DAC GUIDANCE NOTE

Damp, drainage and French Drains

DAC policy

Getting water away from church buildings is one of the key elements in maintaining historic fabric. This means gutters need to be cleared of vegetation and debris, down pipes need to be well maintained and drainage through the churchyard must be protected from blockage.

Many churchyards, after centuries of use, are now higher than the floor levels inside the church building, or slope in such a way that the natural run-off is towards, rather than away from, it. This can cause a build up of damp in the walls leading to the failure of decoration (flaking plaster), infestation of woodwork and growth of algae – all of which look horrible and put the building at structural risk in the long term.

The DAC strongly encourages churchwardens to make regular inspections of the existing rainwater and drainage systems and to take note of problems identified in quinquennial inspection reports. There are often drains that were dug in the 19th century that have fallen into disuse. Wherever possible these should be located and reused. However, in some cases the architect or surveyor will propose new drainage. This guidance note is intended to help parishes with such projects.

Is new drainage necessary?

Sometimes no drainage is better than neglected drainage since blocked drains can concentrate water into localised spots rather than allowing it to distribute itself more evenly around the building. If the external drains are blocked then the gallons of rainwater pouring from the roof will be focussed on specific areas at the foot of walls; the stonework will be unable to evaporate off the moisture from the interior of the building and it will start to deteriorate rapidly inside where the puddles are forming outside.

Equally, walls that are saturated through at high level are usually behind down-pipes that have split, hoppers acting as troughs for vegetation or gutters clogged by last autumn's leaves. Sorting out damp should start with a thorough consideration of the rainwater disposal system and the DAC will expect a thorough assessment of the existing system to be included with any proposal for new drainage work.

Ventilation

Many parish churches are of ancient construction and are built from from materials that need to "breathe". The people who built our churches knew about rain and snow and designed buildings that were intended to cope with the weather. They did not expect churches to be locked up or doors and windows to be sealed: the building would be open so fresh air could move around in it, helping to evaporate moisture away and keep the "climate" fresh. Ensuring that opening windows can be opened – and that someone will be responsible for doing so – is vital for the health of church buildings. The quinquennial inspection should identify lights that need attention to make them serviceable; this need not be very expensive but can make a great deal of difference in the long term.

Another option, especially in the drier months, is to install a "bird gate" so that the main doors can be kept open but there is a metal or wooden gate over the doorway to prevent birds flying

in. These could be temporary frames that slot into the doorway without fixing, or permanent gates (the latter require a faculty). The benefits of this are enormous and the initial cost becomes a good investment – especially if, as in some cases, the gates are put on the outer opening of a porch and can provide year-round additional security.

Improvements to drainage arrangements

Where damp problems exist on the inside of an external wall – often resulting in decaying plaster inside and washing-away of mortar and stonework on the outside – the architect or surveyor may suggest provision of a French Drain and/or additional land drains to soak ways.

1. Soakaways

A soakaway is basically a big hole (usually 1 cubic metre), filled with rubble and coarse stone with a drainage pipe feeding into it. The idea is that water is piped to the soakaway, at least 5m away from the building, and then seeps into the ground safely. The hole itself can be covered with topsoil to restore the appearance of the churchyard. Soakaways don't function well in clay soils and to be effective the drain runs to them must have a fall that enables water to flow naturally towards the hole. The soakaway itself and the drains must be well maintained.

2. Dry areas

A dry area is an open trench around a building, finished to provide an area where water can collect before evaporating away. They might be constructed as a trench, filled with shingle, but without a land drain at the base, and concealed beneath turf. Alternatively, they can be lined with brick (often blue) or other hard materials. Dry areas can fill with water and debris, exacerbating the damp problem rather than relieving it, and must be carefully planned and maintained.

3. French drains

A French drain is simply trench, dug to a gradient. A land drain pipe runs at the bottom and the trench is back-filled with shingle or coarse stone. It may be lined with a geotexile membrane. These drains can be used in open areas but in churchyards they are generally constructed immediately adjacent to the outside wall of the building. French drains can help but are not a miracle cure for damp and are only of use if well maintained as part of a holistic approach to the building. If not constructed well and properly maintained they will acerbate the problem, not relieve it.

Professional advice

An architect or surveyor must properly specify the work and a faculty will need to be obtained. This is because there are inherent dangers in the provision of new drainage in that it will always change the flow of water; this can have unintended consequences. There is also the risk that the ground may dry out rapidly and excessively, resulting settlement and replacing one problem with another. Furthermore, a dry area or French Drain around a building will also take away some of the horizontal resistance to outward wall-movement; if the wall is fragile, this could result in structural issues. Most historic churches have extremely shallow foundations and many have been constructed on top of earlier buildings. Excavating a trench around the perimeter wall can be structurally risky as well archaeologically very sensitive.

Please note that If the church architect or surveyor has not drawn up the specification the DAC is likely to suggest that s/he should be consulted. There may be technical aspects of the project as well as the issue of the work's impact on the church that should be discussed with

the architect or surveyor. The parish may find it helpful to do this at the outset rather than after the DAC has discussed the proposals.

Archaeology

A parish undertaking work in a church or churchyard is legally a "developer" and is required by law to be responsible for the costs of any archaeological work which may be required. The specification for the work should explain exactly what excavation is proposed: the course and depth of the drain/soakaway, whether there are inspection chambers, how the trenches will be dug and so on. A clear plan showing the proposals in relation to the church, existing drains and all features of the churchyard will also be required. The DAC Archaeological Advisor will wish to know what records there are of other structures or buildings in the churchyard, previous buildings and whether there are known vaults or burials in the areas to be affected by the work. This information will allow the DAC to assess the archaeological implications of the scheme

Depending on what is being proposed, the parish may be required to undertake a preliminary investigation to see whether there are existing, but lost, drains that could be used instead of new ones. Another option may be to alter the proposed routes of drain runs to mitigate the level of impact. Where the affected area is thought to be sensitive it may be necessary for an archaeologist excavate test pits. In this situation, depending on the outcome of the test pitting, the DAC will provide further advice. If the assessment of the churchyard and outcome of any test pitting has indicated that there are likely to be archaeological deposits and there is no alternative location it may be necessary to require that the trench or soakaway be excavated using archaeological techniques. If no archaeological evidence has been found, it is likely that a condition regarding archaeological watching brief to the DAC's recommendation.

Information required for a Faculty application

1. A justification for the new work; including an assessment of the condition of existing provision
2. A plan of the church and churchyard, preferably to scale, showing the extent and location of the proposed work and any other structures of buildings attached to the church.
3. Information about known burials or vaults in the area/s to be affected and when the last interments took place in that location
4. Photographs illustrating the situation (snapshots are enormously helpful)
5. Details of the location and depth of the drains/soakaway
6. A specification for the work, including information about the method of excavation.

Further reading

French Drains; Institute of Historic Building Conservation technical paper
http://www.ihbc.org.uk/guidance_notes/docs/tech_papers/French%20Drains.htm