

R. G. Croudace Glass

Reference number: L-04-26-Q

April 10th 2026

Project St. Andrew's Art Centre, Royal Pier Road, Gravesend, Kent, DA12 2BD
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STAINED GLASS CONDITION REPORT

PROPOSED REPAIR WORKS AND METHOD STATEMENTS

REPAIR COSTS

This document details findings of an onsite inspection of the stained glass and leaded light windows at the old Mission Church (built 1871) at Royal Pier Road, Gravesend. The church building is, now known as St. Andrew's Art Centre. Proposed repairs, methods and costs for each stained glass and leaded light location are presented.

R. G. Croudace Glass are traditional stained glass makers and glaziers and everything undertaken for you is handmade following the same skills and processes used for hundreds of years. We adhere to the recommended best practice guidelines of English Heritage Practical Building Conservation (2011), the Society for the Protection of Ancient Builders, and other architectural conservation bodies ensuring sympathetic yet robust work is completed. Our team has a wealth of applied repair and restoration experience including CSkills training in the repair and maintenance of pre-1919 buildings, training in the use of lime mortars and stone masonry repairs, working at height and PASMA mobile tower certification. We are insured for any work we undertake onsite.

If required, we can present written and illustrated method statements and programmes for all stages of the proposed and actual works upon completion of the project.

Adhering to required health and safety standards and practices and completing all necessary written records whilst working on site is normal to our work practice, which we are always happy to implement. We leave our work locations clean, tidy and safe at the end of each day onsite.

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SUPPLEMENTARY TRAINING AND COMPETENCIES

- Our team has a wealth of applied stained glass repair knowledge and experience.
- We are CSkills qualified in the care and maintenance of pre-1919 buildings and trained at West Dean College of Arts and Conservation in lime mortars and the conservation and repair of stone masonry.
- We are PASMA certified for the safe use of mobile scaffold towers.
- 'Working at Height' training.
- 'Asbestos Awareness' training.
- We are insured for any works undertaken on site and have £5 million public liability insurance cover.
- If required, we are happy to discuss indemnity assurance.
- Risk assessments and our methods are work are available for onsite works.

PLEASE NOTE

Our on site observations were made from inside the church building. Close inspection of the glass was only possible where safe height access was achieved using step ladders, because there was no scaffolding in place at the time. Binoculars were used to carefully observe the inaccessible glass at greater heights.

Our costs do not include internal or external fixed scaffolding. These would be required to access all heights of the windows (except the ground floor leaded lights facing Royal Pier Road) to undertake internal and external works.

Where appropriate for use, our costs and works do include the use of our own high-quality mobile tower system, and the hiring of an additional mobile tower as required for simultaneous internal and external access to the window. We can also supply and use our own high-quality ladders or step ladders if required for other locations. We are trained for working at height and PASMA certified for mobile scaffold towers.

If the works require, any window apertures where leaded panels or glazing are removed from the church will be closed and secured with suitable materials e.g. plywood, internal timber braces and coach bolts secured from the inside. Suitable timber braces can be located inside the plywood boarding to impede through access.

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INSPECTION FINDINGS

All inspections and observations (apart from the leaded lights in the narthex area were made internally. No comments are made regarding the external condition of these leaded stained glass panels and the materials sealing their perimeter borders and the building fabric.

NAVE WEST SIDE ISLE (THREE SEPARATE WINDOW LOCATIONS)

WINDOW 1

- Two stained glass windows depicting St. Peter and St. Andrew.
- Metal openers are located at the base of each window.
- Slight bow to the lead work in the header panel of St. Andrew.
- Slight bows to both St. Peter and St. Andrew panels at the bases.
- Various minor and moderate glass breaks to central and border glass pieces. Some affect the appearance of the painted images whilst others less so.
- St. Peter- hand painted glass damage:
 - Glass damage with a hole within the blue gown.
 - Hole in red flash glass above head.
- St. Andrew- hand painted glass damage:
 - Paint loss to amber glass
 - In situ glass repairs are possible to selected glass breaks
 - Cracks to glass in bottom panel.
- Up close inspection of the protective external glazing and fittings was not possible.

