The Church of Scotland
BISHOPTON PARISH CHURCH
Erskine Ferry Road, Bishopton, PA7 5PP

Masonry Conservation Project Phase 2

Planning

This project was the second Phase of a 3-Phase project to rectify deficiencies found in the Church masonry during the Quinquennial Inspection of 2010, undertaken by Wylie Shanks Architects in September 2010. The report identified essential repairs to masonry pointing and main windows amounting to some £45,000. At the time, the Church was heavily committed to repaying the substantial loans taken out to finance the total refurbishment of the building on Greenock Road in the village, which we now know as The Cornerstone. Funding for these required works was simply not available!

From about 2014, some essential works were undertaken on one of the large windows on the South elevation, where a part of the stone mullions was clearly "moving" and, if not attended to, could cause a full collapse of the window. This work was successfully undertaken – but it alerted us to what the likely costs of undertaking all the repairs suggested by the report could be. As the building is "Listed", the work has to be done in accordance with Conservation principles – which do not come cheap!

At about the same time, seminars run by the Church of Scotland General Trustees made clear how important it was that masonry work on old stone-built buildings must NOT be undertaken using modern materials – especially using OPC (Ordinary Portland Cement). While this material is excellent for joining concrete blocks and modern hard bricks, it is much too hard, and impervious, for use as a bonding material for stone, and ESPECIALLY as a pointing material for stone; especially for soft stones such as sandstone.

This was precisely the problem we had with our Church.

While it may have been possible to do repairs on an ad-hoc basis, the costs of putting up scaffolds (you can't do this from a ladder!) would dwarf the costs of doing small repairs; best to bite the bullet and organise "campaigns" to get whole sections of the building done at the one time.

Our first "campaign" was done in 2018 and saw the whole of the Tower given a thorough work-over. This was chosen first as, again, it was noted that there were some deficiencies at the top of the Tower which were becoming unsafe. We were fortunate to get some grant funding – but the works expanded to more than fill the budget! But it was worth it, and there is general agreement that the result is very satisfactory.

This second Phase of the project has looked at addressing the conservation of the front of the West Gable, the Southern elevation, and the remainder of the East Gable (some of which had been done as part of the Extension Hall roof renewal).

Budgeting and Fund-raising

The over-spend on the first phase meant that our Church Restoration Fund was completely depleted and had to be "bailed out" by a bit of financial wizardry on the part of our Treasurer (thanks, Graham!). By 2020, the overspend had been paid off, and we started looking for grant funding support.

The chosen sources were both from the SLCF (Scottish Landfill Communities Fund). These funders work with taxes levied on Landfill Operators (and passed on to users, especially commercial users) in the form of charges on landfill (which is why the cowboys prefer fly-tipping!). It's a bit of a Hobson's Choice really – if we get very good at re-cycling and landfill goes down, so do the grants available to applicants …. but please don't use that as an excuse for NOT recycling!

The first priority was to draw up a Budget. To do this we commissioned a report from a Conservation expert – Nic Boyes, to whom we had been introduced in Phase 1 and had come to highly value his skill and enthusiasm. The submitted report (Revision D July 2020) gave us a basis for going out to tender.

Although 5 prospective contractors were approached, only 2 submitted bids – there are not many contractors capable of doing this work, and they are all very busy, often with very large contracts.

Of the two submissions, the preferred bidder was Limerich (which had done the works in Phase 1 and so was a known contractor), the second bidder actually coming in with a much higher bid.

With this information we were able to apply for funding. Initially we applied to three; the first being Viridor Credits Environmental Company; the second being LandTrust (to whom we had successfully applied for Phase 1), and finally to the Ferguson Bequest Fund. This latter one was important, because we were asking them to fund the "3rd Party Contributions" (approx. 10% of the grant award) that are a part of the SLCF scheme.

Our applications to Viridor and The Ferguson Bequest Fund were successful; that to LandTrust was not, as we had already been awarded a grant recently. We then applied to FCC Communities Foundation, but this also was turned down (reason not explained).

