Newsletter

BUILDING LIMES FORUM IRELAND

Building Limes Forum Ireland is a community of lime practitioners, specifiers, suppliers and producers of lime. The Forum exists to encourage expertise and understanding in the appropriate use of building limes, and education in the standards of production, preparation, application and aftercare. Building Limes Forum Ireland is connected and affiliated to the Building Limes Forums across the world.

Slate Hung Walls - South Mall, Cork City

Edward Raftery

Context

One distinctive characteristic of Georgian Cork was hung slate. This was a prevalent feature of buildings in Cork City, Kinsale, and some country houses from the 1770s to the early 1800s. Few examples remain in the city, but many still survive in Kinsale and along the south coast. No.37 South Mall, Cork, was constructed at the end of the 18th century as a typical Georgian townhouse, forming part of terrace of six buildings. The property is a Protected Structure and is located within an Architectural Conservation Area. Photographs of the South Mall dating from the 1880s, together with earlier drawings and paintings of the area record a number of hung slate façades, including that to No.37. During the 1890's a number of significant alterations were carried out to the property, among them the subdivision of the building, the modification of the entrance thereafter forming two narrow doorways and the loss of the hung slate weathering, replaced with a smooth render finish.

Project

In 2015, the upper floors of 37 South Mall came on the market. The premises had been in use as a dental surgery for generations and unfortunately was in a fragile state. I, along with my partner Sarah Mulrooney, purchased the property to accommodate an office for our architectural practice with the intent of making this project a visible demonstration of our conservation approach (we have already been offered new work as an indirect outcome of this project, an unexpected bonus that helps to fund the project!).

When we finally closed on the property in 2016 we set about repairing the building. We were under no time pressure to complete the work, but we had limited financial resources, so the work was undertaken in stages over a five year period, culminating with the reinstatement of the hung slate on the front façade in 2021. We are now nearing the completion of the remaining internal repairs to include repair of the internal joinery and decorative plasterwork. The works have benefited from Built Heritage Investment Scheme grants. Finbarr O'Brien, Will Keane and Mick O'Sullivan of O'Bri-

(Continued on page 4)

No.37 South Mall, Cork City.

Letter from the Chair

Dear Members,

It is with a sense of both relief and sadness that I am writing to you. With restrictions finally lifted, things looked like they were getting back to normal. However, no sooner were we cautiously re-emerging from Covid-19 lockdown when Russia invaded Ukraine in late February. This has caused a huge humanitarian crisis, loss of life and terrible destruction. We will feel the repercussions from the humanitarian, economic and financial crisis that will follow.

Reflecting back to 2021, we held the Lime Slam as a virtual event over two half days and although this proved successful, it was no substitute for an in person event. Louise Price was guest speaker at our AGM held on the 13th May. Louise, who is based in Donegal, is a heritage activist and a dry stone wall builder, amongst other things. Her 'Rebuilding traditional ways in southwest Donegal' focused on vernacular heritage in the northwest and was an inspiring talk. I was particularly taken with the limecrete floor using recycled glass bottles, which she says is an old technique used in piggeries to keep animals warm. You can check out her blog on limewindow.blog

Our training day at Shankill Castle, Kilkenny, held in collaboration with SPAB Ireland and with support from the Heritage Council, in September last year allowed us to run a one day outdoor event, carefully marshalled by members of the BLFI Board and other volunteers to ensure that social distancing rules were strictly adhered to (see pg.23). The day ended with a 'masterclass'. This was a round table discussion with contributions from some of most experienced practitioners in the field. One of the hot topics was the ongoing discussion of Hot Limes v NHLs. This was inconclusive in our discussions but a topic that we will continue to address through a proposed ongoing series of 'forum' discussions. More on this later.

Just a reminder that the Hot Limes database is up on our website. Please populate it with any of your projects providing information on specification, location, etc. This information will not be for general use. It is part of our research into Hot Limes and how to adapt specifications regionally for Irish climate.

Linked to this is our aim to produce a series of videos on best practice in the use of lime. The Heritage Council sponsored us last year to enable the first one to be produced: External render. We aim to upload this to our website presently.

The main event this year is the highly anticipated annual conference, which will be held in Queen's University, Belfast 2nd – 4th September and organised by the BLFI. Belfast is essentially a Victorian city which greatly expanded during the Industrial Revolution – a city synonymous with the shipbuilding and linen industries.

We have organised a great line-up of lectures and tours, with a focus on Lime. Each morning we will hold lectures/talks with site visits reserved for the afternoons. We will look at Belfast in context and explore recent projects within and outside the city. Saturday morning will focus on the pressing issue of retrofitting existing historic building stock for thermal upgrade, the (lime based) materials, and the implications. We will have papers from our international as well as local members and updates on new research.

Site visits will include:

- Titanic Quarter,
- Carrickfergus Castle,
- Lanyon Building, Queen's University,
- Walking Tours of Belfast City Centre.

The annual BLF conference is a great event and a highlight of the BLF year. It has leaders in the field speaking on all aspects of lime and historic building repair and provides all the CPD requirements for specifiers and practitioners each year.

We are always looking for people to get involved in the running of the BLFI. If you would like to help out or get involved in organising or running events or feel you have something else to contribute, please get in touch with any of the board members. The strength of the BLFI is in our members and the diverse range of expertise within that membership. We are an open group, and our aim is to disseminate the correct information on the use of lime in building construction and repair. Sharing knowledge and experience is key. Please spread the news and encourage colleagues or people you know who might benefit from membership.

Our current board is: Úna Ní Mhearáin, Chair; Grellan Rourke, Company Secretary; Oiseen Kelly, Treasurer; John Beattie, Newsletter; Shane Nolan, Membership Secretary; Lisa Edden, Training; Kevin Blackwood, Bursaries; Henry Thompson; Eoin Madigan; Dermot MacRandal; Damien Condon & Tom McGimpsey. Eszter Nadas is our administrator.

I will be stepping down as Chair in May. It has been a great privilege to have been Chair of the BLFI since 2018. I would like to take this opportunity to thank the Board and the members for their support over the past four years. The next chair will add a new perspective and bring new ideas and energies to the position. I will remain an active member of the board.

Best wishes

Úna Ní Mhearáin

Chair of BLFI


BLF Annual Gathering
2022
SAVE THE DATE
2nd-4th September
Belfast
- Baker Memorial Lecture
- Site Visits
www.buildinglimesforumireland.com
Join with us

Hung slates being installed by Will and Mick of O'Brien and Donnellan Builders in 2021, by Andrew Campion Photography.

(Continued from page 1)

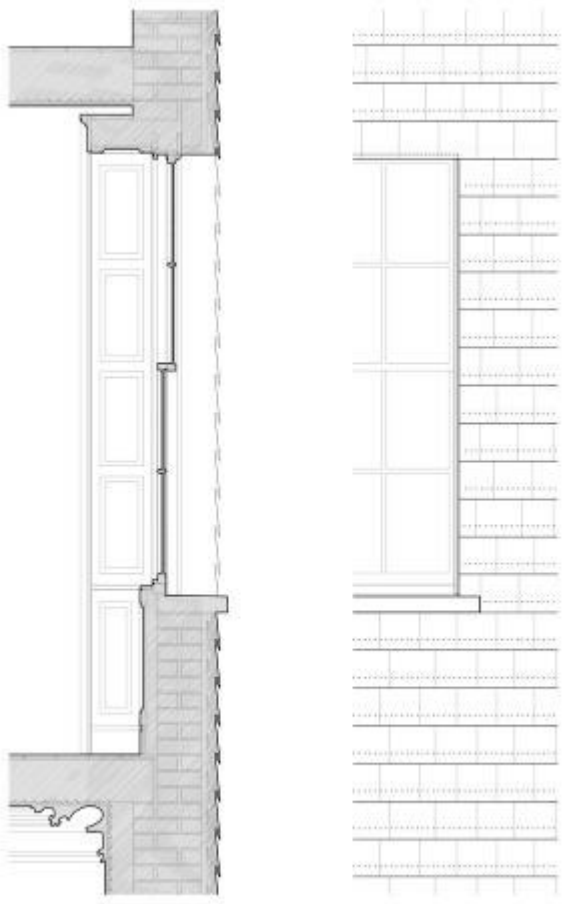
en and Donnellan Builders have been involved in the project for many years. They are now very much part of the story of the building. We received conservation advice from Caroline Gethings of Anu Heritage and structural input from Paul Hegarty of Fourem and our engineer, John McCormick.

Approach (façade treatment)

Today, the most notable feature of No.37 South Mall is the reinstated hung slate façade. The reinstatement is intended to give the building back its Georgian character. It also helps to give definition and legibility to the subdivision of the building. The upper floors, in our ownership, have an intact plan-form and retain many original and reinstated features.

Installing hung slates required a lot of consideration. Financially, the supply of the slates was an addition to the cost of the project. Legally, there was a consent process as the change from the rendered wall back to hung slate required planning permission. Technologically, there was a method to be developed. This included producing exemplar panels, visiting extant local examples, preparing setting-out drawings, and refining a method statement.

