16 DECEMBER 2024

DEIAN DAVIES - 2320098

PLANNING A BUILDING SURVEY USING DIGITAL TECHNOLOGY.

PLANNING A BUILDING SURVEY.





INTRODUCTION

The building industry is evolving exponentially with its health and safety culture, design and construction. The importance of a thorough survey is key to a successful construction site. building surveys allows us to have an in-depth understanding of not only the building, but it's surroundings, by doing so reveals information further than what I can see. Building surveys is an essential tool in the construction industry as it provides a comprehensive understanding of a buildings condition, structural integrity and compliance with legal and safety standards.



This assessment will produce a clear and detailed plan of the surveying process. It will also state how using digital technology can aid in surveying a property.

An in-depth building survey is key to gather all possible information regarding the building. Its important to document the present condition of the property, highlighting areas of failure or concern. In the initial stage of a survey, its allows the surveyor to identify causes of past or ongoing deterioration and implicating measures to improve these deterioration in the construction phase. If any significant issues are identified, the surveyor will attend the issue to prevent serious damage to pre-empt problems in the future.

SCOPE

To determine what type of building survey is required the client must specify what scope of work is required. According to the Royal institution of Charter surveyors (RICS) there are three main types of building surveys.

LEVEL 1 HOME SURVEY

CONDITION REPORT

The level 1 home survey, describes the condition of the property as well as identifying any potential risks, legal issues or urgent defects in the report but will generally not note any advice on how to improve/ repair any defects. This is ranked typically as the lowest priced survey. Usually the level 1 home survey is used on newer homes.

LEVEL 2 HOME SURVEY

HOME BUYER REPORT

A level 2 home survey is most suitable for conventional properties that are in reasonable condition and are simple inform and layout. This report will provide you with more detailed information about the property. Compared to the level 1 survey, the home buyer report will provide the client with a list of improvements that could be considered for any ongoing or future issues.

LEVEL 3 HOME SURVEY

RICS BUILDING SURVEY

This is the most comprehensive survey out of the three. The level 3 Home Survey provides the client with an extensive, in-depth analysis of the condition and includes advice on defects in the property in addition to possible repairs and maintenance options. This is used for, a large, older or rundown property, a building that is unusual or altered, or if a client is planning major works.



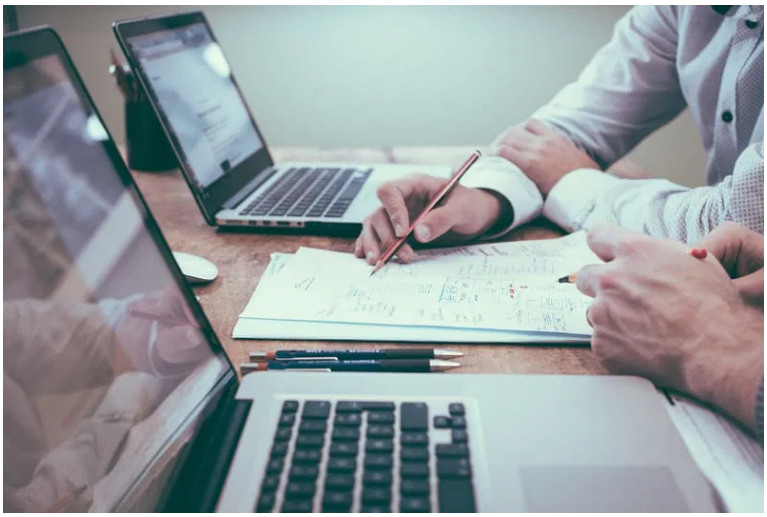
Firstly, an evaluation of the clients requirements is required at this stage allowing us to determine the type of survey that would best suit their needs. A professional body consultant is needed to follow correct guidance. Any instructions should be confirmed in writing before commencing a survey.

PRE-INSPECTION PREPARATIONS

Before commencing a survey, there are numerous preparations needed. Access to the property, to me, is the most important part of the stage, as it is near impossible to survey a building/property from photographs. Therefore, contact should be made with the client to arrange access to the property. After a thorough conversation with the client, to determine the scope of work. The surveyor needs to identify the basic equipment needed to survey the property. Appropriate PPE (personal protective equipment), measuring equipment, ladder, damp meter, notepad etc.