We are indebted to John McGinnigle who put in a huge amount of work on these applications. John died suddenly and very unexpectedly last year and is greatly missed by all who had the pleasure of knowing him.

The scaffold going up – day 1. The arrangement unfortunately means the stairlift cannot be used.

Scaffold fully erected – day 2. This clever arrangement leaves the Choir Room steps and door clear and minimises loading on the Choir Room roof.

The finished scaffold, now with ant-climb measures and weather protection. Work has started on the top lift.

The OPC pointing has been removed to reveal the extent of and condition of the original lime mortar bedding in the Coursed Rubble masonry.

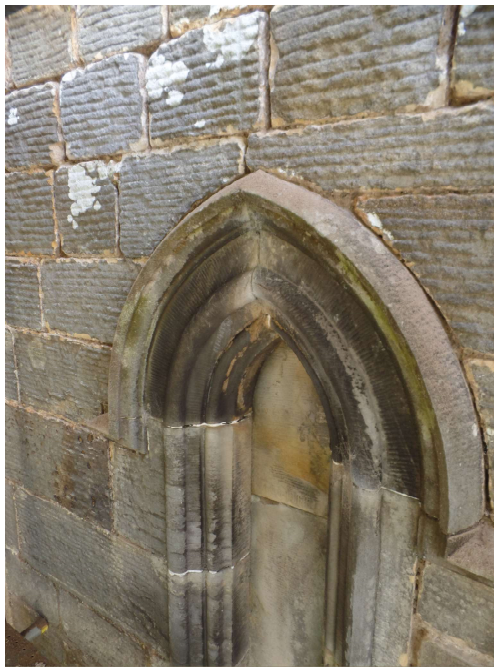
Coursed rubble at the South elevation wall head.

Coursed rubble and Ashlar at the East corner. Some damage has occurred to the stone while trying to get the OPC off!

The East Gable, showing some "spalling" effects on the stone. This may be the result of softer stone but will not have been helped by the use of OPC pointing.

The Cross on the East Gable wall head. It had been thought that the "crack" on the RHS of the base may be loose, but it was found to be only a marking in the stone, and was quite sound. One less job to be done!

The West Gable. No real issues identified here other than a loose section of Ashlar dressing at the top of the buttress.



Packing and pointing with lime mortar on the top lift. The Ashlar joints have also been opened up in preparation for repointing. One defective stone has been removed – note how the original stonemasons adjusted the level of the coursed rubble horizontal joints so that the courses aligned with the top of the buttress.

The top lift – coursed rubble pointing complete. The hessian is used to control the rate of drying of the mortar by keeping off sunlight and drying winds. Note the lead at the wallhead – this is a flashing between the bottom of the slates and the cope stones on the wallhead, and also forms a gutter. There is however only one downpipe – rainfall must have been less in 1815!

The West gable, both coursed rubble and Ashlar have been pointed. The visible mortar looks darker than that on the Tower (from 2018), but has still to dry fully. ALL the West, South and East elevations have been steam cleaned to remove algae and lichen from the surfaces.

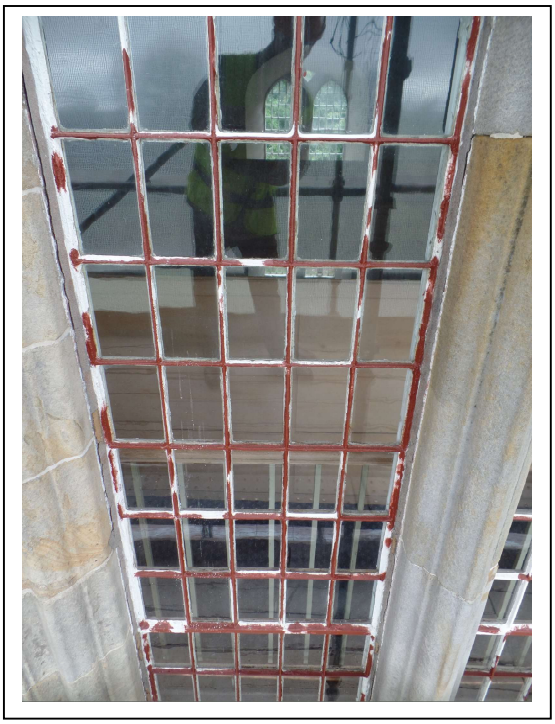
South elevation buttress at ground level. These have been “tooled” lightly using vertical tool marks. The Coursed Rubble stones by contrast have horizontal and deeper tooling marks. Note the coloured veins in the stone.