Certain features are essential to the achievement of an authentic hung slate façade. We observed distinctive characteristics from visiting and studying local precedents. Each slate course has a sharp horizontal shadow line. As with many traditional motifs, how the light falls on the surface is an important consideration. The horizontal coursing varied from a mean of 180 mm with variants of between 170 mm and 190 mm. This variant gave flexibility when aligning coursings to heads, sills, and string courses. These dimensions also matched the coursings from the archival photographs. The vertical butt joints have a minimal gap, at most 3 mm, reinforcing the dominant horizontal line. Traditionally hung slates do not form a perfect grid, which is ideal as it has inherent flexibility. As the slates varied in size, we devised a cutting schedule that minimised waste to near zero. Standard slates 300 mm wide and 500 mm high were cut down into varying widths. These ranged from equal divisions of two 150 mm sections to unequal divisions such as 170 mm and 130 mm or 225 mm and 75 mm. The narrower slates could be used as full or half slates. We superimposed a setting-out drawing on a local precedent, 2 Dyke Parade, to get the sizing correct. We devised a lap joint for the window head that maintained the sharp coursing line. This allowed the mortar on the head reveals to be rendered into a backing slate with the facing slate lapped over.



Cross section and elevation detail showing layout of slate to window openings.

A hot lime mix was chosen for bedding the hung slates as this was the traditional indigenous method. In addition the slate clung instantly to the hot lime bedding mortar. On our initial trial panels, the slates did not hold firm on an NHL 3.5 bedding mortar. We considered applying a bonding coat such as Thistle Bond on the back of the slate. However, we abandoned this option, as it was considered an additional line of failure and thus held true to the historic construction detail. The flat back of the slate faced outwards onto the street, and the rugged front of the slate faced inward with the jagged edge keying the slate to the mortar. We also considered scoring the back of the slate further like a tile, but again this was considered another line of potential failure. Typically, slates are mechanically fixed to the walls. Stainless steel fixings were chosen over ferrous nails, which tend to fail over time. The fixings are hidden by the lapping slates except for the slates cut short under the sills and below the string course. Under the sill where the slate is cut short, we did not want to have mechanical fixings visible. In the absence of a mechanical fixing in this location, and hesitant about relying solely on the bedding mortar to hold the slates we opted to use a dab of tile grout locally providing a firm bond for added peace of mind. This was an important for safety, as it is a street-front façade on a busy thoroughfare. Areas of cut slates to upper levels are all mechanically fixed using the stainless steel fixings as these are outside of immediate sightlines. The finished hung slates are offset from the front face of the adjoining buildings. The offset could have been reduced if a thinner bedding coat had been applied and a thinner slate had been used. We chose Blue Banger Slates, Celtic Grade, with a nominal thickness of 9.5 mm to minimise cracking or spalling. The above considerations are essential when the aim is to complete an authentic restoration and ensure the hung slate endures.

Conclusion

The project, while challenging in every respect, has been a positive experience shared with all those who worked on it. Each element of the project called for careful consideration. The builders required time and space to test and perfect appropriate techniques. This process gave them the confidence to complete each element of the work. Having completed the hung slate using hot lime, there is now a greater trust in the material. The builders began the project as engineering contractors with specialist skills in steel, concrete and gypsum plastering. They finished the project as heritage contractors with specialist skills in hot lime, hung slating, and decorative plasterwork. They are currently now applying this self-learning approach to the repair the timber floors and staircase. A revealing aspect of the conservation work is how straightforward these building methods are once they are understood. The practical experience of the project was that it took a process of trial and error to achieve methods that were close to those originally used. Techniques such as run mouldings, hung slating, and hot lime rendering were once common practice in construction in much the same way that cavity walls are the standard practice in construction today. The project at 37 South Mall has been a case of learning, unlearning and relearning to achieve an authentic, traditional method of construction.

Edward Raftery - Architect

No.37 South Mall prior to works (left) credit NIAH, and on completion (right).

The Ffrench Farm Vernacular Project

Ffrench's Farm, Gorey, County Wexford is a typical labourer's farm dating from the 18th century with dwelling house and outbuildings creating an informal courtyard layout. The site is a Protected Structure (Wexford CoCo RPS ref: WCC 1070) and is recorded by the National Inventory of Architectural Heritage (NIAH Ref: 15701111).

The complex is largely built using locally sourced materials to include tempered clay, local rubble and clay mortars. Repairs were carried out on two of the outbuildings with support of the GLAS Traditional Farm Buildings Grant Scheme, administrated by Anna Meenan of The Heritage Council. Anú Heritage were delighted to be appointed as conservation advisor with expert stone masonry provided by Pat Hickey.

The aim of the project was to stabilise and arrest deterioration of the structures in a sustainable and conservation focused approach to preserve the character and integrity of the vernacular setting. Over three quarters of the repair materials were sourced from the farm itself, which included clay, wood and straw. Growmax in kibble form (quicklime) was used as the main binder for pointing, rendering, and limewashing with aggregate sourced from a local quarry. The availability of a fine head of cattle was not lost on the project team with the kneading of the clay achieved by driving hand reared bullocks through the mix in a controlled environment and under the skilful husbandry of Mr Ffrench.

Most earthen structures are composed of naturally occurring subsoils that are devoid of organic matter. Historically coarse grass, straw, hay, rushes, twigs and furze were the main binding agents for the composition of clay-built structures - in the case of Ffrench Farm outbuildings, straw was found in one section only, with the remaining fabric tempered clay, therefore two clay mixes were created. No quicklime was added to the tempered clay mix. The addition of milk, buttermilk, cow dung ash or animal blood were used to achieve additional tensile strength. All materials were combined until a doughy texture was reached, the mixture was left to "sour" for a day, weather permitting.

Methodology

- Clear topsoil - depth will vary from 5 – 10 inches.
- Remove clay (subsoil).
- Break up large lumps and remove stone larger than gravel grade.
- Add water and knead to the consistency of bread dough (a rotavator can be used if cattle unavailable).
- Add binding materials during the kneading process.
- Allow three days (weather permitting) to 'temper'. During the tempering process the clay mix requires re-kneading or turning over, either or will be weather dependent.

Once the mix had tempered the clay was laid on in layers of twelve to eighteen inches, ensuring a slight overhang. The layer was beat down before leaving it to set (one to two days subject to the weather) with the area covered during this time in a layer of fine Wexford straw and twigs to protect it from the elements. Once the previous day's work was sufficiently firm the next layer was added leaving the straw in place to assist in binding the subsequent layer and with the twigs repositioned horizontally, forming a dowel for added strength (not a thing was wasted!). On completion of a new layer, the overhang to the previous layer was carefully pared back. The finish surface was left rough to achieve a bonding surface with a final limewash applied by Mrs. Ffrench herself who traditionally carries out whitewashing twice yearly on Good Friday, and the last day of Harvest. Mr. Ffrench advises that following the project Mrs. Ffrench has vowed to change her limewash mix from a Rhino lime to a Kibble Quicklime mix!

Caroline K Gethings
Anú Heritage

Left - David Ffrench and Patrick Hickey assessing the fourth test site displayed a small percentage of marl, which is required to form a compatible mix. Middle - Cattle treading the mortar, Right - Treading by foot.

Eroded tempered clay exposing aggregate.

Existing clay mortars.

Repair using hazel rods at connection points.

Completed work to outbuilding.

Completed work to the dairy.

Soft Top Walling at Cashel Palace Hotel, Co. Tipperary

Soft Top Walling or Soft Capping as it's also known, is a method used for the conservation of ruins. It allows carefully selected plants and shrubs to colonise the skyward surfaces through a controlled and managed process, thereby protecting the structure from weathering and erosion through runoff and other weather elements.

We approached this project tentatively, ensuring to research and collaborate with other professionals before any work began. Here at Calx Restoration, we are very lucky that the people around us are so knowledgeable and gave excellent guidance. Úna Ní Mhearáin Architect, Philip Quinn Horticulturalist and Brenda O'Meara Archaeologist were on hand to discuss any arising concerns we had. We also referred to a recommended reading list from my former college, West Dean in Sussex, England.

The soil structure is the essence of the success of a project such as this. You might think a soil rich in nutrients would be ideal to promote growth on wall tops, however the opposite is actually true. The soil needs to be hungry for nutrients and trained to survive in a shallow harsh environment.

On this project we achieved success through trial and error, testing samples in trenches of differing depths, until the right balance was found whereby the soil was deep enough to promote growth but not so shallow as to be inhospitable to the plants and shrubs.

To make a 'hungry soil' we mixed local soil, found adjacent to the site, with 'Rabbit' sand (a sand rarely used by plasterers or block layers.) The works were carried out to the following methodology:

- Mix clay and aggregate at a ratio of 5 parts clay to 1 part sand.
- Lay clay mix to centre of wall top – in some cases where the hearting to the wall has failed or where localised reseating of stones is required it may be possible to form a shallow channel to receive the clay. Once the clay has been laid, tamp down and flood with water.
- It may be necessary to add further clay after tamping where levels have reduced. Again tamp further and flood with water.
- Place 6' sod, grass side down to left and right of wall top. Allow an overhang of approx. 4 to 6" to each side.
- Fold up the overhang on each side creating a shallow channel to the centre. Skewer overhangs in position using bamboo rods.
- Fill the shallow channel to the centre forming a domed skyward surface and water.

Finally lay a 6' sod to the centre of wall top and water.

We skewered the work together using bamboo rods positioned approx. every meter. This holds the sod in place while providing natural drainage. The wall was then lightly covered each night with hessian and uncovered the following morning to allow sunlight in. The area was watered three times per day for three weeks.

Over the years, the soft capping will evolve and in time the nutrient load will change to accommodate a diverse range of plant species. Grasses, mosses, ferns and small flowers will emerge to create a beautiful and sustainable soft wall top. Generally speaking the soft top is low maintenance, however one must be aware that plants such as ivy and briars as well as small trees may take root and will need to be actively managed/removed.

This was a wonderful project to work on and in my opinion, is the most sympathetic way of conserving the exposed surface of a ruin.

