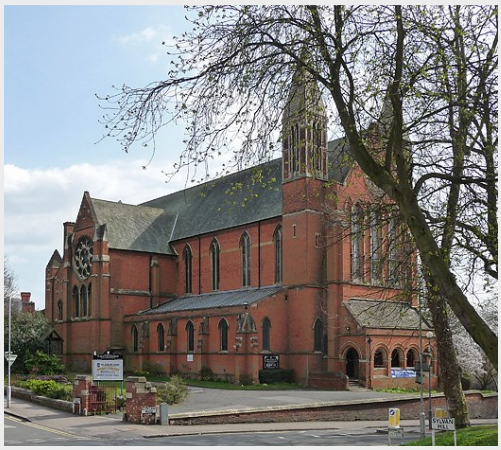
CASE STUDY PROTECTING A CHURCH FROM FUTURE SUBSIDENCE

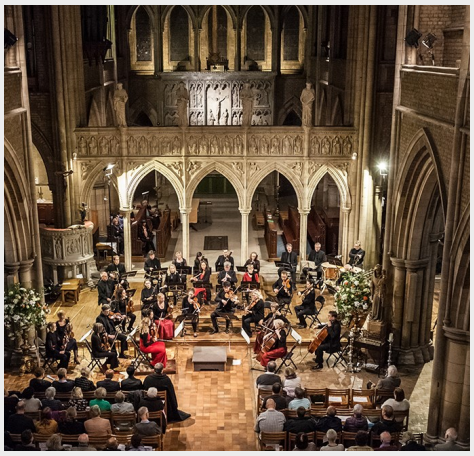
N.B. This case study considers only one possible approach, which will not be suitable for every church. Always seek professional advice.

Key Points

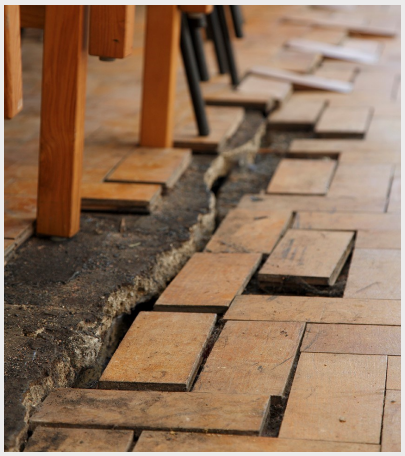
- St John the Evangelist in Upper Norwood, London is located on top of London clay at the top of a slope. As part of the natural expansion and shrinkage of the soil, subsidence has increasingly become a major issue.
- The south end of the church has undergone a substantial underpinning process to secure it against the continuing soil heave, only amplified by nearby tree roots.
- Subsidence for churches on clay soils generally will also be amplified by the increased temperatures expected in the next 25 years.



1 Trees around the church have played a role in shifting the underlying clay soil.



2 The newly opened church again being used for live music (credit—Oneday Photography)



3 Cracking was visible throughout the building (Credit—James Balston)

The context

St John the Evangelist is a very large church in Upper Norwood that dates from 1882. As with much of the area around Crystal Palace it is built on London clay at the top of the hill. Having been built on this kind of soil and position, it is of little surprise that movement has been an intrinsic part of the life of the building from the beginning. Parish magazines from the 19th century had already identified the presence of cracks in the building and over the years the seriousness of these issues have worsened throughout the church and the neighbouring church hall. These movements follow a seasonal pattern, expanding in the summer with warm weather and drought (emphasised by nearby trees) and recovering to some extent during the winter months. The church has also been listed on the Heritage at Risk register because of this issue.

For more information, visit the church's website or its entry on the Church Heritage Record.

Identifying a problem

Cracks at St Johns have been monitored closely from the turn of the millennium for signs of serious subsidence. For the last 15 years they have progressively worsened at least partially caused by mature trees which had self seeded in the previous century. Annually the south side of the building was rotating down and out, and would then retreating slightly in winter, but each year that it was happening, the movement continued to worsen. The QI report for the church identified it as a high priority concern, the architect predicting that there would be a significant structural failure in the next 24 months. This led the church to begin exploring options to secure the wall and ensure the structural integrity of the building.

What work was done to make the church more resilient?

The major two stages of the work that were crucial to securing the south side of the church were the underpinning of the south wall and removal of several trees that were exacerbating soil movement. Whilst this work was underway, the community was still able to use the building, and indeed the progress of the work became a central point of interest that drew in local residents to the church building, some for the first time.

There were some additional jobs undertaken at the same time:

- Netting that had been erected to protect congregation members and visitors from falling mortar dislodged by the movement was finally able to be removed. This also resulted in a restoration of the original acoustics for which the building had been well known, and enhanced its use as a musical venue.
- The flooring on the south side of the church had been warped and destroyed by the movement and represented a non-accessible trip hazard. This was completely restored as part of the wider work.

How was the work funded?

The work was largely funded through large grant funding from the Heritage Lottery Fund (approximately £250,000), the National Churches Trust (£239,000) and then a range of other smaller grant organisations and fundraising activities for a total of roughly £707,000 for the underpinning and floor restoration.

The application process was managed by the parish administrator alongside clergy, who had very limited experience prior, but were able to familiarise themselves with the process with help from the diocese.

A key step for the church was to be placed on the Historic England 'At Risk' register. This gave a sense of legitimacy to their proposals that they are hopeful will aid future fundraising efforts as well.

What future work might be needed to secure the future of the church?

Whilst the south side of the church is now secure, it is clear that in the future there will likely need to be further underpinning work undertaken on the North side of the church were the movement caused by soil heave has become more visible since the south side was secured. The neighbouring hall and corridor that connects it has also shown signs of potential subsidence, namely some large cracks.

This work was initially considered as a part of the original project but by dividing up the work, St John's ensured that the urgent structural work was completed, and put themselves in a better position to achieve the wider works through familiarity with the funding system, buy-in from the church and local community and exposure to potential funding sources.

What could others learn from this case study?

1. Be aware of the potential climate risks that may come from regular process becoming more extreme because of climate change. Subsidence on some types of soil is one of these.
2. Break big projects down into smaller, more achievable workplans. Success in completing one piece of work can help generate momentum in the community and among funding bodies.
3. Consider how you might engage the wider community through restoration projects, particularly those whose exposure to the church might be minimal.
4. Engage with heritage organisations and explore the possibility of being placed on the 'At Risk' register if necessary.

"Focus on the thing you need to do first, identify your priorities and then it's easier to get something done which can lead on to the next"

Administrator, St John the Evangelist