

Wauchope Mausoleum, Edinburgh

Interim Roofing Repairs



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Preface

Historic Scotland Refurbishment Case Studies cover many areas of building repair and adaptation, largely concerning occupied structures and buildings in use. These generally consider the use of traditional building materials and describe how buildings can be improved, sometimes using novel techniques, without harming the character or technical performance of the building fabric. Improvements to energy efficiency, vapour permeability or reinstatement of internal details and finishes are some examples of work that is covered in this series. However, there are also examples where funding or support for works to a building or structure that is not in use is necessary to preserve its immediate future. These reactive works can be termed interim or temporary repairs, or even ‘emergency repairs’, depending on how critical the situation is, and are suitable where only modest funds are available; where the building or structure is in a fragile state; or where there is on-going discussion as to the most appropriate long term solution. Early intervention, even if of a temporary nature, is preferable to continued decay while awaiting a more comprehensive repair scheme. This case study describes works of an interim nature on a structure of some historical importance, that provides clear benefits even while the longer term future of the building remains uncertain.

With changes in local authority funding, and the increasing management of sites and facilities being operated by volunteer and community groups, it is important to establish an easily adapted methodology for the temporary repair of buildings. Such an approach might require swift action, while that action may not be ideal or long lasting. All those who are custodians of traditional and historic buildings should be encouraged to act quickly when damage occurs or is threatened, and address the root cause of the threat to the building, without compromising conventional building conservation principles. This can sometimes involve using a different range of materials than might be desirable for long term repair.

This case study is the first in the Refurbishment Case Study series that addresses ‘interim repairs’. The project involved a rapid process of assessment, consent and delivery on site, without compromising the principles of historic building conservation. It demonstrates that the statutory designation or traditional construction of a building should not be perceived as an impediment to practical building conservation, in the broadest sense of physically safeguarding the historic environment for the future.

1. Introduction

In 2013 Historic Scotland was looking at supporting small projects where the principles of emergency repair could be developed and the practicalities of delivering such work tested on site. The Wauchope mausoleum was a good site on which to follow the various steps in assessment, planning, procuring and delivering such works. Its modest size, limited range of defects and ownership by the City of Edinburgh Council helped ensure the project was successful.

The works were designed with minimum cost and maximum practical impact for safeguarding the monument. The Wauchope mausoleum was in a deteriorating state, but left unattended its condition may soon have become critical, as a combination of water ingress and invasive woody plant growth threatened the fabric of the structure and its fragile interior monuments. The work involved replacing the roof covering and removing damaging vegetation, resulting in a watertight and visibly maintained building, with an enhanced amenity value to the local community.

2. The structure

The Wauchope mausoleum dates from 1735 and is one of the last remains of Niddrie House, a substantial historic structure largely demolished in the 1950s to clear land for a new housing scheme for the city. Located on the south eastern edge of Edinburgh, the extant fabric formed an annex to the main house and is the mausoleum, or burial place, of the Wauchope family. The Wauchopes owned the house and adjacent land for many generations until 1944, when the house was sold to what was then The Corporation of Edinburgh. Ownership remains with their successor body, the City of Edinburgh Council (CEC). Further details on the history and development of the monument and the site are described in the Wauchope Mausoleum Conservation Plan, funded by and for the City of Edinburgh Council to consider issues of repair and access.

In structural terms the building is single storey, square in plan, with a three bay classical front, formed of very fine quality polished sandstone ashlar. The other external walls are of random rubble with no architectural features. Extensive cement pointing across the secondary elevations suggests they have been reworked. The internal space is vaulted with ashlar work of equally high quality to the front. Around the walls are a series of shallow rectangular recesses for memorials within the bays. Parts of the floor are finished with a modern cast concrete slab, two areas have a gravel finish, and there is an area of raised masonry with what appears to be two repositioned 17th century grave slabs. There is local anecdotal evidence of a lower basement level, filled in following the demolition of the mansion house although there is no formal record or evidence of this. The building is a Scheduled Monument.



Fig. 1. The main elevation of the Wauchope mausoleum, view from the south west

3. Condition

Following the redevelopment of the site in the 1950s it appears that the mausoleum has gone through several cycles of repair, the most recent being its adaptation as an emergency generator house for the adjacent housing estate. This function resulted in the formation of a roof over the vault consisting of concrete paving slabs and sealed with a 'painted on' single ply roofing membrane. While this may have proved effective in the early years, damage from UV light, vandalism and self-seeded vegetation growth have resulted in its degradation, leaving an ineffective and permeable roof covering. The monument structure below has become saturated, resulting in substantial visible leaching of lime binder from the walls and the vault. The cement pointing to the rubble external faces compounds the problem by trapping moisture within the walls.



Fig. 2. The condition of the roof covering prior to the 2014 works

The City of Edinburgh Planning Department had been conscious of the situation for some time, and the decision to decommission the generator and clear the redundant contents allowed a re-consideration of the building. Local residents took considerable interest in the structure, exhibiting an attachment to the monument in its incongruous location, and there was a clear local desire to take action on its condition. As part of a recent “Doors Open Day” the building was opened to the public, and many visitors were able to view the inside, now cleared of machinery.

