower which has been fully overhauled and repaired in the last few years.

The external walls are in relatively sound condition though there is some historic cracking over the arched window openings and down the sides of the openings.

There are three bells housed in the tower upper stage, set at a single level with the bearing some 1.6m above floor level. There is a report by Andrew Nicholson, dated 1997, which describes the bell-frame and the bells is some detail and also draws very sensible conclusions regarding the future options for bell ringing in the tower.

Externally, the tower is in excellent condition throughout. The tower walls are buttressed by the nave arch walls on the north and south sides and by two diagonally orientated buttresses on the south west and north west corners.

2.0 Discussion

2.1 Tower Fabric

The tower fabric is in generally sound order throughout with only minor cracking in evidence.

The tower was clearly a later addition to an earlier west front and there are various infilled window and doorway openings visible as well as changes in line of the wall which could relate to an earlier spiral staircase. The tower north and south walls abut the original west front without being fully bonded in and there are some narrow infill sections evident. Never-the-less there are few signs of movement.

The tower shows some historic movement, which is concentrated in the bell chamber level over and around the window openings; this cracking has been repointed.

2.2 Sound Deadening Chamber Floor

The floor is of timber construction and apparently in sound condition. Timber joints bear into the external walls but there is no obvious decay in evidence.

2.3 Bell Chamber Floor

The foundation beams are of substantial section given the short span dimensions across the tower and most appear in good order. They bear onto stone corbels and these too are generally sound although one is split. One transverse timber beam is split and decayed at its end bearing in the north east corner but is serviceable at present.

The floor is difficult to inspect from above and there would be benefit in clearing out all the gathered debris to fully expose all the timber.

The inspection showed that, in the short term, there is sufficient structural integrity to support the dead weight of the bells and bell frame.

2.4 Bell Frame

The bell frame is in very poor order indeed. The frame appears to have been re-used from elsewhere and has been cut down from its original form losing much integrity in the process. The timber is in poor order and strengthening ironwork corroding.

The frame does lack integrity and it is very doubtful that it could be repaired to provide a usable working frame.

Andrew Nicholson's report of 1997 sets out the options for bell use very well. The report also highlights the significant challenges to putting the bells back into full use.

It does not appear sensible to consider a return to change ringing given the frame condition, bell condition and the layout.

At the present time, there is sufficient strength remaining in the frame to be content that the bells can remain in-situ without any risk of them falling.

3.0 Conclusions

The tower fabric is in generally sound structural condition with few structural defects. The fabric only needs regular maintenance for this to remain the case. The roof has been replaced relatively recently and so the fabric is weathertight.

The main focus is on the bells and bell frame and the decision on this does impact upon the tower structure.

The current frame cannot, in my view, be repaired and used. If a new frame were to be the preferred option, then then further work would be needed on the potential impact on the tower fabric. My strong recommendation is that this option should not be pursued as it carries the most risk to the extant fabric.

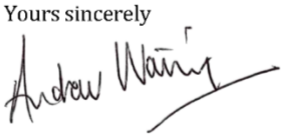
Any plan to either swing chime or strike chime one or all three bells would have negligible impact upon the tower fabric. However, as part of this process it would be necessary to repair the corbel and timber decay in the bell chamber floor structure. The frame would also need work to ensure the bells are secure, perhaps to the extent of needing a new frame. This work would clearly be simplified if one bell were chimed rather than all three and also if the bells remain stationary.

The third or interim option is to leave the bells unused in which case the floor could be left as it stands.

In all three scenarios it is clear that the access to the tower would need improvement to ensure safe access for any inspections or maintenance.

I trust that the above deals in sufficient detail with the main issues to reach a clear way forward for church. As ever, I would be happy to discuss any matter arising.

Yours sincerely



ANDREW WARING
Consultant
BTech (Eng) CEng MICE MIStructE

St Peter's Church, Poulshot, Wiltshire

Grid reference: ST 964 588

Daytime Bat and Nesting Bird Survey Report

March 2017

Table of Contents:

1. Executive Summary

1.1. Sedgehill Ecology Services was commissioned by St Peter's Church, to conduct a daytime bat and nesting bird survey at St Peter's, Poulshot, Wiltshire.

