

Diocese of Durham

The Chapel of the Venerable Bede

College of St Hild & Bede

University of Durham

Quinquennial Report

Under the Inspection of Church Measure 1955 and as amended by the Care of Churches and Ecclesiastical Jurisdiction Measure 199_

Grade II Listed Building

Durham City Conservation Area

Chaplain: Rev Tim Ferguson

University Surveyor Michael Rawlinson



Date: October 2022

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1. Introduction

1.1 I have conducted a thorough survey of the condition of the Chapel over a period of 2021 and finally October 2022. This survey was commissioned by Durham University. Additional investigations have been conducted by topic specialists on

- Historic paint analysis
- Drain condition
- Condition of the clock
- Concrete analysis
- Heating and environmental conditions.

The findings from these investigations have been incorporated into this report.

The external inspection was conducted with the benefit of a high-level lift platform to view the roofs and high-level features.

No access was available to the boiler room due to the potential risk of asbestos.

The boiler chimney flue and stack have not been included in this survey as they form part of the School of Education

The survey takes the form of a visual inspection only, no exposures of the structure or areas where damage may be caused have been carried out. However, tests have been conducted on the paint and the concrete structural frame but not on any other building materials.

No tests have been conducted on the building services (electric circuitry and heating).

1.2 Asbestos

1.2.1 An Asbestos Management Survey Report dated 25/01/12 was available and was supplemented by a report on the boiler room from 22/02/21. The latter identified Asbestos risk from insulation lagging and gaskets hence no access was available to this space.

Additional intrusive survey reports were conducted prior to the Tower and Stairwell roof works. Previous bituminous felt presented a low risk of asbestos in both cases.

1.3 Property Description

1.3.1 The chapel follows a simple rectangular plan with an additional vestry to the southwest with an apsidal south elevation. To the northwest are the enclosed access steps which previously allowed direct access from the adjacent college accommodation. These stairs have been blocked off and used in part as a choir vestry and part as office accommodation for the college.

The stairs pass over an external arched tunnel which provides access to the boiler room. Between the stairs and vestry is a lobby (narthex) under an organ balcony and tower.

1.3.2 There is a dual pitched roof finished with Westmoreland slate over the chapel. Between the external frame/buttress columns are flat roof sections at two levels finished with bituminous felt. The buttresses have slate finishes to the apex and the sloping fronts (amortisements). There are flat roofs to the Vestry, Tower and Stairs, the former being finished with bituminous felt, the latter two with liquid plastic roof systems (SIKA).

- 1.3.3 The Chapel is constructed of concrete portal frames with brick walling infill. The main roof structure is of king post trusses. There are timber beam supports for the flat roofs of the Tower and Stairs. It is assumed that the Vestry has a similar timber beam structure.
 - 1.3.4 The external walls are finished with render.
 - 1.3.5 The internal walls are finished with directly applied plaster.
 - 1.3.6 The ceiling of the church is a series of arched and vaulted sections. The arched sections are supported on metal frames and mesh while the vaulted sections are supported by timber frames.
 - 1.3.7 There are steel (Crittall) windows that provide good light throughout the body of the church.
 - 1.3.8 There is an ashlar stone entrance door case in a Doric classical style which is thought to have been relocated from a former building in Framwellgate.
 - 1.3.9 There is tarmac paving to the west and south perimeter and concrete paving to the north perimeter.
- 1.4 Recent building history
- 1.4.1 There was no logbook or previous reports other than the 2016 QQ report. Maintenance records are kept by the University, but were not available for inspection.
 - 1.4.2 Since the last QQ report 2016 new flat roof structures and finishes have been installed to the tower and stairs. These works were required due to structural failure of the original timber beams due to wet rots. Faculties were obtained for both of these works.
 - 1.4.3 The previous QQ report records that
 - The external cement render was replaced with lime in 2005/6.
 - The vestry roof was re-felted in 2011
 - The chapel lighting replaced circa 2013
- 1.5 Summary of structural condition.
- 1.5.1 While the structure was generally observed to be sound there is a need to monitor the micro cracking of the render and concrete frame and to monitor possible subsidence of the altar floor of the southeast corner before embarking on major refurbishment. There is early evidence of sulphate attack in the concrete frame. It is recommended that specialist advice is taken to specify the render repairs as the concrete frame may need a different solution to the brickwork in order to mitigate water penetration into the concrete.
 - 1.5.2 There are cracks to the render above the flashings to the flat roof sections to the chapel, these may be allowing water ingress putting the roof beams at risk and contributing to the mould growth on the internal surface.
 - 1.5.3 The steel Crittall windows are generally in poor condition and there is a risk of failure to some of the frames if subjected to high wind loads.
 - 1.5.4 While there are a small number of defective roof tiles the pitched roof finishes were in fair condition.
 - 1.5.5 The internal decoration is in poor condition due to damp, condensation and the use of inappropriate vinyl paints. It is recommended that the internal temperature is maintained at 15deg .
 - 1.5.6 Improving ventilation by the use of existing openable windows and all windows following refurbishment will also mitigate the risk of condensation.