More natural colouring in the original stone work. Note also the different colours of individual blocks. Although they would all have come from the one quarry, sandstone will – by its nature – have different colours and veining depending on from where in the rock stratum it has been quarried.

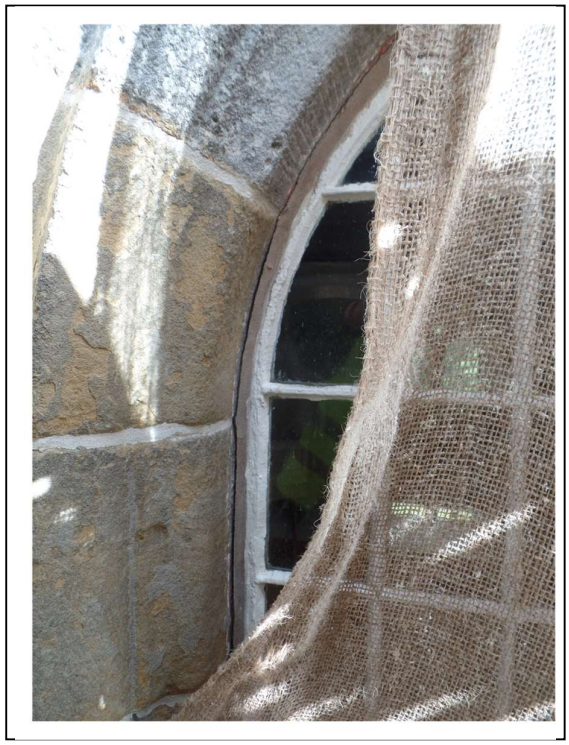
Note matching colouring in the new stone (bottom left) with the old stone. Although the new stone comes from a quarry near Edinburgh, it is thought that this is actually the same stone stratum as in the original quarry in Renfrewshire. This could possibly be confirmed by comparing the chemical and structural compositions from the two stones.

New stones for the East Gable. These are machine cut and the tooling marks on the front have been made by the Limerich stonemasons. The original stones would have to have been fully hand-formed!

The windows have been scraped to remove loose paint and putty. Red primer has been applied to the bare metal to seal it before new putty is applied. The pointed pane at the top was cracked and has been removed to allow replacement with a new pane. For authenticity, the new glass is from stocks of traditionally made glass.



One of the tall windows on the South elevation. These are cast iron. Although cast in at least 2 sections (some were able to be opened), the skill needed to cast these in 1815 must have been immense – it probably couldn't be done today using the facilities available in 1815!



White lime mortar after being applied to one of the window mullions. Movement between the window frame and the surrounding stone has caused the Burnt Lime Mastic (around the window) to separate from the stone – this would be a rainwater ingress path and so has to be re-done.

A finished window. The painter has taken great care NOT to let the paint go onto the glass. It's very tempting, but the paint will not adhere to the glass; it will lift and allow rainwater to get in behind it and eventually cause the putty to fail and the paint to fail on the putty.

One of the East Gable windows. These were found to be in reasonable condition. There is however a need to properly repair one of the windows where the timber cill had failed and was letting rainwater into the Extension Hall. A temporary repair had already been made, so this work has been deferred until the final Phase of works, as it can be accessed comparatively easily from the Choir Room and Extension Hall roof.

