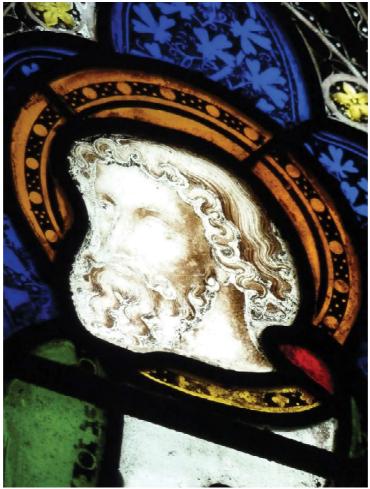


Design & Craftsmanship in Stained Glass

### CONDITION REPORT ON THE STAINED GLASS WINDOWS AT THE CHURCH OF ST MICHAEL & ALL ANGELS – SANDHURST



Report compiled by: Robert Holloway A.C.R & Laura Hobson of Chapel Studio stained glass

November 2017

Robert J Holloway Esq. AMGP, ACR - Director

14 Bridge Road, Hunton Bridge, Kings Langley, **HERTFORDSHIRE** WD4 8RE

Tel: 01923 266386

Email: <a href="mailto:customer@chapelstudio.co.uk">customer@chapelstudio.co.uk</a>

Peter Campling ACR - Director 251 Holt Road, Horsford,

.51 Holt Road, Horsford NORFOLK NR10 3EB

Tel: 01603 891505 Email: office@chapelstudio.co.uk

### **CONTENTS:**

- COMMISSIONING OF PRESENT CONDITION REPORT
- BRIEF DESCRIPTION OF THE CHURCH
- POSSIBLE STAINED GLASS MAKERS AND MANUFACTURES FOUND IN THE CHURCH
- CVMA NUMBERING SYSTEM & FLOORPLAN
- CONDITION ASSESSMENT OF THE WINDOW WITH RECOMMENDATIONS FOR REPAIR
- METHOD STATEMENTS & GLASS CONSERVATION PROPOSALS & PROCEDURES
- COSTS

### **COMMISSIONING OF PRESENT CONDITION REPORT**

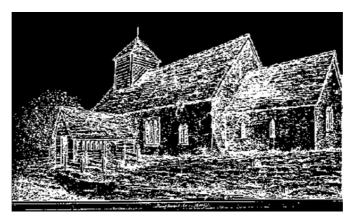
This report on the stained glass windows with recommendations and costs has been prepared at the request of Mrs. Sue Campbell, Church warden of St Michael's and All Angels Sandhurst.

The report has been prepared by Robert Holloway ACR of Chapel Studio who has previously attended site to provide an estimate to repair the Main west windows last year. The windows were inspected on Thursday 2<sup>nd</sup> November 2017, during a dry, mainly sunny period, by Laura Hobson from ground floor level and with use of binoculars. Close examination of the Upper sections of the main east window and west end windows was restricted on height both internally and externally.

The church has a heating system in place which was in good working order on the day of the survey and the Church has good ventilation with all opening hoppers in good working order.

### PRELIMINARY NOTES – A BRIEF HISTORY OF THE CHURCH

### Article written by the late Peter Holmes



A print showing the old St. Michael's Church in the early 19th Century.

The first mention of a new church in the scattered hamlet of Sandhurst was in 1220 and for the next 600 years there were few significant changes made to the original building.

In 1846, Sandhurst was transferred to the diocese of Oxford. A new incumbent, Henry Parsons, arrived in 1850, and in 1853 he embarked on the first stage of rebuilding. This added a new south aisle, a tower with a spire, and new east and west ends for the nave. The designs were produced by the new diocesan architect, G. E. Street, and some of the interior features, notably the font and pulpit, were executed by the incumbent's youngest daughter.

Twelve years later, a north aisle was added and a larger chancel replaced the last remnant of the original church. Although Street was still the diocesan architect, the new extensions were designed by J. Woodman of Reading. The new work was fully in sympathy with the earlier parts to the extent that it could be conjectured that Street took a close interest in approving the plans.

The installation of a new and wealthy Rector, Randal Parsons, in 1880, combined with the parish's wish to commemorate his late predecessor, resulted in a decade of major enhancements to the interior of the church. A new east window and a ring of six bells were the main memorials. The Rector provided new choir stalls and paid for extensive paintings in and around the chancel. In honour of Queen Victoria's Golden Jubilee in 1887, the vestry was enlarged to accommodate the expanding choir and a north porch was built. These were the last structural alterations to the building.

Since that time, new lighting has been installed. In the 1960's some of the wall paintings were covered in a white paint to make the interior brighter. Also in the 1960's the church was registered as a Grade II listed building.

In 1989 a Pastoral Centre, incorporating a large hall, a parish office and rooms for meetings and other church activities, was opened on a site close to the church.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> http://www.stmichaels-sandhurst.org.uk/history.html

### POSSIBLE STAINED GLASS MAKERS AND MANUFACTURES FOUND IN THE CHURCH:

The main East window has been attributed to Ward and Hughes in the church records and Church Guide. I would also say that the three pressed quarry lancets on the north elevation of the chancel are also from ward and Hughes on stylistic grounds, there is no reference documentation to support this however.

Ward and Hughes is a very well-known firm to admirers of Victorian stained glass. They produced a tremendous amount of work in England in the middle of the C19th. However details of the firm's history are not easy to follow. The firms name altered a number of times and some members of the firm undertook work privately.

The firm appears to have originated from Derby. John Hancock was connected with the Derby china factory, and, before he left Derby, he began to manufacture enamel and glass colours (one of the first to practise the art in this country). Hancock was in partnership with Nixon and Dunt at the time of an exhibition of a copy of Spagnoletto's Descent from the Cross, which had been made in painted glass. The partnership between Hancock and Nixon came to an end around the time Nixon was working for Hedgeland. Nixon then became a partner of Thomas Ward (1808-1870), who was primarily a lead glazier, although he did design some ornamental work. Ward had come to 67 Frith Street, Soho, London from Normanton in Yorkshire. For some twenty years Nixon and Ward produced many windows which were sent to various parts of the world.

Henry Hughes (1822-1883), was born at Market Drayton, Shropshire. He was the son of a butcher, but was given an apprenticeship as an artist at Ward & Nixon, stained glass manufacturers. James Nixon began to fade away from the business around 1856, and died in 1857. Hughes married Elizabeth Curtis in September 1851 in St Marylebone Church, London, and lived in Green Street, Park Lane. They had one son and three daughters. After Nixon's death, Ward began a partnership with Henry Hughes, continuing to work from Frith Street, London. Hughes was a well-known, and well respected artist, and won, amongst others, the contract to supply windows for the Guildhall and later St Mary-le-Bow.

For the rest of the C19th up to the end of the First World War, Ward and Hughes manufactured an incredible amount of stained glass work. They were the first firm to use a range of pot-metal coloured glass, resembling that of medieval glass work, produced by the barrister and stained glass enthusist Charles Winston, with the aid of Medlock and Green of Powell's. Wards early patterning and Hughes' figure compositions and colouring were quite exquisite, but as their firm expanded, so their artistic standards deteriorated due to commercial expediency. They employed over 100 people, and often commissioned other artists, including Thomas Figgis Curtis (1845-1924). When Hughes died in 1883 the firm was taken over by Curtis, a relation, and continued production as T F Curtis, Ward and Hughes until the late 1920s. Hughes was buried in Highgate Cemetery. His wife, Elizabeth and three other members of the family were all interred in the same grave. Curtis died in December 1924. The firm continued to trade until c.1930, under Edith Kibblewhite, a cousin of Curtis, after which it ceased trading. (In 1830 Vincent Novello set up his very first premises for Novello & Co at 67 Frith Street, London).

The work of Ward and Hughes varies greatly in artistic quality, but the firing, leading and construction were always excellent. This is probably witnessed to best by a study of their windows in Gloucester, Lincoln and Lichfield Cathedrals.

Ward and Hughes had more patrons in the Diocese of Lincoln than anywhere else, which may have been due to their considerable contract for providing a large amount of work for Lincoln Cathedral. The windows in the north aisle were their work, as well as the great east window of 1855. Sadly much of their work in London was destroyed during the blitz.<sup>2</sup>

The main west window and the Rose tracery of the West elevation window of the North Aisle is attributed to Mr Powell from sketches by the architect Mr G. E. Street and executed by Hardmans of Birmingham.<sup>3</sup>

### John Hardman & Co.

### The History of the Firm

The family firm of John Hardman & Co. had its heyday in the Victorian period, largely through its collaboration with the architect <u>A. W. N. Pugin</u>. The Hardmans were a staunchly <u>Catholic</u> family from Lancashire. They moved to the <u>Birmingham</u> area, with its large and supportive Catholic community, in the earlier part of the eighteenth century. There John Hardman senior (1767-1844) entered the trade of button- and medal-making, and established himself as a pillar of society. A prominent benefactor, he was a moving force in the project to replace the old and inadequate St Chad's chapel with a new church — the future St Chad's Roman Catholic Cathedral.

### The Hardmans and Pugin

Once Pugin became involved with the West Midlands' Catholics himself, he was bound to come into contact with the Hardmans. He first met John Hardman junior (1811-1867) in 1837 at Oscott College, the Roman Catholic public school and seminary, when he was both teaching there and starting to refurnish the chapel. It could have been no later than the end of May in that year, because in June he was writing to the young man from his first home, St Marie's Grange, with his early ideas for St Chad's (see Pugin 78-79, especially Margaret Belcher's first note on the letter). The two were just of an age, shared the same religious views and enthusiasm for the medieval spirit and its expression, and quickly became close friends (Meara 27). Soon Pugin was passing his friend designs for metalwork. Even before the project at St Chad's was under way, Hardman & Co. was advertising "Ecclesiastical ornaments, designed from Ancient Authorities and Examples, by A W Pugin Architect" under John Hardman junior's name (qtd. in Hill 208).

### John Hardman & Co., Ecclesiastical Fittings and Ornaments



<sup>&</sup>lt;sup>2</sup> http://www.woodgreenparish.com/Ward&Hughes.htm

<sup>&</sup>lt;sup>3</sup> Church guide by Peter J. Holmes, Revised and expanded by Catherine Wilkins and Emma Hodge 2017.