- 1.5.7 The heating system is not providing adequate protection for the building and is reaching the end of its serviceable life
- 1.5.8 The University is considering a major refurbishment of the Chapel.

2 Observations

2.1 Roofs

- 2.1.1 The main roof to the chapel was a dual pitched roof finished with green Westmoreland slates laid to diminishing courses. The slate abuts the tower wall to the west and slightly overhangs the gable to the east. There were 25 defective slates in total which included missing, cracked or slipped slates. The location of which can be seen on drawing R19/360/009.



Photo 1, General arrangement of roofs and buttress.



Photo 2, Example of slipped slate to north elevation

- 2.1.2 The main roof was intersected by the apexes of the buttresses which were dual pitched and finished with Westmoreland slate and the ridges capped with lead. There were holes and cracks in the lead on a number of ridges and there was a missing end cap to one ridge on the south elevation.. There were a number of

damaged slates to the apexes. Locations on drawing R19/360/009



Photo 3, Example of holes and cracking to lead capping of buttress apex

- 2.1.3 On the upper sloping sections of the outer faced of the buttresses were hanging slates, as there were to the lower set backs. The slates were attached with mortar. A number of these slates had been lost.



Photo 4, Example of slipped slate to buttress

- 2.1.4 The valleys to the buttresses in line with the eastern gable drain directly onto the render resulting in staining.
- 2.1.5 There were flat roofs finished with bituminous felt between the buttresses. These were on two levels. The higher roofs ran through openings in the buttresses. Puddling was observed on roofs FR4 and FR16 which may indicate deterioration to the underlying substrate. There had been patch repairing to the felt of roof FR15 and 16. Otherwise the roofing felt was observed to be in good condition. See drawing R19/360/005 for roof identification.



Photo 5, Puddling on flat roof

- 2.1.6 The vestry flat roof was finished with bituminous felt that extended up and over the parapet wall. The felt was in good condition although on top of the parapet there were lifting outer edges to the felt.



Photo 6, Lifting felt to Vestry parapet

- 2.1.7 The tower roof and stairwell roofs had recently been renewed and finished with a liquid plastic roof membrane. There were both in good condition.



Photo 7, New plastic roof membrane to tower roof, gaps in the pointing to the coping stones.

- 2.1.8 There were lead flashings over the felt upstands of the chapel flat roofs running up to the render drip beads. There were displaced lead flashings to FR1 and FR5 and loose flashing to FR19.



Photo 8, Example of slipped flashing over flat roof interface

- 2.1.9 The lead flashing to the roof interface to the tower was painted and appeared to be in good condition.
- 2.1.10 Incomplete flashing to cover felt adjacent FR9.



Photo 9, Gap between flashing and roof felt upstand

2.2 Rainwater goods

2.2.1 There were cast iron rainwater gutters, hoppers and downpipes which generally were in poor decorative order.

2.2.2 The following defects were observed.

- Broken gutter FR9, FR8
- Retained water FR14, FR2
- Cracked downpipe FR6, FR5
- Bracket defect FR12, FR13



Photo 10, Displaced gutter joint

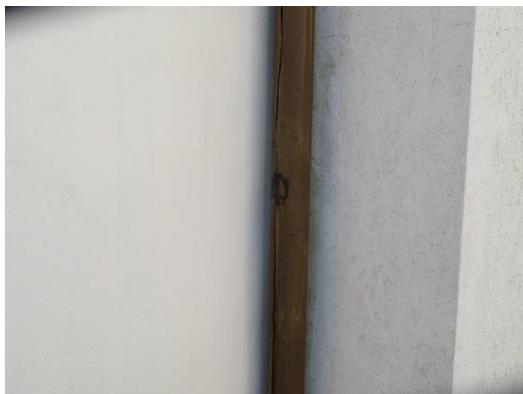


Photo 11, Cracked downpipe

2.2.3 The tower roof drained through two lead chutes onto the chapel roof. These had been lined with liquid plastic roof membrane to be consistent with the roof finish.

