Earth: A Cultural Landscape Project in Scotland

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SUMMARY

The mudwall heritage in the Carse of Gowrie region of Scotland is threatened by poor understanding and recognition, low cultural valuing, a small skills capacity, little guidance to building owners and no contemporary earth building. A series of coordinated intervention tackled these issues at a regional community scale through a 4-year Landscape Partnership.

Activities included building repairs, skills training, documentation, oral heritage, school projects, advice to home owners, a landscape art project, a week-long international festival and a new building.

The key achievement was raising the cultural value of earth building in the minds of the local community – when all the individual actions fade, this is what will sustain the area’s earth buildings in the long term. This success in enhancing the public perception of earthen heritage was achieved by delivering a diverse range of interventions at a cultural landscape scale that engaged with local people over an extended period.

INTRODUCTION

The Carse of Gowrie is an area of low-lying, flat ground on the north side of the Tay River between the cities of Perth and Dundee, approximately 200km². In the 18th and 19th centuries C.E., agricultural improvements stimulated construction at a time before railways gave easy access to industrial building materials and vernacular traditions still flourished.

During this period the only local material that was abundantly available was clay earth. Clay was used in diverse ways; as plasters and floors, as wattle and daub walling, and extensively as clay mortar to stone masonry, but the main technique was mudwall, a dense mix of clay and straw, known elsewhere as cob.

This tradition was described in the 1790’s: ‘As there is no stone in the neighborhood, they [the houses] are mostly built of clay, and huddled together, without much order or regularity. Excepting gentlemen’s seats, all buildings in the Parish are of that substance, which … is reckoned the warmest and most durable of any; and there are some fabrics o it still in tolerable repair, the date of which cannot be ascertained. In forming such edifices, every man is his own mason, raising them by times, and putting on one layer as the other is condensed; and to this cause it is certainly owing that there are so few professional masons in the parish.’

Later buildings were faced with fired brick or lime render to protect against the weather and enhance their appearance, and during the early 20th century earth building ceased. By the early 21st century, there was only one old man left alive who remembered building with clay, there were scant formal records, no local earth buildings skills, no knowledge of appropriate maintenance methods. While some people knew they lived in clay buildings, it was seen as a problem - for maintenance, mortgages and insurance. The low cultural value of traditional clay buildings was at an all-time low.
1. THE RAPID SURVEY

A preliminary survey used GIS digital mapping techniques to correlate written records, interviews with local people, historic maps from 1850 and 1890, and place-name analysis with digital maps of subsoil geology (Fig. 1). This identified the likely locations for clay buildings which were then targeted for field surveys.

Fig. 1

Six types of clay-rich subsoil with particle size grading suitable for building were identified, comprising 44% of the TLP area. This methodology quickly produced significant new information on the key characteristics of the area’s clay heritage and priorities for the emerging strategy.

Before the study only 4 clay buildings were recorded, though others were thought to exist. During the study, 40 surviving mudwall properties and 65 lost buildings were identified, dating from before 1745 to 1903 (Fig. 2).

Fig. 2
This heritage is significant because of its rarity, quality and the size and diversity of the surviving examples. It is a distinct local tradition that expresses the bond between the people of the area and their natural resources through the buildings that their ancestors built and which they inhabit. But it is also vulnerable and urgent intervention was needed to safeguard it for the future.

2. **TOWARDS A CULTURAL LANDSCAPE STRATEGY**

The Rapid Survey gave the team an awareness of the complexity and vulnerability of this cultural landscape. It retained a distinct identity, with tangible and intangible heritage elements, but was being actively depleted and there was no activity to sustain it. It was clear that there were multiple, inter-related threats and an integrated strategy addressed through two strategic themes:

1. **Conserving and restoring what survives:**
   - Increasing knowledge of surviving buildings.
   - Reducing risk of loss of buildings.
   - Improving maintenance and repairs.
   - Improving guidance.
   - Documenting local knowledge.
   - Fostering knowledge transfer.