1.2. The site consists of a church set within landscaped grounds.

1.3. A daytime bat and nesting bird assessment was undertaken on 27th March 2017.

1.4. The proposals are to carry out internal and external renovations to the church bell tower roof.

1.5. The internal survey of the tower noted evidence of jackdaws, with several on the roof trying to access the space during the survey. The tower had two floors, accessed by ladders. The tower floors were covered with nesting debris. Gaps were noted between the first floor ceiling. Points of access were noted within the tower windows and roof. No evidence of bats in the form of debris, droppings, stains or markings were noted.

1.6. The external survey of the tower found potential access points within the roof and tower windows. The stone roof could provide some limited crevice roosting spaces given the expose nature and holes within the roof space.

1.7. Evidence of nesting jackdaws were noted during the internal and external inspection.

1.8. With the active and historic jackdaw nesting sites noted during the survey, it is considered that the tower is of lower suitability for use as a spring and summer roosting site.

1.9. It is thought with precautionary measures in place the proposed works can proceed. No further surveys are recommended. As nesting birds were noted on site, works must be carried outside of the nesting bird season (March to August inclusive). If the new proposals will exclude the jackdaws from roosting within the tower, these nesting birds will require compensation in the form of nest boxes within suitable trees on site.

2. Introduction

2.1. Sedgehill Ecology Services was commissioned by St Peter's Church, to conduct a daytime bat and nesting bird survey at St Peter's, Poulshot, Wiltshire. The surveys were carried out on the 27th March 2017.

2.2. The proposals are to carry out internal and external renovations on the tower roof.

2.3. All bat species are protected by European and national legislation. A bat survey is therefore required to determine the presence or likely absence of bats at the site. The survey aimed to determine whether bat species are present at this site, the type of roost at the site, and the population size.

2.4. The brief was to survey the proposed development site, and identify the presence or likely absence of bats and nesting birds. A desk top study consisting of an NBN records search was used to assess the species of bats that may occur on site. Recommendations will be made as necessary in order to inform a mitigation strategy and licence application if required.

3. Limitations

3.1. The daytime inspection was conducted in March when most species of bat are becoming active on warmer evenings but are still within hibernation roosts (BCT Guidelines, 2016). Whilst evidence of roosting can be confirmed by a daytime inspection alone, very often features that could support bats cannot be searched thoroughly to confirm whether bats are indeed roosting.

4. Legislation

4.1. This section details the legislation relevant to the protection of species and habitats. It also details the relevant policies within national, regional, and local planning policy.

4.2. The National Planning Policy Framework in summary requires that the planning system should aim to contribute and enhance the natural and local environment. The aims are to: protect and enhance valued landscapes as well as geological conservation interests

and soils; recognising the wider benefits of ecosystem services; and minimising impacts on biodiversity and providing net gains in biodiversity where possible.

4.3. The UK Biodiversity Action Plan (BAP) lists species that are of particular importance on national and local scales. The aim of this plan is to ensure that change does not result in net loss of both the quality and quantity of biodiversity, and ultimately enhance biodiversity where ever possible.

4.4. All species of bats are strictly protected through UK and European regulations. Bats have been placed on protected lists due to the overall steady decline of species over the last century. They are protected under the Wildlife and Countryside Act 1981 (as amended), under which bats are protected from intentional or reckless disturbance.

4.5. Additional protection for all bat species is provided under Schedule 2 of The Conservation of Habitats and Species Regulations 2010. Under Regulation 41 it is an offence to deliberately capture or kill a wild animal of a European protected species, deliberately disturb any such animal and to damage or destroy a breeding site or resting site. Since August 2007 amendments to the Conservation (Natural Habitats) Regulations 1994 have changed the term 'deliberately disturb' such that it is an offence if the species are disturbed in such a way that it is likely to significantly affect the colonies ability to survive, breed or rear their young; or affect the local distribution or abundance of that species. If the deliberate disturbance is considered to fall below the threshold for the Regulations, no licence under this legislation is necessary, but the disturbance may still be an offence under Wildlife and Conservation Act 1981 (as amended).

4.6. Licences are needed if the disturbance is a significant effect on the bat colony and would otherwise be an offence. Licences are granted after strict following of Section 44 under the Habitat Regulations, following the submission of a licence application to Natural England. Licences permit the work that is otherwise considered to be an offence under the legislation.