2.2.4 The stairwell roof upper section drained directly into a rainwater gutter to the west while the lower section drained through the parapet wall onto cast iron hopper and downpipes. These were in good condition and had been recently decorated.

2.3 Drainage

An independent survey was conducted which identified the following defects. The drains were of vitreous pipework.

- Attached deposits to IC02-HH01
- Joint displacements to IC04-GY06
- Joint displacements to IC04-GY07
- Joint displacements to MH02-GY09
- Cracked pipe IC05-MH04
- Blockage GY12
- Soil erosion under gutters

Separate independent report available with location plan.

2.4 External walls

2.4.1 There were brick infill walls between the concrete portal frames which were finished with render. The previous QQ report indicated that the render was lime based and had replaced the earlier cement-based render in 2005/6. The render to the stairwell was of a harling (roughcast) render while that to the body of the church was a smooth stucco finish, it is possible that the roughcast remaining sections are original.

2.4.2 There was widespread fine cracking to the render across wide areas of the body of the church which fell into a number of categories. A separate report detailing defects by location is available.

2.4.3 Crazed cracking as seen below the parapet copings to the tower and FR10.



Photo 12, Crazed cracking to render



Photo 13, Cracking to south face of tower

2.4.4 Vertical cracking observed above drip beads over flat roofs.



Photo 14, Example of vertical cracking over drip bead over flat roof

2.4.5 Vertical cracking and delaminating render to buttresses.



Photo 15, Example of vertical and horizontal cracking on buttresses

2.4.6 Horizontal cracking above drip bead over flat roofs which may compromise weather protection.



Photo 16, Example of horizontal cracking over lead flashing over flat roofs

2.4.7 Regular spaced fine horizontal cracking to buttresses



Photo 17, Regular spaced cracking to render on buttresses visible externally and internally

2.4.8 Horizontal cracking below rainwater gutters.



Photo 18, Example of horizontal cracking under rainwater gutters

2.4.9 Vertical cracking at junctions of vestry parapet coping to buttress.



Photo 19, Cracked render and slipped slates at junction to vestry parapet

2.4.10 There was a hole in the render to buttress B17



Photo 20, Hole in render to buttress 17

2.4.11 Independent concrete analysis of the portal frame confirmed that

- Carbonation had not reached the depth of the reinforcement.
- The horizontal cracking to buttress render did not occur at the location of the internal horizontal reinforcing rings
- There was evidence of the horizontal cracking in the render of the buttresses extending into the concrete frame.
- There was no evidence of Chloride attack
- There was evidence of active sulphate attack but this was within the concrete voids and did not extend into the microcracks that were present in the concrete and render

2.5 High level features

- 2.5.1 Ashlar stone copings to the parapet wall to the tower, The stones were observed to be in good condition although there was some loss of pointing which would allow water ingress into the wall head. (see photo 7) The parapet has perforated openings to the four elevations with slate finished sloping bases.

- 2.5.2 The metal cross fixed to the west tower parapet was in good condition however there were gaps in the seating of the lead capping to the stone base of the cross.



Photo 21, Lead capping to cross base

- 2.5.3 The painted stone statue of St Bede sat on top of a fluted corbel clock housing and within a simple niche on the west tower elevation. The statue was showing some signs of damage; a broken nose and open joints between the stone sections.



Photo 22, Cracks at the junction of the statue elements

- 2.5.4 To provide some protection to the statue there was a half octagonal faceted hood extending out from the cross base over the statue. The sheet metal was in good condition although the paint finish was in need deteriorating.
- 2.5.5 The clock, with a 2'6" open convex face, was not operational. The decoration to the clock face and pointers was in poor condition. See independent report on clock condition concluded by "Smiths of Derby".