The East Gable wallhead after mortar excavation. It was very apparent that there was a much bigger problem with this wall, as the pointing on the Coursed Rubble stones appeared very much poorer than in other parts of the elevations.

As the joints were opened up, it rapidly became apparent that there seemed to have been a much earlier campaign of work on the gable; but it had not been done well, as many stones were broken (causing vertical joint weakness) and were out of horizontal alignment.

The culprit! Removal of a small broken piece of stone (it simply fell out!) reveals behind it a clay chimney liner. It was now apparent that, when the "Session Room" (as it was then) was built, a flue had been inserted into the wall from the fireplace, vertically up, then at an angle near the wall head, and up to a chimney head built behind the Cross.

However, it was also apparent that the clay pipes had been bedded in a CEMENT mortar (early examples of this had been in use in Scotland since the mid 1800s), and the removed stones had been replaced using the same material – but very poorly!. This mortar was now crumbling and had no structural integrity whatsoever.

To allow for removal of the stones over the flue, and to rebuild the wall, those stones that were not to be removed had to be "pegged" to ensure that they did not slip. Wooden wedges were used for this purpose, and the wall then – carefully! – opened. Stones to be replaced had been measured and ordered from the quarry in Edinburgh.

The full extent of the horror now revealed! The grey material is the (now useless) Portland Cement. The browner material at the top LH is the original 1815 lime mortar. The small stones are the "packing" stones used in the middle of the wall, behind the dressed stone on the outside and the internal lining stones. Examples of these can be seen on the internal walls of the Tower.

Very shoddy construction of the flue liner! The gaps would allow acidic gases from the coal fire in the Choir Room to penetrate into the wall structure, and then condense to form sulphuric acid, which would in turn hasten the degradation of the mortar packing.

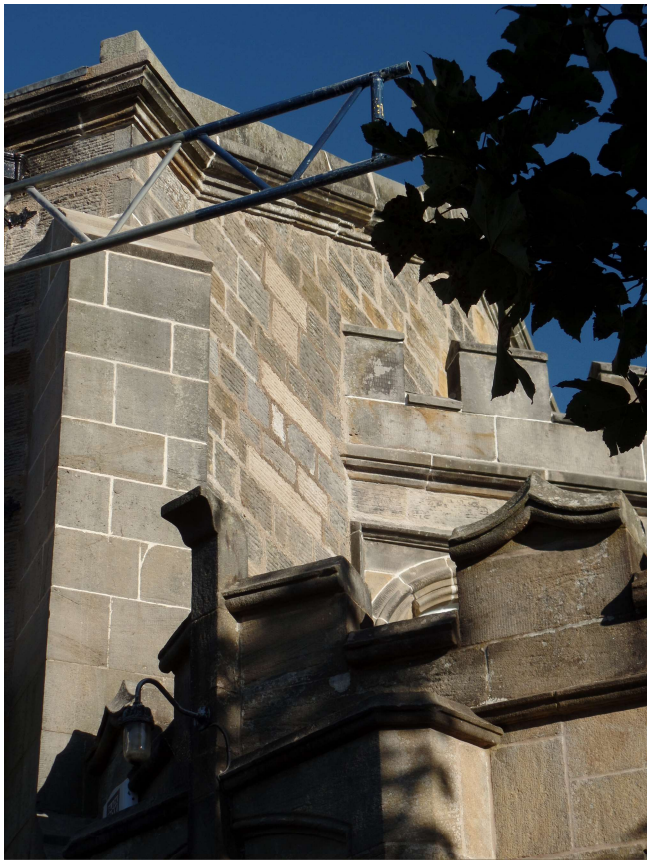
The wall being re-built. The longer new stones replace stones that had broken, and also act as “stitches” across the vertical joints. The spaces behind the stones have been packed with lime mortar.

Almost finished. The final lime mortar going into the Coursed Rubble joints. Note how this is left proud of the surface. After a couple of days or so, the mortar has cured enough that flushing off the joints (using a coarse brush) will not cause any damage below the surface.