RECOMMENDED WORKS

- The bows in the panels could be left and monitored over time. **Optional:** Remove the panels now from the window frame for studio repairs. This work would remove the bow entirely. Happy to discuss the pros, cons and costs.
- **Optional:** Return metal opening window frames to operational standard. This includes removing the metal frames from the building fabric, sand blasting, priming and painting in marine grade matt or satin black paint.
- Replace heavily damaged hand-painted pieces with hand-painted replicas by Flora Jamieson.
- These damaged hand-painted pieces will be removed, replacement glass cut to fit onsite and then painted by F. J. Suitable temporary glass will be cut to shape, fitted and weather sealed into the leaded panel whilst painting offsite is made. New hand-painted glass fitted into lead on return visit.

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- Strap minor and selected moderate glass breaks with lead came strapping to stabilize glass and mask damage (see process description below). Both internal and external faces of breaks will be strapped where access is possible.
- In situ glass replacement of selected broken glass (see process description below).
- Replace any failed or missing weather sealing leaded light cement in between glass and lead comes as found on both sides of leaded panels.
- Replace any failing or missing external perimeter border weather sealing material in between leaded panels and building fabric using appropriate material e.g. lime putty.

WINDOW 2

- Single stained glass window.
- The lower section of the window panel is bowing inwards.
- Bottom left side- hole in painted glass piece.
- Bottom left side- repaint damaged glass.
- Wall or ceiling paint can be seen on the lead comes.
- Up close inspection of the protective external glazing and fittings was not possible.

RECOMMENDED WORKS

- The bow in the lower section of the panel could be left and monitored over time. Optional: The panel removed now from the window frame for studio repairs. This work would remove the bow entirely. Happy to discuss the pros, cons and costs.
- Replace heavily damaged hand-painted pieces with hand-painted replicas by Flora Jamieson.
- These damaged hand-painted pieces will be removed, replacement glass cut to fit onsite, and then painted by F. J. Suitable temporary glass will be cut to shape, fitted and weather sealed into the leaded panel whilst painting offsite is made. New hand-painted glass fitted into lead on return visit.
- Strap minor and selected moderate glass breaks with lead came strapping to stabilize glass and mask damage (see process description below). Both internal and external faces of breaks will be strapped where access is possible.
- Remove paint from lead comes by hand.
- Lightly buff lead to remove traces of cleaning process.
- Replace any failed or missing weather sealing leaded light cement in between glass and lead comes as found on both sides of leaded panels.
- Replace any failing or missing external perimeter border weather sealing material in between leaded panels and building fabric using appropriate material e.g. lime putty.

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WINDOW 3

- Wall or ceiling paint can be seen on the lead comes.

RECOMMENDED WORKS

- Remove paint from lead comes by hand.
- Lightly buff lead to remove traces of cleaning process.
- Replace any failed or missing weather sealing leaded light cement in between glass and lead comes as found on both sides of leaded panels.
- Replace any failing or missing external perimeter border weather sealing material in between leaded panels and building fabric using appropriate material e.g. lime putty.
- Up close inspection of the protective external glazing and fittings was not possible.

ALTAR (TRACERY STAINED GLASS WINDOWS)

- Overall, the majority of saddle bar ties appear to be in position and still tied. These ties are soldered to the leaded panel and wrapped around the horizontal metal bars located into the tracery stonework. These ties are very important to help brace and support the leaded panels in position from movement, principally by the wind and weather.
- Horizontal metal saddle support bars- some ends located into the building fabric appear to have jacked the stone.
- Possible Portland cement traces can be seen on lead and glass, especially around Jesus' left hand and on the side perimeter border lead.
- Minor crack in hand-painted glass to one figure's red gown.
- Right side window- Hand-painted glass replacement of red glass in Jesus' gown required. Water staining is evident on the glass beneath the hole..
- Either wall or ceiling paint or bird faeces on lead comes.
- Wall or ceiling paint can be seen on the lead comes of numerous panels.
- Minor glass breaks across all panels.
- Missing glass in hand-painted glass piece- a hole is evident in a green tree canopy piece.
- Hole in amber perimeter border glass of quatre foil leaded panel.
- Possible stone decay or loose dust underneath the pink wall paint along the top three curves in both quatre foil panels.
- Up close inspection of the protective external glazing and fittings was not possible.