Photo 23, Deterioration of finish to clock face

- 2.5.6 The fixed bell was in good condition while there was some face corrosion to the bell clapper. The manual and rope pull and auto chimer to the clock were not operational.
- 2.5.7 There was cracking to the lead capping to the statue base over the clock.



Photo 24, Crack in lead to statue base

2.6 Window and door openings

- 2.6.1 There were rendered reveals with arched or square heads and steep slated sills, which were observed to be in good condition.
- 2.6.2 The windows were single glazed steel framed (Crittall) multi paned windows which were a combination of rectangular or shaped to arched heads.
- 2.6.3 The steel window frames were in poor condition showing evidence of broken glazing and corroding and distorted frames. In addition, most of the ventilating panes were seized and inoperable.
- 2.6.4 There is a risk of frame failure to some of the windows if repairs are not conducted within the next two years.



Photo 25, Example of corrosion to window frames



Photo 26, Example of broken window glazing

2.6.5 An independent survey of the windows was conducted which concluded that 31 frames could be repaired in situ but 16 would require removal and restoration within a specialist workshop. A full schedule of photos is available.

2.6.6 The front entrance door was timber framed with multi pane glazing. The door was in good condition although in need of decoration.

2.7 Roof structure

2.7.1 The Chapel timber roof structure comprised king post trusses and one purlin to each elevation. The timbers were observed to be in good condition with no evidence of infestation by wood boring insects.



Photo 27, Roof Structure

2.7.2 There was evidence of water ingress onto the purlin ends inset into the tower masonry.



Photo 28, Evidence of water staining to purlin ends

- 2.7.3 The roof finish included timber sarking boards which were in good condition with no evidence of significant water ingress.
- 2.7.4 The roof structures of the tower and stairwell are of horizontal timber beams

2.8 Ceilings

- 2.8.1 There were sections of part flat, part half barrels in the side set backs and plain barrel vaults and cross vaults through the centre of the chapel.
- 2.8.2 The curved plaster to the set backs was hollow and is likely to be on wood or metal lathes.
- 2.8.3 The plain barrel vaults were on metal laths with wire mesh support for the plaster. These were observed to be in good condition.
- 2.8.4 The cross vaulted ceilings were of fibrous plaster supported by timber laths. Generally, these were in good condition although one hanging fibrous support was noted to have broken. NB. it is important that fibrous plaster ceilings are inspected on a regular basis as they are particularly vulnerable to water ingress which can lead to collapse.



Photo 29, Broken support for fibrous plaster of vaulted ceiling

- 2.8.5 The internal paint finish to the walls and ceilings was in very poor condition with large sections of mould, lifting paint and salt damage.



Photo 30, Example of mould to ceilings and walls

- 2.8.6 There was flaking paint to the curved ceiling sections adjacent to the organ loft.



Photo 31, Example of lifting paint and staining to ceiling

- 2.8.7 The ceiling to the organ loft was of painted wood wool slabs that were in good condition.
- 2.8.8 The flat ceilings to the narthex, stairwell and vestry were observed to be in good condition.
- 2.8.9 The organ balcony arch plaster was in good condition

2.9 Doors

- 2.9.1 The internal doors to the chapel, vestry and stairwell were of dark teak and pale African walnut and with brass handles. All in good condition

2.10 Internal Walls

- 2.10.1 The internal walls were finished with directly applied plaster. The paint finish was in poor condition with extensive areas of mould and surface deterioration.
- 2.10.2 There was cracking of plaster and flaking paint to the northeast corner
- 2.10.3 To the lower northeast corner there were regular oblong shaped area of stained and flaking paint to the upper reveal.



Photo 32, Cracking, mould and discolouration to NE corner

- 2.10.4 To the reveals of the south set backs there were horizontal cracks in the plaster finish, similar to those observed externally.
- 2.10.5 There was mould developing to the plaster faces of the arched sections of walls between the portal frames.



Photo 33, Mould to arched sections between frames

- 2.10.6 There was badly flaking paint to the vestry walls below the air vent to the east wall and on the west wall below where the lifting roof fell was observed externally.



