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NYMNP
07/09/2022

Design and Access and Heritage Statement Old St Stephen's Church, Fylingdales



1.0 Introduction

- 1.1 This Design and Access and Heritage Statement has been produced to illustrate considerations behind re-furbishing and re-hanging the bell at Old St Stephen's Church, Fylingdales. It aims to provide a background to the GI listed heritage asset and to explain how the proposals have been led by conservation principles with the intention of enhancing the significance of the building and the cumulative positive impact upon its national park setting.

1.2 Listing Details:

Grade: I

List Entry No: 1148706

Date first listed: 06-October-1969

Statutory Address:



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The listing text is a comprehensive description, providing details of both the interior and exterior:

Former Parish Church. 1821 rebuilding on medieval site. Coursed herringbone-tooled sandstone with ashlar dressings. Purple slate roof. Single-cell preaching box with small sanctuary; South porch and north vestry are early additions. Gothick style. Open-pedimented porch has segment-arched entrance with rusticated voussoirs. Sundial above has dates 1736, 1864 & 1919 with various initials. Wood side benches; and wide 6-panel double door with interlaced fanlight; keystone largely concealed by barrel vault of porch. 5-bay nave has pointed-arched windows, with glazing bars and interlaced heads, in architraves with impost. All rest on a cill band except for shorter window above door. Small square-headed door in south chancel wall; east window similar and flanked by big stepped diagonal buttresses. North nave wall has 3 short windows, similar to that above door, lighting gallery. West windows similar to east. Vestry has 15-pane fixed light with 2 opening panes. OSBM on south east corner of nave. West bell-cupola had only its damaged wood frame remaining at time of survey. Interior: Complete late Georgian fittings. Panelled gallery, around north and west sides, rests on Roman Doric columns. Lateral south pulpit has sounding board and stairs with turned balusters and ramped handrail. Complete box pews, including one named for the Farsyde family with coat of arms. Various memorial tablets to the Farsyde family. Small early C18 font with low, cornical open cover.

1.3 The Church

The current church building, dating from 1821, is built on an existing site where there is a spring beneath the altar, indicating possible pre-Christian beginnings. It is believed there has been a church on the site since at least 1088, though no known prints or drawings have been discovered.



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1.4 The bell itself is medieval. An absence of maker's marks suggests that it was cast on site & its inscription 'Ora pro Nobis Sancta Petro' indicates that it originated at Whitby Abbey, which was formerly dedicated to both St Hild & St Peter. It's likely that it came to Fylingdales at the Dissolution of the monasteries, when there was a chapel of ease on this site. Rehung in 1937, it was taken down during recent work on the cupola but had rung out over the Dale for hundreds of years, marking generations of weddings & funerals for the residents of Raw, Robin Hoods Bay, Fylingthorpe and the surrounding farms.



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2.0 Planning History

2.1 A search of the North York Moors National Park online planning records show the following applications:

Application number: NYM/2018/0797/LB

Proposal: Listed Building consent for cupola repairs and modifications to rainwater goods

Application type: Alter or Extend a Listed Building

Address: Church of St Stephen, Church Lane, Fylingdales

Decision date: 09/05/2019

Decision: Listed Building Consent Granted

Application number: NYM/2018/0328/LB

Proposal: Listed Building consent for internal re-plastering works to Chancel and Vestry walls

Application type: Alter or Extend a Listed Building

Address: Church of St Stephen, Church Lane, Fylingdales

Decision date: 27/07/2018

Decision: Listed Building Consent Granted



3.0 Planning Policy

3.1 Paragraph 189 of the National Planning Policy Framework states that, in regard to descriptions of significance,

“The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance.”.

The proposal relates to refurbishment of the historic bell which is likely to be of substantial significance and its re-installation in the non-historic cupola, a scheme which is considered to be entirely in accordance with conservation principles although careful consideration of the work to the bell is warranted. It is considered that this assessment demonstrates that the above NPPF requirement is fulfilled in this application.