2. **Fostering a Living Tradition:**
   - Increasing cultural and financial value attached to mudwall buildings.
   - Spreading skills locally.
   - Improving intellectual and local access.
   - Promoting mudwall heritage to visitors and outside the area.

17 specific individual actions were proposed, most of which were realised over the following 3 years.

3. **IMPROVING THE RECORD**

Existing records of the mudwall heritage were partial, unsystematic and difficult to access. There was no electronic or photographic record.

This is a problem for 4 reasons:

1. **Extent.**
   The extent of the tradition is one of its principal features. In the Rapid Survey, 33 inhabited clay buildings were recorded that were not previously known and the authors believed a significant number of further sites could be identified through further investigation. During the survey, it was readily apparent that there was local knowledge and photographic records held by local people dating back over 100 years.

2. **Representativeness.**
   There were measured and photographic records of only two sites, which are typical in their construction, but unusual in their typology. There is no drawn or photographic record of the main concentration of buildings in Errol.
3. Quality.
There was no drawn or photographic record of the best quality and largest single building, the listed Horn Farmhouse. There was no record of oral history. The relatively recent demise of the tradition, and recent loss of buildings, suggested that a record of oral history could prove effective.

4. Accessibility.
The existing records were inaccessible, especially to local people within the TLP area. Better access would enhance understanding, appreciation and the ability of local people to sustain their heritage.

Further identification and mapping of sites by local volunteers happened to a small extent, but activities that focused on people proved more popular. The participation of schoolchildren in the oral history project was particularly effective as a learning outcome and in engaging elderly relatives in a cross-generational exchange. In fact there were several school projects where engagement with children through curriculum subjects (history, geography, art) proved a very effective way of engaging parents and extended families.

The project aims to establish a local archive, located at Errol Library or Community Centre, which will be an ongoing resource to the local community and for future school projects.

4. SAFEGUARDING THE BUILDINGS

The surviving buildings divided into two distinct types – a small number of prominent isolated rural buildings that had become redundant for their original use and were actively decaying, despite being protected by Listed status, and a larger number of everyday homes in more urban areas, which were maintained through active use, but lacked protection (Fig. 3).

With limited funding, a decision had to be made about which buildings to support and, of course, the team attempted to help both types.

4.1 Sustaining Buildings in Use

Of the 40 standing buildings identified in the Rapid Survey, 37 are currently in use, predominantly as the well-loved homes of owner-occupiers. The characteristic strengths of these mudwall homes are that they are cared for – kept warm and dry, with defects
attended to when they develop. The owners generally know about their history and recognise the distinctiveness of their construction. These buildings represent the living tradition, safeguarded often by people with both a financial and emotional commitment to the buildings.

There are two characteristic vulnerabilities of these mudwall homes – inappropriate alterations and misconceptions among financial bodies that make it difficult to obtain insurance and mortgages.

None of the common homes are listed, and the cost of appropriate traditional repairs and lack of guidance were significant barriers to good maintenance. Cement renders have often been applied as a modern external finish, promoting decay and concealing defects. It was clear that these had been applied with the intention of protecting the mudwall on the basis of advice from local builders. The project team offered individual owners advice on the condition of their buildings and how to maintain them, which raised awareness and created a desire among owners to remove cement renders and replace them with lime. While the TLP provided some grant assistance for repairs, this was insufficient to make new lime renders affordable to most owners. So while awareness has been raised, promoting appropriate repairs, longer term financial support is needed to deal with the backlog of bad practice.

A less prevalent problem, but one that was reported by several owners and some surveyors, is difficulty in obtaining mortgages and insurance because of a lack of understanding about mudwall construction among commercial providers.

One example from a recent Home Report by a firm of surveyors stated ‘the main walls are of clay construction. A large number of lending institutions are not prepared to grant mortgage facilities on this type of property and some will only grant mortgage facilities with a satisfactory Engineer’s Report. Large areas of cracked and bossed roughcast were noted.’ Their valuation ‘figure reflects the fact that the property is of non traditional construction and some lending institutions are not prepared to grant mortgage facilities on this type of property.’