Damien Condon
MD with Calx Restoration and BLFI Board Member

Rolling the sod.

Finished soft top.

Dublin City Wall at Wood Quay Venue - Update

A report on the works to date at Dublin City Wall at Wood Quay appeared in the 2021 edition of the Newsletter of the Building Limes Forum Ireland. The following provides an update on the main conservation works to the wall which were completed in spring 2022.

Project Background

The medieval town walls, known as the city wall, were built c.1100 as part of the Hiberno-Norse defences. Over 100m of the northern town wall defences were uncovered during the Wood Quay excavations of the 1970s. An up-standing c.24m section was incorporated within the basement of one of the two original office blocks of Sam Stephenson's Civic Offices. Most of the c.24m section now presents within the interior of the building, with one small portion forming part of an external courtyard. In 2007, Dublin City Council commissioned a condition survey of the upstanding wall within the basement of Civic Offices prior to refurbishment of the space as the Wood Quay Venue conference facility. The survey of the upstanding wall found that the northern face was showing significant loss of mortar, with approximately 50% of the wall observed to have open joints. A further survey commissioned in 2018 by Dr Ruth Johnson, the City Archaeologist, showed that the situation had deteriorated over the intervening years, by then recording 90% open joints to the north elevation. The survey concluded that it would be necessary to carry out a judicious programme of repointing to the north elevation to secure the monument into the future. Additional recommendations included monitoring of the environmental conditions to include an analysis of temperature, relative humidity, and dew point. Fluctuating levels of relative humidity compounded by legacy issues arising from historic water ingress were identified as contributing factors in the deterioration of the mortar. In 2018, five mortar samples taken from the wall were analysed in a geology laboratory. Following consultation with the relevant statutory authorities, Ministerial Consent was granted

Dublin city wall following completion of the works.

for stabilisation and repointing works subject to further monitoring over 2018-19. The works were commissioned in 2020 by Dublin City Council as a project of the City Archaeologist. The design team for the project was guided by a steering group comprising key conservation and archaeological professionals along with facilities management. Carrig Conservation were retained as Conservation Consultant and Summit were engaged as the heritage contractor.

Following the carrying out of samples and consultation and agreement on a mix and methodology during the initial phase, the main conservation works to the wall were carried out:

Raking and repointing process

- Areas of sound historic pointing were retained.
- Work was carried out in sections.
- The aggregate from the raking out was collected, processed and reused.
- Deep joints were repointed in stages.
- Pinning stones were used according to the agreed methodology.
- Archaeological finds discovered during the works were processed according to the agreed methodology.

Areas of sound historic pointing were retained

A key aim was to retain as much of the historic fabric in situ as possible while also repairing and stabilising the wall for the future. Where historic pointing was found to be sound it was retained in situ and repointing was carried out around it. The mix and finish of the repointing was chosen and carried out so that the pointing gave a uniform appearance to the wall overall while allowing identification of the historic pointing on closer inspection.

Work was carried out in sections

The selective raking out and repointing was carried out methodically and in defined measured sections only to ensure controls were in place and that any finds were recorded accordingly. Carrying out the work in distinct sections meant that each area could be carefully processed according to the agreed methodology for raking out, recording of archaeological material, repointing and the use of pinning stones, and so that material for reuse could be put back into the same area.

The aggregate from the raking out was collected, processed and reused

As each section was raked out the material from the raked out joints was carefully collected and processed and the aggregate was sieved for reuse in that area. The raked out material was collected in trays at the base of the wall. Once any archaeological material had been identified and processed, the remainder of the material collected was sieved and the graded material was reused as aggregate. The processed aggregate was incorporated into the mortar mix which was used to repoint the section from which the aggregate had been raked out.

Deep joints were repointed in stages

Material from the raked out joints was collected and processed.

Some of the joints had failed to a considerable depth. In places bedding mortar had to be replaced as well as the pointing. Where joints were particularly deep these were repointed in phased stages.

Pinning stones were used according to the agreed methodology

It was agreed that any pinning stones required would be sourced from stone salvaged from a portion of Dublin City Wall that had formerly stood adjacent to the subject section, but which had been taken down in the 1970s. This material had previously been identified as suitable material for repair of surviving upstanding sections. A replacement stone was used where pinning's had failed, with locations recorded on elevation drawings.

Archaeological finds discovered during works were processed according to the agreed methodology

The location of any archaeological finds was noted, with these being processed and stored as per the Ministerial Consents. Any large items identified during the raking out were removed with some of the matrix material, labelled/bagged and logged both on the site drawing and in the site notebook. A photograph was taken of each of the archaeological finds with a label identifying the type of material (i.e. bone, shell, fossil) and the location where it was found. Finds (animal bones, shells, lignite and a piece of glass) were stored securely in a finds box. On completion of the works the site drawings were transferred to a digital drawing for submission as part of the record of the works.

Report on faunal material by animal bone specialist Dr. Fiona Beglane

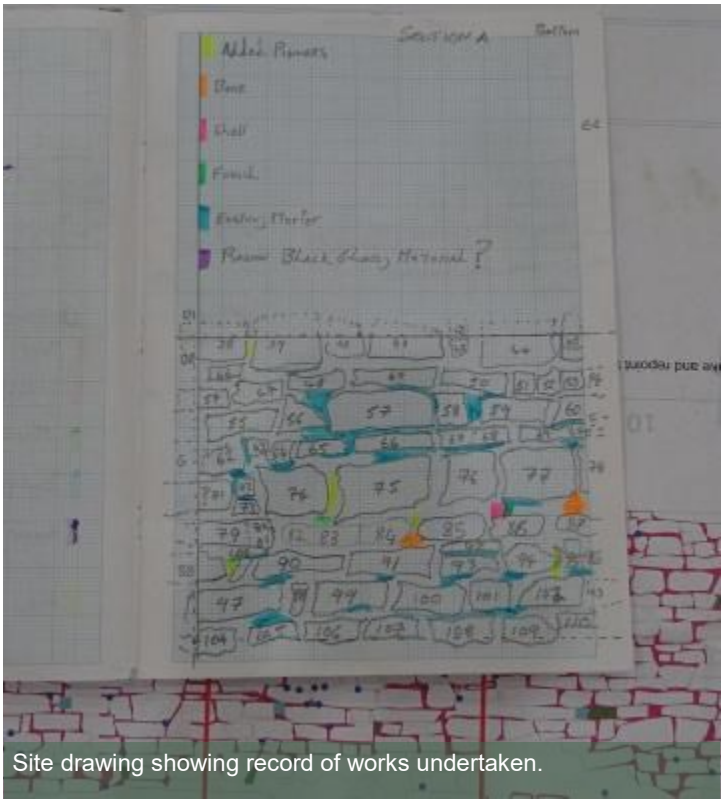
A total of 48 bone fragments were recorded. These included four cattle bones, one rabbit bone and one mouse mandible. There were six bird and ten fish bones. There were 25 countable fragments of mollusc with cockles making up the largest proportion of the assemblage, followed by periwinkles and mussels. The most likely scenario is that the mollusc shells came in with sea sand, while the mammal remains were incidental waste from the surrounding site. The mouse maxilla is of interest since this species was probably introduced by the Hiberno-Norse and the bone could potentially date from any time thereafter. The presence of rabbit in one of the samples suggests that at least that particular section of the wall was built or repaired after the arrival of the Anglo-Normans to Dublin.

Report on sherd by glass specialist Antoine Giacometti

A single sherd of glass was found which was identified as a basal sherd from a globular phial. Phials are small bottles intended for storing a small quantity of liquid such as medicine, oil or perfume etc., but excluding drink. This phial type is comparable in form and colour to phials previously excavated in Ireland and England and dated from the second half of the 17th century into the early 19th century.

Leila Budd

Carrig Conservation



Site drawing showing record of works undertaken.

HMM Project Symposium - Update

Venue change

HMM Project Symposium to be held on the 25th & 26th May 2022.

Since I provisionally announced the Hot-Mix Mortars Project Symposium to BLFI members at this years Limeslam event, it has become uncertain if the HES Engine Shed at Sterling will be available on these days and an alternate venue in York is to be considered.

The symposium shall be confined to technical and practical matters relating to research and current developments in traditional mortars.

With restricted numbers, the event will be invite only.

A further announcement will be made in due course.

Ivor McElveen

Conservation Engineer & Former BLFI Chair

Rylagh Limekiln

I am often struck by the great number of limekilns that survive in the fields and along the back roads of my home place. The limekiln in the townland of Rylagh, not far from Gortin, County Tyrone is just one of them. The kiln was built c.1800 and was restored in 2015 by a local community group, 'Friends of the Glens'. Works included the removal of ivy and seven large trees which had taken route in the structure. Salvaged stone was used to rebuild the side walls of the kiln and a date stone was added, carved with the date 1801. The kiln now serves as a community meeting place and a venue for music and song. An interpretation plaque bears the following poem by Tyrone based poet Samuel Irwin.

Image & text by John Beattie.

The Limekiln

Like an old waiting servant standing in the deep silence of her stone.
Refusing to let one powdered touch of her life be felt, for all she knew, is not, and the pressings of her past lie where she knows not, where to go.
Nothing now to give honour, in the services of flames.
Here left behind, wailing in chains of abandonment.

Would that the smoke could crawl the air again.
That need was in hands, to light the furnacy fires and look to her sweated brow.
But the ruining shroud has fallen, and a strange image she is.
The cables of time pulled her to this day, where the thousand fires that burned in her belly are gone and she sought for lime is long blown in the wind.