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RECOMMENDED WORKS

- Strap minor and selected moderate glass breaks with lead came strapping to stabilize glass and mask damage (see process description below). Both internal and external faces of breaks will be strapped where access is possible.
- In situ glass replacement of selected broken glass (see process description below).
- Replace heavily damaged hand-painted pieces with hand-painted replicas by Flora Jamieson.
- These damaged hand-painted pieces will be removed, replacement glass cut to fit onsite, and then painted by F. J. Suitable temporary glass will be cut to shape, fitted and weather sealed into the leaded panel whilst painting offsite is made. New hand-painted glass fitted into lead on return visit.
- Remove paint from lead comes by hand.
- Solder replacement saddle bar ties in place.
- Light removal of dust from all panels.
- Remove paint from lead comes by hand.
- Lightly buff lead to remove traces of cleaning process.
- Replace any failed or missing weather sealing leaded light cement in between glass and lead comes as found on both sides of leaded panels.
- Replace any failing or missing external perimeter border weather sealing material in between leaded panels and building fabric using appropriate material e.g. lime putty.

NAVE (TRACERY STAINED GLASS WINDOWS- CENTRAL POSITION)

- Saddle support bars appear satisfactory and in position.
- The metal saddle bars themselves look satisfactory.
- Possible stone decay or loose dust underneath saddle bar ends where they fit into the walls.
- Wall or ceiling paint can be seen in a few places on lead comes.
- External protective glazing sheeting looks satisfactory, albeit aged by weather and sunlight exposure. Fittings not inspected.
- Cracks to clear perimeter border glass.
- Crack to hand-painted ship hull piece.
- Minor cracks in surrounding border glass, and to a lower decorative leaded panel.
- Hole in glass in hand-painted blue sky (to the left of the ship's sail). Cracked blue glass beneath this piece, clear glass to the side broken, and clear perimeter border glass cracked.
- Up close inspection of the protective external glazing and fittings was not possible.

RECOMMENDED WORKS

- Light removal of dust from all panels.
- Replace heavily damaged hand-painted pieces with hand-painted replicas by Flora Jamieson.

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- These damaged hand-painted pieces will be removed, replacement glass cut to fit onsite, and then painted by F. J. Suitable temporary glass will be cut to shape, fitted and weather sealed into the leaded panel whilst painting offsite is made. New hand-painted glass fitted into lead on return visit.
- Remove paint from lead comes by hand.
- Solder replacement saddle bar ties in place.
- Remove paint from lead comes by hand.
- Lightly buff lead to remove traces of cleaning process.
- Replace any failed or missing weather sealing leaded light cement in between glass and lead comes as found on both sides of leaded panels.
- Replace any failing or missing external perimeter border weather sealing material in between leaded panels and building fabric using appropriate material e.g. lime putty.

NARTHEX (GROUND FLOOR LEADED LIGHTS IN STAFF ROOM AND TOILET. FACING ONTO ROYAL PIER ROAD)

- Six rectangular quarried leaded lights- three in toilet area, three in staff room.
- One in situ clear textured glass repair required.
- Overall the leaded lights appear in good condition.
- External metal protective grilles fixed in position across both sets of windows.
- Protective external glazing siliconed into position with vent holes in silicone.
- Paint on some glass.

RECOMMENDED WORKS

- Light removal of dust from all panels.
- Replace any failed or missing weather sealing leaded light cement in between glass and lead comes as found on both sides of leaded panels.
- Replace any failing or missing external perimeter border weather sealing material in between leaded panels and building fabric using appropriate material e.g. lime putty.
- Remove external metal protection grilles. Clean metal work (sandblast off site or hand clean onsite). Paint metal work with marine grade paint to resist water side location and weather. Install grilles into same locations.
- Leave external silicone glazing in situ.