Another homeowner reported that he could not obtain insurance for a property when it was described as being of clay construction, but could when the agent described it as wattle and daub.

Most have ultimately resolved the problems, and there was little ability to improve the situation through the project. However, subsequently EBUKI is looking to address this issue at a national level with guidance and dialogue with financial institutions.

### 4.2 Repairing Key Buildings

The Rapid Survey identified four sites at clear risk. It is significant that most are:

- redundant buildings that have been disused for decades
- commercial rather than residential property
- cement rendered
- ‘protected’ by Listed status.

These buildings are significant because their earth construction is not concealed by modern finishes and domestic use. This is why they have been recorded and protected.
However this has not protected them from the natural processes of decay that happen under a regime of neglect and disuse.

While these buildings demonstrate a resilience that is perhaps surprising, there is a risk of sudden loss, through two key mechanisms:

- Defective roofs direct rainwater onto wallheads, where moisture levels rise behind impermeable cement render, leading to collapse of the clay wall when it reaches a plastic state (Fig. 4).

- Decay of load-bearing timber elements causing loss of support or unusual thrust on a material that has inherently low tensile strength.

Both of these mechanisms are driven by lack of basic maintenance and cause defects that are accelerated and concealed by cement renders, potentially causing sudden and unexpected collapse. There were three key buildings, each of which presented different opportunities for intervention.

The Horn Farmhouse is a large 2-storey building, part of a large and redundant farm complex, which had suffered collapse of a section of wall. The TLP provided a small grant to enable the repair of the building, safeguarding it from immediate danger (Fig. 5).

Redundancy is a key threat to earth heritage and, though it can be very difficult, establishing a viable new use is the only way of sustaining heritage in the long term. However, such plans often require professional expertise not normally affordable to building owners.

The owner of the Horn has previously attempted to redevelop the site, but was refused permission as the proposals were inappropriate. The TPL funded a feasibility study of potential future uses of the farm which identified a viable redevelopment use as a rural visitor attraction for families, safeguarding and promoting the historic site, while creating new economic activity.
The Cottown Schoolhouse has been repeatedly damaged by winter flooding, caused by the effect of modern developments on local surface drainage. Repairs to make good the damage were undertaken in 2015 and the building was made accessible to the public, but it flooded again the next winter. There are plans to improve the drainage, which would allow the building to be brought back into use, but such major works were outside the financial scope of the project.

The Flatfield Barn was in an unstable and dangerous condition, with sections of wall in danger of collapse, but had a very engaged and supportive owner. The TLP provided a small grant to enable a substantial programme of repairs, and this was enhanced by using it as a place for skills training, which significantly increased the amount of repair that were achieved.

5. BUILDING SKILLS & CAPACITY

Alongside the physical heritage of surviving buildings, stand the skills to build enduring, elegant and comfortable structures from earth and knowledge needed to sustain them for the future. These are the intangible aspects of the areas mudwall heritage.

It is clear from the historic description of Errol quoted earlier, that traditionally the skill of building mudwall was widely held in this very specific community where mudwall was the main form of construction. Over several centuries, a high level of skill in sourcing materials and constructing buildings developed in proximity to a local clay mineral resource.

These practical skills and knowledge died out across Scotland during the 20th century C.E., following the end of traditional mudwall construction. Since the 1980’s a series of research, restoration and new build projects, supported by Historic Scotland and the National Trust for Scotland, have led to the revival of these practical skills, providing the ability to repair and conserve the surviving heritage, as well as to build new buildings in traditional methods.

The technical quality of these skills is high, supported by technical materials research and a wider conservation capacity, and several phases of repairs at Cottown Schoolhouse have provided a key forum for technical development. The skills quality is recognised in
the Award of National Craftsperson of the year in 2009 to the contractors for the restoration of the mudwall Schoolhouse at Logie in Angus.

However, the demand for these skills has been small, with around one mudwall project in Scotland each year and capacity of this skills base is in one specialist company. This is not a sustainable resource.