Samuel Irwin.

Lime Slam 2022

The Lime Slam 2022 returned as an in person event in the Royal Society of Antiquaries on Merrion Square in Dublin on March 8th. After two years of meeting virtually it was a great reminder of how important it is to meet in person, swop ideas and make connections.

It was a jamb packed day which kicked off with **Úna Ní Mhearáin** providing a BLFI update including details on the upcoming conference in Belfast on the 2nd to 4th September (see pg.3). **Silvia Mambriani** of 7L Architects and **Lisa Edden** of CORA Engineering followed speaking about Tirellan Castle and Merlin Castle in Galway. The importance of research and investigation was shown in the work undertaken. **Leila Budd** of Carrig Conservation alongside **Seamus McIntyre** and **Tommy Cooper** from Summit Conservation then talked about their work on the surviving section of City Wall at Dublin City Council (see pg.9). Tommy's descriptions of the archaeological finds found within the joints was an important demonstration of scrutinising historic mortars. **Ivor McElveen** highlighted the upcoming Hot Mix Mortar Symposium on May 25th and 26th (see pg.12).

After the morning's tea-break, **Henry Thompson** of the Old Builders Company focussed on internal insulation and the importance of correct detailing to reduce thermal bridging. He did acknowledge the difficulties to achieve this where there is original cornicing detail etc. His presentation also detailed the retention of historic finishes and he aptly demonstrated that the loss of historic plasterwork and patina is an ongoing live issue. **Úna Ní Mhearáin** of Consarc and **Damien Condon** of Calx Restoration then spoke about the work to the Wall tops at Cashel Palace comprising 600m of boundary wall where they put on a soft top. Damian's samples, trials and the need for aftercare were well described and I loved his description of needing a hungry soil (see pg.8). **Pat Hickey** outlined his repair of vernacular structures. He emphasised the importance of mortar samples and using an evidence based approach to his work. His exploration around the adjacent fields in search of a suitable earth mortar was a great example of vernacular building and his description of using cattle to mix earth mortars was inspiring (see pg.6). **Tom Pollard** gave a passionate outline of his work with the Irish Traditional Skills Initiative and the importance of motivating the next generation to learn craft skills and provide a clearer path for young people to follow this career path. It was apt that **Théo Bouchez** followed Tom Pollard. Théo described the French Journeyman Experience. He described his training with the '*Compagnons du Devoir et du Tour de France*' a French organisation of craftspeople and artisans which has its origins in the Middle Ages. Their education includes taking a tour, the '*Tour de France*' around France and doing apprenticeships with master craftspeople. Again a rousing talk which showcased the importance of passing on skills and training.

After lunch **Pat Tallis** (and **Eugene Butler** who was hiding in the audience) of Tallis and Co. spoke about a folly repair with lime mortar and a window reveal detail. Pat Tallis gave an interesting account of his journey to becoming a conservation contractor. **Michael O'Boyle**, Conservation Architect spoke about the remarkable town of Fethard Co. Tipperary and his work on the repair of the medieval town walls. **Laura Bowen** outlined some of her recent projects in Kildare and Westmeath including a stone roofed folly in Clonmellon and Leixlip boathouse on the banks of the Liffey. **Brian O'Connor**, Architect and **Helena Bergin**, Architectural Conservation Officer from Fingal County Council spoke about the repair of a section of the boundary wall at Newbridge House and Demesne in North county Dublin. Helena described the ongoing issue she has faced in Fingal with the inappropriate desire to remove historic renders exposing random rubble construction which would never have been exposed originally. **Paddy Byrne** outlined a number of lime case studies from around the country and spoke practically about the issues of failures. **Shane Nolan** of Nolans Group Conservation and Restoration finished the day. Shane spoke passionately about wigging best practice. His video of a wigged joint being carried out clearly demonstrated the skill required for this work.

The importance of evidence-based research was stressed time and time again by nearly all the speakers. Other items which came up again and again were the importance of samples and learning from trial and error. Particularly illuminating were the honest and frank reasons why certain NHLs, hot mixes and hybrid mixes were used. As ever it was a stimulating and thought provoking day listening to heritage contractors, architects and engineers talk so passionately about their work. Thank you to the BLFI for organising a great day. On a side note, on International Women's Day, it was motivating to listen to so many inspirational Mná na hÉireann. And for any hecklers down the back asking when is International Men's Day its – Lads its everyday - sorry I meant November 19th!

Sarah-Jane Halpin
Architectural Conservation Officer with Dublin City Council

A Tale of Three Houses

In 1739 Robert Fitzgerald, the 19th Earl of Kildare paid Paul and Philip LaFranchini the princely sum of £501 for their work to the Dining Room ceiling at Carton House, Maynooth, County Kildare - this was equivalent to 1/16 of the total purchase price he had paid for the entire estate earlier that same year. The decorative plasterwork discussed below is not as elaborate or on the scale of Carton House, but the monies exchanged between Fitzgerald and the LaFranchini brothers illustrates how plasterwork was viewed in Ireland during this period.

Decorative plasterwork was a hugely important element of these historic houses but often centuries of overzealous painting has left decorative registers and the finery of detail largely unrecognizable. The process of removing thick and multiple layers of paint is time-consuming and should only be undertaken by an experienced and competent person because when not carried out correctly major damage can occur. Conversely, where sensitively executed using the correct techniques and under skilled expertise the process can bring beautiful plasterwork back to life.

The removal of paint is often just one step in the conservation and restoration of plasterwork. Most typically repair, and in some cases localised reinstatement of underlying embellishment, follows the removal of paint. My experience has shown that some historic plasterwork can be quite weak and frequently it's the many layers of paint that hold the register or scheme together. Elsewhere poorly executed previous repairs or missing elements are often highlighted following a programme of paint removal.

The 3 projects I focus on below can all be found on Dublin's 'Georgian Mile', with The Goethe Institute at No.37 Merrion Square East to one end and No.4 Fitzwilliam Place to the other. The United Arts Club at No.3 Fitzwillam Street Upper falls firmly in the middle. I count myself fortunate that all the projects my company, Griffin Plastering, work on have beautiful plasterwork, but I chose these 3 case studies in particular because between them they chart the changing fashion in Irish plasterwork over the course of a 70 year period. Most people look at Georgian Dublin as representing one period in time and although some may consider that the external brick facades of the ubiquitous terraced townhouses show little outward sign of variation their internal splendour unveils a rich and evolving storey of plasterwork at its finest.

Decorative plaster ceiling to Goethe Institute.

Goethe Institute

Client: German Government

Architect: Shaffrey Architects and Henchion Reuter

No.37 Merrion Square East, now home of the Goethe Institute, was built in the 1760s. The exquisite plasterwork which enriches its rooms was the work of the great Irish Stuccodor Robert West. In my opinion the detailing and quality of the work found in this property would rival any base relief plasterwork of its type anywhere in the world. The scheme incorporates some limited mould work but most of the decorative plasterwork was hand modelled. Due to the many layers of paint the delicate detailing of the frieze was largely unrecognizable, appearing as nothing more than crude blobs on the face of the wall. The colour scheme we see today is based on a past historic scheme, uncovered as we carefully pealed back the layers of paint, though is not thought to date to the 1760s.

After judiciously removing layers of unwanted paint and restoration of the historic plasterwork throughout the building, Don Know (specialist painter) did an amazing job recreating the historic colour scheme. As they say a picture tells a thousand words and you can see from review of the accompanying before and after images, the plasterwork now looks stunning. If you walk by the building at night, you will may note that the lights to the first floor library are often left on so that the plasterwork can be admired from the street.

The United Arts Club occupies No.3 Fitzwilliam Street Upper, a property which was built c.1800. Like the Goethe Institute the building retains splendid hand modelled decorative plasterwork throughout. Though the very finest of the plasterwork was reserved for the formal rooms of the first floor Piano-Nobile other areas of the building were not found wanting. I have chosen to highlight this comparatively modest run of cornice and foliate centrepiece in the Dontay Room on the Ground Floor, where overpainting had almost totally obscured the detailing. The transformation in the cornice was astounding and now forms a talking point on entering the room. The centrepiece was somewhat unusual and working on this enabled me to appreciate the craftsmanship of those early plasters in whose footsteps I walk. Some localised repair and reinstatement using hand modelling was undertaken as part of the works where embellishments had detached or were missing.

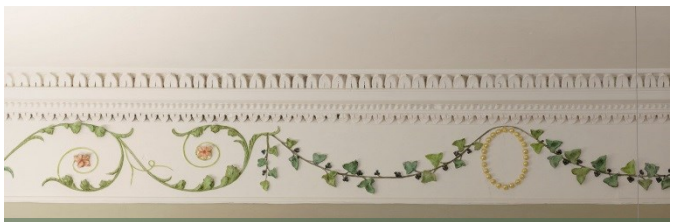
United Arts Club

Client: United Art Club

Architect: Martin Tritschler

Of course, the overpainting of detailing is not merely confined to the decorative plaster cornices and centre pieces of internal rooms. Columns which frame the main entrance door to the United Arts Club were a mere vestige of their former glory. Here we undertook similar paint removal followed by the conservation and restoration of the volutes. The same rules applied - you have to know what you are doing, or serious damage could occur, but when carried out correctly and sensitively you can begin to appreciate the detail with which these elements were originally intended. Similar works were undertaken to areas of overpainted masonry elements in the rear courtyard which was once was an underutilized space and is now a beautiful area for outside dinning (a welcome and inviting space during the pandemic).

Frieze to Goethe Institute prior to works.