Finishing off the East Gable. This work had been left until the repairs to the wall had been completed. The use of the syringe to inject the white mortar into the Ashlar joints can be seen. Still good weather!

The finished chimney head. Again, note the hessian to protect the drying mortar in the Coursed Rubble stones.

The finished Gable. The scaffold is coming down with all repairs complete.



The scaffold coming down. 2 days work, and the finished work is revealed!

All tidied up, stairlift back in use. The grass, though a bit sorry for itself, will recover!

People

Along the way with these projects, we have come to know many people and organisations.

In addition to the obvious candidates (those who grant us funding!) there are the essential people who help it all to work. I've tried to list them below:-

The Congregation

Many thanks to you all for sticking with us on this journey! You have provided support and encouragement, and many – who started out contributing to the Cornerstone Fund – have continued regular giving into the Church Restoration Fund. Thank you all so much (and don't stop now!!)

The Funders

Who have all been helpful in so many ways. Even when it's the "wrong" outcome, it has been communicated kindly. They have many potential projects to fund for many different outcomes, and we simply can't win them all. Our thanks to LandTrust, Virodor Credits Environmental Company, FCC Communities Fund, and The Ferguson Bequest Fund.

The supporters

We've had so much support from people outside (and inside) the Congregation. Special thanks to the Elected Representatives and others who have supported our Grant Applications!

The Property Team (including co-opted!)

You've all put up with the moaning by me, the endless "little" tasks, and the trips up scaffolds. You know who you are – thanks! (BTW we start again next month on Phase 3 …)

The Contractors

Firstly LimeRich. This is Richard Fraser, who is passionate about lime mortar (it takes all sorts …). As an employer, he's also passionate about skills and developing people, and has been in very many interesting places to apply these skills and learn new things. Along the way he picks up very interesting "subbies", one of which we have now seen on both Phases. Chris Dodd is a self-employed painter, and is passionate about painting windows – which he does very well! He can also turn his hand to many other important tasks to which he devotes the same intensity and attention to detail.

Then there's Nic Boyes, our Conservation Consultant. What to say? Other than many thanks for your guidance and unfailing common sense and pragmatism.

And finally, Richard's chosen scaffolder, Paul Winters (Winpac Ltd). I may be a bit of a freak, but Paul builds BEAUTIFUL scaffolds!

Outcomes

Despite finding out fairly quickly that we had a "problem" with the East Gable, we finished up completing the project overall within the project timescale (6 weeks of work but expected to run over 8 weeks) and below budget.

There were however extras arising from the defects found at first inspection. These were summarised in a very detailed manner and set out with costs and categories (Desirable, Necessary and Urgent). These works, despite taking some costs out of the original budget for works no longer necessary, were still above the "Contingency" sum allowed in the Budget – but we still finished up only about £1k above the original budget – not bad on a £60k spend.

Some works have had to be carried over to Phase 3. We could not manage to get a good lead worker in time to attend to the roof flashings, and it was decided to leave work on the East Gable windows to the next phase. Neither of these are urgent and will wait without causing any significant problems – but we know they are there and need seen to.

Thanks to funders and supporters!

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Phase two complete: Nic Boyes, Ian Farnshaw, David Woodrow, Ken Lawson, Councillor James MacLaren, The Very Rev Lorna Hood, Natalie Don MSP, Douglas Hope, Des Nicholl and Richard Fraser, Limerich Ltd outside Bishopton Parish Church

Restoration of historic parish church takes another step forward

Phase 3

Phase 3 will be simpler (fingers crossed). It will comprise the North elevation and the portion of the West Gable on the North side (all at the back of the Church).

The situation with the OPC pointing is the same, but there doesn't appear to have been as much heavy weathering of the Coursed Rubble. There is however much more algae and lichen, and the buttresses do need attention. The windows may not be as much of a problem, but there's (ANOTHER) flue in there somewhere from the Plant Room in the NW corner ….

Watch this space !!