KOREC™

CUSTOMER
Granville Consultants

PROJECT
Warneford Hospital, Oxford

SOLUTION
Trimble X9 3D Laser Scanner

A combination of 2D elevation information, scan data and 3D visualisations

Complexity to clarity

How Glanville Consultants used a Trimble X9 Laser Scanner and Perspective software to tackle an expanding brief on a 10-year, campus project in the east of Oxford.

At any given time, Glanville Consultants oversees more than a thousand active projects, demonstrating its ability to deliver its services with precision and efficiency across the UK and Ireland. This steady workload reflects a growing client base built on lasting relationships with repeat customers and the trust of new clients drawn by reputation.

Committed to adding value and applying innovative thinking to all its projects, the company has recently launched a 3D Studio for the generation of 3D models using point cloud data. The output of this studio is particularly useful for visualisation during the planning and design stages of a project.

Much of the 'as-built' data used in this 3D Studio will be generated by the company's Trimble X9 3D Laser Scanner, an essential tool in Glanville's comprehensive Trimble technology portfolio which also includes total stations and GNSS systems. This integrated suite of equipment allows the company's surveyors to adapt workflows and equipment seamlessly, ensuring flexibility and efficiency, particularly on long-term or complex projects such as one that Glanville is currently undertaking in Oxford.

This project has required extensive laser scanning for an as-built survey on behalf of the Oxford Health NHS Foundation Trust and the University of Oxford. The intuitive Trimble workflows have been key in keeping the project efficient, allowing surveyors from Glanville's regional offices to collaborate effectively as the project continues to evolve.

An expanding brief

The Warneford hospital, the oldest in-patient unit in use across the NHS, no longer meets the needs of a modern mental health institution. Ambitious plans are therefore underway to replace it with a new mental health hospital, a modern scientific facility for the world-leading brain research taking place at the University of Oxford and a new post-graduate college focused on medical sciences, bio-engineering and related disciplines.

Responsible for liaising with the architect and managing the work on this project, which is at the pre-planning phase, is Glanville Senior Surveyor, Lauren Whittaker, who took over the project during the hiatus between the initial topographic survey and the expanded plans that followed.

The initial topographic survey had been conducted by the company in 2018/19 which was followed by a request to update the survey and include the external elevations of the main building, and then of all the buildings on the site, as well as a roof plan in 2D and 3D. Additionally, of the thirty-four buildings on the site, many were listed requiring more detailed scans to aid the planning application.

Whilst initial topographic survey work had been undertaken using Trimble robotic total stations and GNSS, some scan work had already been completed before Glanville Consultants took possession of a new Trimble X9 3D Laser Scanner. The X9 was then used to complete the external work and internal scans where required.

Top features for X9 on this project:

- On-site registration of scan data to ensure nothing has been missed
- Ability to turn floor layers on and off for checking
- Clever features within Trimble Perspective software for dealing with a complex site
- Intuitive system ideal for use by all of Glanville's survey team
- Prompt support from KOREC Technical Support

The Trimble X9 3D Laser Scanner

A second combination of 2D elevation information, scan data and 3D visualisations

Dealing with a vast site and an expanding spec

For Lauren, one of the primary challenges was the complex nature of the project itself. It involved multiple surveys conducted by different Glanville survey teams over an extended period, all across a large site. The phased approach to the work required Lauren to be especially meticulous ensuring that nothing was missed and that everything would fit the original control network.

Checkerboards were therefore placed around the site and captured as a precision point using the X9's laser pointer, and each one given a name. Back in the office, the traverse is processed, and control can be applied to the scans within the Trimble Perspective software via the georeferencing tool.

During the scan work on site, the X9 was used for both internal and external surveys with the team opting for 52 second, 2 minute or 4 minute scans depending on the level of detail required in relation to their intracacy. In particular, Lauren cites the X9's on-site registration as one of the many features key to the success of the project:

> *"This is a working hospital with access to clinics only allowed at certain times. Using the on-site registration, we could check that absolutely nothing was missed as we moved around the hospital. This meant we could leave a complex site with a full visual check that we'd captured everything we needed."*

The X9's self-levelling also cut time by allowing the surveyor to move swiftly in and out of clinics with minimal disruption.

The captured data was then turned into a 3D model and 2D outputs for those involved in the project. The 3D model is delivered to the design team via a Revit model and online viewer to make it available for all involved.

"Trimble Perspective is just what you need on site. It's great for checking and avoiding any potential confusion."

Lauren Whittaker, Glanville Senior Surveyor

Scan data shown on the Trimble T10x Tablet

"Efficient, reliable and intuitive"

For a project of this scale, Lauren found the X9 to have delivered in several crucial areas.

> **"KOREC has a good understanding of what we're trying to do here at Glanville and their service reflects this."**
>
> **Lauren Whittaker, Glanville Senior Surveyor**

Most notably, its consistent reliability, even in rainy conditions, made planning much more straightforward. The on-board Perspective software also stood out for its simplicity and ease of use, which was essential for ensuring the smooth coordination of a team that included surveyors from both the Oxfordshire and Hertfordshire offices.

> *"Perspective is just what you need on site. It's great for checking and avoiding any potential confusion and clever features within the software, such as cropping and breaking scans, were especially beneficial."*

As the project continues apace, Lauren can reflect that this complex survey has been assisted by both the functionality of the Trimble X9 system and also the back-up provided by KOREC.

> *"We have a great relationship with the technical support team at KOREC and it's good to know that we can always contact them and get a speedy response to any queries. KOREC has a good understanding of what we're trying to do here at Glanville and their service reflects this."*

Visualisation of Warneford hospital – birds eye view (left) and the Trimble X9 in use at the hospital (right)

Trimble Perspective software tips for managing a large site

The Trimble Perspective field software, which is specifically designed for in-field georeferencing and complete registration when working with Trimble X Series Laser Scanners, also delivered some additional benefits for Lauren and the team that are particularly relevant to larger projects:

• Ability to turn layers/floors on and off – useful for avoiding confusion and checking nothing had been missed on floors with multiple rooms.

• Limit box tool – great tool for slicing through floors and ideal for checking data and make sure scans are registered correctly.

• Outline cloud view- a simple click to see vertical walls, helpful again to check that scans are registered correctly, without the distraction of the ceiling data.

...and some additional KOREC tips

• Add area –from the 360 dome scan, select any number of smaller areas for higher res scans on areas of interest.

• Scan station viewing tool – display the last five or so scans for easy checking.

• Add annotations – see something in the room, take a photo, add a note and georeference it to the scan. Great for noting listed building features that need better documentation.

• Move and rotate tool – a useful visual way of fixing scans by simply moving them to where they need to be and rotating until they are in the correct alignment

• Magnifier tool – eg, magnify an intricated design such as a listed building feature, and then zoom in to check everything is clear and correct and all scans are connecting.

CONTACT US

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

(UK) 0345 603 1214
(IRE) 01 456 4702

info@korecgroup.com
www.korecgroup.com

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