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TRADITIONAL IN SITU REPAIR METHODS

Glass requiring replacement can be undertaken in situ implementing traditional methods, appropriate hand tools and materials. This traditional repair process for leaded windows does not necessitate the leaded panel being removed from its frame. However, some internal or external evidence of the work will be evident on the lead work surrounding the replaced glass.

- Match replacement glass closely as possible to original in texture, colour, surface movement, and clarity using Lamberts mouth-blown glass..
- Remove broken glass from lead comes.
- Removal of weakened lead light cement in between glass piece and lead comes using hand tools.
- Hand cut corners of surrounding lead comes to enable opening.
- Hand work lead from inside to remove broken glass.
- Create template and hand cut replacement glass.
- Insert replacement glass and dress down lead comes.
- Apply new leadlight cement or linseed putty to secure glass and seal area.
- Remove weakened leadlight cement from between glass and lead using hand tools. Apply new mix by hand and dress to finish.
- Stabilize and mask selected glass breaks using lead came strapping.
- Tuck lead strap into adjacent lead comes so it sits beneath lead came. Where appropriate, bond to glass surface using an appropriate clear low modulus, UV resistant, acetic acid free, clear silicone. Select lead came straps of appropriate width to perform task whilst remaining aesthetically appropriate.
- Remove wall / ceiling paint from lead comes using hand tools- either wooden picks or surgical scalpels for minimal intervention. 0000 grade wire wool maybe used in specific circumstances. Paint adhered to hand-painted glass work will be left.
- Replace copper saddle bar ties- make new ties using appropriate diameter copper wire. Hand-solder into position adhering to hot works protocol. Hand twist wire around saddle bar, twist and cut to length, and fold flat along the saddle bar.
- Replace failed, weakened or missing external perimeter border weather sealing material between leaded panels and building fabric using appropriate manual hand tools. Replace with suitable material by hand e.g. linseed putty, lime putty, burnt sand mastic.

WORKS RELATING TO OPTIONAL WORKS: ONSITE REMOVAL AND INSTALLATION WORKS

- Remove existing leaded lights from stonework only using hand tools and appropriate methods. These panels maybe cemented into the building framework, making a time-consuming removal process.
- Supply and install temporary glazing or plywood boarding into window aperture. This is fitted into the same position as the leaded panel e.g. into a glazing groove or rebate.

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- Secure in position with timber braces and coach bolts. Weather seal perimeter border.
- Team installation of panels into stonework using appropriate methods and materials i.e. lime putty/mortar.
- Clean and prepare stone glazing grooves as required.
- Install leaded panel/s into glazing grooves and install saddle bars in required locations.
- Hand wrap copper ties on leaded panels around saddle bars.
- Apply hand-mixed lime putty or mortar in appropriate ratio mix into glazing groove to create appropriate weather seal between stone and leaded panels.

TRADITIONAL STAINED GLASS PAINTING

I have selected Flora Jamieson to hand-paint and kiln fire the high-quality Lamberts replacement glass to match the damaged original painted glass. Flora is an outstanding, recognized, skilled and respected traditional stained glass painter. She is greatly coveted and in demand. I have used Flora numerous times on projects requiring glass painting for churches (including grade one listing), period properties and homes. Flora's church-stained glass painting has been exceptional and appropriate to context in style, colour and detail.

Flora's replacement glass will be photographed alongside the original damaged glass pieces before installation, and their location in the windows will be recorded and identified. If necessary, Flora's work can be annotated with initials and dated on the glass surface to readily identify it from original material without reference to written records.

www.florajamieson.co.uk

www.florajamieson.co.uk/stained-glass-church-windows-restoration-repair

MATERIAL SELECTION

LEAD

High quality traditional English lead came by Heaps, Arnold and Heaps is our selection for all period repair works. It is made from commercially pure lead and provides a look and feel perfectly suited for historically important contexts. It is available in imperial sizes and profiles to provide an excellent match when replacing lead comes. Its natural ageing patina is an excellent sympathetic match alongside historical building fabrics.

