

Castle Gardens – Structural & Architectural

Scope: registered 3d point cloud of historic walls and monuments, Castle Gardens Lisburn, rendered 3d models of walls, 2d CAD plan, elevation and section drawings, 3d Model of the entire gardens.

Client: Dillon Project Management, Belfast.

Date: November 2003

Background: The historic terraced Castle Gardens in Lisburn Co. Down are to undergo complete restoration. As a prerequisite to this, a detailed set of CAD drawings in plan, section and elevation of all terrace walls and monuments, plus 3d rendered models of all walls had to be provided to the projects structural engineer, archaeologists, landscape architects, and architects.

Dillon Project Management hired *gridpoint solutions Ltd* to supply all the above and fill gaps in previously supplied survey data with a 3d Laser Scan High Definition Survey (HDS).

AutoCAD's™ standard drafting and dimensioning tools were used to trace, measure, create sections, elevations and plans from the point cloud slices.

422 dimensioned sections through the gardens terraced walls were produced for the projects structural engineer. 22 highly detailed CAD drawings were supplied to the projects architects to aid in the restoration of the gardens monuments.

Project Facts

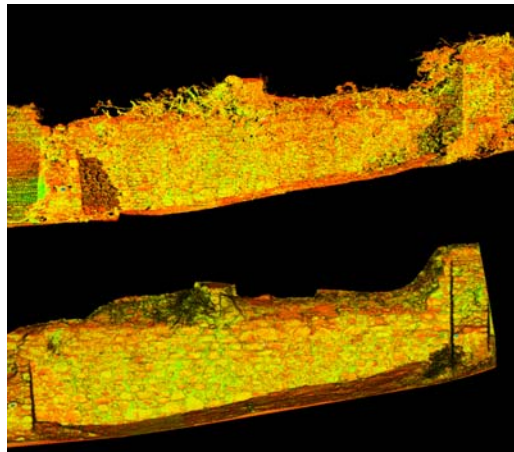
Field: 2 person scanner crew, 2 field days.

Office: 2 surveyors, 15 days using Cyclone & Cloudworx.

Deliverable: registered 3d point cloud, 2d CAD Section, elevation and plan drawings. 3d Model of entire gardens

Benefits

- Complete digital 'as is' archive
- Survey speed
- Reduced return visits for missed detail
- Survey quality and accuracy



Point cloud of wall & Rendered Wall

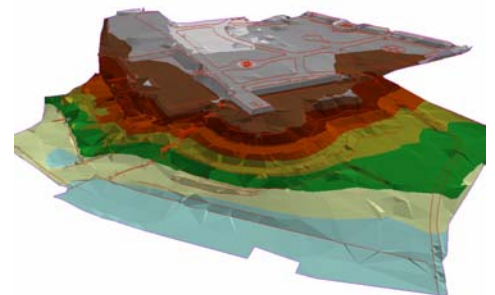
Workflow: *gridpoint solutions Ltd* used a Leica Geosystems 2500 scanner to capture high-detail, high-density scans. Scan data was viewed in real-time on the scanner laptop allowing areas of structural, architectural and archaeological significance to be quickly identified and rescanned at a greater resolution.

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



Wallace Memorial

gridpoint solutions Ltd also supplied a 3d model of the entire Castle Gardens to aid in the redesign and QS process. Sections through this model were used by the projects landscape architects to calculate cut & fill volumes and conceptualise the design process.



3d model of Castle Gardens