John Hardman senior died in 1844, and was laid to rest in the Hardman Chantry at St Chad's. By then the younger Hardman had already become head of the firm. The collaboration with Pugin continued and flourished, to their mutual advantage. Under the impetus of the stream of designs pouring in from the architect's hand, the Birmingham firm was now diversifying, branching out into stone- and wood-carving, leather-making, even textiles, all showing the influence of Pugin's insistence on reviving the traditions and forms of medieval craftsmanship. Thanks to the architect's own far-flung enterprises and inspiration, the firm's <u>Gothic Revival</u> artefacts, recalling the medieval past in every detail despite being made in a factory workshop, began to find their way into religious establishments all over the country and even beyond it. At the end of 1844, the collaboration was further strengthened when Hardman junior sent his teenage nephew <u>John Hardman Powell</u> (1827-1895) to train with and assist Pugin, now living at <u>The Grange</u> in Ramsgate — probably with a view to helping with the additional work to be done for the interior of the House of Lords (see Shepherd 65). Soon afterwards, with business booming, the firm opened a new factory in Birmingham's Great Charles Street

#### **Stained Glass Manufacture**

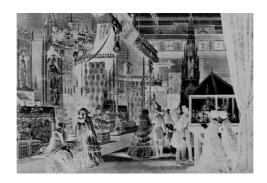


Within months Pugin had persuaded Hardman to enter a new, challenging area: stained glass production. As part of a rather complicated operation, Powell and Pugin's eldest son Edward (1834-1875) were trained to draw the cartoons in Ramsgate, and these were sent off to the Birmingham workshop. As time went on, other assistants were drafted in, usually from Birmingham, and the dedicated Cartoon Room at Ramsgate, shown alongside, became a hive of activity. The challenge was not simply to manage all the work that was now going back and forth, and then out to churches and other buildings all over the country. Stained glass windows, as against painted ones, required skills that had been lost over the years, both in the glass-making process itself, and in the combination of colours. Mistakes were made even by Hardman's (see Cheshire 42).

It took time for Hardman's to build up a wider reputation in this line. But it did. The first window was completed in November 1845 (Hill 344)); after 1846 Pugin only designed his glass for Hardman (Cheshire 44); and by the late 1840s, Hardman was having to tell would-be clients that he would only work to Pugin's designs (see Shepherd 91-92). The firm was well on the way to becoming "one of the most successful studios in the country" (Cheshire 42).

The collaboration between the Pugins and Hardmans continued to be a fruitful one, growing closer still in 1850, when young Powell married Pugin's eldest daughter Anne (1832-1897), and the two families became relatives by marriage.

#### The Great Exhibition



By now, the Pugin-Hardman enterprise was producing some of its finest work, such objects, for example, as the Reliquary Cross for Erdington Abbey, Birmingham, of about 1848 (see Atterbury 294). At the beginning of 1851, Pugin and Hardman began selecting specimens of their output for the <u>Great Exhibition</u> at London's Crystal Palace. Pugin was already stretched to the limit with his commitments at the House of Commons, and there was no time to make everything for his Medieval Court from scratch. Some of the pieces were chosen from those already in progress, while many were simply borrowed back from their new owners (see Hill 454). Lord Shrewsbury, worried about the safety of his precious works, nevertheless acceded to Pugin's requests, and the huge 42-light brass and crystal chandelier from his dining room at <u>Alton Towers</u> was one of the grandest exhibits. Pugin was particularly keen to promote the Gothic Revival style for domestic as well as ecclesiastical purposes.

### **The Later Period**



The Hardman firm continued to be influenced by Pugin, and to propagate his influence, long after his death in 1852. Powell was now Hardman's chief designer and artistic director, having taken the stained glass team, including Edward Pugin, to Birmingham with him in mid-1852 (see Shepherd 184). Inevitably, there were changes. Powell himself, for example, gradually evolved a more flowing style for the stained glass windows: Stanley Shepherd talks of his "elongation of forms" (188). There were organisational changes, too. In 1883, the stained glass and metalwork units of the firm split off from each other, with Hardman, Powell & Co. specialising in metalwork, and John Hardman & Co. focusing on the stained glass. Showell's *Dictionary of Birmingham* could now refer to the Hardman family's "world-known name" (316). Powell remained the principal designer of John Hardman & Co. until his death in 1895, by which point the head of the firm was John Hardman junior's son, John Bernard Hardman (1843-1903). For three generations, then, the collaboration that began towards the end of the 1830s was "an essential ingredient of their successful domination of church architecture and decoration" (O'Donnell 15).

Although their reputation faded as the Gothic Revival segued into the Arts and Crafts movement, and Ruskin's influence into William Morris's, the firm remained in the family until the 1930s, and its main workshop, then on Newhall Hill, continued in use until a devastating fire in 1970. The name lived on even into the twenty-first century, with stained glass production continuing until a few years ago. — Jacqueline Banerjee.<sup>4</sup>

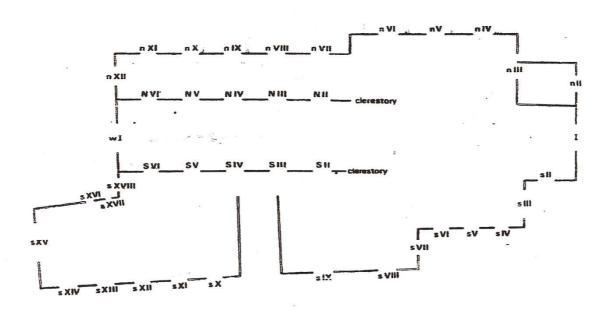
There are unfortunately no more maker's marks on the other windows and there are no church documents to attribute them either. I would suggest that on stylistic ground Window n VII was possibly made by Clayton and Bell but there is no historical documentation to support this claim.

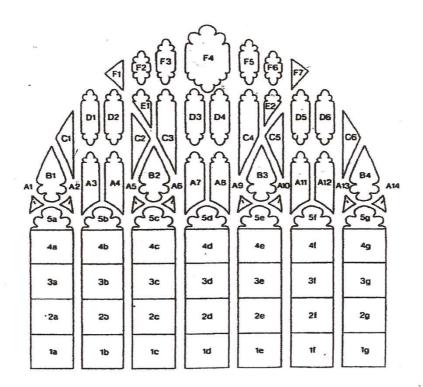
The London stained glass firm of Clayton & Bell was founded in 1855 and continued until as recently as 1993. The founders were John Richard Clayton (1827-1913), and Alfred Bell (1832-95), who entered into a partnership with Clayton in 1856, having previously worked in the studio of George Gilbert Scott. By 1859 these were definitely "the rising stars of Victorian stained glass" (Cheshire 24), and the firm was soon preeminent among the stained glass designers and manufacturers of the time — a time when this glass was in huge demand. As a large-scale producer, catering to the market for decorative schemes in churches and grand secular buildings alike, the firm has been criticised for over-production: in the mid 1860s, it had 300 employees in its Regent Street workshop ("Clayton and Bell [1855-1993]"). Scott, who had thought very highly of the precocious Bell, was particularly outspoken in his criticisms, feeling that artistic talent had been betrayed here: "No real art can stand against a constant high-pressure and working against time. Some of Clayton and Bell's productions are of a high character, but a large proportion are damaged or ruined by one or both of the influences above-mentioned. Their works are by no means whatever proportioned to their ability." Scott was biased: he particularly disliked the craze for "antiquated drawing," with its "oddness" or even "grotesqueness" (222); "wretched, mawkish attempts at picture-painting" also annoyed him, and altogether he found it positively "vexatious" that Clayton and Bell, "from whom better things might have been hoped, and who have produced fine work" should follow such trends (223). However, the firm retained its position, and from what can be seen even in local parish churches which commissioned work from them later on, there was a return to form in the last decades of the century, as it passed into the hands of the next generation. — Jacqueline Banerjee.<sup>5</sup>

<sup>&</sup>lt;sup>4</sup> http://www.victorianweb.org/art/stainedglass/hardman/intro.html

<sup>&</sup>lt;sup>5</sup> http://www.victorianweb.org/art/stainedglass/clayton/index.html

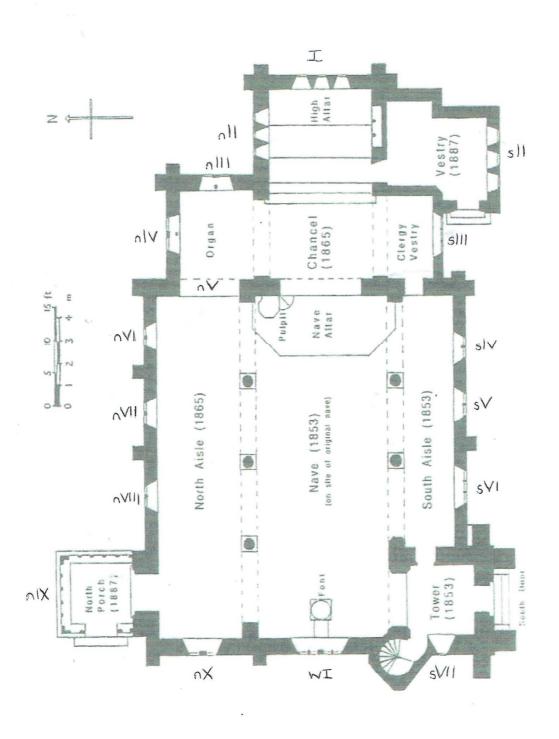
### **CVMA NUMBERING SYSTEM:**





**CVMA FLOORPLAN OF THE CHURCH:** 

### Plan of the Church



Window: I

Window location: Main East Window



Figure 1: Main East window

**Access to Window:** Would require a tower scaffold both internally and externally. There is an altar piece at the foot of the window. Its 2 metres to the bottom of the window from the floor.

Number of Lights: 3 main lights

**Sizes:** The outer lights measure 15" wide x 118  $\frac{1}{2}$ " high. The centre light is taller at approximately 136" high. Each light is made up of three panels.

Maker: Ward and Hughes. 6

<sup>&</sup>lt;sup>6</sup> Church guide pg 54

**Date of Installation: 1878** 

**Style and Contents:** The window was a memorial to Rector Henry Parsons, given by his friends soon after his death. The window depicts the Crucifixion. The base panels across all three lights has and ornamented text which reads "Worthy is the lamb that was slain: To receive Power and Riches and Wisdom; Strength and Honour and Glory and Blessing", which is a quote from Revelation 5:12. The memorial inscription was too faded to read.<sup>7</sup>



Figure 2: Detail from light a

**Previous interventions:** The torso of Christ is a good quality sympathetic painted repair.



Figure 3: Detail of the painted repair to Christ's torso in the centre light.

 $<sup>^{7}</sup>$  Church guide pg 54

### **General Condition:**

**Lead Matrix**: Is comprised of a mixture of 3/16 and  $\frac{1}{2}$  flat profile leads, although the lead is oxidised which is to be expected in a window of this age I could not see any bowing or sagging of the matrix. There were no obvious cracks in the joints either.