The vast majority of repairs and alterations to the surviving mudwall buildings have been undertaken by companies without specialist training in mudwall materials. While the standard of the works has generally been good, some of the materials and techniques used in these works, notably the application of cement renders, have been inappropriate and detrimental.

The TLP provided the opportunity for targeted training to increase the national skills base, while improving the quality of local repairs and maintenance.

Historic Scotland provided funding for skills training and the Flatfield, Horn and Cottown repairs became the basis for the training for two new experienced craftspeople in earth building repair skills through on-site mentoring by an experienced mudmason. This is a key outcome in expanding the skills base in earth building repair and making it more resilient in the long-term. The two trainers were chosen because they are employed by national organisations that will safeguard and disseminate these skills, despite low commercial demand.

The importance of building owners as guardians of individual buildings was recognised by the team in working to develop their understanding of, and ability to undertake, routine maintenance. The owners of Flatfield already undertook minor repairs themselves, and the repairs offered a good opportunity to target training to increase their building skills.

6. FOSTERING CULTURAL VALUE

Understanding and appreciation of the areas distinctive clay building heritage was poor. There was a good technical understanding among a tiny number of specialist conservation professionals, but this was not well informed by the knowledge of local people and it was disseminated through professional forums that are inaccessible to local stakeholders.

Equally, there was a good appreciation among some local people who lived in clay buildings, but this was not well informed by a good technical understanding and it was an inherited appreciation within a family, and thus vulnerable to loss.

There was no local organisation to champion the tradition, connecting owners of mudwall buildings, and no links to relevant national organisations, such as EBUKI, or other vernacular communities. There was no promotion of the mudwall tradition as part of the area’s distinctive character, either culturally or commercially.

A series of interventions were targeted.
6.1 Public Exhibitions

A public exhibition was created which travelled around the area to celebrate mudwall heritage in its national and international context, while highlighting local projects. This allowed local people to see their homes in an international context. There was also a separate exhibition at the regional Perth Museum, outside the area, to promote the heritage to a wider audience through historic artefacts and images.

6.2 School Projects

The TLP’s Education Officer and mudmason Becky Little worked with the local primary school children, 5 to 12 years old, over several years on a local history project about their distinctive built heritage. The children made an exhibition of model earth houses, a film about the local mudwall traditions and wrote a song (Fig. 6).

Delivering this teaching about local earth building as part of the schools regular history, geography, science, art and music curriculum also proved an effective way of reaching the next generation and indirectly engaging with parents and grandpare

6.3 Clayfest!

A key activity was Clayfest! - a week-long festival of earth building in May 2015. This included 60 individual events, ranging from a conference and seminars, to practical workshops in 8 different earth building techniques which provided 208 people/days of training (Fig. 7).

This event was specifically organised to be an international event, attracting speakers and participants from more than 18 countries, but vested in the local community. This achieved the twin aims of exposing the local heritage to an international audience, and showing the local people that their buildings were valued by people from far away, as part of an international community of vernacular cultures.
Clayfest! made a really significant improvement in cultural valuing, with local people actively engaged. At the end of the week, there was an active campaign on the local community facebook page not to demolish the temporary walls that the workshops had built.

Another important aspect of Clayfest was that it appealed to a wide audience – academics and craftspeople, but also people not normally included. A group of people with autism came to one workshop and profoundly engaged with the tactile quality of creating forms in clay. There was also outreach to older people, mothers and pre-school children, made easy by holding the event at the Village Hall, which the community continued to use for their regular activities throughout the week.

There was a land art project, which interpreted the historic landscape around Errol through a series of installations made collaboratively by members of the community, a poet, an archaeologist and an installation artist (Fig. 8). This is an ongoing process documenting how the installations change through time in digital images and sound recordings on a website.