4.7. Natural England (NE) is the authority for determining licence applications for works associated with developments affecting bats. In cases where licences are required, certain conditions have to be met to satisfy Natural England under the 3 tests set 3 tests set out in Regulation 53 of the Habitats Regulations 2010 when granting licences. These tests are:

> *The consented operation must be for "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment"; and*
> *There must be "no satisfactory alternative"; and*
> *The action authorised "will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range".*

4.8. In order to meet the tests, Natural England expects the planning position to be fully resolved. Full planning permission, if applicable, will need to have been granted and any conditions relating to bats fully discharged.

4.9. All native birds receive protection whilst nesting under the Wildlife and Countryside Act 1981 (as amended). Barn owls receive additional protection under Schedule 1 and 9 of the Wildlife and Countryside Act (as amended).

5. Methodology

5.1. On the 27th March 2017, internal and external inspections were carried out. The surveys were carried out by Patricia Holden MSc MCIEEM (bat licence: 2016-20440-CLS-CLS), an experienced ecologist who has undertaken numerous bat and nesting bird surveys and has undergone professional training in bat surveying techniques. The survey followed guidelines by the Bat Conservation Trust (2016) Bat Surveys Good Practice Guidelines. Any bat droppings found were noted for shape, size, texture and age.

5.2. *Bats Internal and External Inspections*

5.2.1. The internal inspections of the tower identified features of interest and potential bat roost sites. The floor spaces within the tower were searched for evidence of bats in the form of droppings and insect debris. Within the roof spaces, features such as cracks, crevices, ridgebeams were inspected for droppings, insect debris, urine stains or markings, scratchings and bat remains.

5.2.2. The external survey of the tower identified features of interest such as likely exit and entrance points, examples include: holes in walls, gaps in windows and doors, cracks in brickwork/stonework, hanging roof tiles, and loose eaves. The grounds around the tower were searched for evidence of bats such as droppings, or feeding remains.

6. Results

6.1. *Position in the Landscape*

6.1.1. Grid reference: ST 964 588

6.1.2. The dwelling is within the village of Poulshot, an area that is characterised by lower density built form. The tower is set within the church grounds and adjacent to a Church Farm. The site itself is surrounded by landscaped grounds. The church grounds are surrounded by further residential and agricultural land.

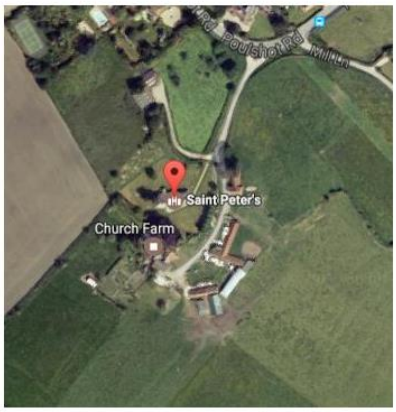


Figure 1: Google Map Image of the Site

6.1.3. No part of the site contains, or is within, statutory sites of nature conservation interest, such as a Site of Special Scientific Interest (SSSI), and or Special Area of Conservation (SAC).

6.1.4. The NBN gateway record search due to copy rights could not be reproduced in the report.

6.2. *External inspections*

6.2.1. The site surveyed consisted of a church tower. The exteriors of the tower were inspected for access points, and evidence of bats and nesting birds.

6.2.2. The tower consists of stone tiled roof, with stone walls. The inspection noted within the wall and roof space some areas of potential access and potential crevice space. The windows within the tower walls were open with wire mesh with some areas of mesh missing. The roof had two notable holes and typical lifts associated with stone tiled roofs.

6.2.1. The external features and potential are summarised in the table below:

Table 1: Summary of the dwellings external features and potential

Location	Feature	Potential/Confirmed Feature
roof	Stone tiled	Holes noted within roof, slight lifts within roof space, typical of stone tiles, potential crevice space and access points, jackdaws noted on roof during inspection
walls	stone	walls in good state of repair with no holes, gaps or missing areas, open windows with wire mesh and missing mesh- potential for access

6.3. *Internal inspections*

6.3.1. The internal inspections of the tower examined features of interest, potential bat roost sites and bird nesting areas.