**Ties:** Each panel is tied to the internal support bars with copper ties soldered onto the lead matrix joints to align with the bars. These appeared to still be intact.

**Waterproofing cement:** The waterproofing cement has started to become friable in places. It is pushing out from underneath the lead flanges.

**Structural support:** Each of the outer lights have 5x 3/8 round support bars and the centre light has six. These are starting to rust but are not causing damage to the mullions currently.

**Masonry internally and externally:** The masonry both internally and externally appears to be in good condition. There is some staining presumably from an old corroded wire guard that has since been removed.

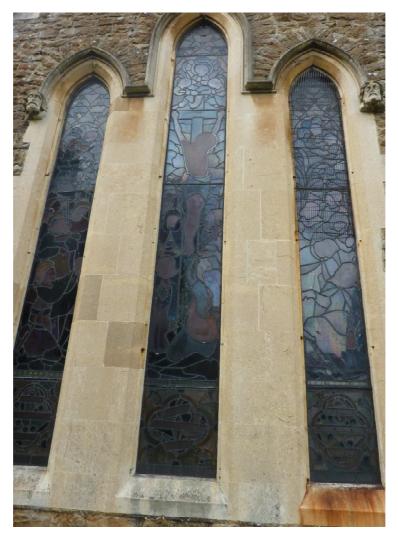


Figure 4: Detail of the external stonework surround of the window

**Glass:** The glass is in reasonably good condition. There is no sign of corrosion but there are multiple breaks. Some of these are single cracks which can be an indication of the lead matrix starting to

become weak. The right hand light has a section with multiple fractures running across three sections of glass around the kneeling soldier and running through his face; these breaks look like it has been caused from an impact from and object of some kind.



Figure 5: Detail of the fractured sections of glass in panel 3b

**Painted pigment:** There is some paint loss in this window, most noticeably in the base panels of each of the three lights. The memorial inscription is very badly faded and the extent of paint loss means that the legibility is affected. There are also some localised areas of fading of the pigment around the bars and the feet of Christ. This is where moisture builds up and I think it has started to attack the pigment.

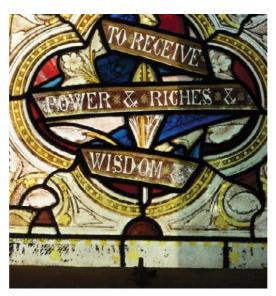


Figure 6: Detail of the faded and lost pigment running along the base inscriptions in panel 1a



Figure 7: Detail of the fading of the pigment around the bars where moisture has built up.

**Protection:** There is the remnants of an old corroding wire guard at the top of the right hand light looking externally. The other windows used to have guards as there still the leftover fixings in the mullions.

**Recommendations:** This window will need to be removed in the near future for re-leading and repair. It's not the most urgent in the church but should be budgeted for in the rolling programme of repair in the church. The paint loss will continue to get worse as the weatherproofing cement is starting to fail on this window allowing moisture onto the internal surface. There is evidence of the lead matrix starting to deteriorate in the form of the single cracks in the glass. Currently this is not too bad but this occurrence will continue to progress if not addressed.

The multiple broken section by the soldier in panel 3 b is currently secure and should continue to be monitored for any worsening or instability of the cracks.

I would recommend that this window be assessed again in 3-5 years' time.

Once the funds do become available this window would benefit from being removed for full releading and repair. The window is showing signs of fatigue in the form of single stress cracks in the glass and the weatherproofing cement is becoming friable. The matrix isn't bowing yet but the stress cracks will continue and water ingress will become more of a problem. The missing areas of inscription can have backing plates attached with the missing detail painted onto it bringing back the legibility of the inscription whilst being a completely reversible technique to. We can then also repair the cracked glass with the most up to date conservation methods which would be resin repair for the broken solders face and copper foil repairs for the single cracks in the backgrounds or drapery sections of the windows. We can also look to stabilise the painted pigment and re-weatherproof the window preventing any more moisture build up. The support bars can also be replaced with new non-ferrous bars to prevent any future damage to the stonework at the same time.

Window: s II

Window location: South elevation of the Vestry



Figure 8: No access internally for the inspection so assessed externally.

**Access to Window:** Would require a double ladder to reach the tops of the windows. There was restricted access internally as the door was locked.

Number of Lights: 3 lancet lights, the centre light has an opening hopper

Sizes: Each light measure 50" high x 16" wide

Maker: Unknown

Date of Installation: 1887

Style and Contents: Rectangular quarry window with green border. The centre light has an opening

hopper.

Previous interventions: None Noted

### **General Condition:**

**Lead Matrix:** ¼ round which is in good condition.

**Ties:** The panels are tied to internal support bars as well as the external ferrementa with copper ties. These appear to still be intact.

**Waterproofing cement:** This appears to be in good condition I could not see any evidence of it crumbling out from underneath the lead flanges.

**Structural support:** Each light has internal support bars but I didn't have internal access so could see how many and if they are in good condition or not.

**Masonry internally and externally:** Externally the masonry is in good condition I couldn't see internally.

**Glass:** There is a mixture of clear sheet glass and a green antique cathedral glass for the borders.

Painted pigment: N/A

Protection: N/A

**Recommendations:** This window is currently in good condition and does not require any restoration. The ferrementa would benefit from being brushed down and re-decorated with the appropriate black finish metal paints.

I would recommend that this window be assessed again in 10 years' time.

Window: s III

Window location: Clergy Vestry



Figure 9: Window in the Clergy Vestry on the south side

**Access to Window:** I could get close up access to this window whilst undertaking the report as the door to the office was locked but could view it from standing on the pews in the chancel. Any works would require a double ladder both internally and externally.

Number of Lights: 3 main lancet lights.

Sizes: Approximate site size of 14" wide x 57 high"

Maker: Unknown

**Date of Installation:** 1887, the Golden Jubilee year of Queen Victoria, was celebrated by the addition of timber north porch and a southward extension of the Vestry, to designs by William Ravenscroft of Reading.<sup>8</sup>

Style and Contents: Diamond leaded light windows and the central light has an opening casement.

**Previous interventions:** The central light has been re-leaded at some point. The width of the matrix is a thinner 5/16 round profile as the outer lights are a 3/8" flat profile leads which are older.

### **General Condition:**

<sup>&</sup>lt;sup>8</sup> Church Guide pg25

**Lead Matrix:** The outer lights are glazed in a 3/8 flat profile lead which although its oxidised is in reasonable condition and the centre light has been re-leaded at some point and is in good condition with a slightly thinner width lead of 5/16".

Ties: The panels are tied to the external ferrementa by copper ties and these still appear to be intact

**Waterproofing cement:** The cement is still in reasonably good condition from hat I could see from the outside. I couldn't see any obvious areas where the cement if falling out from underneath the lead flanges.

**Structural support:** The external ferrementa bars are in good condition currently they are not causing any problems to the stonework at the moment. The internal bars are starting to rust.

**Masonry internally and externally:** The stonework is in good condition both internally and externally.

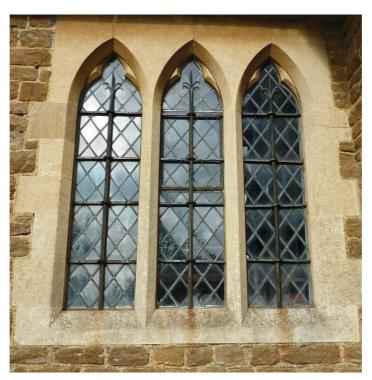


Figure 10: External view of window s III

**Glass:** Clear sheet glass, I could only see one cracked diamond in the right hand light. There is no evidence of any glass corrosion.

Painted pigment: N/A

Protection: N/A

**Recommendations:** This window is currently in reasonable condition, I would recommend that the ferrementa bars be brushed down and re-decorated in the appropriate metal black paint and the window assessed again in 10 years' time.

Window: s IV

Window location: South Aisle



Figure 11: Window s IV South Aisle

**Access to Window:** Good access both internally and externally, would require a double ladder both sides to carry out any works.

Number of Lights: Two single lancet lights.

**Sizes:** The site size for each light is 14" wide x 57" high. Each light is divided into two panels and the division is at 38" up from the sill.

Maker: Maker unknown there is no written record of who the makers where in the church records

Date of Installation: 1939 in memory of Patrick Leslie Peacocke (1915 – 1925)

**Style and Contents:** This two light window depicts St Francis in the left-hand light with wildlife and the right hand light depicts St Christopher. The inscription in the left hand light reads "To the glory of god and in loved memory of Patrick Leslie Peacocke (Paddy) Born 5<sup>th</sup> Aug 1915" The right hand light reads "He was called to higher service 4<sup>th</sup> Nov 1929 "Blessed are the pure in heart for they shall see god".

Previous interventions: None noted

### **General Condition:**

**Lead Matrix:** The matrix is in reasonably good condition. I could not see any areas where it is bowing or sagging. There were no obvious cracks in the lead joints. The panel is comprised of ¼ round profile lead.

**Ties:** The panels are tied to the internal support bars with copper ties. These are in good condition and are still intact.

**Waterproofing cement:** The cement is still in reasonably good condition currently. I could not see any areas where it is falling out from underneath the lead flanges.

**Structural support:** Externally each of the lancets has the original ferrementa bars which are starting to rust but are in reasonably condition. Each light has 3 x 3/8 round support bars which are also reasonable condition.



Figure 12: External view of the ferrementa which is starting to rust in places and the lead condensation trays.

**Masonry internally and externally:** The surrounding stone is in good condition but there is some crumbling loose pointing along the mullion of the left hand light. The pointing mix is very white looking externally so this could be a problem caused by the mix or caused by incorrect application which has allowed some water ingress.

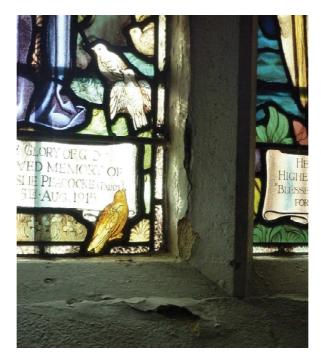


Figure 13: Detail of the crumbling plaster and mortar at the base of the central mullion.

**Glass:** There is some really good quality antique handmade glasses in this window. There is no evidence of corrosion on either surface. Unfortunately there is a single crack running down the inscription of panel 1a. The crack is stable and from what I could see there was no evidence of water ingress.



Figure 14: Detail of the crack in panel 1a.

**Painted pigment:** The painted pigment is well fired and there's no evidence of fading or paint loss. The silver stain is also in excellent condition.