A desk-top survey is necessary before commencing an on site survey. This is to ensure all possible historic information is gathered. An examination of all documentation and other information relating to the building is advisable helping the surveyor has a clear understanding of the site. As-built plans and drawings would be useful to show the building's original construction as well as Ordnance survey maps of the area. If this isn't done accordingly, the surveyor could implicate unnecessary suggestions to the client's brief.



Finally, to conclude the preparations needed before commencing a survey. It's important to research into the age and location of the building. By contacting the local authority, the surveyor can request any previous building control approvals or planning permissions, to indicate any past major changes/interventions to the property.

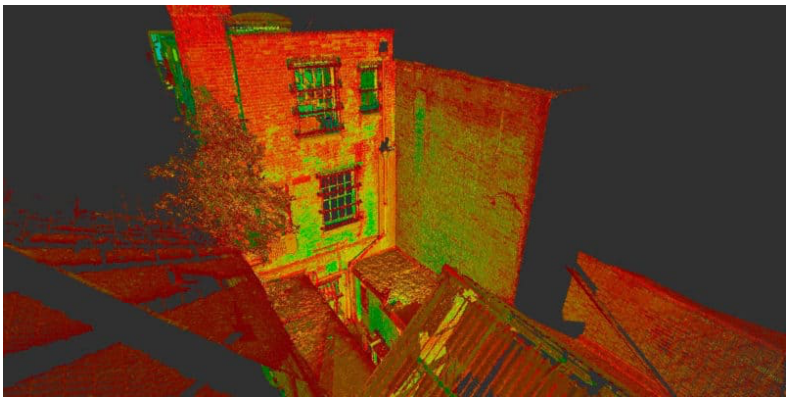
DIGITAL TOOLS AND TECHNOLOGIES

Measured building surveys is the “bread and butter” of all successful building projects for centuries. The fundamentals of surveying are the same today. Modern tools and technologies has improved efficiency and safety for surveyors for the last 20 years. These improved measures allows surveyors access in hard to reach areas, hazardous sites, high hard to reach areas. Allowing for a better understanding of the surrounding site. But not only has digital technology improved on site data, it’s also improved the desk-top experienced as well. Cutting time from surveyors, with improved accuracy in collective data.



LIDAR

(LIGHT DETECTION AND RANGING)



LiDAR is a remote sensing method for creating 3D models in real time. according to the article by published on



Faro, “LiDAR sensors work by emitting millions of laser pulses per second. Each laser pulse returns to the scanner, calculating the distance between the object and the sensor using the velocity of light, referred to



as the time of flight. The result is a single point in space and the combination of all these points creates a dense 3D visualisation called point cloud date".

LiDAR is very beneficial in the construction industry as it gathers information stationary, while moving or even during the night. This cuts down time for a surveyor as the LiDAR can collect information when the surveyor is pre occupied. Terrestrial laser scanners can create such a in-depth model, if the surveyor glanced over a possible defect in the building, the LiDAR Scanner would collect that data.

INFRARED CAMERA

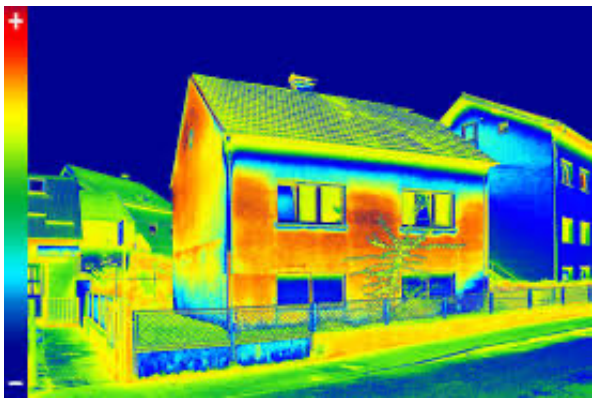
(THERMAL CAMERA)

An infrared camera is an extremely useful device for surveyors, as it can look further that what the eye can see. By using a thermal camera, it enables the user to locate possible defects such as cold spots, loss of heat, warm spots , that could cause a threat to the building in the future.



HOW DOES IT WORK?

According to the article on Linkedin, as all objects emit infrared radiation, relating to their temperature. Meaning the hotter the object is, the more infrared radiation it emits. Thermal cameras detect this radiation and converts into a visible image that can be analysed. In comparison to visible light imaging, thermal imaging provides a view of temperature patterns not visible to the naked eye.