6.3.2. In summary, most the tower consists of three floors: ground floor, first floor and second floor. The spaces were accessed by ladders.

6.3.3. The ground floor consists of painted stone walls, stone floors and a timber ceiling space. The first floor of the ground floor was accessed via an opening within the ceiling of the ground floor. No signs of remnant or active nesting birds were noted. The ground floor lacked potential access points or crevice points.

6.3.4. The first floor consists of a small space, less than 1.3 metres high and consists of wooden floors, stone walls and wooden ceiling space. The floor space was covered by deep nesting debris (with some areas having 25cm piles) and one dead jackdaw noted. The stone walls were in a good state of repair with no holes, gaps or cracks. The ceiling noted gaps between the main beams and supports, these offered potential crevice spaces. upon closer inspection, nesting debris from the second floor space and cobwebs were noted within these areas.

6.3.5. The second floor was accessed via a wooden ladder. The space consists of stone walls with three windows, timber floors with a roof space consisting of stone and felt with timber battens and beams. The floor space had deep nesting debris and a single nest was located within the roof beams. The roof timber battens noted water damage. The felt roof noted tears, rips and holes. Visible light was noted within the roof with two areas of missing stone tiles noted. Typical lifts with visible light were noted within the stone roof. One small hole was noted within the stone wall however this hole was not heavily recessed. The windows noted wire mesh with areas of missing mesh. There appears to be a ledge between the roof and the stone walls but this area could not be surveyed due to limited access. Jackdaws were noted on the roof during the survey.

7. Assessment

7.1. The tower presented limited to no potential use for roosting daytime bats. The surrounding landscape offers good foraging and traversing grounds for potential bats. The mature trees within the boundary of the church yard noted nesting rooks and nesting jackdaws were noted on both the first and second floor of the tower.

7.2. The tower roof space had exposed stone roof with limited areas of felt, with evidence of water damage, it is considered that the second floor is very exposed and drafty, reducing the potential for use as significant roosting spaces. The tower roof did note holes and visible light during the inspection suggesting areas of potential access spaces. The tower found no evidence of roosting bats in the form of marks, stains, debris or scattered droppings.

7.3. The external inspection of the tower walls noted intact features with limited areas of potential crevices spaces and access areas. The stone roof was in an average state of repair with holes and lifts typical of stone roofs.

7.4. With the population of rooks and jackdaws within the boundaries and tower, it is not considered that the tower would be suitable for use by spring and summer daytime roosting bats given the risk of predation. Studies have been carried out on the active predation of jackdaws on bat species and evidence has shown the successful predation by these birds on emerging bats at dusk (Milkula 2013).

7.5. The internal survey did note within the first and second floor potential hibernation areas although the first floor did not find any confirmed marks, stains, droppings and these areas had cobwebs and nesting material. The second floor had limited areas and the drafty nature of this section could impact on use given the constant change in the microclimate. Given these combined factors, it is considered lower potential for use as a hibernation site.

7.6. It is not thought that the works will impact on any potential roosts and no further surveys are required.

7.7. The tower as it is listed will have like for like repairs with timber batten, beams and black roofing felt. The stone roof will have typical lifts when relaid, so it is considered with repairs the proposals will allow for future roosting habitats for local bats, should the jackdaws nesting site be removed from the tower.

7.8. The tower provides multiple nesting grounds for local jackdaws, should the proposals seek to remove this nesting site then further offsite nest boxes will be required. Proposed works must be outside of the nesting season (March to August inclusive).

8. Conclusion & Recommendations

8.1. The site is located within the village of Poulshot and is surrounded by further agricultural and residential land.

8.2. The site consists of a tower set within church grounds.

8.3. The proposals are to carry out internal and external renovations to the church bell tower roof.

8.4. The internal survey of the tower noted evidence of jackdaws, with several on the roof trying to access the space during the survey. The tower had two floors, accessed by ladders. The tower floors were covered with nesting debris. Gaps were noted between the first floor ceiling. Points of access were noted within the tower windows and roof. No evidence of bats in the form of debris, droppings, stains or markings were noted.

8.5. The external survey of the tower found potential access points within the roof and tower windows. The stone roof could provide some limited crevice roosting spaces given the expose nature and holes within the roof space.