Frieze to Goethe Institute on completion of works.

Revealed detailing to frieze of United Arts Club.

Careful removal of paint from capital of door column.

No 4 Fitzwilliam Place

Client: IPUT

Architect: Lawrence and Long

No 4 Fitzwilliam Place was built around 1830 and again, like the other two properties is graced with beautiful decorative plasterwork of a very high standard. While the plasterwork incorporates elements of hand modelling, by this date you start to see more mould work coming into play, when compared with schemes from the earlier period.

The decorative plasterwork shown here is found in the principal entrance hall. Again, we find another stunning centrepiece and embellished cornice. The pictures highlight the skill which is required to successfully repair this type of decorative plasterwork. The lower register of the cornice incorporated 36 large leaves with a total of 35 of them either missing specific details, damaged or having been poorly repaired. It would of course have been more expedient and easier to take down the 35 leaves and replace with new cast leaves, but the works were undertaken as per best practice conservation which sought to conserve the maximum amount of historic fabric possible. As such, repairs were undertaken on an individual basis and in a like-for-like manner.

Griffin Plastering has been commissioned to carry out repairs in many properties in this part of Dublin and as you can see from these 3 examples the decorative plasterwork is of the highest standard. It is a privilege to work on these projects and to observe and learn from the little tricks of the craftsmen of the day when creating different elements like vines etc. I appreciate that often, budgetary considerations mean that judicious paint removal is overlooked but I am so very grateful to the clients and architects on these projects for giving us the opportunity to bring back to life all these different types of beautiful decorative plasterwork. Paint removal and the conservation of historic decorative plasterwork is a slow process which should be carried out by a competent person but as you can see from the above case studies, that when carried out correctly it can be transformative!

Paul Griffin
Griffin Plastering

Decorative plasterwork to entrance hall of No.4 Fitzwilliam Place.

Ancient Roman lime mortars last longer than a modern cement mortar!

By now most of you will have dutifully returned your completed Census Forms with the Time Capsule section duly filled in with a thoughtful message for your descendants. It seems that gone are the days when a time capsule actually contained things, often quirky odds and ends as mementos with a message for whoever found it. Well, that is what I am going to do, and this article will explain why. To ensure that you read it I will tell you what I will be putting in my time capsule at the end. But no cheating!

In October last year the *Journal of the American Ceramic Society* published an article about research undertaken by a team of MIT material scientists into why Roman concrete lasts so long in contrast to modern concrete, which tends to crack and crumble after only a few short decades. We would call this 'spalling'. They wondered why this was happening and could the Roman features be replicated in modern cement concrete. (The scientists appeared to juxtaposition the term concrete with that of mortars and vice-versa, and I will try and use the correct nomenclature when I can.

The study focused on a remarkably well-preserved 30 BC tomb of a Cecilia Metella, a Roman noble woman. The tomb comprising a rotunda shaped tower sitting on a square base being 21 metres tall and 29 metres in diameter, is located on the Appian Way and is a landmark on the Via Appia Antica. They discovered that the ancient lime mortar used a volcanic aggregate, what we would call a pozzolan or possibly pozzolana being a pozzolanic ash from Pozzuoli near Naples. They were impressed as to how the ancient mortar/concrete had reacted to rain and ground water over the ages. The tomb was built using a technique described by Vitruvius of thick walls of course brick or volcanic rock laid and bound with mortar made with lime and crushed pozzolan, comprising porous fragments of glass and crystals created from explosive volcanic eruptions (sic).

The study found that the secret to the long-lasting properties of the mortar and also found in Roman concrete might be a mineral called *leucite*. The mineral is rich in potassium which, over time, dissolves and effectively remodels and reorganises the interface between volcanic aggregates and the lime creating a cementitious binder, improving the cohesion of the mortar, making it stronger over time. This seems to me to be perhaps partially describing the autogenous process associated with lime mortars.

Other analytical research was undertaken using scanning electron microscopy (SEM) and dispersive X-ray spectrometry exploring different areas of the mortar, which compared favourably to mortars used in the Markets of Trajan built 120-years later. According to the research, both mortars consist of a building block called the C-A-S-H binding phase (Calcium-Aluminium-Silicate-Hydrate), along with other minerals. This would appear to be what a good lime mortar mix with an appropriate aggregate and maybe a pozzolan would be expected to do in any event in carbonation process. So, C-A-S-H is MIT speak. The scientists note, however, that the process releases more potassium into the mix, which would cause problems for modern concrete, resulting in eventual microcracking and the eventual deterioration of the structure. This does not happen with lime-based mortars or limecrete. 'Understanding the formation and processes of ancient materials can inform researchers of new ways to create durable, sustainable building materials for the future,' said wisely by Admir Masic, Associate Professor of Civil and Environmental Engineering at MIT. 'Doing this through the integration of time-proven *Roman wisdom* provides a sustainable strategy that could improve the longevity of our modern solutions by orders of magnitude", he added. Perhaps he should have joined the HLM Team and given the BLFI a call.

The HMM Project, the successor to the HLM Project, has reached similar conclusion relevant to lime technology by research undertaken by Historic England and others, and in Technical Papers published by Historic Environment Scotland based on ancient lime mortar mixes. But does the MIT research mean that at a certain date in the future the bridge that we are driving over will suddenly turn to dust while we are at the same time looking at a 14th century tower house in the distance? Hardly, but expensive high maintenance is clearly ahead for our Local Authorities based on this valuable research undertaken by the MIT. However, instead of twigging cement-based concrete to better perform, why do we not twig lime mortars instead to take the place of common concrete, with a lime-based concrete, aka limecrete, where the occasions would allow. It should be highly cost effective, much more sustainable, and considerably reduce carbon emissions.

So, to my Time Capsule; I am going to make specimens of 4 different mortars, in concrete form, and put them in the capsule, which will be opened in one hundred years' time. The First Specimen will be of standard concrete to a formula chosen by CRH: the Second Specimen will be a typical NHL lime-based mortar to a formula approved by one of the manufactures: the Third Specimen will be a hybrid quicklime gauged NHL mix as given in the HLM Report and the Fourth Specimen will be a straight quicklime mix in popular use. When these are opened in one hundred years' time they can be tested and compared for performance and for whatever else takes the scientists' fancy at the time. The ensuing debates and arguments should be interesting, and I am glad that I will not be around to hear them for I suspect that nothing much will have changed.

Ivor McElveen

Conservation Engineer & Former BLFI Chair

View of 14th century Grannagh Castle, Co Kilkenny in the foreground with the 21st century N25 Waterford Bypass long cable stayed suspension bridge, spanning the River Suir, in the background.

The castle is already some 700 years old and certainly good for a few more hundred years. Admittedly, the suspension bridge is a much more complex structure continually experiencing dynamic stresses and strains but one might wonder which is the more vulnerable to the ravages of time if the concrete in the bridge is suspect.

SPAB Ireland Working Party 2021 - Kilmore Cottage, Co. Armagh

SPAB Ireland held a Working Party during National Heritage Week 2021 to launch their Vernacular Irish Buildings Campaign. The site was a late 17th century cottage in the village of Kilmore, Co. Armagh, where a group of approximately 20 volunteers carried out repairs under the leadership of Eoin Madigan (SPAB Fellow and BLFI Board Member). Thanks to the hard work and enthusiasm of everyone involved, a significant amount of work was achieved in just two days. An impressive effort was made to repair a huge crack in the gable end of the cottage and the end result was a robust stitch that would return structural integrity to this elevation of the building. Volunteers also cleared debris from the top of the adjoining garden wall, to reveal an unexpected course of brick detailing. A lime stabilised earth mortar was prepared and used to secure the wall top. Other works included soft-capping demonstrations and stabilisation of the stone entrance piers. The local community is hopeful that the working party will kickstart further stabilisation and repairs of the structure. The Kilmore Cottage Working Party was supported by the Heritage Council, under the Heritage Sector Fund 2021.

Shona O'Keefe

Chair of SPABIreland

Stella's Tower & St. Catherine's Church, Portrane

Stella's tower choked by vegetation prior to works.

Stella's tower following completion of works.

Stella's Tower or Castle, and the historically associated St. Catherine's Church nearby, both in the village of Portrane, are in the guardianship of Fingal County Council (FCC) as National Monuments (or scheduled for inclusion as National Monuments in the case of the castle/ tower). Both structures are of medieval origin, with historic mentions of church and castle buildings dating to the 13th century. The 'castle' is slightly west of the village, in an open field, about 400m from the church, both on slightly elevated ground overlooking Portrane beach and with views out to Lambay Island. St. Catherine's church consists of a roofless nave and chancel with a tall, striking tower at the west end intact to the stepped parapet. Stella's Castle is a classic tower house construction, with a spiral staircase in one corner and a tall brick chimney rising from its western wall, representing a 17th or early 18th century improvement. The name 'Stella's Castle' comes from the connection with 'Stella', or Esther Johnson (1681-1728), a lifelong friend of Dean (Jonathan) Swift of St. Patrick's cathedral. She stayed in the tower house in Portrane as a guest of the Swantons, relations of Swift, for a period in 1712. Some of his letters to 'Stella' as he addressed her, date from this time. Her name became associated with the building as a result.