Protection: N/A

**Recommendations:** This window is in good condition currently, the pointing and the crumbling plaster should be monitored at the base of the window internally but the stained glass does not require restoration at the moment. The window should be assessed again in 10years time. The ferrementa would benefit from being brushed down and re-decorated.

Window: s V

Window location: South Aisle

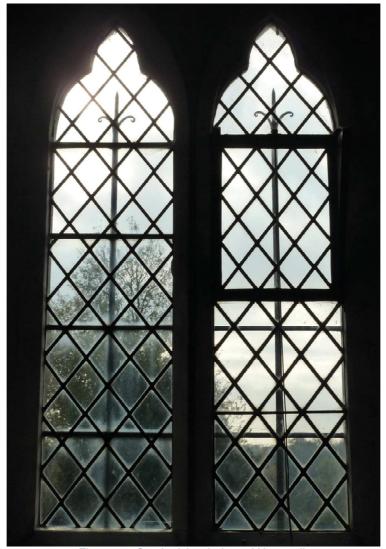


Figure 15: South aisle window s V internally

**Access to Window:** There god access both internally and externally to this window. A double ladder would be required to reach the top of this window if any works are required.

Number of Lights: Two single lancet lights.

**Sizes:** Each of the main lights site sizes are 14" wide x 57" high. Left hand light has a division at the spring line 42" from the sill. The right hand light is split into three panels. Base 24" Casement is 17" high x 13" wide and the head panel is 14 high.

Maker: Unknown

**Date of Installation: 1853** 

**Style and Contents:** Diamond quarry window with an opening hopper casement.

**Previous interventions:** The left hand light has been re-leaded at some point as the size of the lead came is different. It is 5/16 and the right hand light looks more oxidised and older 3/8 lead.

### **General Condition:**

**Lead Matrix:** Although there's two different lead came sizes and dates, the right hand light is older with 3/8" lead and the left hand is 5/16" and has been re-leaded at some point. Both windows are still in reasonable condition. There is some bowing in the casement panel but that's to be expected as there is no support bar and it's still a working hopper. The lead is oxidised but I could not see any visible cracks in the joints.

**Ties:** The panels are ties to the supports bars and the ferrementa bars with copper ties. These appear to be intact.

**Waterproofing cement:** This is starting to become friable in places and should be monitored. There is evidence where it's just starting to push out from underneath the lead flanges. This is evident in the right hand light.



Figure 16: Detail of the cement starting to push out from underneath the lead flanges

**Structural support:** Each light has external ferrementa which is starting to rust as is the casement. You can see the rust staining the stone sills as the upright enters the stonework. It's not causing any damage currently. The casement is also rusty internally as are the support bars. This has caused some of the pointing to come loose out of the grooves but is very localised and has not caused damaged to the stonework.

Masonry internally and externally: The stonework around this window is in good condition both internally and externally. There is some crumbling of the pointing at localised points around the support bars internally. This is due to the rusting of the bars. Externally there is also some rust staining at the sill where the uprights of the ferrement bars enter the stonework. This will need to be continued to be monitored as this will only continue to get worse as the metalwork continues to rust and unfortunately rust jacking is inevitable. If further damaged starts to occur then the bars, casement framework and the ferrementa will need to be removed and the support bars replaced with non-ferrous bars to match the width and profile of the original and the ferrementa will need to be cut and re-tipped with stainless steel ends. The picture below details the staining of the sills from the rusting metalwork.

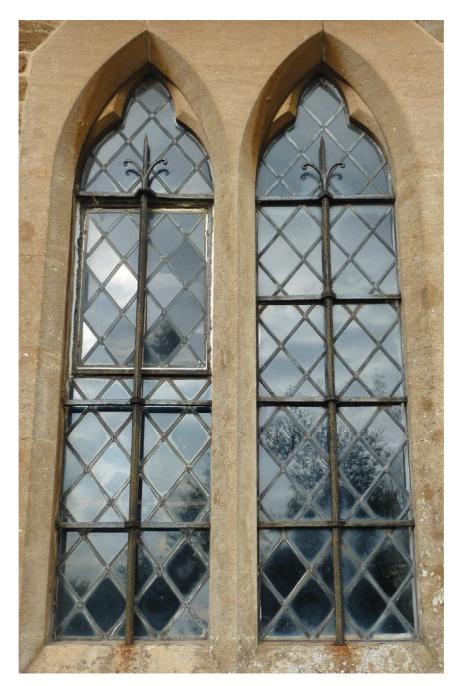


Figure 17: Window s V Externally.

**Glass:** Clear sheet glass with no movement or texture to it. The right hand eyelet wing of the opening hopper is cracked. No evidence of corrosion on either side of the glass.

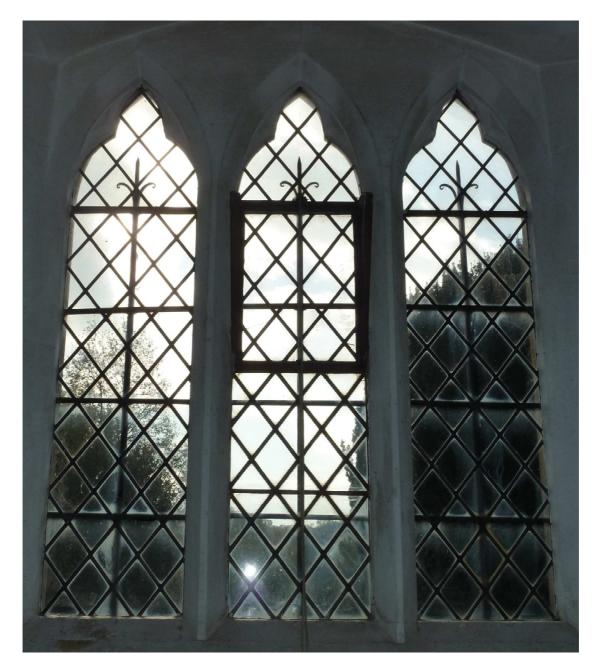
Painted pigment: N/A

Protection: N/A

**Recommendations:** This window should be assessed again in 3-5 years' time but should be monitored for signs of water ingress and further loss of pointing around the internal bars. Brush down & Re-decorate the ferrementa. The broken wing of the casement should be replaced with glass to match insitu whilst others works are being undertaken

Window: s VI

Window location: South Aisle



**Access to Window:** Good access both internally and externally, would require a double ladder to reach the top of each light if works are required.

Number of Lights: 3 main lights

**Sizes**: Each of the main lights 14" wide x 57" high. The outer lights division is at 42" at the spring line. Sizes of the centre light is Base 24" Casement is 17" high x 13" wide and the head panel is 14 high.

Maker: Unknown

**Date of Installation: 1853** 

Style and Contents: Diamond quarry window with opening hopper in the centre window

**Previous interventions:** The outer lights have been re-leaded at some point as the profile is a thinner 5/16" lead came.

### **General Condition:**

**Lead Matrix:** The outer lights are newer 5/16 lead cames which are in good condition and the middle centre light has older 3/8 lead cames. The casement panel is bowing which again is to be expected from an opening hopper which has no support bar. There is no obvious cracks in the centre light but there is oxidisation which is to be expected of lead cames of that age.

**Ties:** The panels are tied to the support bars with copper ties and these all appear to still be intact.

**Waterproofing cement:** The centre light cement is starting to crumble in places. It has become friable and is pushing out from underneath the lead flanges in places. The outer lights seem to be in better condition the cement is still intact and not crumbling.

**Structural support:** Each light has external ferrementa and internal support bars at spring line for the outer lights. These are all starting to rust, you can see the rust stain at the sill of each light externally from the ferrementa upright and the internal bars and casement frame is rusty also.

**Masonry internally and externally:** The stonework surrounds are in good condition currently. There are some localised areas where the pointing is loose at the base of the centre light much like the previous diamond light on the south aisle.

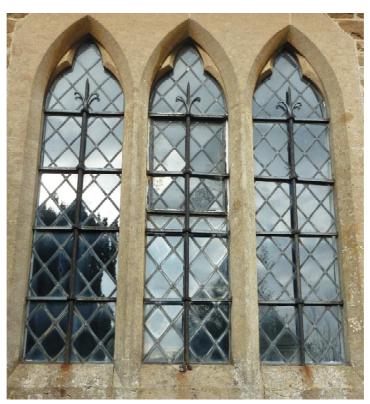


Figure 18: External view of window s VI

**Glass:** There are two broken diamond quarries in the casement panel. There is no evidence of corrosion on either surface of the glass.

Painted pigment: N/A

Protection: N/A

**Recommendations:** The outer lights are in good condition currently and don't require any restoration. The centre light should be monitored for any water ingress from the failing cement but this is just in the beginning stages. The bars, casement and ferrementa will continue to rust so will require attention at some point in the future but can maybe wait until funds are in place and the centre lights needs removal for re-leading. I would recommend that this window be assessed again in 3-5 years' time.

Window: s VII

Window location: Tower



Figure 19: Window s VII tower window

**Access to Window:** Would require a triple ladder to reach the top of the window but there is good access both internally and externally. There is a sloping sill and the sill is 2 ½ ft. deep.

Number of Lights: single tall lancet light.

Sizes: 7" wide x 85" high division is at approximately 44"

Maker: Unknown

**Date of Installation: 1853** 

Style and Contents: Diamond quarry lancet window

**Previous interventions:** Previous stop in repairs to two diamonds at the base of the window.

### **General Condition:**

**Lead Matrix:** Original 3/8" lead cames which is in poor condition. There is cracks in the joints and the lead is buckled from previous repairs.

**Ties:** The panels are fixed to the support bars with copper ties which are intact at the moment.

**Waterproofing cement:** The cement is failing quite badly and is crumbling out from underneath the lead flanges throughout the entire window. There are sections where you can see daylight between the glass and the lead cames and the scale build up from the failing cement.



Figure 20: Detail of panel 1a

**Structural support:** The window has 4 x support bars which are all rusty and in poor condition internally and also has original ferrementa externally, this is starting to rust also

**Masonry internally and externally:** The surrounding stonework is in good condition both internally and externally.



Figure 21: External view of s VII

**Glass:** Clear sheet glass which has no movement or texture in it. There are several broken quarries throughout the window. There is no evidence of any glass corrosion.

Painted pigment: N/A

Protection: N/A

**Recommendations:** This window should be removed for re-leading. Any broken sections of glass will be re-placed with new glass to match the original, once the glass is cleaned it will be re-glazed into new lead cames that match the width and profile of the original. The panels will be cemented with lead light cement to both sides, cleaned off and polished up. New copper wire ties will be soldered onto the joints to align with the internal support bar positions. The existing rusty and corroding support bars should be replaced with new non-ferrous bars to match the width and profile of the original. The ferrementa should be removed to be cut and re-tipped with stainless steel tips, redecorated with the appropriate metal paints. The panels and associated metal works can be refitted back into their respective openings and sealed with the appropriate mortar mix.