3.2 Whilst the physical proposals are restricted to internal alterations within the listed building, it is considered that returning the bell to the church will also have a positive aural impact upon the character of the surrounding landscape including the historic settlements of Robin Hood’s Bay and Fylingthorpe. It is therefore anticipated that Policy ENV11 of the North York Moors National Park Authority Local Plan is most relevant, with the policy stating that the Council will:

“Policy ENV11 – Historic Settlements and Built Heritage

Development affecting the built heritage of the North York Moors should reinforce its distinctive historic character by fostering a positive and sympathetic relationship with traditional local architecture, materials and construction. High standards of design will be promoted to conserve and enhance the built heritage, settlement layouts and distinctive historic, cultural and architectural features. Development proposals will only be permitted where they:

1. Conserve, enhance or better reveal elements which contribute to the significance of the heritage asset or its setting including key views, approaches and qualities of the immediate and wider environment that contribute to its value and significance;

2. Conserve or enhance the special character and appearance of settlements including buildings, open spaces, trees and other important features that contribute to visual, historical or architectural character;

3. Reinforce the distinctive qualities of settlements through the consideration of scale, height, massing, alignment; design detailing, materials and finishes;

4. Respect the integrity of the form of historic settlements including boundary and street patterns and spaces between buildings;

5. In the case of new uses, ensure the new use represents the optimum viable use of the asset which is compatible with its conservation;

6. In the case of adapting assets for climate change mitigation, the proposal is based on a proper understanding of the asset and its material properties and performance, and of the applicability and effectiveness of the proposal. Development should not harm the heritage value of any assets affected. North York Moors National Park Authority Local Plan July 2020 When a proposal affecting a heritage asset is acceptable in principle, the Authority will seek the preservation of historic fabric in situ.

When retention of the feature is not justified or the form and appreciation of a heritage asset is compromised through the proposal, the applicant will be required to undertake an appropriate programme of historic building recording (HBR) and analysis secured through an approved Written Scheme of Investigation (WSI).”



4.0 Proposal and Assessment

- 4.1 The most important part of the proposal is the work to the bell, which is detailed more closely in a report by long established bell founders, John Taylor & Co, shown at Appendix 1. Whilst likely to originate in the 15th century, it is apparent to expert eyes that the bell has been repaired and modified in the past and the original casting technique has also resulted in some metallurgic vulnerabilities. Whilst details are provided in the report, specifics could be provided via planning condition on the receipt of listed building consent. Nevertheless, as stated in the report the conservation and repair work to the bell would be carried out in accordance with the Church Buildings Council Code of Practice, ensuring that conservation principles are adhered to.
- 4.2 More straightforward is the proposal to re-hang the bell in the recently repaired cupola. A new timber headstock is required along with gudgeon and bearings and a new rope. It is understood that the former headstock, believed to date from 1937, was rotten hence the need for replacement. The bearings upon which the gudgeons pivot will be attached to the non-historic framework in the cupola roof, on a like for like basis.
- 4.3 Design and Access matters throughout this proposal are unaffected, the scheme being limited to an essentially like-for-like reinstatement of a currently missing feature.

5.0 Conclusions

- 5.1 The sole aim of the proposal is to return the bell to its proper historic location and, through the employment of specialist expertise, ensure it performs to its potential and is preserved from failure by addressing potential stress risks due to earlier modifications and weaknesses as a result of the original casting process. Doing so will not only enhance the significance of the church by returning its chimes, but will also enhance the character of the historic settlements and the surrounding landscape, entirely in accordance with Policy ENV11 of the North York Moors National Park Authority Local Plan. As stated by Chair of the Friends Group, Deb Gillanders:

“Old St Stephen's & its One Small Bell have survived the building of a new church in the 1870's & retain a significance for many, whether part of the Bay diaspora or recent visitors. If the history of a place is written in the church yard, then the bell is its voice.”



By permission of Deb Gillanders



APPENDIX 1

JOHN TAYLOR & CO., BELLFOUNDERS, BELLHANGERS AND CARILLON BUILDERS



Our Ref: DP/SEA/855/25

Deb Gillanders
8 Esplanade,
Whitby
North Yorkshire
YO21 3HH

8th July 2021

Dear Deb,

Old St Stephens Church, Fylingdales – The bell

Thank you for meeting me at the above church on Tuesday the 29th of June 2021 and accompanying me during my visit.