8.6. Evidence of nesting jackdaws were noted during the internal and external inspection.

8.7. With the active and historic jackdaw nesting sites noted during the survey, it is considered that the tower is of lower suitability for use as a spring and summer roosting site.

8.8. It is thought with precautionary measures in place the proposed works can proceed. No further surveys are recommended. As nesting birds were noted on site, works must be carried outside of the nesting bird season (March to August inclusive). If the new proposals will exclude the jackdaws from roosting within the tower, these nesting birds will require compensation in the form of nest boxes within suitable trees on site.

8.9. To ensure that this site complies with wildlife legislation and the National Planning Policy Framework, the following recommendations are made:

8.9.1. Tower repair works to occur outside of the nesting bird season (March to August inclusive) with compensation for any proposed loss of nesting sites in the form of (2) Schwegler Jackdaw Nest Box 29 within suitable trees.

8.9.2. Precautionary measures in place for the proposed works. In the unlikely event that evidence of bats are found, the ecologist is to be contacted on how best to proceed.

9. References

Hundt L (2016) Bat Surveys: Good Practice Guidelines, 3rd edition, Bat Conservation Trust.

Mitchell-Jones, A. J. *Bat Mitigation Guidelines*. Jan 2004. English Nature.

Stebbings, R.E, Yalden, D.W., Herman, J.S. *Which Bat Is It?* The Mammal Society. 2007.

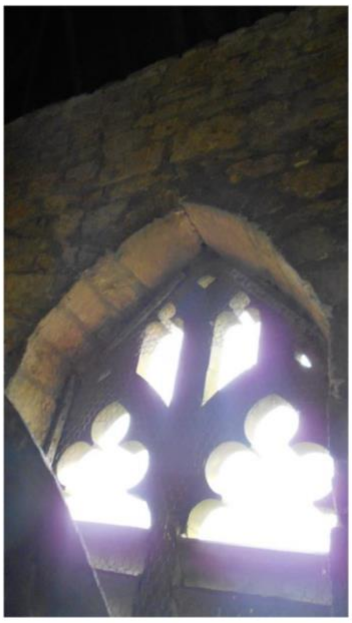
Appendix I: Photos of the Site


ground floor of tower leading to first floor


nesting jackdaw within timber beams


gaps in timbers of first floor with cobwebs and nesting debris


nesting debris within first floor of tower



second floor window with missing wire mesh

church tower roof and windows

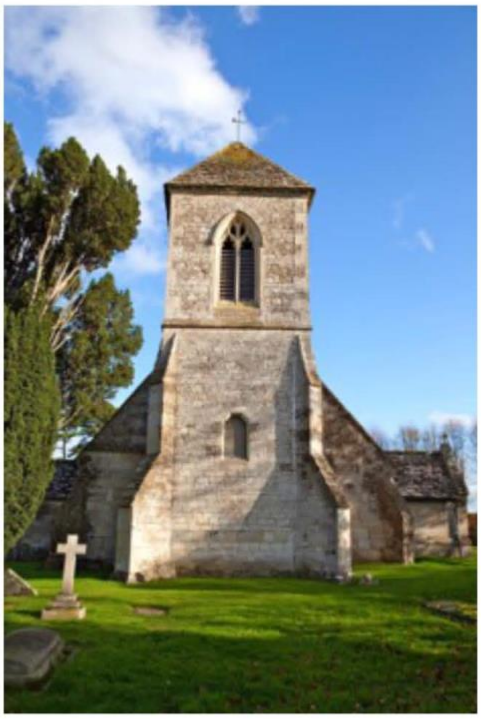

Sedgehill
ECOLOGY SERVICES

APPENDIX E: 2016 Tower Survey Report by Arthur Needham of Vitruvius Conservation.

VITRUVIUS

BUILDING CONSERVATION

The Church of St. Peter, Poulshot Tower Survey 2016



Arthur Needham, Vitruvius Conservation

www.vitruviusconservation.com

The Church of St. Peter, Poulshot Tower Rope Access Survey 2016

We were asked by Helen Martin of St.Ann's Gate Architects to survey the interior of The Church of St. Peter, Poulshot as access was difficult and required rope access.