See [http://www.theredfield.co.uk/un-melting](http://www.theredfield.co.uk/un-melting)
Diverse means were used to disseminate the activities:

- 400,000 people viewed a television news article on Clayfest
- https://www.youtube.com/watch?v=VIGBKNBFAz0
- Film recorded for broadcast by UK permaculture organisation,
  https://www.youtube.com/watch?v=FhX8BTwkiD0&feature=player_embedded#t=0
- Film recorded for broadcast by a Polish environmental organisation.
- Estimated 134,000 people saw 3 articles in the local newspaper Dundee Courier.
- 7,400 people saw EBUK tweets on Clayfest.
- 15,297 people saw tweets by Historic Scotland on Clayfest.
- 55,000 people viewed EBUK’s Facebook posts on Clayfest and there were 1,245 likes
- 4,338 people viewed Historic Scotland’s Facebook posts on Clayfest.
- 5,394 visits to the EBUK webpages on Clayfest.
- 3,242 viewed Historic Scotland’s newsletters on Clayfest.

As an intense week of focused activity, Clayfest gave a boost to publicity and promotion for all the activities of the 4-year Landscape Project. It built off the initial year’s community engagement and provided a legacy of awareness that helped deliver the following two years work.

6.4 Exemplar New Building

The success of Clayfest created an enthusiasm among local people for a new permanent mudwall building. A small new building is being constructed in 2016 in the public park as a contemporary demonstration of traditional technique – the first new mudwall building in the area for a hundred years (Fig. 9).

![Fig. 9](image)

The shelter will have a useful community purpose and is located in a prominent public place in Errol. It will be built by Becky Little, the two trainees and community volunteers. This will be a demonstration that mudwall is a living tradition which can create modern buildings, as well as something fine from the past (Fig. 10).
CONCLUSION

The Tay Landscape Partnership proved a successful intervention to arrest the decline of a regional earth heritage.

The Rapid Survey was a very effective tool in identifying a well-targeted series of actions, which combined to deliver a comprehensive campaign of activity sustained over four years. The GIS mapping technique is now being developed as a national system by EBUKI to support other communities and the data collected will be used to lobby the insurance and mortgage industry.

The projects aims were very broad ranging, and activities that relied on a large financial or human resource could only be delivered to a limited extent because of the financial constraints of the project. However, the activities that relied on engagement with the local community were delivered to a large extent, due to the popular support that the project achieved.

The sequence of engagement, its diversity and long time period were key to this success. People would not have engaged with a simple short project. Having numerous small projects over several years allowed relationships to develop between the external earth experts and local people that were the basis for a deeper level of engagement.

The success in delivering short term improvements to individual buildings is tempered by the recognition of the scale of repairs still needed. But the project has established that viable uses can be found for redundant earth buildings and that building owners will do the right thing, if they get good guidance, because they care for and are proud of their earth heritage. The creation of the first new mudwall building in a century is an important symbol of community resilience in arresting the decline of a vanishing vernacular culture and giving it hope for a sustainable future.

Recommendations to Others Considering Cultural Landscape Projects:

1. Take several years to deliver the project, so that there is time to develop relationships with people on the ground and to create momentum between individual initiatives.
2. Work over a large area, so that success is not predicated on one building or individual and so those involved can appreciate the scale of the heritage that they held in common.

3. Connect with as many different people in as many different ways as possible. Be imaginative, try anything, but don’t predicate success on any one activity.

4. Use outside experts, but vest the project in the local community. Only local people can sustain a living culture in the long term. Our team was very clear that we were trying to conserve a living culture, not individual buildings as museum pieces. In this respect all the projects were really, at their heart, about the relationship of people with place, and only a cultural landscape project like this can address issues in this way.

5. Set the project in its local, national and international cultural context. By seeing the project in cultural landscape terms, develop a cultural approach to community intervention that is tailored to its unique character, but informed by the global debate over vernacular culture.

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NOTES

1 Statistical Account, 1791-99, Errol Parish.
2 Confidential source, Home Report from Errol area, obtained with consent from home owner.

BIOGRAPHY

Tom Morton is Director of Arc Architects, based in Fife, Scotland and an Executive of Earth Building UK & Ireland. His works includes conservation and new build earth structures, the development of materials, skills, community and culture.