Photo 34, Flaking paint to vestry west wall

- 2.10.7 A specialist report on the wall paint by Hirst Conservation was conducted which concluded.
- The most recent paint was an unsuitable synthetic paint.
 - Earlier layers are indicative of limewash or distemper
 - No lead was found in the layers.
 - Colour matching of earlier layers identified layers of NCS 0505-G80Y and NCS 0505-G90Y.
- 2.10.8 The report recommended the full renewal of the paint before redecorating and recommends conducting a paint stripping test to identify a suitable solvent that would not cause damage to the underlying substrate.
- 2.10.9 It was observed that there were salt deposits on the internal faces of the wall brickwork in the roof void indicating previous penetrating damp, no close access was available to test for current damp levels.



Photo 35 Salt deposits on inside brick face. Metal frame and mesh structure of barrel ceiling

2.11 Ventilation and glazing

- 2.11.1 All glazing was single float glass. These were broken panes to W29, 27, 2-6, 8-13
- 2.11.2 All windows were steel framed (Crittall).
- 2.11.3 Side opening casements were present in the vestry and narthex.
- 2.11.4 The high-level centre pivot windows to the chapel were closed and without cords.
- 2.11.5 The lower windows to the offsets had centre pivot windows.
- 2.11.6 Ventilation of the interior space is poor, contributing to the extent of condensation.

2.12 Floors

- 2.12.1 There were solid floors throughout finished with cork tiles. The chapel centre aisle appears to be a later finish.
- 2.12.2 While the chapel floor was generally showing some signs of discoloration and there were some areas where localised impact damage was visible, the floor was generally in fair condition
- 2.12.3 There was cracking of the tile finish to the southeast corner of the raised altar plinth. Indicative of floor movement.



Photo 36, Cracking to cork tile at corner of altar

- 2.12.4 There was an open gap between the floor and the skirting to the southeast corner adjacent to the altar indicating possible settlement of the floor slab. The area should

be monitored to establish if the movement is ongoing.



Photo 37, Gap between skirting and floor in SE corner

- 2.12.5 The raised bench platforms to either side of the chapel have older cork tiles in generally fair condition.
- 2.12.6 The cork nosings to the bench and altar platforms have been inappropriately repaired with softwood and resin in a number of locations.
- 2.12.7 To the corners of the altar platform there was localised damage to the cork finish. Consideration should be given to renewing nosings with a more robust but matching material. However if under floor heating is to be considered during a refurbishment the full floor finish will need replacing.



Photo 38, Damage to corners of altar platform

- 2.12.8 The cork tiles to the solid organ loft floor were badly discoloured (probably from tower works) and those to the vestry were damaged near to the sink.



Photo 39, Discolouration to organ loft floor

- 2.12.9 The narthex floor was of stone slabs which were in good condition

- 2.12.10 The spiral stair access to the organ loft were of concrete with protective nose coverings. There was slight surface deterioration to one of the steps
- 2.12.11 The steps to the blocked stairs were of natural stone and were in good condition.

2.13 Internal fittings

- 2.13.1 Simple collegiate benches from beech wood with front faces finished in dark and light panels similar to doors. These was some fading to the north front.
- 2.13.2 The Reredos was of 5 long blue curtains hanging from three separate castellated pelmets. There was mould developing to the rear of the curtains up against the mouldy external wall.
- 2.13.3 Silver cross (Stephen Sykes Bower 1938) was in good condition as were the large candlesticks
- 2.13.4 The wooden baptism font with corner spindles, a wooden cover with finial and inbuilt aluminium bowl was in good condition as was the wooden lectern.
- 2.13.5 Memorial brasses in the narthex and timber memorial plaques in the stairwell were in good condition.
- 2.13.6 A triptych painting hung by Presidents chair. There was a textile wall hanging under a pelmet behind the chair. All in good condition.
- 2.13.7 To either side of the entrance doors were seats with extended pelmets and textile hangings, all in good condition.
- 2.13.8 To the central aisle was a large handmade Wilton carpet designed by Leonard Evetts, while showing some signs of wear was in good condition.
- 2.13.9 The Harrison and Harrison Organ is serviced annually by the manufacturers.

2.14 Heating

- 2.14.1 The Chapel is heated by a gas fired boiler located in a basement at the adjoining School of Education and vents through a masonry stack to the north.
- 2.14.2 The heating is a hot water system with exposed large piping and 6 fan convactor units within the chapel and column radiators to the narthex, vestry and organ loft.
- 2.14.3 A separate report on the heating has been prepared by TGA Consulting Engineers following monitoring of the internal environment and concluded
- The existing boiler is reaching the end of its serviceable life.
 - The heating had no measurable effect on the internal temperature and not providing adequate frost protection during the monitoring period.
 - The air was stagnant and with no evidence of air movement.

