

Lynally Church - Historic Fabric Survey 1

"The 3d point-cloud is a wonderful database, an extraordinary record. The Church walls have been surveyed accurately and in superb detail"

Dave Pollock Project Archaeologist and Director – Archaeografix

Scope: registered 3d point-cloud of ruined and abandoned church, 3d models, 2d AutoCAD drawings

Client: Archaeografix/Offaly County Council Heritage Office

Date: November 2003

Background: Late in 2003 Offaly County Council Heritage Office commissioned *Archaeografix* to undertake a historic fabric survey of two ruined churches in County Offaly as part of a project to record and archive the ruins before the implementation of a restoration project and accompanied site heritage management plan.

The upstanding masonry at Lynally Church comprised of a ruined roofless and partly vaulted church with an arched entry enclosed in a trapezoidal walled graveyard.

Archaeografix approached *Gridpoint Solutions Ltd* to supply a 3d laser scanning *High Definition Survey* (HDS) of the upstanding ruins. This allowed the project archaeologist quick access to a complete highly accurate and detailed survey of the church, coupled with production of scale 2d section, elevation and plan drawings, and 3d rendered models of the upstanding walls.

Cyclone™ software was then used to register the thirteen scans together and reorientate the X, Y and Z axis to the local grid system. The resulting complete 3d point-cloud of the entire upstanding ruin was made available for future work.

Project Facts

Field: 2 person scanner crew, 1 field day

Office: 1 surveyor, 5 Days

Deliverable: registered 3d point-cloud, 3d rendered wall models, 2d CAD Section, elevation and plan drawings.

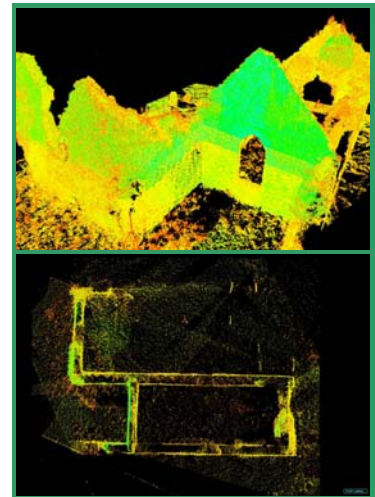
Benefits

- Within budget
- On site safety
- Quick turnaround
- Survey quality and accuracy



Workflow: Following an initial site inspection overgrowth was cleared (where possible) by hand from the church, and the upstanding ruins were then surveyed by *Gridpoint Solutions Ltd* using a HDS 3d laser scanner at a scan resolution no greater than 10mm. Multiple 3d scans were collected detailing the external and internal archaeological and architectural features of the church. Local control was attached to the thirteen individual scans via a reflectorless EDM survey of in-scene targets.

Scan data was viewed in real-time on the scanner laptop allowing areas of archaeological/architectural significance to be quickly identified and rescanned if necessary at a greater resolution.



Back in the office the fully registered point-cloud of the church was opened in *AutoCAD™* using the 3d point-cloud analysis plug-in *CloudWorx™*. *CloudWorx™* tools were used to "slice" the ruin intelligently along the X, Y and Z axis and provide detailed 2d views of each slice directly within *AutoCAD™*.

AutoCAD's™ standard drafting tools (e.g. polygon tool, arch tool, spline tool, etc.) were used to trace and create sections, elevations and plans from the point-cloud slices. *AutoCAD's™* dimension tools were used to extract and place dimensions on the drawings. All necessary drawings and models were delivered within one week of the completion of scanning. *Archaeografix* completed the project by supplementing the detailed scan and CAD output with professional archaeological illustration and presented Offaly County Council with a detailed, accurate, unique record and archive of the ruined Church.