

COMPANY

FHM Consulting

LOCATION

Perth, Australia

SOFTWARE

Autodesk® ReCap™

Autodesk® Revit®

Scan-to-BIM technologies provide precise as-built models of heritage buildings for Western Australian Museum's expansion project.



Introduction

The Western Australian Museum was established in Perth in 1891 and has since expanded to five other sites throughout the Australian state. The Perth location is currently in the midst of a \$428.3 million expansion and renovation.

The original museum occupied Perth's 'Old Gaol' building and that structure still forms a large part of the museum. Over the years, the Perth museum's footprint grew to encompass several other heritage buildings. The new museum project includes the design and construction of a new building integrated with these existing heritage buildings. Therefore, precise measurements for the buildings and their surroundings were crucial to the project.

Although scan-to-BIM models were supplied by WA as part of the tender, the project team felt that this information was inadequate for their needs. 4D Delta and Russell Fuller Hill of FHM Consulting were commissioned to provide laser scanning and scan-to-BIM modeling services.

Technology Used

- The team used Faro and Leica scanners to capture over 600 scans of the project.
- All of the scans were processed in Autodesk® ReCap™ from PTX files, which had been broken up into staged modeling areas.
- The resulting point clouds were imported into Autodesk® Revit® and used by Fuller Hill as a backdrop for his modeling efforts.
- A terrain model of the surrounding site and concourse was created by extracting 3D points from the point cloud that was then processed into a surface mesh.
- The building, including the underground parking garage and associated mechanical plant, were also modeled in Revit to facilitate the coordination and connection of the new and old underground power utilities.

Results

The team scanned and modeled over 40,000 square meters of the existing site and floor area. This included three museum wings, the Old Gaol, and an underground parking garage, as well as the adjacent State Library concourse, redevelopment site, and streetscapes.

The modeling effort totaled over 900 hours. The final models have now been delivered to the contractor's project team and construction is underway. The expected opening date of the new museum is 2020.