Window: W I

Window location: Main west window

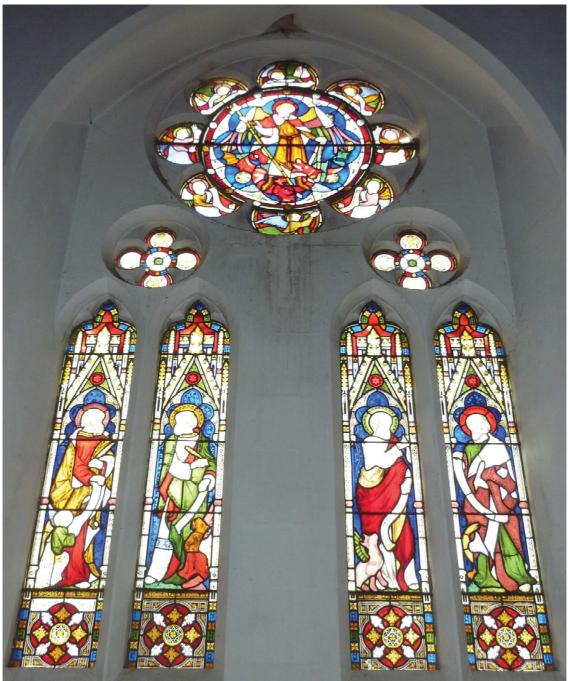


Figure 22: Main West window

Access to Window: Would require a tower scaffold to reach the rose tracery section of the window

**Number of Lights:** Large rose tracery with 8 lobes, two smaller quatrefoil tracery sections and four lancet windows below.

**Sizes:** Each lancet window measures 13  $\frac{1}{2}$ " wide x 68" high site size. Each light has two panels and the division is at 12  $\frac{1}{2}$ " high from sill; it is an overlapping division so the top panel sits slightly at the

back of the bottom panel and not a normal saddle division where the top panel sits on top of the panel below, which you can see more clearly looking externally. Sometimes overlapping divisions if not sealed with putty can allow water ingress along that line.

The upper rose tracery is approximately 5ft across but I did not have access up to that level to measure.

**Maker:** The window was designed by Mr Powell to sketches by the architect, Mr Street and executed by Hardman's of Birmingham.<sup>9</sup>

Date of Installation: 1853, and was the gift of Dr Chapman of the Royal Military College.

**Style and Contents:** The rose tracery depicts a central figure of St Michael slaying a dragon, surrounded by eight lobes with figures of angels, which is based on an account from Revelation 12. The quatrefoils have geometric patterns and floral designs. The four main lights depict the four evangelists, St Matthew, St Mark, St Luke and St John, each holding a scroll showing the first line of his gospel in Latin. At the figures feet their traditional emblems are represented; a winged man, a winged lion, a winged Ox and an eagle.



Figure 23: Detail of the bases of lights a&b

**Previous interventions:** None noted.

### **General Condition:**

**Lead Matrix:** The matrix is comprised of a mixture of 3/16 flat and ¼ flat profile leads. The panels are bowing and sagging in places so much so you can see daylight through the glass and lead as the glass

<sup>&</sup>lt;sup>9</sup> Church Guide pg 54

is pulling out from underneath the lead flanges. There are cracks in the joints and the lead is heavily oxidised.

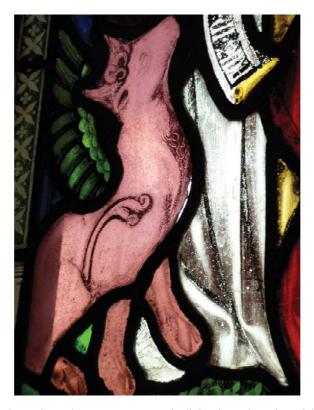


Figure 24: Detail of panel 2c where you can see daylight along the edge of the glass and lead.

**Ties:** The panels are attached to the internal support bars with copper ties some of which appear to have snapped from the panel due to the sagging of the matrix.



Figure 25: Detail of the copper ties and the rusty support bars.

Waterproofing cement: The cement is friable and has fallen out from underneath the lead flanges throughout the traceries and the main lights, this is causing water ingress which is affecting the painted pigment. Water sitting on the surface of the glass is extremely detrimental to the painted pigment, especially if the painted pigment isn't fired very well in the first instance. The moisture will be subject to slight temperature changes throughout the day and can sit within little fractures and holes within the painted layer and expand and contract with these subtle changes in temperature. This hydrolytic decomposition starts to fade and lift off the pigment from the gel layer of the glass. Which adding to the paint loss across this window. You can clearly see the water ingress in drip marks from the upper Rose tracery and at the sills of the main lights also.

Structural support: The rose tracery has a circular metal frame externally and a single support bar running through the main circular panel internally, this appears to be in a corroded rusty condition. The main lights each have four round 3/8 bars and these are also rusting too which you can clearly see looking at figure 25 above. They are not at present causing rust jacking to the stonework that I could see but if allowed to continue to rust further then damage to the surrounding stone is inevitable unfortunately. The panels appear to be buried quite deep into the stonework. Quite a lot of the clear outer borders are hidden in the grooves which means the panels are in very tight. The pointing has fallen out in areas along the internal mullions again I think this is localised to around the support bars due to the rusty condition of them and expanding at those points resulting in the pointing pushing and crumbling out. You can see the staining of the stonework externally also from the rusty framework.



Figure 26: Detail of the external framework of the rose tracery. There is also staining which i don't think is just from the existing frame i think there was old corroding wire guards at some point which have been removed which has caused the green staining.

Masonry internally and externally: The stonework is in good condition both internally and externally there are no signs of rust jacking from the supporting frames and saddle bars but this will start to happen at some point in the future if they are allowed to deteriorate and corrode further. There is a small section of plaster work right at the very top of the window internally which has fallen away. This should be assessed by stonemason or monitored by the church for further deterioration.

**Glass:** The window is made up of pot metal glasses. There are numerous cracks throughout the window a lot are single stress cracks as a combined result of the deterioration of the lead matrix and

also how tight the panels are within the stonework. There appears to be no tolerance for any movement which can also result in stress cracks. I could not see any areas of corrosion of the glass on either side of the window.



Figure 27: Detail of a broken section of glass with missing fragments in panel 2b



Figure 28: Detail of a single stress crack and also the severity of the paint loss occurring on the very pale green almost white looking glass in panel 2d.

Painted pigment: The internal temperature of the church is stable, the church has an effective heating system in place and there was no evidence of condensation due to poor ventilation and heating throughout the church. I think there is a combination of factors leading to the paint loss and fading of the pigment in this window. I think that there is an issue with the types of pot metal glasses used and the firing of these sections as well as the contributing factor of water ingress from the deteriorating condition of the lead and more so the friable nature of the cement. Some paler green pot metal glasses are affected by paint loss. This is due to the instability of the metal elements and amount of fluxes used in the painted pigment and the metal compounds and fluxes used within the glass itself that once fired can caused cracking and crumbling of the gel layer of the glass as they don't combine and are not compatible which over time can lead to this paint loss. This is why sometimes the paint loss is localised to areas of paler tinted glass. This has also been exacerbated in this instance by the moisture and damp through the water ingress which has been previously mentioned.

**Protection:** There has been some wire guard protection previously just like most of the other windows as you can still see the fixing holes in the surrounding stonework and in this window you can see the typical green staining of the stonework that happens as the wire guards start to corrode.

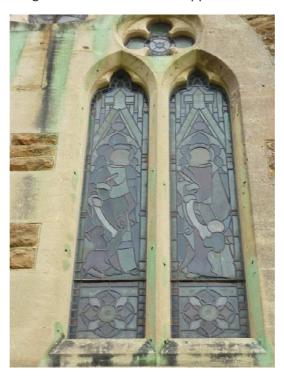


Figure 29: detail of light a & b externally where you can clearly see the previous green staining and fixings from old guards.

**Recommendations:** This window needs urgent attention to bring back the legibility of the window and to prevent further damage to the stonework and painted pigment as well as the glass.

Carefully remove the main lights and tracery panels from the stonework and temporary fill the openings weather tight with 6mm thick twin wall polycarbonate sealed weathertight. Each panel will be Labelled and loaded into our specially fitted vans in a safe and controlled manner to be transported back to our Studio. We will undertake a photographic record of before, during and after conservation works.

After each panel is photographed and assessed again on the benches to confirm that the windows in this instance will require full re-leading, discarding all weak and corroding lead cames. We will then

make rubbings of each panel and dismantle discarding all old weak and cracked lead. Gentle well controlled cleaning is again essential as the important rule here is to conserve this glass rather than to return full transparency due to historic build-up of deposits on the fragile surface, careful conservation cleaning is again important to not risk any damage whatsoever to the fired painted oxides. The glass in this instance will be carefully cleaned with de-ionised water and soft bristle brushes for any stubborn deposits as the painted pigment is in sound condition. Areas where the paint is unstable will be carefully dry cleaned with the aid of a microscope.

The level of intervention for a particular conservation project will be affected by a wide variety of factors, all of which will need to be considered finally once the glass is on the bench, for instance a fragment infill piece could be painted to match the original rather than replacing a complete piece or more than is actually needed. Another fundamental principle is that conservation techniques should always be reversible. Reversibility allows for the possibility of future developments in conservation, this will allow repairs to be removed or reversed should this be required in future years. We will repair any cracked glass using current conservation methods in line with CVMA Guidelines. Simple cracked sections of glass will be conserved without the need for any additional or new glass required. Once the glass as been freed from the lead cames and laid out onto the 1st rubbings and carefully cleaned then the broken glass edge can be examined and we can decide upon the least obtrusive methods of repair. Where broken or missing glass is found this will firstly be looked at with an eye to conservation rather than replacement only if the glass is found that it is beyond conservation and repair is not feasible then we will replace badly broken sections of glass with new glass that matches the tints and texture of the original as near as possible and hand paint, stain and kiln fire painted details to match the style and texture of the original piece as best as possible.