We report as follows:

The Bell.

Bell	Diameter	Weight	Note	Founder	Cast
1	18.88" (479mm)	1-1-17 (71kg)	B Flat	Unknown	15 th Century

The bell is listed in George Dawsons National Bell Register for the Diocese of York but now comes under the Churches Conservation Trust. Permission will need to be granted by either CCT or Listed building Consent given before commencement of any works.

The above details are taken from measurements and details recorded at site. The weight of the bell is estimated based on its diameter.

The bell was cast with and retains six canons (two singles, and four doubles) or loops upon its head, formed as a means of attaching the bell to its headstock. All canons appear to be intact.

The bell was also moulded and made with a "cast-in" iron crownstaple within its head, formed as a suspension pivot for the clapper to hang from. These cast-in crownstaples often cause bells to crack through the differing rates of expansion between the bell bronze and the iron components of staple roots.

John Taylor Bell Foundry (Loughborough) Limited trading as JOHN TAYLOR & CO.

The John Taylor Bell Foundry, Freehold Street, Loughborough, Leicestershire, LE11 1AR, UK
Telephone: 01509 212241 Fax: 01509 263305 Tel: International +44 1509 212241 Fax:
International + 44 1509 263305
Email: office@taylorbells.co.uk www.taylorbells.co.uk

Registered in England No. 7032766

At some point this crownstaple has broken off, and its stumps remain in the head of the bell. A central stress relieving hole has been drilled through the argent as well as two further holes in the head of the bell head so that an independent crownstaple could be fitted; this meaningful work has done much to relieve stresses built up in the head by rusting expansion of the old crownstaple.

When the bell is next restored, all traces of the "cast-in" iron crownstaple should be removed and carefully drilled out, according to the Church Buildings Council Code of Practice for bell conservation guidelines, so to lessen the possibility of cracking in the future. Guidance can be found at:

https://www.churchofengland.org/sites/default/files/2018-11/CCB_Code-of-practice_Conservation-and-repair-of-bells-and-bellframes_2007.pdf

The sound-bow is only slightly worn and has never been turned.

Bell fittings.

The bell is now devoid of any of its fittings.

The bell will have been hung on traditional swing chime fittings consisting of: a shaped timber headstock carved and cut at its underside to fit over the canon lugs of the bell; a steel chime lever with chain attached; a wrought iron clapper; steel gudgeons (pivots); it is assumed that the gudgeons rotate in plain brass bearings fixed to the cupola framing.

Recommendations.

We recommend that the bell is removed from church for conservation and rehanging on new swing chiming fittings. Given the age of the bell, it would be appropriate to rehang it in the traditional manner for swing chiming with a hardwood headstock and new fittings.

To prevent cracking of the bell in the future, all of the embedded roots of the cast-in crownstaple should be carefully removed, and any voids created by the extraction of the roots should be back filled with 'Devcon' resin putty.

As it is unknown how the bell was removed from the cupola it may have been subjected to shock loading during the process, it should be carefully checked for signs of damage and cracks.

In order to reduce theft risk and make the bell more secure, all bell support and bearing bolts should be well fitted and capped off with 'shear' nuts making it impossible to undo them with a spanner once installed.

A new bell rope to be provided and floor/ceiling bossed fitted where the rope passes through the various floor levels.

We set out below our specification and quotation to rehang the bell as recommended above.

Our Ref: DP/SEA/854/34

8th July 2021

Old St Stephens Church, Fylingdales Diocese of York

Specification and Quotation No.1.0. To rehang and restore the turret bell.

Collection and Dismantling

One bellhanger to travel to the church to collect the bell.

At the works

At the works, the bell to be weighed, measured, and musically pitched. The bell to be carefully cleaned by sandblasting if required and checked for cracks. The cast-in crownstaple roots to be cut out.

The remains of the cast-in crownstaple stumps to be removed from the bell head by careful drilling of short blind holes. The voids created by drilling to be back filled with Devcon resin putty.

Provide for the bell a new hardwood sapele headstock, neatly carved at the underside to receive the canons.

