

This project was highly commended amongst the entrants for the 2018 King of Prussia Gold Medal Award

Old Chapel was built for a Presbyterian congregation between 1839 and 1845 to the designs of architect Richard Tattersall of Manchester, replacing an earlier chapel built in 1707. A temporary porch at the west was eventually replaced in the 1890s with a new west front to the designs of Worthington & Elwood in neo-Gothic style, with several fine Capronnier windows. Over the years the beliefs of the congregation changed from Presbyterianism to Arianism and then, in the mid C19, Unitarianism.

In 2012 Mark Pearce of Lloyd Evans Prichard carried out a quinquennial inspection of the chapel which noted widespread nail fatigue to the slating and the risk of leaks from any



View from SW

were about 10 tonnes of unsupported plaster: the chapel had to be immediately closed and a temporary structural supporting scaffold installed. While this was being installed, it was found that the timber columns clad a cast iron structure. Water was entering the roof space from failing hoppers and travelling down the column cores into the floor voids. This raised considerable concern as to the potential extent of the dry rot throughout the chapel.



West elevation

blocked hoppers and downpipes due to their design inset into the walls. The interior had been recently redecorated and appeared in reasonable condition though some water staining and cracking was noted at the intersection of the transept and nave vaulted plaster. A key recommendation in his report was that a detailed high level inspection of these areas should be undertaken. In June 2014 the owners carried out some opening-up works. These identified that water had indeed been entering the building due to the poor design of the rainwater disposal system, causing dry rot outbreaks which had completely destroyed four key timber bearings to the central crossing of plaster vaulting, as well as localised sections of timber wallplates and roof truss bearings.

Mark invited structural engineer Gary Booth of WML Consulting to inspect the chapel. He calculated that there



Original timber support to plaster vault springing point



Interior of vault; complete loss of timber rib and laths

In the light of these alarming facts LEP liaised with Historic England and the local Conservation Officer to get the chapel added to HE's Buildings at Risk register, and a grant application was made to the HLF. An unusually large grant was eventually offered, although this took protracted negotiation because the work could not be split into phases of less than

£250,000. It was however accepted that the lower aisle roofs and associated fabric repairs to the chapel could be undertaken as a second phase of work. Following a competitive selection process LEP were appointed as project architects in September 2015.

The development phase grant included four areas of further surveys and investigations:

- Measured survey of the whole chapel
- An asbestos survey
- High level survey of roofs and roof voids
- Limited opening-up of plasterwork.

For the high level survey, scaffolding was erected to two external areas to access roof voids via the bell opening and to carry out a detailed inspection of the roofs and cast iron gutters. This survey established the full extent of timber repairs to the roof structure and also confirmed that the cast iron RW goods had corroded beyond repair. The internal opening-up allowed inspection of the timber structure behind. This also established that the chapel has a cast iron frame throughout and not just to the gallery. All decorative features, including the arches to aisles, were formed in timber, laths and plaster.

