

ZERO REWORK FOR COMPLEX FIT OUT



Apollo Property Group (Apollo) is a Brisbane-based company specialising in all aspects of construction and fit outs including commercial and industrial buildings, government and medical facilities, residential and multi-residential projects.

With a commitment to green building and environmental sustainability, Apollo partner with architects to deliver full, or part, components of the building process and they understand the importance of client, contractor and end user collaboration. Their experience ranges from ultra-modern commercial buildings and industrial projects right through to bespoke designer spaces, new architecturally designed houses and vibrant home renovations.

Challenge

In mid-2015, Apollo began work creating a high-end office space at the top of an existing office tower overlooking Brisbane CBD and the Storey Bridge. To complete the project, Apollo contracted BVN as the architect to do the fit out of the office space - a job made more complex by the special steel-structured roof.

To begin the planning process, the architect was given a number of as-built plans in PDF format. At this early stage, they expressed their concerns about the quality of this documentation, knowing that the lack of proper information could result in ill-fitting plans, costly rework and project delays.

Kelsi Goan, Interior Designer for BVN, says: “When I first spoke to the contractor responsible for modelling the exterior and roof of the building, he explained that there was little documentation available to get the roof structure accurate. We really needed this information to make sure all services had enough space between the vertical beam and the stepped ceiling, but our model was showing more clearance between the two.”

Realising they faced a major hurdle to getting the project finished on time and on budget, Apollo approached BuildingPoint Australia, experts in design-build-operate solutions, for advice on gathering more accurate onsite information.

“[BVN knew] lack of proper information could result in ill-fitting plans, costly rework and project delays”. - Kelsi Goan, BVN

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Solution

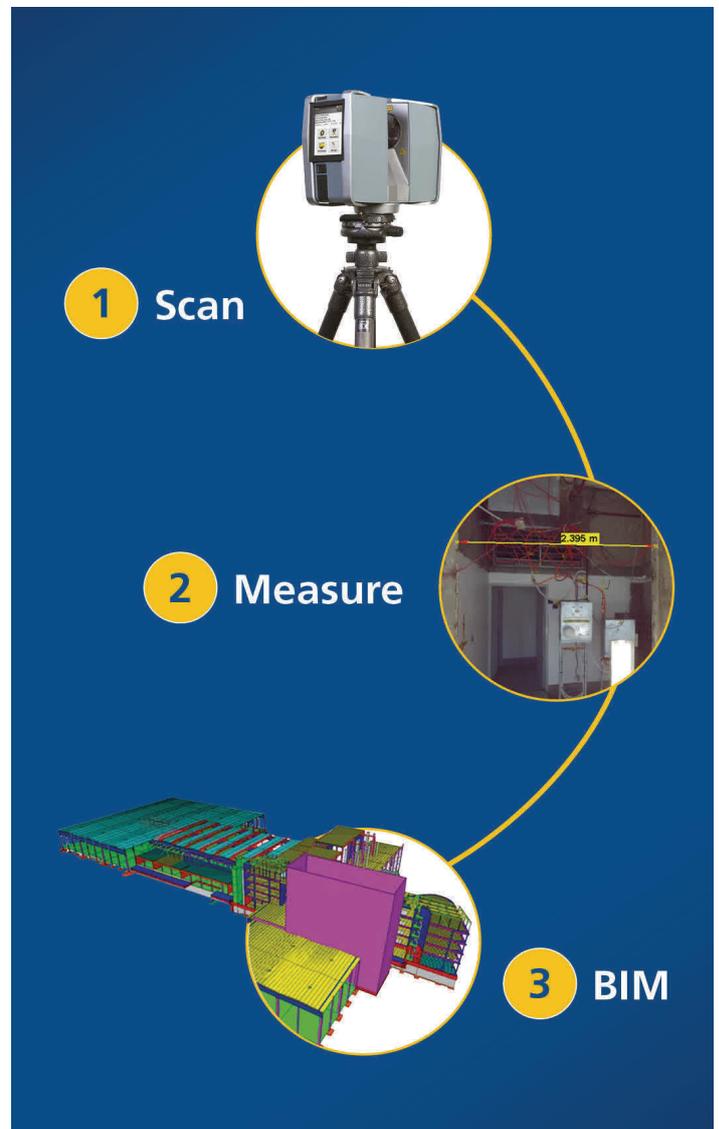
BuildingPoint Australia recommended scanning the interior of the space and developing accurate 3D models from this information. New plans could then be laid over the current 3D model to ensure no clashes between existing and new content.