4. Assessment

The nature of the building, its importance as a relic of the Niddrie Estate and the remains of the family within, meant that re-use in any normal way would be inappropriate. While the building at present serves no practical function to the local community, it is nevertheless a local asset, and requires maintenance and protection. It was clear that any works had to address the root of the problem – that of continuous water ingress through the defective roof covering. In this case, although the painted on waterproofing system had entirely degraded, and was largely absent, the base layer of concrete paving slabs, well cut and soundly bedded, still formed a solid base onto which a new protective layer could be applied. At the request of the City of Edinburgh Council, Historic Scotland visited the site to assist in

considering what might be possible. It was decided that a new roofing layer, formed of three layers of bituminous roofing felt, would be the most suitable material to secure the roof. Additional masonry repairs to the slabs as well as the removal of woody shrub growth would also be required.

5. Selection of a new roof covering

The previous roof design relied on a thin waterproof layer being applied to a firm concrete and cement substrate. The rubberised waterproof layer did not survive exposure to ultra violet light and possible foot traffic from intruders. There are no records that indicate what the building was originally roofed with; stone slabs or lead may have been used but later work on the roof has removed all evidence. A new lead roof on a new timber substructure would probably have been the desired ideal solution, both in terms of durability and in architectural terms. However, even if funds could have been secured, the risk of lead theft would preclude such a proposal.

Modern synthetic construction products do not generally lend themselves to the repair of historic buildings and monuments, but where subsequent interventions require repair, compatible modern materials of proven performance can be considered. There are a range of single ply and other roofing membranes available, however they are more suited to locations with firm boundaries and edges upon which to fix and fasten. It was considered that an established, multi layered bitumen felt roof, bonded to the concrete and component layers by heat, offered a high degree of resilience and durability. It was also a product that could easily handle localised selected repairs using existing skills and materials, should further work be necessary. The product consisted of a painted-on bitumen primer, a perforated blister layer to absorb air and water vapour movement, and two further layers of bitumen felt. The final layer has a finish of crushed slate; this gives a light grey green finish and helps prevent ultra violet light damaging the felt layer. One consideration with the use of such materials is that heat, in the form of a naked propane flame, is needed to bond the layers together. In Scotland this material is generally called “green mineral felt”, and the technique referred to as “torch on”. As the monument is entirely masonry there was no danger of fire. In other structures the risk of fire may oblige a different approach.

Selection of the roofing material also accounted for the possibility of plant re-growth should the poisoning of the shrubs be unsuccessful. In the event of plant growth resuming, potentially causing distortion and damage to the surface, the felt could be cut back, the plant growth removed and the felt repaired. Felt roofs are routinely installed and repaired by all roofing contractors, giving considerable flexibility in procurement and maintenance.

6. Scheduled Monument Consent

The Wauchope mausoleum is designated as a Scheduled Monument under the Ancient Monuments and Archaeological Areas Act 1979. Under that Act, any works to a Scheduled Monument that could result in its destruction, damage or alteration require the prior written consent of the Scottish Ministers. This is known as Scheduled Monument Consent, or 'SMC'. The Scottish Ministers' policy on SMC is set out in the Scottish Historic Environment Policy <http://www.historic-scotland.gov.uk/shep-dec2011.pdf> and SMC is obtained via Historic Scotland.

Works could not start on the project until SMC had been obtained. The application process for consent can seem intimidating, but the procedure and dialogue is straightforward. SMC applications should normally be determined within nine weeks; in the case of this project, consent was granted within five weeks. This was largely because the applicants had undertaken pre-application discussions with Historic Scotland to determine which elements of the proposed works might require consent and how to mitigate the impact of those works on the monument.

For the Wauchope mausoleum, since the repairs did not affect the historic fabric directly, the focus of the application was to describe what was to be done, and explain why. Ensuring that works did not affect areas of older fabric was essential. This was particularly relevant in the formation of a skew junction between the 18th C parapet and the modern concrete slab roof. Standard practice would have been to cut a raggle or channel into the masonry into which a flashing could be fastened. This would have meant altering the original fabric, and since this was essentially a temporary repair it was agreed that the new felt would instead be heat bonded to the masonry. In addition, it was necessary to augment some of the existing details to ensure that water was effectively shed from the structure. This mainly consisted of an enhanced drip at the edge of the concrete slabs where they over sail the external walls, in order to minimise water running down the vertical face of the elevation.

7. Delivering the work

A schedule of work was drawn up by CEC and priced by two local contractors. The successful tender was able to demonstrate the right skills, an established business comfortable with this type of repair, and a price that was reasonable for the work required. The first stage was to meet with the contractor on site and confirm the tendered works. This is important, as often perceptions change as to what was outlined when the work was initially priced. In addition, the process of SMC highlights particular aspects of the work that might need specific attention. All such points need to be re-iterated and confirmed with the contractor, and most importantly, the foreman who directs the works on site day to day.