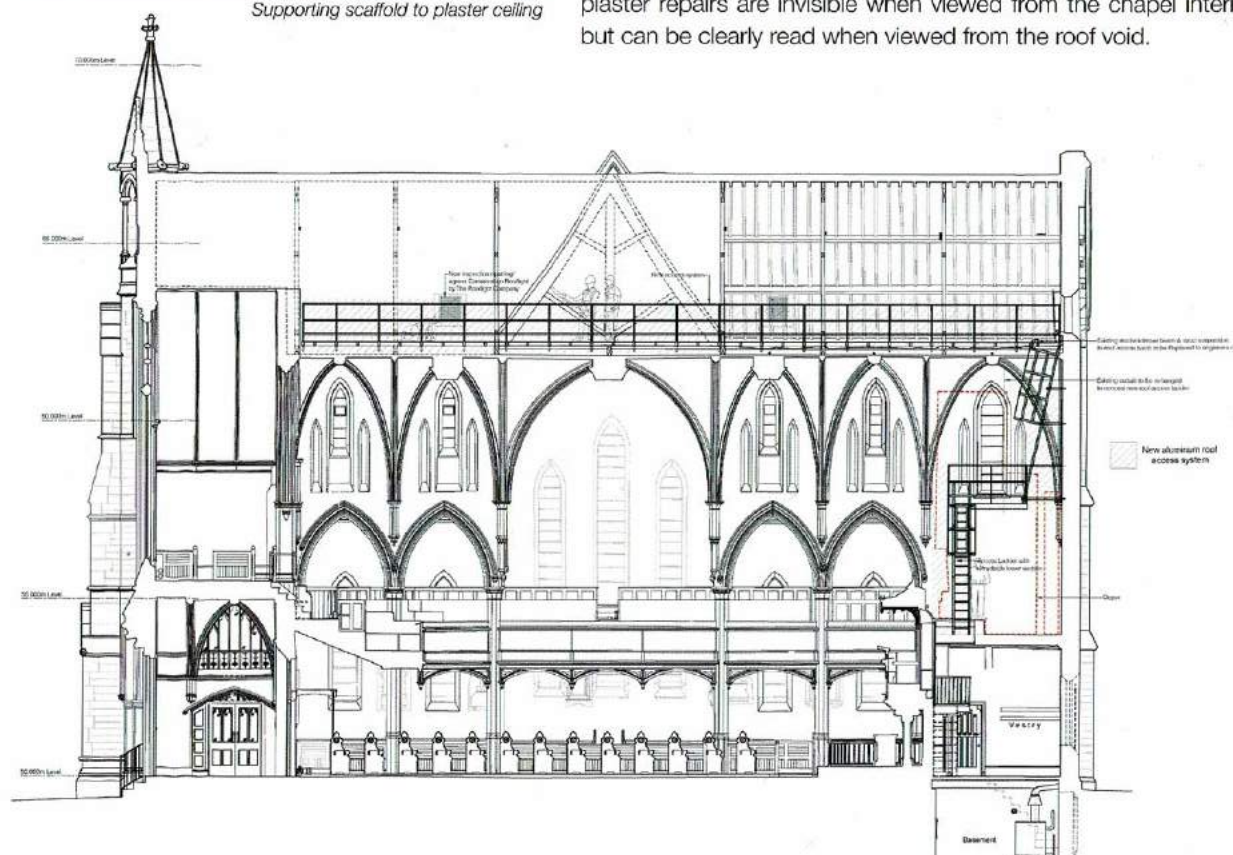
Conservation and works strategies

Externally, robust detailing removed weaknesses in the original design, whilst ensuring that the original architectural details, such as the new decorative ridge crests, profiles of new cast iron gutters and selection of slate, all matched the existing. Examples of design improvements include the installation of overflow chutes, roof access windows and roof void gantries.

Internally, only areas affected by dry rot decay were removed and all new plasterwork matched the original exactly. The timber and plaster repairs are invisible when viewed from the chapel interior, but can be clearly read when viewed from the roof void.



Supporting scaffold to plaster ceiling





Original gutter let into masonry



Original gutter intersection and outlet



New cast iron gutter corner with chute



New gutter and chute installed

The works were complex in that a structural scaffold had first to be installed inside to support the plaster vaulted ceilings at risk of collapse. Then the chapel needed to be reroofed prior to the internal plaster repairs. The project thus required structural timber and plaster repairs to be done in tandem with reroofing and renewing the rainwater goods. The latter were redesigned to be inspected and maintained more easily in the future.

Summary of repairs

Re-roofing works

- Removal of roof coverings, ridges, associated leadwork, gutters and rainwater pipes to north transept, south transept, east nave and west nave.
- Timber repairs and dry rot treatment works to roof structure and associated masonry.
- Re-roof with new Burlington slate in diminishing courses with new leadwork and crested ridge tiles to match existing.
- Form new lead lined secret gutters to shallow gable abutments to improve their weathering.
- Install new cast-iron downpipes and bespoke gutters to match existing profile. Gutters at transept intersections incorporate a chute to ensure water is thrown clear and cannot enter the chapel if downpipes block.
- Install four inspection / access roof lights to enable gutters to be inspected safely.

Masonry Repairs

- Re-bed coping stones to gables on lead DPC, securing coping stones on stainless steel staples in the bed course.
- Insert new stone where hoppers were removed.
- Re-point masonry to nave and transept clerestory and gables and defrass face-bedded masonry.



New stainless steel support to plaster vault springing point



Vault support installed



New timberwork for plaster vault

Internal Repairs

- Clear debris from roof voids.
- Remove dry rot infected vaulted lath and plaster and the supporting timber ribs.
- Timber repairs and dry rot treatment to roof timber ribs and associated masonry.
- Renewal of lath and plaster to vaulted ceiling complete with plaster ribs, and some areas of plaster cornice repair/renewal.
- Redecoration of ceiling and vaults with paint and colours to match the existing.
- Install new roof access ladders and gantries.
- Re-wire main lighting circuit and refurbish the historic pendant light fittings, replacing missing glass shades and installing a rise and fall system to enable safe relamping.



Interior view to east

These works started in November 2016 and were completed the following July at a cost of £410,000. Subsequently, the congregation has had a new heating system installed and is developing proposals for a re-ordering scheme as well as a second phase of work to repair the aisles. These works are all aimed at attracting others to the congregation and increasing the use of the chapel by the local community.

Mark Pearce

Project Details

Architect	Lloyd Evans Prichard
Quantity Surveyor	T Sumner Smith and Partners
Structural Engineer	WML Consulting
Principal Contractor	Heritage Conservation Restoration



The repaired ceiling

WMLCONSULTING

Civil, Structural and Geotechnical Consulting Engineers



Proud to be part of the Design Team that delivered the Highly Commended Dukinfield Old Chapel project

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