Should the glass be cracked rather than shattered with all or most pieces present, then we would look into conserving the original glass by one of three methods once the glass edge can be examined a microscope again we can then decide upon the least obtrusive option as follows:

- 1 Adhesive edge bonding with specialist epoxy resin Araldite 20/20 combined with plating which is a 1mm back plate that is kiln formed to exactly the contours of the original conserved piece. This additional platting method can be advantageous is extreme occurrences of faded or lost pigment as it can also be used to re-introduce very faded or missing painted line aesthetically integral sections of the windows such as faces, hands and feet or drapery sections and inscriptions. This can help bring back the legibility of the design. This is not required in this instance.
- **2** Copper foil jointing as fine as possible taking care as to minimise any flux touching the fired surface. This is a very strong form of repair and the very thin solder lines blend in with the lines of the lead matrix making for an aesthetically pleasing repair also.
- **3** String lead repairs can also be used for single or double cracks. Our sting leads come in flat and round profile and are 1/8" thick so again can offer a strong and aesthetically pleasing repair. String leads are normally used in background designs or border areas.

Where there are areas of severe paint loss and fading we will assess again once at the workshop but these areas may require consolidation. We carefully apply a paraloid solution to the worst affected

areas to adhere flacking pigment back onto the surface of the glass. This is a non-reversible technique and will only be undertake where absolutely necessary.

In aesthetically important areas of paint loss such as figures faces, hands, feet and drapery as well as inscriptions we would look to re-instate the painted line and detail to bring back the legibility of the pieces. This is done by painting the detail onto a 1.5mm thick piece of float glass which is then slumped to match the shape and contours of the original piece. This section will then be adhered to the original piece with a thin silicone skim around the edges to seal it and prevent and cement, dust and moisture between the plates. This will then need to be glazed into a wider heart lead came to allow for the added width of the plate.

Where the rebuilding of an existing leaded panel is chosen which is our recommended option in this instance due to the degradation, our intention is to always replace exactly like for like in regards to width, profile and height if the heart.

Once the two rubbings and photography of the original matrix have been taken, the glass is taken out of the matrix and placed on the first rubbing for cleaning and repair as stated above.

Rebuilding of the panels on the second original matrix rubbing will then begin with the selected drawn lead cames matching the profile and widths and height which in this instance is a mixture of 3/16", %" and 5/16" round profile lead. Once glazed then the joints are soldered with a 60/40 tinmans solder before the panels will be carefully cemented to both sides with Hodgsons black lead cement taking care to not touch the glass surface more than absolutely necessary and kept away from the fired oxides. Black lead light cement is always applied by hand to ensure a watertight seal and dexterous fine seal, once the lead came is cleaned and polishes with a softer bristle brush then new 1/16" gauge copper ties will be applied to the solder joints to align with the positioning of the original saddle bars ready to be tied to the new non-ferrous bars upon installation.

Ferrous saddle bars which are internal to the windows; where they touch the porous stonework, were found to be corroding, these could either be tipped with stainless steel or (our preferred option) replaced with non-ferrous CZ121 or bronze bar in a profile to match exactly the square ½" existing bars. These bars are darkened down with patina and allowed to completely dry before being installed. For the purposes of this report CZ121 replacement bars have been allowed for in the replacement of the corroded saddle bars. The circular frame will need to be removed and re-tipped with stainless steel to prevent any corrosion/ rust jacking of the stone work. At the same time it will be lightly sandblasted to remove any rust before being primed and re-decorated with the appropriate black metal paints.

The panels will be very carefully loaded and transported back to site and systematically slotted back into their respective openings until all panels are installed. The panels will then also be secured and tied to the new internal saddle bars. It is important that the mortar for re-installation and the sealing of the grooves of the new outer membrane of the pointing layer is as soft as the stone itself, therefore a hydraulic lime based mortar will be used with a semi sharp washed sand. The mix will be matched as closely as possible to the stone in hardness and colour, applied, dressed and compacted to a fine finish. A final clean down of the working area will affect the completion of works.

Window location: West elevation – North Aisle

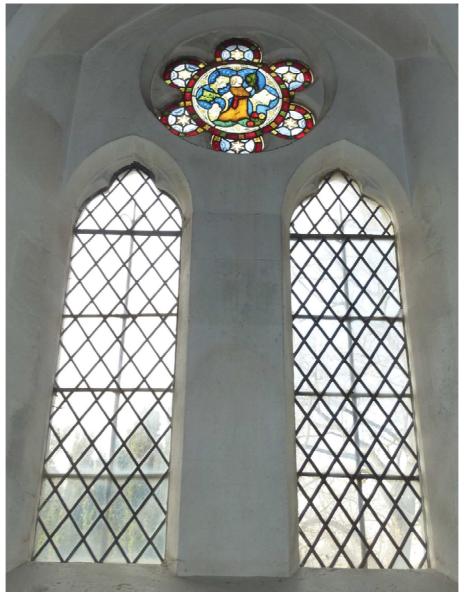


Figure 30: Window nX looking from ground floor internally.

**Access to Window:** Good access but would require a tower scaffold both internally and externally to reach the top of the windows. 2.4 meters up to the sill from the floor

Number of Lights: 2 lancet lights and a rose tracery with six lobes.

**Sizes:** Each of the main lights measure 16  $\frac{1}{2}$ " wide x 62" high. With a division at 42" high from the sill. This is an overlapping division at the spring line.

**Maker:** Unknown but I would suggest on stylistic grounds that the tracery is of the same painted style and maker as the main west window. That being Powell and manufactured by Hardman's of Birmingham.

Date of Installation: 1853

Style and Contents: The main lights are diamond leaded lights with slightly different shaped diamond sizes. The upper rose tracery depicts the figure of Christ in a garden with a repeated decorative leaf and border detail in the lobes.

Previous interventions: The left hand light and the base panel of the right hand light have been releaded previously at different dates due to the different sizes and shapes of the diamonds and lead sizes. The head panel of the right hand light still has its original 3/8 flat lead. I would think the base panel of the right hand light was very badly broken at some point and had to be replaced completely possibly due to an attempted break in. This would explain why the diamond size is different to the rest of the windows in the church.

## **General Condition:**

**Lead Matrix**: Left hand light is 5/16 lead which is in good condition. The right hand light is 3/8 lead, the base panel is in good condition, the head panel I think still has its original 3/8 flat lead, which is showing signs of deterioration, there is slight bowing. The rose tracery looks like it is predominantly 3/16 and ¼ flat leads. The panel is bowing but this isn't helped by there not being a support bar.

Ties: The panels are not tied to any bars or the external ferramenta work. So they are holding their own weight.

Waterproofing cement: The cement in the left hand light and the base panel of the right hand light is stable. The right hand head is friable and you can see its pushing out from underneath the lead flanges. The cement in the tracery is failing. You can clearly see just like the main west window the drip marks running of the sill of the tracery down the wall from the water ingress as a result.



Figure 31: Detail of the drip marks visible running down from the wall from the sill of the tracery.

Structural support: The only support for his window is the external ferrementa which is rusty but not causing any rust jacking currently. The panels however are not tied the ferrementa

Masonry internally and externally: The surrounding stonework is actually in really good condition currently there is no obvious areas of damage or crumbling. There is some green staining externally where again there must have been some previous wire guards that had corroded so badly they were removed but you can clearly still see the fixings that have been left in the stonework.

Glass: The glass in the main lights is a clear sheet glass with no movement or texture to it. There are no obvious breaks in the diamond lights. The upper rose tracery is in worse condition. There are a number of single stress cracks which are from the deteriorating lead matrix and the pressure from the bowing panel. I could see any areas of corrosion on the glass surface on either side.



Figure 32: Detail of the central roundel if the upper rose tracery. You can see some single cracks most noticeable in the kite shaped outer border sections and the red scarf.

Painted pigment: The painted pigment is in poor condition for the same reasons as the main west window, however there is a large amount of pigment painted on the outside of the window, a good 90%. Looking externally this is very porous looking and is contributing to the paint loss.



Figure 33: External view of the rose tracery where you can see the amount of painted pigment that is exposed to the elements and the porous quality to it as a result.

**Protection:** There are old wire guard fixings left in the stonework but no guards

**Recommendations:** The diamond main lights are in reasonable condition. I would assess the right hand head again in 3-5 years' time.

The rose tracery needs urgent attention as its allowing water to ingress into the internal fabrics of the church. The painted pigment is in very poor condition and also needs stabilizing.

Due to such a high amount of painted pigment being on the external surface and currently being exposed to the weather we would not want to return it to the same fate.

We recommend that the best option for this window is to isothermally glaze it. This means that the original stained glass panels are removed from situ restored and conserved. As the panel will be housed within a brass u channel frame and brought forward into the internal space of the church and not exposed to the weather any more we will look to conserve and restore the original lead matrix too. We will re-solder any cracked solder joints, carefully flatten any panels if necessary and if required only part dismantle areas to access broken section of glass for repair if necessary. For single cracks we will look to resin repair them to stabilise them.

# Internally Ventilated Isothermic Glazing Side view Overview External External Internal Interspace Internal Protective Glazing Plugs & Stainless Steel Screws Stained Glass Protective Glazing Rivet Airflow Mortar/Original Groove U-Section manganese Bronze Frame Stained Glass Gravel Stonework Stonework Compared Sill/Tray

Isothermal Glazing System Internally Ventilated - Method statement

### Method:

The tracery panels will be carefully removed from the stonework grooves. The openings boarded up with twin wall polycarbonate sealed at the edges weather tight. The stonework can have any necessary repairs carried out once the glass has been removed (to be determined by the architect and specialist stone conservator.) The panels will be labelled and carefully transported to our studio where they will undergo a photographic record and an on the bench assessment with the aid of a microscope will be undertaken to determine how each individual panel is to be cleaned, repaired

and consolidated if necessary. Please refer to our Philosophy of repairs to see what techniques will be used for carrying out the cleaning and repair work in line with CVMA guidelines. Areas of paint loss will be painted with cold paints on the non-painted side (Normally the external surface); this is only possible as it will not be exposed to the weather.

The windows will not be re-leaded the existing lead matrix will be repaired and restored where necessary, however in some instances re-leading will be necessary due to resin repairs and backing plates increasing the thickness of the glass. We would retain as much of the original materials as possible. Cracked sections of glass will be resin repaired.

Once the glass and lead have been cleaned and repaired each panel will be housed in specially fabricated bracketed non-ferrous manganese bronze u channel frames with supporting bars attached in line with the internal support bars if necessary. The panels will have new 1/16" copper ties soldered onto the lead joints to align with the frames support bars so they can be securely tied into the frames. The frames will have a 1/2 - 1" (depending on stone reveals) thick strips of lead leaf soldered onto the outer edge of the back of the frames. This stops any glare of light seeping around the frames and also allows you to have control of the air flow around the ancient glass. These frames are then installed into the internal stone reveals of the mullions and tracery approximately 5-10cm away from the original groove.