Apollo agreed to this approach and invited BuildingPoint Australia to carry out the work at a time when most of the interior and existing mechanical, electrical and plumbing (MEP) systems were already demolished. At this point, there was just the core and shell of the building with only fire protection and storm drain systems remaining in the roof space.

Technical Consultants from BuildingPoint Australia worked through the following steps:

1. **SCANNING [4 hours]:** Collected data using a **Trimble laser scanner** on a tripod as well as a **Trimble handheld scanner** for harder to reach spaces.
2. **POST PROCESSING and MODELLING [1 day]:**
 - A. Uploaded data into **Trimble RealWorks software** which resulted in a clean, registered and geo-referenced point cloud to use as the basis of the model.
 - B. Used **Scan Explorer** (a module of RealWorks) to identify surfaces, lines and points in the coloured scan.
 - C. Produced a model from all the above information in **Trimble SketchUp** and exported it to **Revit** – a format the architect was able to easily use. Because of the integration between the two programs, the elements in RealWorks appear immediately in SketchUp when they are open side by side.

“Finding discrepancies early and off site can typically save 8-10% of the construction cost on an average job” - Gabor Gulyas , BuildingPoint Australia.



 A colourised point cloud showing the ability to measure between any two points. This is accurate to <math><1\text{mm}</math>.

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Outcome

“The time and cost saved by using the 3D models developed by BuildingPoint Australia far outweighed the cost to carry out the work,” says Leon Bowes., Owner, Apollo.

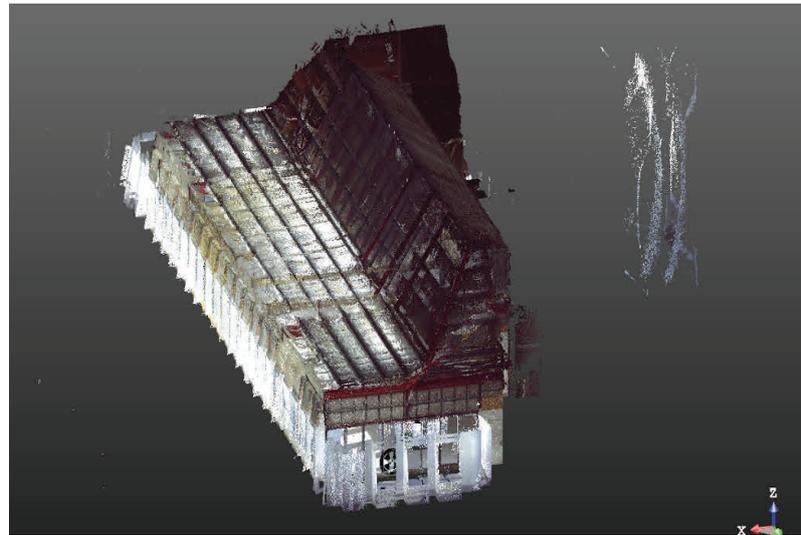
“Initially we were only thinking of the immediate application of the 3D model - to avoid clashes between existing and new content – so we were really pleased to find a number of valuable ongoing uses. In particular, because horizontal and vertical sections can be cut through anywhere in the model, it can be used by the architect for documentation.”

Kelsi from BVN continues, “This technology is hugely beneficial, particularly for a fit out within an existing or old building like this project was. The surveyed model can be dropped into Revit as the base model and the interiors can be modelled around this, providing more accurate measurements.”

Gabor Gulyas, National Services Manager for BuildingPoint Australia was incredibly pleased to be able to reduce constructability issues on site. He says that “finding these discrepancies early and off site can typically save 8-10% of the construction cost on an average job. To increase ROI of this technology, the same model can also be used for exact quantity take off, prefabrication and set out on site.”

The success of this project has seen Apollo use the same technology on other projects, including the upgrade of the Queens Arms Hotel in Brisbane.

“The time and cost saved by using the 3D models developed by BuildingPoint far outweighed the cost to carry out the work,” - Leon Bowes, Apollo.



↑ *The registered point cloud from an angle that could never be seen in reality—the interior of the building from the outside.*

↓ *The black and white point cloud showing even poorly lit spaces (like the roof space) clearly..*



About Trimble Buildings and BuildingPoint Australia

Trimble Buildings is passionate about solving the inefficiencies rife across building design, construction and operation through technology focused on the full building lifecycle, delivering a constructible model and collaboration amongst stakeholders.

BuildingPoint is the global distribution channel for Trimble Buildings Solutions and BuildingPoint Australia employs industry professionals and technology experts to work with you through sales, implementation, training and ongoing support.

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