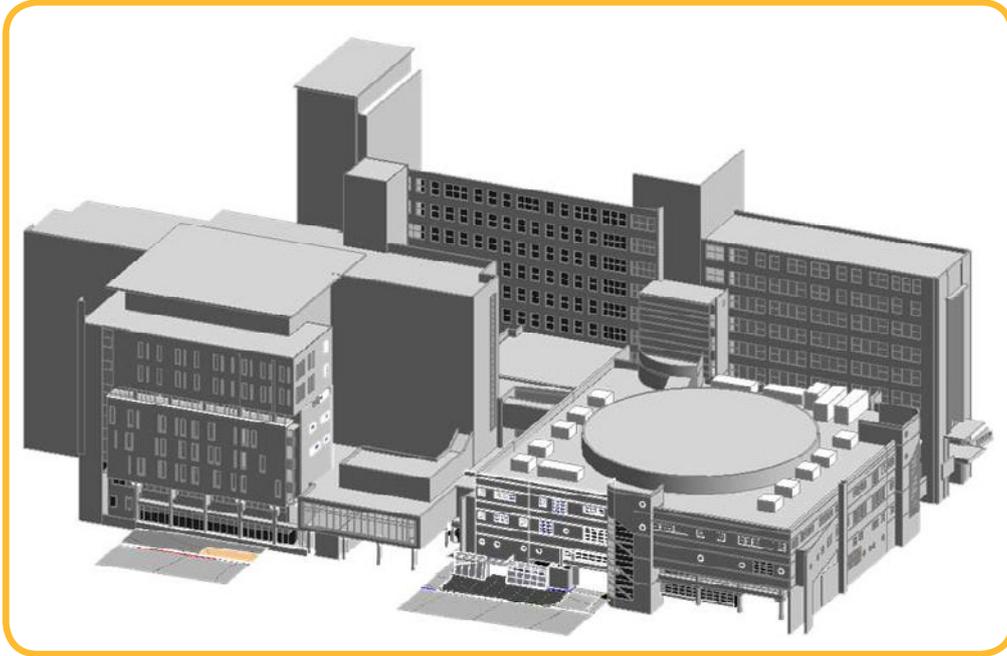


# CASE STUDY: Upgrading the Building Information Model of Royal Melbourne Hospital using Terrestrial Laser Scanning

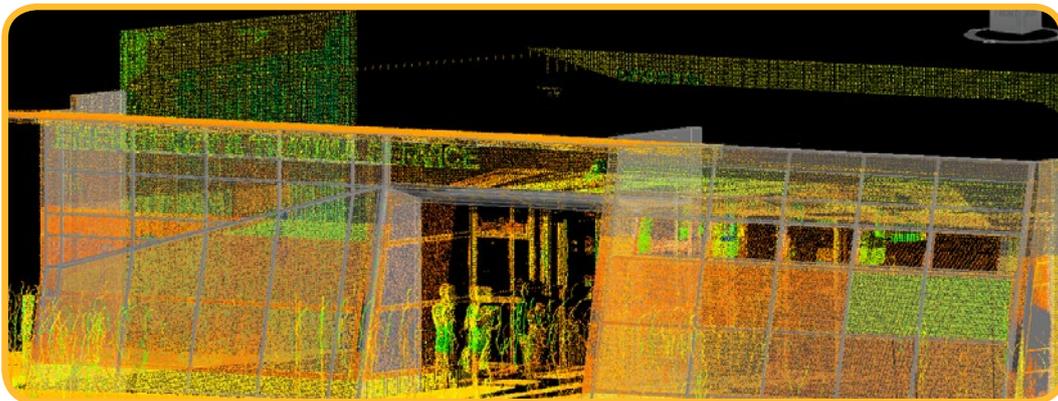


## Overview

The Royal Melbourne Hospital (RMH) is being extended as part of a major upgrade to the precinct. The hospital will increase its service capacity through the addition of four floors for buildings facing onto Grattan Street. In addition, two link-bridges will be built from the existing hospital south to the new Victorian Comprehensive Cancer Centre. The Builder, was in possession of a Building Information Model (BIM) for the existing hospital, based on information of unknown accuracy or quality.

## Situation

The architects were not confident that this BIM was accurate enough for construction tolerances – particularly for the link-bridge interface sections of the project. Accordingly the AAM solution was to undertake a Terrestrial Laser Scan (TLS) of the hospital and using this as-built data, upgrade the BIM contents and detail to a level suitable for construction purposes.