The outer plain glazing is fabricated to match the main lead matrix of the original panels. Not all lead lines will be followed just enough to be structurally sound. The glass will be kiln formed and very lightly matted externally to be as sympathetic to the surrounds of the buildings and prevent any glare. They will be water proofed both sides and then new copper ties will be soldered onto the external face of the leaded lights to align with the support bars/ ferrementa bars. All panels will be photographed before they leave our workshop. The outer panels will then be slotted into the original grooves and sealed with the appropriate mortar mix. A final clean down of the working area will affect the completion of works.

Please see some images of the isothermal glazing frames used on the two heads and the medieval tracery for a south aisle window at St Peter Ad Vincula church in South Newington to give you an idea of how it may look.



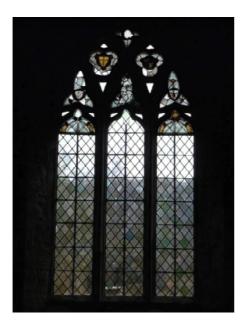




Figure 21: Isothermal framing Images Copyright to Chapel Studio Stained glass Ltd

If the preferred option of Isothermal glazing is not desirable or chosen then this window will need to be fully dismantled and very carefully cleaned flowing all the methods as set out for the main west window but the sections with painted pigment on the external face will need to be plated with 1.5mm float glass slumped to match the contours of the original and this will mean the vast majority will need plating and this will intern increase the weight of the window and a support bar will need to be introduced to give the panel extra support to hold this extra weight. The panels will need to be re-leaded n a wider heart lead to allow for the plating.

Window location: North porch



Figure 34: West elevation of the North Porch



Figure 35: North elevation of the North Porch



Figure 36: East elevation of the North Porch

Access to Window: Good access apart form the last two panels on the east elevation which is obstructed by a large cupboard. Would require a small pair of step ladders to reach the top of each panel both sides.

Number of Lights: 12 lights in total.

Sizes: The West elevation panels either side of the door measure 14 ½" w x 34 high with the division at 17 3/4". The remaining 10 panels are 17" w x 34 H and the div is at 17 3/4".

Maker: Unknown

Date of Installation: 1887<sup>10</sup>

Style and Contents: Rectangular quarry windows with a green antique cathedral border

Previous interventions: None noted

**General Condition:** 

**Lead Matrix:** ¼ round profile leads which is in good condition.

**Ties:** Copper ties all intact and tied externally to the ferrementa saddle bars

Waterproofing cement: Sound

Structural support: Each light has and external ferrement support which are slightly rusty

Masonry internally and externally: The porch window are slotted into wooden frames and fitted externally and it is in good condition.



Figure 37: External view of the east elevation of the porch windows

Glass: Clear sheet glass in the quarries and outer border with no tint or texture to it and there's green antique cathedral glass in the border detail. There is one small section of broken green border in the panel to the left of the door looking internally but it is secure within the lead.

Painted pigment: N/A

Protection: N/A

Recommendations: All the panels are sound and should be assessed again in 10 years' time

<sup>&</sup>lt;sup>10</sup> Church Guide

Window: n VIII

Window location: North Aisle

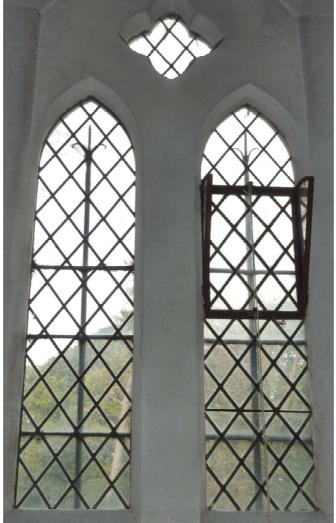


Figure 38: Window n VIII looking from ground floor internally

Access to Window: Good access would require a double ladder to reach the top of the window

Number of Lights: Two lancet lights and Tracey

**Sizes:** Each of the main lights measure 13  $\frac{1}{2}$ " w x 58" h site size. The right hand casement light measures base panel – 24  $\frac{1}{2}$ " high, casement panel 18" h and the head panel is 13  $\frac{1}{2}$ " high.

Maker: Unknown

**Date of Installation: 1865** 

**Style and Contents:** Diamond leaded light window with opening casement panel.

Previous interventions: None noted

**General Condition:** 

**Lead Matrix:** Left hand light is 5/16 round profile leads and has been re-leaded at some point. The matrix is in good condition. The right hand light has its original 3/8 lead as does the tracery. These panels are starting to bow and there are cracks in some of the joints too.

**Ties:** The right hand base panel is tied to an internal support bar and the ties are intact. The left hand light does not have any ties on it.

**Waterproofing cement:** The left hand light is sound. The right hand light and the tracery has friable cement. You can see where it's starting to push out underneath the lead cames.

**Structural support:** There's one internal very rusty square 3/8 bar in the base panel of the right hand light. Each of the main lights have external ferrementa. These are starting to rust but not causing any rust jacking to the stonework just yet. The casement framework is also rusty but is operable.

**Masonry internally and externally:** This appears to be in good condition both internally and externally.

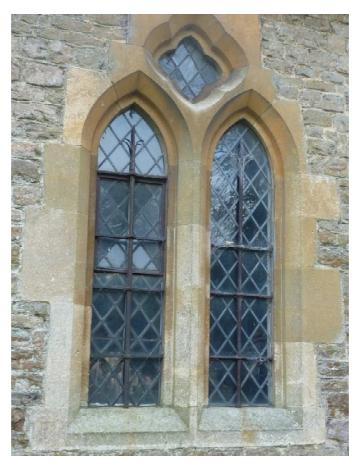


Figure 39: External view and you can clearly see the ferrementa bars are rusting as is the casement framework.

**Glass:** Clear sheet glass with no tint or texture to it but is in good condition. There are no breaks currently.

Painted pigment: N/A

Protection: N/A

**Recommendations:** Continue to monitor for water ingress due to the poor cement in the tracery and right hand light but I would assess again in 3 – 5 years' time.

Window: n VII

Window location: North Aisle



Figure 40: Window n VII looking from the ground floor internally

**Access to Window:** Good clear access but would require a double ladder to reach the top if the tracery

Number of Lights: Two lancet lights and a single Tracery panel.

Sizes: Main lights are 13  $\frac{1}{2}$ " wide x 58" high, the divisions are at 12  $\frac{1}{2}$ " high from the sill and at the spring line 44  $\frac{3}{4}$ "

**Maker:** On stylistic ground only as there's no historical reference material I would suggest Clayton and Bell.

Date of Installation: Exact date unknown

**Style and Contents:** This window depicts the Annunciation. The left hand light depicts the archangel Gabriel and the right hand light depicts the Virgin Mary. This is a memorial window to Louisa Boyle (Daughter of Henry Parsons) and her husband William.

**Previous interventions:** The base panel of the left hand light has been repaired and re-leaded. Unfortunately the inscription must have been in too bad a condition with too many missing

fragments to be kept or repainted as there is just a blank matted section in place now. You can see where they have tried to save the original glass but the arrangement is different and so is the border work.



Figure 41: Detail of panels 1a & 1b where there has been previous restoration of the left hand base panel

## **General Condition:**

**Lead Matrix:** There is a mixture of 3/16 and ¼ round leads. The matrix is in reasonable condition there isn't any sagging or bowing of the matrix and I could not see and cracks in the joints.

Ties: Each of the panels are secured to the internal support bars with copper ties, these are still intact and offering good support.

Waterproofing cement: The cement still appears to be in reasonable condition I could not see any areas where it's pushing out from underneath the lead flanges.

Structural support: Each light has 3 x 3/8 round support bars which are rusty and as a result are starting to crumble the pointing at the point they bars enter the stonework on either mullion.



Figure 42: Detail of panel 2b along the right hand mullion where you can see the missing pointing

**Masonry internally and externally:** Apart for the localised areas of loose pointing due to the rusty bars the surrounding stonework appears to be in good condition.



Figure 43: Detail of the external side of the window n VII

**Glass:** Mixture of pot metal glasses which is in good condition apart from some localised damage to the base of the right hand light. This looks like is has sustained an impact of some kind as the breaks are more than just a pressure crack. The bottom inscription has been badly broken as has the border piece just above it on the left hand side and there's a little pellet hole in the right hand side scroll. The inscription and scroll has had remedial repairs in the form of being pugged with putty and silicone.



Figure 44: Detail of panel 1b with the broken inscription.

**Painted pigment:** The pigment is in reasonable condition it still appears to be well fired and there were no areas of paint loss or severe faded areas.

**Protection:** Has previously had wire guards as the fixings are still in the stonework

**Recommendations:** This panel should be assessed again in 5 years' time. Although there are breaks in the right hand base panel they have been made secure with previous remedial repairs although somewhat crude they are affective as they are secure and not allowing rain to penetrate into the internal fabrics. This area should be continually monitored for any water ingress or instability of the fragments in the meantime.

Window: n VI

Window location: North Aisle



Figure 45: Window n VI from ground floor

**Access to Window:** There is a piano in front of this window but could get a ladder up. Would require a double ladder to reach the top of the window.

Number of Lights: 2 lancet lights and circular tracery.

Sizes: Lancet lights measure 19" w x 55" high

Maker: unknown

Date of Installation: exact date unknown

**Style and Contents:** This two light window and tracery depicts St Paul carrying a book in the left hand light and St John the Baptist wearing a camel hair shirt. This is a memorial window to S.A. Chapman (d. 1860).

**Previous interventions:** The main base panel of the right-hand light has been repainted at some point probably due to vandal damage of some kind. As it appears that a large section has been redrawn and repainted as its slightly different to the left hand light. You can see more clearly from looking externally as to where the panel has been re-leaded.



Figure 46: External detail of the windows where you can see the lower section of the left hand looking from the outside where it has been previously repaired and re-leaded.

### **General Condition:**

**Lead Matrix:** The windows are comprised of 3/16 and ¼ round leads. The base of the right hand light is in sound condition as it has been re-leaded quite recently. The remainder of the window is also in reasonable condition. There is no evidence of bowing or sagging. I could not see any joints that are cracked or torn.

**Ties:** The panels are tied to the internal support bars with copper ties soldered onto the joints. These appear to be still intact.

**Waterproofing cement:** This is still in reasonable condition I couldn't see any areas where the cement is falling out from under the lead flanges.

**Structural support:** Each of the lights have 2 x ½ round bar. These are rusty and are causing the pointing to come loose and crumble out of the grooves. They are not damaging the stonework at this point but they will start to cause rust jacking if allowed to corrode further.



Figure 47: Detail of missing pointing due to the corroding bars.