DRONES

(UAV - UNMANNED ARIEL VEHICLES)



Traditionally, surveys of roofs are dependent on ladders and scaffolding, but is not always accessible by a human. Drones play a vital role in accessibility on construction sides in this day and age. Unmanned Ariel Vehicles (UAV's) are more advanced today than ever before, as a surveyor can attach both of the above to better the report as well as capturing photographs.



According to the website handr.co.uk "building inspections of hazardous environments or high elevations and roofs always carry a small degree of risk, even when health & safety regulations for working at height are diligently complied with as a matter of course. Using a drone eliminates the need for surveyors to climb buildings, traverse unstable or slippery surfaces or face unexpected dangers, and they can easily reach blocked access areas that humans cannot."

PLAN

ON-SITE RECONNAISSANCE

With the chosen equipment explained and listed above, it's time to construct a plan.

Firstly, it's advisory to check the weather. Keeping a close eye on percentage of precipitation in the area, wind speed and direction. After arriving on site, a visual inspection will take place, noting if there are any major defects in the facade and the structure. It's also wise to note the north point, to mentally note where the sun would rise and set.

WHAT TO LOOK FOR?

- Are there any major obstacles or natural formations that might have an impact on the property?
- Do any of the surrounding properties display common faults?
- Are there any access problems that may adversely effect the use of the property?
- What is the physical context of the property?
- Are there any joining or approaching roads in a poor condition?



INFORMATION GATHERED

Following the collection of all the data, the results will be assessed through a building survey report. This report will include a thorough analysis of the construction and state of the various building components, a summary of repair options, and, in certain situations, specific risks to the property and its occupants, such as a large hole in the garage floor, structural issues like serious roof defects, compromised chimney stacks, and significant damp penetration, as well as advice for legal The client will gain a comprehensive awareness of significant matters, particularly those pertaining to surveyors' legal obligations. After that, the information will be added to the BIM model.



CONCLUSION

In conclusion, this building survey planning has demonstrated that, in comparison to more conventional approaches, surveying technology has significantly increased accuracy, safety, and speed, demonstrating that, once again, technological developments are limitless. Using BIM to represent buildings makes it possible to plan repairs effectively and how the building will be maintained. The use a modern technology in building surveying has revolutionised the industry, as this might be the way forward in the industry. The surveyor's job has been greatly enhanced by the use of contemporary surveying techniques like drones, LiDAR and thermal imaging, which enable them to collect accurate, definitive data while lowering dangers and site time.



REFERENCES

admin (2022). *7 Reasons to Work in Construction*. [online] Boss Training. Available at: https://bosstraining.co.uk/7-reasons-to-work-in-construction/.

admin (2024). *Is LiDAR the Same as 3D Laser Scanning?* [online] Survey2Plan. Available at: https://survey2plan.com/lidar-vs-3d-laser-scanning/ [Accessed 16 Dec. 2024].

Dubois, A.-S. (2022). *LiDAR Enhances Construction Site Safety*. [online] Insights | Outsight. Available at: https://insights.outsight.ai/how-lidar-is-changing-construction-site-safety/.

Freeths.co.uk. (2024). *Construction & Engineering Law | Construction Industry Legal Advice | Freeths*. [online] Available at: https://www.freeths.co.uk/legal-services/construction-engineering/ [Accessed 16 Dec. 2024].

H + R. (2024). *Drone Survey for Listed & Heritage Buildings | Hutton & Rostron*. [online] Available at: https://handr.co.uk/services/technology/ [Accessed 16 Dec. 2024].

Rics.org. (2023). Available at: https://www.rics.org/consumer-guides/house-surveys-uk-the-costs-types-and-benefits-of-an-rics-home-survey.

Sky Revolutions. (2023). *Introducing LiDAR*. [online] Available at: https://skyrevolutions.co.uk/news/introducing-lidar/ [Accessed 16 Dec. 2024].

Woffindin, L. (2023). *Everything you need to know about Construction Site Safety*. [online] CPD Online College. Available at: https://cpdonline.co.uk/knowledge-base/health-and-safety/everything-you-need-to-know-about-construction-site-safety/.

www.linkedin.com. (n.d.). *How Does A Thermal Camera Work?* [online] Available at: https://www.linkedin.com/pulse/how-does-thermal-camera-work-topdontech.

xanda (2024). Innovative Techniques In Measured Building Surveys: What's New In 2024? - Michael Gallie & Partners. *Michael Gallie & Partners*. [online] https://www.michaelgallie.co.uk/innovative-techniques-in-measured-building-surveys-whats-new-in-2024/