*Above: TLS point cloud of existing entry*

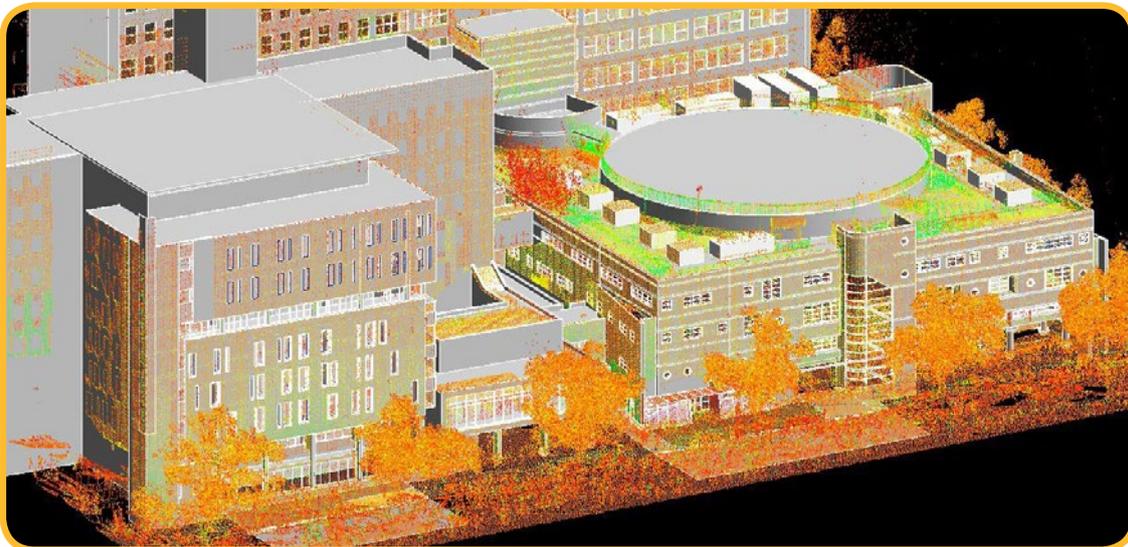
## Action

AAM's solution was to undertake a terrestrial laser scan of the existing hospital, allowed for the continuing use of the RMH BIM through the accurate updating and further development of the BIM in the critical areas information was most required – adding confidence to the information used for construction, in a cost-effective manner for the client.

AAM's approach to work directly in the end-user product (BIM as an Autodesk Revit Model) has improved the timeframes, cost and associated benefits with regards to the end-product.

Furthermore, the laser scan proved invaluable in upgrading the accuracy of the BIM, through its comprehensive ability to acquire site information, instead of discrete points as measured using conventional total-stations. In some areas, windows and columns were displaced by up to 150mm from their actual position, which was readily detected by comparing the as-built point cloud with the existing BIM.

Finally, AAM were able to utilise the Laser Scanning Data to update and create Modelled Elements directly in Revit, providing benefits to time, costs and interpretability for the client.

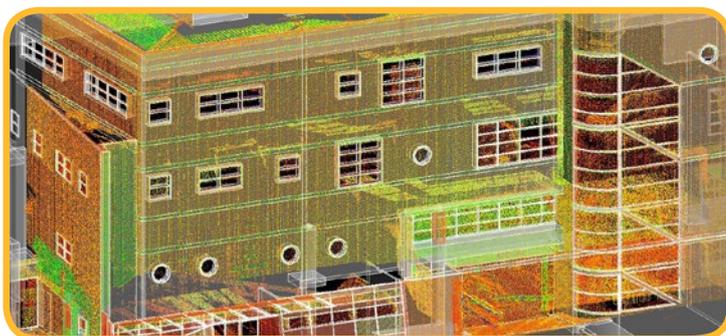


*Above: TLS point cloud 'ghosted' over the BIM of the existing Royal Melbourne Hospital*

## Results

The use of TLS and the spatial upgrading of the BIM ensured that the model was accurate enough for construction design. AAM was then able to work with the Architects to ensure the veracity of the BIM, with the added advantage of being able to verify or amend critical interfaces in regard to the new building.

TLS allows for better documentation of as-built drawings and existing conditions. The resulting 3D visualisations allow clients to see historic preservation and site context with respect to the new project, minimising errors and omissions. Accordingly TLS is an excellent means of documenting and capturing existing conditions of current buildings as well as "as-builts" of new structures.



*Left: BIM with point cloud overlaid*



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