Masonry internally and externally: The stonework is in good condition both internally and externally. Like the other windows there is some green staining due to previous corroded wire guards and again there are some old fixings in the stonework.

**Glass:** There is a mixture of different pot metal glasses, the glass is in good condition with no obvious breaks and no evidence of any corrosion.

Painted pigment: The pigment is in sound condition and well fired.

**Protection:** Has previously had old wire guards which must have been really badly corroded as there's green staining on the sills and there old fixing holes and bits of fixings left in the stonework.

**Recommendations:** This window is still in good condition and should be assessed again in 10 years' time.

Window: n V

Window location: East elevation upper window on the north Aisle



Figure 48: Internal view of window n V

**Access to Window:** This is a higher up window technically at clerestory level. Would require a tower scaffold to carry out any repairs. Could see what the access is like externally as it would be from the roof of the organ loft.

**Number of Lights:** Rose tracery with five lobes, the central roundel is an opening casement.

Sizes: Approx. size as didn't have access up 4 ft. across and high.

Maker: Unknown

**Date of Installation: 1865** 

**Style and Contents:** Diamond quarry Rose Tracery with five lobes.

Previous interventions: None noted

**General Condition:** 

**Lead Matrix:** It appears to be 5/16 round leads looking from ground floor level.

**Ties:** The panels are tied to the supporting frame with copper wire bands. These still appear to be intact.

Waterproofing cement: Looking from ground floor level the cement appears to be reasonably ok. This needs to be assessed up close.

**Structural support:** There's a casement framework and a single support bar. This is starting to rust but is not causing any damage to the stonework at present.

Masonry internally and externally: I could see the external view of the window as the roof obscures the view but looking internally the surrounding stonework appears to be in good order.

**Glass:** The glass is clear sheet glass which is in good condition there are no obvious breaks or any signs of corrosion.

Painted pigment: N/A

**Protection: N/A** 

Recommendations: This window is currently in sound condition and should be assessed again in 3-5 years' time.

Window: n IV

Window location: North elevation of the Organ room



Figure 49: External view of window n IV

**Access to Window:** I could not get internal access as this window is behind the organ but there is good access externally.

Number of Lights: Two main lancet lights and rose tracery

Sizes: 16" wide x 68" high for each main light. The tracery is approximately 4ft wide

Maker: Unknown

Date of Installation: 1865

Style and Contents: Diamond quarry window with diamond quarry rose tracery with 6 lobes.

Previous interventions: Looking externally the right hand light has been re-leaded more recently

**General Condition:** 

Lead Matrix: Again looking externally the left hand light has its original 3/8 lead as does the tracery panels. This is still in reasonable condition I couldn't see any obvious cracks in the joints yet or any severe bowing. The right hand light has been previously re-leaded in ½ flat leads. This light is in good condition.

Ties: I think the panels are tied to internal support bars but I didn't have internal access so can't be sure.

Waterproofing cement: The cement still appears to be in reasonable condition currently. I couldn't see any obvious areas where the cement is falling out from underneath the lead flanges.

Structural support: The left hand light still has its original ferrementa iron work externally. This is rusting but doesn't appear to be causing any rust jacking to the stonework yet. There are internal support bars 2 x 3/8" round per light.

Masonry internally and externally: The surrounding stonework is in good condition externally I could not view the internal side due to the organ being in the way.

Glass: Clear sheet glass with no tint or texture to it. The glass is in good condition I couldn't see any obvious breaks in the entire window and there is no sign of any corrosion.

Painted pigment: N/A

Protection: N/A

Recommendations: This window is currently in reasonable condition but the tracery and left hand light looking externally should be assessed again in 3 years' time.

Window: n III

Window location: East Elevation of the Organ room



Figure 50: Window n III looking externally.

**Access to Window:** Internally this window has restricted access due to the organ and there appears to be an internal screen up against the window. Externally the access is good.

Number of Lights: 2 lancet lights

Sizes: Each light is 15" wide x 66 1/2" high

Maker: Unknown

**Date of Installation: 1865** 

**Style and Contents:** Clear diamond leaded light windows

**Previous interventions:** The ferrementa on the right hand light has been removed from situ.

**General Condition:** 

**Lead Matrix:** Both lights are 3/8" lead. I couldn't see any obvious cracks in the joints, the right hand light is starting to bow slightly but nothing extensive at this stage.

**Ties:** There are thin internal bars but couldn't see if the panels are actually tied to them as no internal access.

**Waterproofing cement:** This still appears to be intact I couldn't see any areas where it has fallen out from underneath the lead flanges.

**Structural support:** The left hand light looking externally still has its original ferrementa iron work which is rusty but not at the point of damaging the surrounding stonework. There are internal thick security grill internally. I couldn't see how these are fixed from looking externally but again this looks rusty too.

**Masonry internally and externally:** Externally the stonework is sound there are small areas where the pointing is loose along the left hand side of the central mullion. This could be from the rusty ferrementa bars expanding and contracting with rust and causing the pointing to crumble.



Figure 51: Detail of the base of the left hand light where you can see the rusty condition of the ferrementa bars and also the internal grilles

**Glass:** Clear sheet glass with no tint or texture to it. It's in good condition with just one small cracked half diamond at the top of the left hand light. The windows are filthy with cobwebs and dirt

Painted pigment: N/A

**Protection:** Internal thick bar grilles which are rusty too.

**Recommendations:** This window is still currently in reasonable condition but should be assessed again in 3 years' time.

Window: n II

Window location: East Elevation of the High Altar



Figure 52: Pressed quarry windows in the east elevation of the High Altar.

**Access to Window:** Good access both internally and externally would require a small pair of steps to reach the top.

Number of Lights: 3 lancet lights

Sizes: Each light is 10" wide x 41" high

Maker: On stylistic grounds I would attribute these windows to Ward and Hughes

**Date of Installation:** Possibly at the same period as the main east window 1878 but no historical reference exists.

**Style and Contents:** Pale green tinted pressed quarries with eclipse shapes depicting the Lamb of God and a St David's star. The quarries have the sacred monograms painted in silver stain on them

Previous interventions: None noted

#### General Condition:

**Lead Matrix:** The matrix is ¼ flat lead. The flanges appear to be very thin and there is evidence of the panels starting to bow and buckle in places. This isn't too severe but will only get worse especially as there are no support bars.

Ties: N/A

**Waterproofing cement:** This has become friable in places and is starting to crumble out from underneath the lead flanges in places.

**Structural support:** There are no internal support bars or external ferrementa. The windows should really have a couple of support bars each due to the weight of the glass. Pressed quarries can be a good 4-5mm thick which can make panels quite heavy. The lack of support bars has contributed to the deteriorating condition.

**Masonry internally and externally:** The surrounding stonework both internally and externally appears to be in reasonably good condition currently.

Glass: The background quarries are a pale green tinted glass which are pressed quarries; these decorative quarry glass was mass-produced by moulding and printing, rather than hand-cutting and painting. This product could be used in church windows as a cheap substitute for stained glass. It was often installed in new churches, to be later replaced by pictorial windows. Most of this quarry glass was clear/ pale green, printed in black and detailed in bright yellow silver stain. Occasionally the quarries were produced in red, blue or pink glass, but these are rare. The borders are also moulded repeat patterns with painted detail. The pictoral details in the eclipses and roundels are not moulded glass and are pot metal glasses. There are numerous breaks throughout each of the 3 lights. These appear stable cracks and they are not in any danger of falling out but they should be monitored. These breaks are due to the weakening condition of the matrix and this will continue to happen.

**Painted pigment:** The painted pigment is faded in areas, mainly in the moulded sections; the central pictorial sections are still in reasonable condition.

Protection: None

**Recommendations:** This window should be continually monitored for signs of water ingress but should be assessed again in 3 years' time.



Design & Craftsmanship in Stained Glass

## PHILOSOPHY OF REPAIRS

This is a blanket statement for all Reports: not all procedures will apply in each case.

Robert Holloway is Accredited Conservator Restorer of the Institute of Conservation. Their Code of Practice follows the guidelines issued by the Institute, the Corpus Vitrearum Medii Aevi and English Heritage.

#### **Technical Procedures**

- We aim to retain the appearance of the commission in every respect, keeping original materials wherever possible
- 2. Every effort will be made to keep original glass.
- 3. Only where glass is missing will it be suggested that a new piece be cut to shape, of 'antique' mouth blown glass of a matching colour, painted in style, initialed and dated in small but legible letters and fired for permanence, to form a replacement. Adopting such a suggestion is up to the Client in conjunction with the Architect and Heritage Bodies.
- 4. All glass will be carefully examined under the microscope for assessment regarding (i) its condition; (ii) the stability of its painted surface if it has painted or enameled detail.
- As far as is appropriate, each piece of glass will be cleaned front and back with de-ionised water, using suitable tools such as glass fibre brushes.
- Careful consideration will be given to original painted areas to decide whether a permitted consolidation gent should be used to prevent further paint loss.
- 7. Where painted detail has been lost or the legibility compromised by a degree of paint deterioration, it will be suggested to a client that these details or a supporting mat could be painted on a backing plate and sealed to the original. This is particularly important with regard to missing detail or indistinctness on the face of key characters in a design. Adopting such a suggestion is up to the Client in conjunction with the Architect and Heritage bodies.
- All cracks will be edge-bonded with approved resins and supported with a backing plate: a matted piece of 1.5mm glass, kiln formed to match the contours of the original.
- All backing plates will be silicon edge-bonded to the original glass to create a seal.
- 10. If thought appropriate, cracks will be mended with copper-foil (which makes a thinner line than leading)
- 11. Unsightly mending leads will be carefully removed where appropriate and feasible and the pieces put together again using whatever method is appropriate: (i) an approved resin bond, supported by a backing plate (ii) copper-foil (iii) string lead (very narrow and unobtrusive) or a narrower lead than previously used.
- 12. It will be suggested that missing areas of enamel can be replaced by painting new colour/s onto a backing plate and sealed to the original. Adopting such a suggestion is up the Client in conjunction with the Architect and Heritage Bodies.
- 13. All necessary new leads will be of the same size and profile. This does not apply to repair leads.
- 14. The leaded light cement will be applied by hand.
- 15. All original ironwork will be kept unless unfeasible.
- 16. All ironwork will be assessed, cleaned and repainted as required, using approved substances.
- 17. All work in the Studio is documented 'before' and 'after' with photography.
- 18. Rubbings are made before disassembly.
- 19. Detailed notes are made during all procedures.
- 20. All procedures are reversible.

Robert J Holloway Esq. AMGP, ACR - Director Elise Learner Bettembourg BA (Hons) - Consultant