The site works were divided into three stages:

1. Removal of vegetation and poisoning of roots
2. Repairing and re-bedding the existing roof slabs including installation of new slabs where required
3. Applying the new roof covering and completing the edge detailing (Fig. 3)

The stage 1 work began in March 2014, just prior to the growing season. Plant growth was removed, overhanging branches cut back, and herbicide applied. Several slabs had to be lifted and rebedded to remove extensive roots. A second application of herbicide was required to ensure all plants were dead. Stage 2 was then progressed in the middle of June 2014, with new slabs being laid to replace broken ones. At this stage it became apparent that further consolidation of the wall head on the north wall was required, and these additional works were instructed by the client, CEC. As the weather was generally fine, good progress was made.



Fig. 3. The application of the bitumen felt covering

Stage 3, the application of the roof covering, was completed in the last week of June, with the new edge detailing and final works being completed in the first week of July. Site visits by the Client and Historic Scotland during each of these stages allowed review of the details and occasional adjustments to the formal plan; for example a final version of the edge detail was suggested by the site charge hand, and

subsequently implemented as the confirmed finish (Fig. 4). This revised detail consisted of the addition of an angled piece of timber, mechanically fastened to the concrete paving slabs forming the roof deck. This allowed the formation of a drip edge with the mineral felt, and an additional 40mm of projection away from the vertical of the wall. This feature will keep the water from the roof run-off away from the upper part of the wall, assisting in keeping it dry.



Fig. 4. The finished edge detailing

8. Final costs

The initial price for the work to the main area of the roof repair was £5,600. The additional work to the north wall and the enhanced drip detail resulted in a final price, ex VAT, of £7,030. Price increases are not uncommon in works of this type, especially as sometimes the design details are adjusted to suit site conditions encountered. An adequate provisional sum or contingency (risk) should be built into any project of this type.

9. Durability of the repairs

While the works described here are termed “interim ” or “emergency”, the felt roof covering applied to the monument has an anticipated product life of 25 years. As the site location is in a sheltered environment, with some protection from overhanging trees, it is reasonable to expect that the finish may last longer. Vandalism is always a risk for unoccupied structures. However, the lack of any value in the roof covering, the difficulty in prising the layers of bitumen felt apart and the local interest in the structure means that intentional damage is unlikely.

10. Other works

The priority for most interim repairs is keeping water out of the building, and therefore the repairs of summer 2014 were concerned only with the main roof structure. However, the fine ashlarwork of the principal elevation and the carved adornment in the cartouche within the central pediment has great architectural merit and historical importance. Water ingress through open ashlar joints and missing parts of the cornice and pediment has resulted in staining and decay to masonry in the vicinity (Fig. 5). A separate scheme of work will be planned and costed to address these areas of damage and inhibit further decay.



Fig. 5. Staining on the carved stonework from open ashlar joints and damaged cornice

The almost total saturation of the monument means that drying out is likely to take a long time. Following water ingress, heated masonry structures can take many months or even years to dry out; this structure - unheated and with no windows - is likely to dry slowly. The current steel door, installed as part of the generator facility, does not allow adequate ventilation and also detracts from the fine ironwork beneath the arch (Fig. 6.). A door of more sympathetic design, that allows better advection of moisture, would permit quicker drying out and on-going air movement and ventilation.



Fig. 6. Original wrought iron screen in front of the modern steel door

11. Future use

It is generally accepted that the building is unlikely to have a future use in the conventional sense, but with the modest repairs carried out, it is better protected from the elements, the fabric stabilised and the presentation of the monument improved. This will allow enhanced appreciation of the structure and its occasional opening for local and other uses. The works are hoped to have increased the perceived value of the structure to the local community.

12. Conclusion

There is a perception that with historic buildings and monuments there has to be an “all or nothing approach” to building repair. This inclines towards large or complex repair projects for which funding is always an issue. All building repairs should be of the highest standard, but the extent of the works can be prioritised and the palette of materials can vary. Carefully executed work using temporary materials, as has been described in this case study, has a place in building conservation, especially in cases of urgent need.

From a planning perspective, proposals to carry out work on listed buildings or even scheduled monuments can be phrased in terms of temporary works for the long term good of the building. The consents process need not be onerous if pre-application dialogue is entered into. In the case of the Wauchope mausoleum SMC was obtained in good time and necessitated only minor amendments to the proposed technical solution.

By limiting the scope and extent of the works, and by managing the project in clear stages, it can be shown that significant benefit can be achieved with modest financial outlay and standard materials. Water ingress has been stopped, the condition and the presentation of the monument has been improved, and an investment in the community clearly demonstrated by the owner. Success at this stage of repair may allow for consideration of more comprehensive works in the future.

13. Post project activity – public interest

As part of the Cockburn Association’s twenty-third annual Edinburgh Doors Open Day event, the mausoleum was opened to the public on Saturday the 27th and Sunday the 28th of September 2014. Attracting more than 200 visitors over the course of the weekend, there is clearly a great deal of public interest in the monument, the immediate future of which has been secured through the modest repairs discussed.



Fig. 7. Over 200 hundred visitors accessed Wauchope Mausoleum during the Cockburn Association’s 2014 Doors Open Day event (Image courtesy of J. Gillon)

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