Reports were published in 2014 on fifteen historic structures in the council's care, deemed 'structures at risk'– Stella's and St Catherine's included. Each assessment provide structural analysis and recommendations for repair/conservation. The fifteen structures are judged as high value in terms of archaeological, historical, social and architectural significance as well as representing cultural assets for the community; that should be maintained and made accessible for amenity and interpretation. A heritage steering group was established for the project, led by the FCC Heritage Officer Christine Baker; Fionnuala May, County and Grade 1 Conservation Architect; and Helena Bergin, FCC Architectural Conservation Officer who with the support of grant schemes such as the Community Monuments Fund (CMF), have procured and co-ordinated an invaluable suite of reports and conservation-led works to the structures.

With access an issue, in particular to Stella's Tower which had been cloaked both inside and out by significant ivy growth, the treatment and removal of unwanted vegetation was a necessary first step. Over two years the ivy was treated, then carefully removed following die-back. You can see how much was hidden by

comparing images of works before and after repairs. Consultant conservation engineer's, David Kelly Partnership (DKP), were then commissioned by FCC to procure measured building surveys and prepare conservation repair briefs for both sites – castle and church - as a twin-project – given their proximity to one another.

Detailed surveys of each structure allowed the team to map the extent of damage and to mark up the required repairs. On completion of the specification consents were sought and duly granted by The National Monuments Service. JO Hearty and Son Ltd, Heritage Contractor, were appointed in the summer of 2019. The first task on both sites was the construction of multi-storey scaffolds around the two towers (and inside in the case of Stella's Castle), to allow further detailed inspection of the elevations and to provide a safe working access for the masons and plasterers.

The use of traditional lime mortars represented a fundamental element in the repair of these buildings with detailed analysis of the existing mortars, renders and masonry informing the particular matches. This research (from Dr. Jason Bolton) suggested that the mortars used a locally produced naturally hydraulic lime, with sea shells added to the aggregate to assist carbonation. Areas of the surviving, original mortar, and fragments of original medieval render were found to be in good condition though replacement mortars, using an Otterbein, NHL 3.5 were specified where loss and failure had occurred. An area of modern blockwork infill (unrecorded work by others) to the south elevation of Stella's Castle was retained owing to its structural value, but it was decided to apply a relatively smooth lime-based render to the area, thus improving the visual appearance and providing differentiation between areas of modern intervention and historic construction. An area of collapse and associated structural cracking, also recorded to the southern elevation, required specific attention. Here a bespoke stainless steel strut and tie was designed and fabricated for insertion at first floor level, bolted to each side of the wall breach and mortared tight to the unsupported remains of the second floor beam. At each floor landing, off the spiral staircase, a static guardrail was inserted to offer protection for maintenance access, while avoiding impediment to inspection. Unguided public access is not currently envisaged and as such the guardrail remains simple and reversible. Prior to works, access to the interior of the castle was via a small breach in the west elevation. This was subsequently blocked up upon rediscovery of the original ground floor entrance. Following removal of areas of collapsed masonry, the opening was reinstated and a new and secure galvanised steel gate inserted.

The history of decay in many Irish tower houses, as in Portrane, started with the collapse of the roof and upper floor timbers. As the effects of weather and vegetation took their toll, assisted by occasional masonry collapse, the vaulted first floor lost its integrity and partially failed, strewing masonry on the ground floor beneath. As part of the conservation works at Stella's Castle, collapsed masonry elements, to include those to the skyward surface of the vaulted floor were gathered and stored externally in gabions. The exposed crown of the vault and its broken edges presented a particular challenge with regards to consolidation and weathering against elements. Here the design team seized the opportunity to employ an innovative, conservation solution – soft-capping. A site specific specification was developed by DKP for Stella's Tower, whereby locally harvested sods were pinned into a layer of applied puddle clay. The installation is designed as a low impact and fully reversible grassed 'roof', providing natural protection to the otherwise exposed fabric of the ruin.

Soft capping to exposed vaulted floor.

At St Catherine's Church, the work was less complex though every bit important. As well as addressing localised open joints and the application of a lime-based flaunching to exposed wall tops, the main focus was the repair of the crenelated parapet to the vaulted tower. The use of the 'triple step' to parapet merlons is historically unique to Ireland, and here the repair and consolidation of this detail provided the most obvious heritage gain. The earth and vegetation that had cloaked the tower roof, out of sight from below, was also completely removed. This revealed a surprisingly intact and fully functional, stepped stone parapet drain with four rainwater outlets and stone shuts – now newly re-employed!

Brian O'Connor

Fingal County Council – Architects Department

Cloonradoon Brick Kilns

In 2020 archaeologists discovered a brickmaking site during investigative works for the construction of the N5 bypass at Strokestown, Co. Roscommon. Site director (Archaeological Management Solutions), Lydia Cagney, excavated the brick production site in the townland of Cloonradoon adjacent to the Strokestown Park Demesne. The bases of five brick clamp kilns were identified. These have all have been carefully recorded, with most focus on one kiln due to its better state of preservation. This kiln base was a rectilinear structure about 32 feet by 12 feet in plan, built on a clay surface. It comprised twelve parallel brick benches, separating eleven fuel channels containing discarded fragments of brick and black charcoal-rich soil. The brick in the benches was well preserved, handmade, of rough but consistent quality, yellowish-red in colour and generally well-fired. A clay hole situated to the east of the site was the likely source of raw material for the brickmaking process.

I visited the site in September 2020 to meet the archaeologists and see the kiln structures before the excavations were filled. On that visit we discovered that the bricks found in the base of the kiln were an exact match for the brick lining the south-facing eighteenth-century wall in Strokestown Park walled garden, matching perfectly in dimension, colour and quality. Correspondence in the Packenham-Mahon Papers (National Library of Ireland) mentions a brick wall here in 1788 and work ongoing to various hot houses and fruit houses in the garden in 1789. It seems very likely that this same brick was used as a lining material in other structures and for vaulting in estate buildings. As far as I can determine no evidence of the brickmaking site appears in estate records so, despite its substantial size, this is a new discovery.

While there is plenty of documentary evidence of this sort of estate brickmaking, few sites like this have actually been excavated. One similar site was discovered at Abbotstown, Co. Dublin, in 2013. Here excavations associated with the National Sports Campus revealed the base of a brick kiln on the grounds containing brick that similarly was an exact match for the red brick in the walled garden. [Coughlan, Sheephill, Dublin, 2013] ‘

Excavated clamp kiln base, Cloonradoon.

Brick-lined walls in gardens, like Strokestown, can be seen all over Ireland and are interesting for several reasons. Firstly, they indicate that brick could be, and was, produced locally all over the country. They also illustrate that knowledge of brick's importance for heat retention, as well as fruit propagation, was well understood by our gardening ancestors. Also, in many instances, the use of brick linings in gardens mirrors the use of brick as a lining material to stone walls in the main buildings.

In Ireland brick in walled gardens tends to be limited to where its benefits are most effective. The orientation of garden walls in this regard was closely studied. John Lawrence, writing in the journal, Gardening Improv'd, in 1719, believed that garden walls should not directly face the four cardinal points but between them, facing south-east, south-west, north-east and north-west. The first two were considered good for best fruit, the latter for plums, cherries and baking pears. He recommended brick as the most handsome material for garden walls and the most convenient for nailing. Stephen Switzer, writing in The Practical Kitchen Gardiner, in 1727, noted that south-facing walls had previously been considered the best for fruit, but that experience had not confirmed it. He recommended that south walls 'declining about 20 degrees to the east' were best, because he considered the morning air to be purer, and because in the morning the sun shone 'oftener and stronger than in the Afternoon'. At Strokestown only the south-facing wall is brick-lined and it is interesting that, in orientation, it follows Switzer's recommendation in 'declining about 20 degrees to the east' making the garden enclosure an uneven shape and not on axis with the house and wings which are laid out on a true east west axis.

The report by Archaeological Management Solutions on behalf of Transport Initiative Ireland and Roscommon County Council about the excavations at Cloonradoon will be published later this year. [Cagney, N5 Ballaghaderreen to Scramoge Road Project Stage 3, Post-Excavation Report: Cloonradoon 1, 2022].

A Gazetteer of Irish Brickmaking by Susan Roundtree is due for publication by Wordwell Books later this year.

If BLFI members or friends have information to share on this, or any other brick-related topic, or have any comments, they would be very welcome.

Susan Roundtree [susan.roundtree53@gmail.com]

Matching brick in Strokestown Park Walled Garden.

'Repair of Traditional Walls' Workshop, Shankill Castle

The BLFI and SPAB Ireland joined forces, with support from the Heritage Council to roll out the much anticipated workshop on the 'Repair of Traditional Walls' at Paulstown, Kilkenny on 4th September 2021. The workshop, which was hosted in the stableyards and walled gardens of Shankhill Castle focused on the use of Hot-mixed Lime and Earth mortars, allowing the 50 participants the opportunity to gain both theoretical and practical hands-on experience under expert guidance. The event had initially been programmed for May of 2020 but had been postponed due to the Covid-19 pandemic. As such, Shankhill represented our first in-person event since the workshop at Drimnagh Castle in October of 2019. With the welfare and safety of our members and demonstrators in mind, the outdoor workshop was organised with attendees placed in socially distanced groups rotating between designated stations.

The morning session included talks from Pat Hickey who used the structures of the 19th century walled gardens to discuss the importance of site survey and condition assessment, providing valuable insight into the identification of mortar types and aggregates. The extensive range of rubble outbuildings, walls, and archways at Shankhill offered numerous case studies for Lisa Edden, who considered structural challenges in the face of aging materials as well as appropriate structural repairs. A trio of experts, in the form of Ivor McElveen, Henry Thompson and Martin Codd provided hands-on guidance in relation to wall preparation and the raking out of joints, with attendees given the opportunity to don safety googles and take to a section of boundary wall using a lump hammer and chisel. Eoin Madigan and Tom Pollard set up in the byre where they shared a wealth of knowledge on hot lime, hybrid and earth mortars (generously giving up their lunch hour to offer further insight to those who simply couldn't get enough!).