The headstock to be fitted with new welded flat plate gudgeons formed of stainless steel and sealed ball bearings in weather-proofed housings, equipped with stainless steel bedplates. A central hole to be drilled through the headstock so that a modern independent crownstaple can be fitted to the bell. Provide new bell support bolts formed from stainless steel and made to pass between the canon loops (insulated where they contact the bell).

Provide a new clapper formed of SG iron, properly proportioned and to be bushed with a resiliently mounted precision oilite sleeve bearing. The clapper to be fitted with an independent stainless steel crownstaple of clevis pattern, with mild steel joint pin fitted with a hydraulic lubricator and insulation washers.

Make a new chime lever from stainless steel flat bar with a welded plate and through bolts for the headstock. Provide all required shackles and connectors to attach the bellrope.

Provide for the bell a new chime rope with salley and tail end, to which a stainless-steel wire top end rope is connected; provide smooth turned floor bosses to protect the bellrope where it passes through the holes in the roof.

The bell bolts, gudgeon plate bolts and bearing bolts to be provided with shear nuts for added security.

Treatments

All timber items to be preservative dip treated. All iron parts to be painted with zinc rich primer and a durable enamel topcoat. All other steel parts to be galvanized to BS EN 1400 (2009) standard or BZP plated.

The bell and its fittings to be fully assembled and tested in our Works to ensure correct operation.

Delivery

Bellhangers to travel to the church with the restored bell and new fittings. From access provided by the church, the bell fittings to be carried up to the cupola. Mark out, drill and fit the bearing bedplates to the framework of the cupola.

The bell to be hoisted and rehung and its new fittings to be installed and correctly adjusted. Any paintwork of the fittings damaged during installation to be touched up, and another coat of gloss paint to be applied to the newly painted surfaces.

The bell rope to be fitted, and the height of the salley set. Fit smooth turned rope bosses where possible. The bell to be tested chimed to ensure all is well with the installation, and user instruction to be given.



LION HERITAGE

CONSERVATION SPECIALISTS

Structural Surveyor's Report (reproduced with permission from NYMNP)

From: David Wiggins
Sent: 16 August 2022 18:29
To: Maria Calderon
Subject: CRD013) St Stephen's Old Church, Whitby

Hi Maria.

ST STEPHEN S OLD CHURCH, WHITBY: STRUCTURAL INSPECTION 23/06/2022

Further to our visit to the above church, I set down the findings from the focussed inspection of the structural repair works to the cupola support. The intention was to review the structural arrangement, with a view to determining whether the cupola repairs would be capable of resupporting the bell which the Church now wish to re-hang.

1. Review of Steelwork Repairs

It is clear that the works are not conservation-orientated, and in several aspects poorly designed / implemented. However in general, the cupola support posts appear to have been severed just below the cladding, replaced with steel at the penetration through the roof plane (full-strength splice joints apparently the intention), then cantilevering vertically upwards through the roof where the drawings indicate they are reattached to timber above the plane of the roof (16851-Y-SK-001-P1), where another full-strength splice repair would be expected (extract from third party engineer below).

Connexions between the repair metal work and timber are quite crude, with end/edge distances grossly defective in many areas. It will be difficult to justify by calculation whether these connections are adequate for the applied loading. In vertical downforce, it's unlikely to be a problem, as most of the axial compression will go through butt-ended contact between steel plate and timber post. In uplift, the number of bolts mean this is unlikely to be a problem either: gut feeling says in the up/down direction. OK.

If s in the lateral directions which it will be very difficult to explain away, as these joints don't meet British Standard codes practice for shape/spacing etc. Gut feeling says the destabilising loads will be fairly small, and therefore the applied bending moments very small compared with the post sections, so in strength terms. I think this will be OK. In stiffness - i idea. Things feel very chunky so stiffness, while outside the scope of conventional calculation because of code non-compliance, probably OK too.

I did also note that ferrous bolts are corroding at contact with masonry, and possible bimetallic corrosion may be in play (some bolts stamped grade 4.8). The original spec seems to include carbon steel and stainless steel, so I'm not sure whether this has been followed or whether there may be longer term corrosion problems with the new metalwork. Possible bad practice, but unlikely to affect strength in our lifetimes.