GENERAL CONDITION

The tower is in a general state of neglect, a considerable amount of twigs and excrement from nesting birds is present in the middle and bell chambers, to such an extent that the hatch had to be forced through a large pile in order to gain access. They also obscured our view of the floors so an entirely comprehensive inspection was impossible at this stage, however this didn't prevent us from coming to important conclusions regarding the condition of the fabric.

ROOF

The roof is in a poor state of disrepair. There are tiles missing on the South quadrant, the felt is torn on every elevation and many timbers are rotten through to varying degrees. The apex of the roof, where the king post meets the hip blades and central rafters is extensively rotten through, which is undoubtedly compromising the structural integrity of the roof. It is quite probable that the lead detail beneath the Cross is unsatisfactory.

Fig. 1: Leaking roof on the South quadrant

Fig. 2: Extent of rot to roof apex

BELL CHAMBER

The condition of the bells, frames and floors do not appear to have changed significantly since the 1997 survey carried out by Nicholson Engineering. The bell frames are suffering from mild surface rot, however given the age of the timbers and the hardwood used should not be of concern. The headstocks and mountings of the bells however may benefit from restoration.

Fig. 3: Damaged bellframe below Second strap gudgeon

Fig. 4: Extent of rot to Treble headstock

The rubble walling above the windows is showing signs of movement and attempts have been made to point cracks. These repairs have hairline cracks around them and would benefit from deeper, more thorough pointing for future monitoring.

MIDDLE CHAMBER/BELL CHAMBER FLOOR

The middle chamber floor has a considerable amount of twigs from the nesting birds above, suggesting that it hasn't been cleared for some time. This obscured our full analysis of the state of the floor, but everything we could see appeared to be in sound condition. The hatch has one damaged board that could be repaired easily and is still functional. The stairs to the bell chamber are sound, despite mild surface rot.

Accurate assessment of the floor of the bell chamber was clearer from below. The beams and floorboards are suffering from varying degrees of rot, ranging from decayed knots to mild surface pilling from woodworm. Following the defrassing of a couple of areas, we could ascertain that this rot ranged between 5 and 20 mm deep, even on the floorboards this may not be of concern given their thickness. The central beam is bearing onto wall plates approximately 100 mm wide, also suffering from woodworm, the South being in poorer condition than the North. Water ingress from the missing tiles on the South Quadrant is evident here and on the floorboards above. The East and West beams are bearing onto more modern corbels, (perhaps a Victorian addition) however the Northwest Corbel has approximately 25% missing on it's West side, indicating movement at some stage. Iron bracing has been installed to tie the bell frames and beams together, however their efficacy is questionable. The bell chamber floor has a small area of relatively new repairs near the centre by the staircase, in the form of tantalised boards. The marginal nature of this repair suggests that the works applied for in 2004 were not granted.

Fig. 5: Extent of rot/decayed knots to Treble support beam

Fig. 6: Spalled corbel stone

The East wall of the chamber is infilled with rubble stone, dubbed out with a wet lime putty mix judging by the extent of cracking present in the mortar. This doesn't appear to have affected the structural integrity of the infill.

RINGING CHAMBER (GROUND FLOOR)

The ceiling boards are made from a high quality softwood, perhaps Pitch Pine. There is evidence of water ingress from above, in the form of salt residues on the edges and underside of the boards, however no significant rot is evident from below.

The pointing on all walls has the same tell-tale signs of wet mortar being used in construction, however no structural integrity has been compromised as with the infill area in the middle chamber. The mortar in the window infill behind the ladder has fallen out, however this doesn't appear to be of structural significance.

Fig. 7: Evidence of leaking on ringing chamber ceiling

Fig. 8: Loose mortar around window infill on East wall of ringing chamber

RECOMMENDATIONS

- All nesting material should be cleared from both floors with care to enable further inspection/works in this room and above

- Assessment of the timbers, bells and frames by specialist contractors to ascertain best course of action

- The roof should be Repaired: Stripping and saving of all stone tiles possible, making provision for wastage, the installation of a good quality breathable membrane, replacement/repair of the wall plates, king post, hip blades, battens, and any defective rafters
- Cracks and failed mortar in the rubble walling above the windows in the bell chamber and window infill in the ground floor to be pointed and monitored