Wall preparation with Ivor McElveen, Henry Thompson and Martin Codd .

'Repair of Traditional Walls' Workshop, Shankill Castle

Tom Pollard demonstrating the properties of a good hybrid mix.

Paddy Byrne kicked off the afternoon proceedings with a truly informative analysis on mortar sampling and testing where he demonstrated the absolute importance of specifying the correct mix for the correct situation. This was followed by a demonstration of the lime cycle by Ed Byrne who had fired up his mobile kiln for the day. We were then back to Ivor McElveen, Henry Thompson and Martin Codd, where attendees had the opportunity to place a hybrid mortar and point up the section of walls which had been raked out and prepped during the morning session. Damien Condon and Tommy Bolger represented the plastering fraternity with sample panels of harling and plaster coats and discussion on technique and approaches as well as the advantages of applying lime-based weather coatings to traditional masonry construction. Shane Nolan shared the benefit of his experience in heritage construction with a presentation on the curing and protection of lime, where he was joined by Ivor McElveen, Aoife Murphy and Eoin Madigan. The day drew to a close with an online forum on hot-mixed lime mortars, coordinated by Lisa Edden and moderated by Ivor McElveen. This included a panel of delegates from the day as well as Nigel Copsey who had dialled in from Canada.

Thanks must be extended to the organising committee without whose generous time and energy the event would not have taken place, to include Lisa Edden, Triona Byrne, Aoife Murphy, Oiseen Kelly, Eszter Nadas and Elaine Byrne. Thanks must also be extended to the team at Shankhill Castle.

John Beattie

BLFI Board Member

Participants raking out section of wall ahead of pointing.

Lisa Edden putting us all to shame….

Indigenous Pozzolan Experimentation

During lockdown in 2020 I conducted numerous hot mix mortar trials using various additives such as crushed brick, crushed limestone, hairs and fibres, indigenous basalt and burnt culm dust.

The following report is a follow up to last year's article I wrote for the BLFI newsletter about my mortar experiments during the first lockdown in March 2020.

Burnt culm dust to recap is comprised of fine anthracite particles from local and now ceased coal mining activity. Early evidence for the use of culm can be identified as far back as the medieval period. Up until quite recently it was mixed 1:7 with local yellow clay into small units that, once dry, were used as fuel in counties Tipperary, Carlow and Kilkenny. Indeed, it is known that large amounts of culm had been exported to the UK, at a time, for industrial fuel use. Culm and clay, when mixed are called "Culm Balls" or "Culm Bombs" and when burnt they create intense heat which vitrifies the clay content just like in brick production. The burnt "Culm Balls" or "Culm Bombs hold their original form, though they crush and powder with great ease unlike historic bricks.

Unburnt culm bomb.

Basalt being part of our geology was another avenue to pursue. On examining basalt it compromises of 66% silica and alumina. It is available crushed here in Ireland and is very affordable. Culm took some hunting down, but that in itself proved very valuable by way of the people I met and their advice on mixing and use. Once sourced it proves to be abundant.

Crushed basalt.

Why experiment with these archaic or niche additives you may ask - to me there are so many answers but let me first set out my stall.

The HMM or Hot Mixed Mortars initiative which I'm sure most folk are aware of has been a big inspiration to me. I was introduced to hot lime mortar nearly twenty years ago during my training here in Ireland. Over the years having joined the BLFI and through my travels to West Dean in England the subject has always been open to debate, with many workshops featuring a hot mixed mortar. Driven by enthusiastic practitioners and specifiers with an abundance of reading material to access, it has been easy to join this conversation and learn from driven and dedicated custodians of our built heritage here in Ireland and in the UK. I trust these mortars, I use them, and have years of practice with hot lime mixes to look back over and observe. Quite simply they work! I can fine tune a mortar to suit a locality or region and be assured of my drive to carry out a like-for-like repair that will perform. That in essence is what my job is, conserving to the best of my abilities.

Two projects which I had been asked to view with an interest to repair, had me sample and analyse the original mortars and decide on a plan of action. One structure is local to me, in Kilkenny and the other in Donegal. The Kilkenny project informed the trials using burnt and crushed culm and the Donegal project would see me carry out trials using basalt.

Through a meeting and conversation with Bill Revie, a construction materials consultant and historic mortars oracle to many a practitioner, I took him up on an offer to analyse my materials of choice. One year later I was delighted to receive his conclusions. To read, and then understand a mortar assessment takes patience and one often resorts to 'google' for clarity regarding obscure elements such as Friedels salt. Despite this, I find the wormhole of new learning, particularly in regard to mortar analysis, invaluable.

With a soft mortar such as a hot lime we look to create a mortar that will have sufficient porosity to cope with moisture movement, air entrainment to aid carbonation, structural integrity and with the ability to cure from core to bedding mortar surface over time.

Time… the one hurdle to a hot lime being the go-to repair mortar. NHL's take away the time worry factor and help expediate works due to the percentages of hardeners within, via clay content added to limestone during kiln production. This results in effective alumina and silica elements which create a fast setting mortar with a

lower lime content thus creating a less workable or flexible mortar than the historic lime mortars I often observe when working on a 15th or 16th century structure. A good pozzolana with a well-designed hot lime will do the same for the set while utilising a far higher lime content that gives flexibility and the ability to capture more Co2 naturally through carbonation . Furthermore, the use of an effective pozzolan or admixture will increase the strength of the mortar produced.

Kilbarron Castle, Co Donegal

In case of the Donegal and Kilkenny projects, I designed both mortars for their strength so the addition of a pozzolan was crucial.

The ruins of Kilbarron Castle (12th C) in south Donegal, rest on a cliff edge without any protection from wind and sea spray. What remains is an inspiration and a lesson in expert stonemasonry with the use of correct bonding of stone in tandem with a hardy and rugged lime mortar full of shell and rounded aggregates of varied dimensioned from the nearby shore, most probably hydrated with salt water. I needed the inherent tack of a hot mix to grab the masonry surfaces. I needed the inherent fatness of a hot lime to fill the voids. It need to have the skin through initial drying and carbonation to cope with the elements with the structure to hold a large content of aggregates, all while looking and performing like the original mortar. A plain hot mix could do all this, but I needed to see a set before moving on home to Tipperary, the ease of just popping by for a bit of aftercare in Donegal was not available.

Gravity defying ruins of Kilbarron Castle, Co Donegal.

This is where basalt as a pozzolan came into play. As mentioned basalt can contain as much 66% silica and alumina but if you want to add the calcium Ca0 within the basalt sample then 78.58% of basalt would have a beneficial effect on the set of a pure lime mortar. Eureka!… but I would have to be sure and with mortar analysis I could be that bit more confident. Confidence is key, though most of us hot mix supporters spend far too much time with mixes gestating in our minds I find.

The basalt results were very positive thankfully. Samples were made and observed at six month and twelve month stages. Compressive strength improved from 2.1 Mpa by 11% over six months to 3.1 Mpa, an increase of 19%,at twelve months. Porosity will involve thin sections to be created and analysed yet, but as tests prove so far I have my set and with my test mortars (in varying structures facing varying directions) now nearing two years of application issues such as shrinkage, leaching and ability to shed water are not in any way a concern. Basalt has a great effect and is of course an indigenous geological admixture.

The mix above was 1:3 pure lime to selected sand and aggregates and 20% addition of basalt fines.

Ballybur Tower House, Co Kilkenny

Not far from Mullinahone is the Kilkenny border and just beyond is Ballybur. Mullinahone was a village of great culm production, amongst many other historic accolades. Locals would travel to Mullinahone to buy pre-mixed culm which was trod on and mixed underfoot by horses.

Like most tower houses Ballybur is now in a barren agricultural landscape devoid of the forestry that would have surrounded her when completed in 1541. Today it remains habitable but is in need of a lot of work to the bedding mortars, having lost her roughcast shelter coat to time. Luckily some fragmentary remains displaying a pinkish hue had me convinced burnt culm had a hand in the materials of the construction. An 85 year old neighbour of mine attests to seeing it added to mortar in his childhood and as knowledge was local, shared and trusted in skills and crafts why not have the confidence in culm as an additive?

A mix with culm added is a wonder to use, along with the tack and workability of a hot mix the moisture management of culm is hard

to explain in words. It seems to shed excess moisture and retain what creates a sufficient mortar by choice. Daft I know yet perhaps the organic nature of the culm increases the workability of the mortar through a reduction of water tension. Workability suggests aeration and the possibility of decent pore structure. The culm samples at six months had reached a compressive strength of 2.5 Mpa, a gain of 32%, and by twelve months 3.6Mpa, a gain of 38%. Again we have a set, and an impressive set at that!

The mix above was a 1:3 pure lime with a 20% addition of burnt culm.

It is hard to gain traction when discussing hot mix mortars but there are many a reason to "feel the fear and do it anyway". As practitioners we have this forum, we are a small community working with a hot lime mortar and looking to expand and influence.

The broader our knowledge through implementing like-for-like and well researched mortars, the more our forum can inform, perfect and perpetuate what we once knew and strive to rediscover. It is a valid and interesting field without the worry of a reversal in ethics and philosophy that will lead to structural or aesthetic failures.