2.15 Electrical installation

- 2.15.1 The previous QQ report indicated that the church was rewired in September 2010.
- 2.15.2 An electrical inspection report from 20/7/20 was available for review. Remedial measures recommended have been confirmed as completed..
- 2.15.3 No access was available to the cupboard where the distribution board is reported to be located.
- 2.15.4 In the chapel there were semi flush lights under the offset lower ceiling and spotlights for the central aisle and altar area. Within the recess areas there were up lights.
- 2.15.5 Within the narthex and vestry were ceiling mounted strip lights while there were wall and ceiling mounted light fittings in the stairwell

- 2.15.6 Twin electrical sockets were located behind the altar and to the front of the south benches
- 2.16 Lightning Conductor – none present
- 2.17 Fire Risk Assessment
- 2.17.1 A fire risk assessment was conducted in 2018. It is recommended that this is re-accessed. The report recommended that
- If numbers are not to be restricted, the existing entrance/exit door should be re-hung to open in the direction of escape.
 - If numbers are not to be restricted, at all times the premises are in use for more than 60 persons, a trained member of staff should be positioned in the Entrance Hall to help raise the alarm in an emergency and control the evacuation of the building.
 - The Entrance Hall and rooms leading off the Entrance Hall should be kept free from obstructions, sources of ignition and combustible materials.
 - Consideration should be given to installing an automatic fire detection and alarm system throughout the building to BS 5839-1, for a Category L3 system
- 2.17.2 Break glass alarm activator and sounder connected to the college system. No access to view boiler room sensors.
- 2.17.3 Extinguishers; a 6 ltr foam extinguisher was present in the narthex, serviced 10/22. No extinguisher present in the organ loft. It was recommended in the FRA that an additional CO² extinguisher is provided.
- 2.18 Sanitary facilities
- 2.18.1 No toilet facilities
- 2.18.2 Washbasin in the vestry with a wall mounted water heater. External plastic drain pipe disconnected
- 2.19 Disabled access
- 2.19.1 Low entrance step and internal double doors provide manageable access to central aisle. Steps to the benches and altar hinder access. Organ loft and chair vestry inaccessible.
- 2.20 Security
- 2.20.1 No alarm installed
- 2.20.2 Mortice and barrel locks fitted to entrance door.
- 2.21 External access
- 2.21.1 Tarmac paths to west and south. Some unevenness to tarmac outside entrance door.
- 2.21.2 Concrete paving to the north is very uneven creating a trip hazard. Concrete sections have collapsed into the ground.
- 2.21.3 The plaque on the west wall adjacent to the entrance door celebrates the laying of a foundation stone. This plaque is now worn.

2.21.4 The painted wooden sign noted in the previous survey to the south is no longer present.

2.22 Archaeology

The chapel falls within an area of archaeological importance and therefore consultation with the local authority archaeologist is recommended before embarking on any ground works.

3.0 Summary of Recommendations

Detailed recommendations available in separate reports

3.1 Immediate actions

- Implement recommendation of Fire Risk Assessment
- Establish monitoring and further sampling of render and concrete cracking
- Establish monitoring of southeast corner floor
- Treat west purlin ends with fungicide to guard against wet rots
- Increase internal temperatures to 13-15°
- Repair below ground drainage
- Relay external concrete paving (trip hazard) to north
- Accurately measure entrance door ashlar to provide information for later restoration.

3.2 Actions within 18 months

- Obtain specialist advice and conduct repairs to external render following monitoring
- Update detailed Conservation Plan
- Consider upgrading flat roofs with insulation.
- Renew boiler or upgrade heating system
- Refurbish cast iron rainwater goods and redecorate
- Repair roof and high level defects.
- Repair windows

3.3 Actions within 5 years

- Redecorate internally after allowing time for fabric to dry out after render repairs
- Repair Clock
- Conduct repairs to floor finish subject to decision on heating upgrade.

3.4 Regular maintenance

- Clear rainwater gutters and downpipes.
- Inspect fibrous plaster ceilings