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GLASS

Important stained glass windows are crafted using beautiful Lamberts mouth-blown glass. Lamberts is world-renowned and the standard high-quality glass demanded for church work. Its colour and texture is unrivalled and timeless and is always admired. It is available in suitable types for all periods and styles of window, particularly churches.

www.lamberts.de/genuine-antique-glass

Whether machine made or handmade, glass may contain various lines, seeds or surface texture. These are natural aspects of the material, rather than flaws, which provides decorative glass with unique aesthetic and characterful appeal.

LINSEED PUTTY AND LIME MORTAR PUTTY

We always use Hodgson Sealants multipurpose linseed putty. This high-quality material is consistently excellent in application and performance and well tried. It is suitable for both primed softwood, hardwood, and metal frames. Please note linseed putty requires subsequent painting to ensure its performance and durability.

We typically use a lime mortar putty mix for installation of glass and leaded panels into stonework but can use linseed putty where specified too.

ONSITE HOT WORKS- IN SITU SOLDERING

The availability to undertake soldering on site is sometimes advantageous. Any on site soldering will only commence once a hot works permit and safety check has been completed by a competent person and confirmed by a work colleague. Permit records will be kept and will be available to view or copy.

Both propane gas (portable 3.9kg bottle) or 240 volt electric mains powered soldering irons are used for onsite work. Heat proof mats, fully uncoiled electrical extension cables with thermal cut-out switches, isolating smoke alarms and utilising associated safety equipment, including extinguishers, a fire blanket, and PPE are used to minimise risk. All hot works cease one hour before leaving the work site.

FINAL RECORDS

Written notes, photographs and diagrams are made before and after the works. These will show close-up details and overall context of panels within the building fabric. The report provides a dated record to

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recount what works were undertaken, why, how and what materials were used. The complete and final records will be presented in electronic pdf format to enable universal viewing on computers.

COSTS

- Please note costs below do no include any works above noted as 'optional'.
- Please note that this business is not VAT registered and therefore these costs are not subject to VAT.
- Material costs are valid for 30 days because of fluctuating market prices.
- A 50% deposit of total costs is requested when work commences to cover materials and part labour. Receipts are given for all monies received.

Nave (West side aisle)	St. Perter and St. Andrew (without metal opener refurbishment)	Window 2	Window 3
Materials, consumables and work costs	£245.00	£200.00	£150.00
Labour (including stained glass painting)	£805.00	£570.00	£250.00
VAT	£0.00	£0.00	£0.00
Total	£1,050.00	£770.00	£400.00

Altar (Tracery stained glass windows- central position)	Costs
Materials, consumables and work costs	£1,120.00
Labour (including stained glass painting)	£2,430.00
VAT	£0.00
Total	£3,550.00

Nave (Tracery stained glass windows- central position)	Costs
Materials, consumables and work costs	£800.00
Labour (including stained glass painting)	£2,150.00
VAT	£0.00
Total	£2,950.00

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Narthex (Ground floor leaded lights in staff room and toilet. Facing onto Royal Pier Road).	Costs
Materials, consumables and work costs	£260.00
Labour	£500.00
VAT	£0.00
Total	£760.00

Combined sub totals	Costs
Nave west side aisle (three windows)	£2,220.00
Altar tracery	£3,550.00
Nave tracery	£2,950.00
Narthex leaded lights	£760.00
Grand total	£9,480.00

Thank you and best regards, Rob Crou



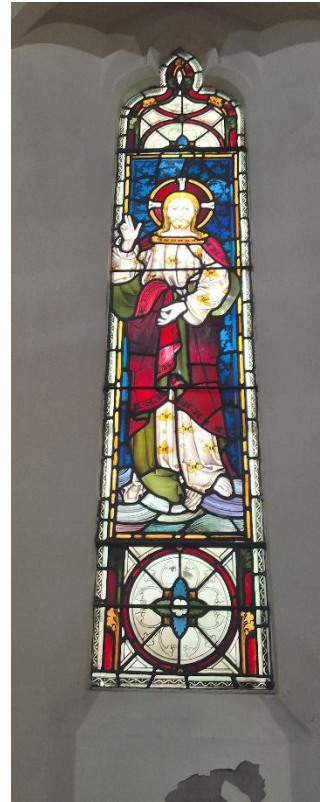
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APPENDIX 1