We need to think of costs in terms of carbon emissions, product and transportation. We can capture more carbon with a pure lime, we can cut transport costs and emissions by embracing home produced lime in conjunction with suitable additives and patient application. We can enjoy experimenting and perfecting together. Please feel free to contact me if you would like the full laboratory report on trials so far at tphandcrafts@hotmail.com

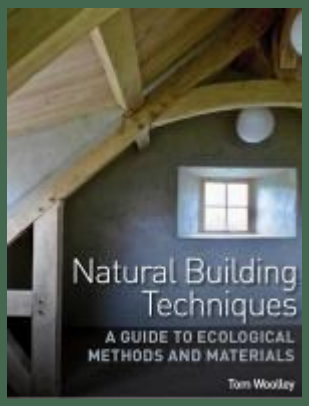
Tom Pollard

Heritage Contractor

Ballybur Tower House, Co Kilkenny.

Forthcoming publications:

- A Gazetteer of Irish Brickmaking by Susan Roundtree is due for publication by Wordwell Books later this year.
- Natural Building Techniques: A Guide to Ecological Methods & Materials by Tom Woolley is due for publication by The Crowood Press late his year.



Richard Donelan: My journey to Historic Building Conservation

I have only ever lived in old houses but until my early twenties I probably never fully appreciated either their fragility, the complexity of their construction or the associated repair and maintenance that goes into their conservation and preservation. A friend "liking" a Facebook post one autumnal afternoon first focused my attention on the Irish Georgian Society (IGS). While I had heard of the IGS growing up, I had never seen them as a group that would be relevant to me despite the fact that I had only ever lived in old houses and mostly protected structures of the Georgian era at that. More specifically, what really grabbed my attention about that post was the invitation attached to a series of lectures on the subject of the care of historic homes - and so I decided to find out more. I discovered that the IGS had been *"founded in 1958 by the Hon. Desmond Guinness and Mariga Guinness for the protection of buildings of architectural merit in Ireland" and that it organised annual events to help equip guardians of historic buildings with essential knowledge, key to helping them to understand how best to care for their old buildings, (https://www.igs.ie/about/our-profile). It further transpired that the IGS in conjunction with the local authority (indeed also my local authority), dlrcoco.ie, happened to be commencing one of those courses the following week at the Royal St. George Yacht Club, Dún Laoghaire Harbour, Co. Dublin. I have to admit that I don't think that I ever signed up to something so quickly for reasons that I would later set out in more detail in conversation with The Irish Times: https://www.irishtimes.com/life-and-style/homes-and-property/dublin-city-council-and-georgiansociety-s-conservation-talks-1.2958193

I should probably caveat at this point, that while I had always been interested in engineering and DIY, that I had never formally studied or worked in any aspect of conservation or construction. That being said, the IGS series of events was so well produced (with talks enthusiastically delivered by some of Ireland's most knowledgeable conservation practitioners of the day) that I became totally hooked on all things historic building conservation related and especially on the subject of building limes! It made perfect sense to me that we should all be choosing appropriate and breathable repair and decorative materials for our precious buildings and I became very eager to find out more about this fascinating aspect of the science of historic building materials. A visit to the Traditional Lime Company in Co. Carlow soon followed wherein I got a taste of the more practical aspects of working with lime via a short "working with lime" introductory course facilitated by proprietor Edward (Ed) Byrne. Ed's workshop and teaching area was like an Aladdin's cave, packed full of salvaged antiquities, each piece with a story to tell. Those fragments had mostly been saved by Ed from historic Irish buildings that had been previously sentenced to death by demolition to make way for the "new and improved" by the various architects of Ireland's building and infrastructural modernisation in the latter half of the last century.

Troubled by learning about all that destruction, often of significant aspects of our built heritage, I also became acutely aware of the concurrent loss of traditional building skills in Ireland over the same period. It further transpired, as Ed would explain, that Ireland was not alone in this regard but that all hope was not lost. An educational project had been created in the UK by experts that shared similar concerns to Ed and I, and who were eager to preserve the valuable knowledge that was otherwise in danger of being lost to threats like privatisation and modernisation in the name of "progress". Some further background to that UK based training project: Throughout the 1980s, driven by Thatcherite policies, much of the UK had started to privatise and outsource and that included the outsourcing of labour functions of institutions such as English Heritage which had traditionally engaged and trained direct labour to maintain a collection of some of England's most significant historic places - perhaps ironically - *"inspired by a determination to put England's heritage ahead of private interest" (https://www.english-heritage.org.uk/about-us/our-history/). A hugely valuable aspect of English Heritage's recruitment, training and retention of labour policies was that it could set and maintain high standards of conservation skills and practices by delivering formal training and supervision in the area of historic building conservation and repair at a "Building Conservation Training Centre"

Richard at West Dean College.

that it ran at Fort Brockhurst, just across the water from Portsmouth Harbour on the South Coast of England. When it emerged that this training centre was eventually to fall victim to this plague of privatisation, the risk emerged that the generational knowledge that the training centre had helped to amass and share over many years would also become lost with its closure.

Recognising that this knowledge was too valuable to lose, Colin Burns, a Master Mason, and former English Heritage Senior Training Officer at Fort Brockhurst; alongside John Ashurst, former Principal Architect with English Heritage, and former Professor of Building Conservation at Bournemouth University as well as being joint author of the seminal book series 'Practical Building Conservation', created and delivered a Diploma course at West Dean College, Chichester, West Sussex, UK. West Dean would ensure that such vital skills and knowledge could be preserved after the closure of the English Heritage training facility at Fort Brockhurst (https://cool.culturalheritage.org/byform/mailing-lists/cdl/2001/0168.html) The teaching facilities now available at West Dean include class rooms for academic learning in addition to a unique, purpose-built conservation training area (known as the ruinette) best described as "a simulation ruin that course delegates can practice conservation techniques on" so that the course tutors (drawn from a pool of highly experienced and practically competent professional practitioners) can provide a combination of both academic and practical (hands on) learning to support the delivery of what became the Professional Development Diploma in Historic Building Conservation and Repair. (https://www.westdean.org.uk/about/media/school-of-conservation/press-release-conservationand-repair-of-masonry-ruins-cours).

The course itself is recognised by Historic England (formerly English Heritage) and by The Royal Institute of British Architects (RIBA) who have agreed that the Professional Development Diploma course qualifies as a Conservation Training Course for entry on to the RIBA Conservation register at CR level. I always feel most fortunate and immensely proud to have studied at West Dean and to have been one of the first Irish students awarded the prestigious Professional Development Diploma in Historic Building Conservation and Repair. This was by no means an easy accomplishment not least of all because the course involved 10 separate and very intensive residential short courses that I completed within a year, where most candidates will typically spread those out over the best part of a decade. I was also very grateful to receive a discount on course fees as a member of Building Limes Forum Ireland! The courses themselves typically involved long days of intense (yet thoroughly enjoyable) learning that included a healthy mix of academic teaching and practical skills training culminating in the delivery of a written thesis. That thesis was required to demonstrate that the student had not just taken on the required learning but that they were also capable of practically applying that learning in real world contexts. I was also thrilled and extremely privileged to have been handed my Diploma by legendary newsman Sir Trevor McDonald OBE! While John Ashurst had sadly passed away before I arrived at West Dean, I was extremely fortunate to have been exposed to the knowledge and learning's of Colin Burns (sadly also since departed) who summed up the value of the Diploma best: "the BCM courses are all about demonstrating the right way of doing things so that participants could return to whence they came with a clearer understanding of the standards that they should be reasonably able to expect when dealing with trained professionals"! I remember my time at West Dean with great fondness, and the knowledge that I gained there has been invaluable in helping me to have a much deeper appreciation of our historic housing stock and a greater admiration of those who dedicate their lives to its conservation and preservation. Many thanks specifically to the BLFI for their support along that journey and I look forward to re-joining events in person in the future as we begin to put the wretched pandemic times behind us!

Richard Donelan

Richard (left) at West Dean College with fellow BLFI member Damien Conden (right).

Dates of your Diary

AGM, Irish Architectural Archive
19th May 2022

Belfast Conference
2nd – 4th September 2022

Training & Education

- Madigan Traditional Masonry, Co Clare ph:0857679753 email:madigantraditionalmasonry @gmail.com
- Stoneware Studios Ltd., Co. Cork, ph:024 90117 · email:mail@stonewarestudios.com Visit www.stonewarestudios.com/
- The Lime Store, Dublin 12 ph:01 450 8624 email:info@thelimestore.ie Visit www.thelimestore.ie/
- Traditional Lime Company, Co Carlow ph:059 9151750 email:info@traditionallime.com Visit www.traditionallime.com/

What is Building Limes Forum Ireland?

The Building Limes Forum encourages expertise and understanding in the use of building limes. It aims to achieve this goal by:

- exchanging, collating and disseminating information, through publication of a regular journal and by holding meetings and conferences;
- encouraging practical research and development through field studies, trials, monitoring and analysis;
- encouraging development of appropriate industrial and craft skills and techniques;
- educating building professionals, builders, conservators, craftsmen and women, and property owners in the appropriate use of lime in building through demonstrations, publications and courses;
- developing contacts with institutions and individuals outside the forum and in other countries that have relevant experience or knowledge.

Communicating With Your Forum

If you would like to get involved please contact us by post or by email on **info@blfi.net**

The bfli are also now on twitter - follow us @BLF_ie

Membership

Membership of the Building Limes Forum offers:

- the opportunity to participate in conferences, courses, workshops, demonstrations and visits organised by the Forum
- an informal network of contacts that is prepared to share information and to discuss matters of general interest
- annual bursary to assist with training and education

For a membership form go to:
www.buildinglimesforumireland.com