2. Assessment of Decay

Truss T6 tie-beam exhibits structural decay along its middle half, with approximately 50% section loss when probed (i.e. half width lost: full depth remains). This has been crudely splinted by an RSA to one side, although through bolts don't extend past the areas of decay (maybe the outer bolts only in say 30% section loss timber) so this can by no means represent a bypass repair. Again, very difficult to justify adequacy by calculation.

I've done an assessment of working forces within the truss, and fully loaded the tie beam services about 3 tonnes' tension (31kN working force), with bending moments and shear also at work here. Without detailed knowledge of timber species, I've estimated the strength of the timber as fairly high strength softwood, about C30 grade. This is being quite generous, but I'm trying to probe actual working stresses rather than condemn anything unnecessarily.

From the back-analysis, prior to the effects of decay, the tie beam (onto which the cupola also bears) utilisation ratio was as follows:

- 20% combined bending & tension U/R
- 15% shear U/R
- 50% buckling U/R

Now introducing the effects of decay, the working stresses vs strength in the tie beam utilisation ratios are as follows:

- 45% combined bending & tension U/R
- 25% shear U/R
- On the limit of permissible working stress for buckling (around 100%)

From the Planning application. I couldn't see any results of a timber condition appraisal prior to the repairs. The engineering information did not seem to determine the scope of structural decay, and as a matter of good practice I would recommend further checking on file to see if this may have been carried out, possibly by a timber condition surveyor.

Concerning other elements suffering structural timber decay, the beams carrying the cupola posts bear onto the T6 tie beam, and the one nearest the hatch is structurally decayed towards its bearing on the truss. Crudely splinted by an RSA to one side, its function doubtful. Thankfully the post is located above splint to tie beam, although not in intimate contact (I would recommend this be shimmed). Part-embedded bonding timbers towards the base of the gable peak are also heavily decayed; recommend removal and tile/indent masonry repair.

3. Assessment. Capacity to Accept Bell

The weight of the bell recorded as 11st (70kg: 0.7kN). I can't remember if this is a bell that swings, or hit with a hammer. Assuming a swinging bell, a single bell induces a downforce when rung of around 4 times its dead weight, so a total downforce of 280kg (2.8kN) would be shared through the cupola support posts, with around half bearing into the truss T6, the other half into the masonry peak. An additional load of 140kg (1.4kN) bearing on the tie beam (included in check above). So in vertical terms, not a problem.

The lateral force exerted by a ringing bell on its support is around twice its weight (assuming a bell that swings, rather than one hit with a hammer). This 140kg (1.4kN) would be combined with any wind loading attracted by the cupola. This horizontal loading would engender a bending moment in the posts, which as I've said above will be difficult to prove in strength and stiffness terms because the connections don't in my view meet codified practice. Gut feeling says though, that the moment component from the bell is relatively small compared with the moment component from wind, and as I've said above, probably OK. although it couldn't be guaranteed that joints won't begin to rattle open or split the timber sections of the support posts.

NYMNP

07/09/2022

Ge_srij_Summary

Boiling this **down** to a succinct summary, the repair **works** that have **been** done are quite heavy-handed, **not** conservation-orientated. and **in** places don't meet codified design practice. Because of the latter, **their** adequacy **will** be difficult to prove by calculation, and hence guarantee **by** design.

The effects of timber decay to the **truss** and other secondary timbers do not **appear** to have been properly dealt with, although there appears **from** the back-analysis of what's there, to be just about sufficient **remaining** cross-section of sound **timber** to cope with the working stresses, thanks to the **original** stockiness and generally good quality of original timber employed. However a caveat would be that I've been fairly **optimistic with** the species strength grade.

Introducing the effects of the bell, given its modest size and **weight**, **gut** feeling says 'probably ok', but because the support system is **difficult** to prove for support of the cupola itself, it's the same for the **bell**. The additional effects of the bell are **quite** modest though, and if **it's** a bell that's hit with a hammer, then even smaller still.

Hope **this** helps for the time being. **I'll** give you a **call** tomorrow to talk through **the** outcomes, and I'd be happy to formalise into a letterhead / **technical** note if you prefer.

Regards.

David Wiggins
BSc(Hons) **PhD** IEng **MICE** CARE
Conservation Engineer / Director

<image001.png>