NAVE WEST AISLE: WINDOW 1. ST. PETER AND ST. ANDREW



NAVE WEST AISLE: WINDOW 2

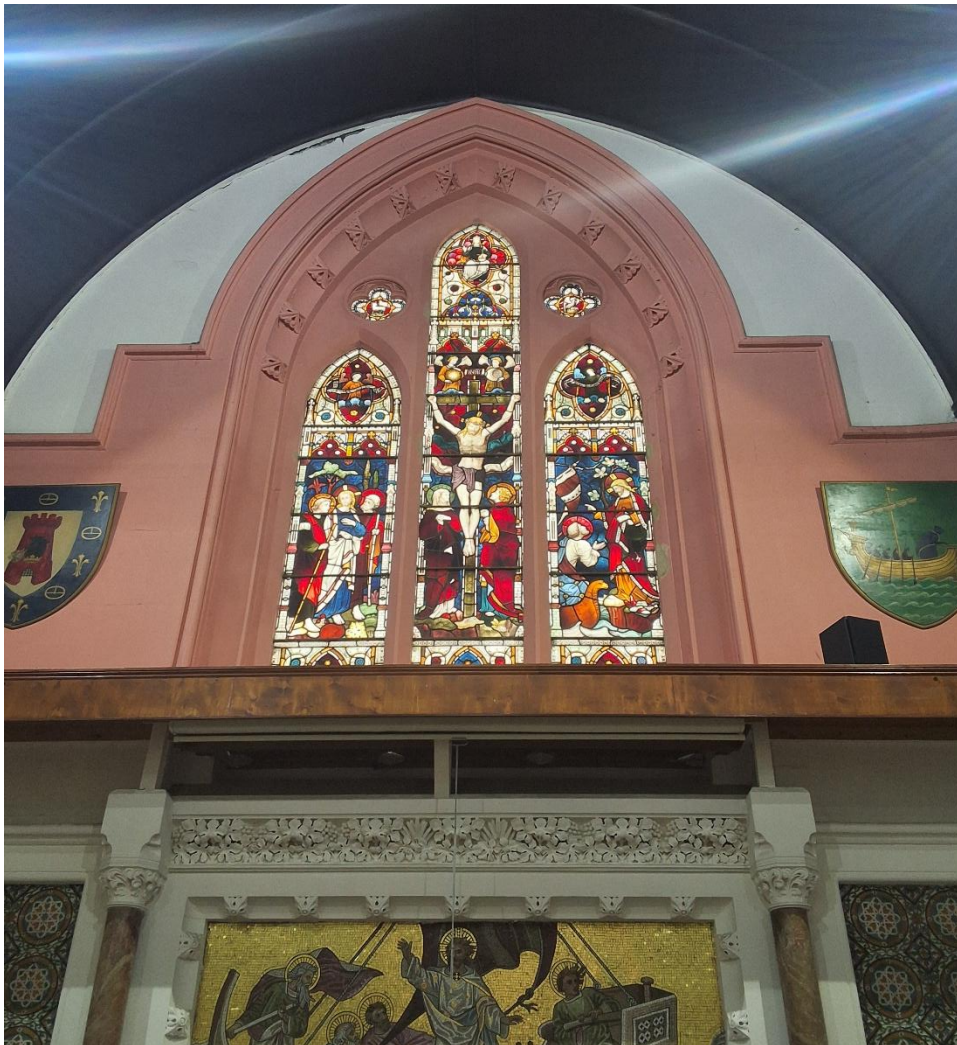


NAIVE WEST AISLE: WINDOW 3



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ALTAR



NAVE



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NARTHEX

