



Your integrated survey partner

Providing all your project's
measured survey, mapping
and 3D modelling requirements

Complex data made simple

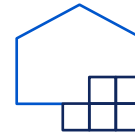
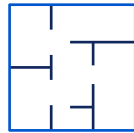
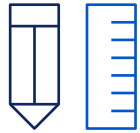
Working predominantly with the architecture, engineering and construction industries, Powers provides **measured land and building surveys, underground utility detection, site engineering, 3D Revit models and interactive 3D maps**, across the UK.

Our aim is to keep your projects running on time and within budget. Our high-performing teams achieve this by limiting the potential for project over-runs or over-spend by solving your complex measurement and mapping dilemmas at every stage of your project's lifecycle.

We are a learning organisation, constantly updating our team's skillsets and equipment, with an increasing emphasis on advanced software deliverables. We're committed to providing digital assets at speed, in a format that means you can hit the ground running.

We take the time to evidence everything we do, precisely measuring all your requirements, giving you the time to make informed decisions aligned to your budget and time constraints.

Surveying in the construction lifecycle



① PRE PLANNING

Topographic Surveys

Measured Building Surveys

3D Laser Scanning

3D Mesh Models

3D Revit Models

Underground Utility
Detection Surveys

Augmented Reality of
Underground Services

Boundary Surveys

Accurate Measured
Viewpoints

Mobile Mapping

Drone Survey

② SITE PREPARATION

Setting out for
Construction

Boundary Surveys

Topographic Surveys

Underground Utility
Detection Surveys

3D Ground Modelling and
Volumetrics

Drone Survey

Augmented Reality of
Underground Services

③ ON-SITE CONSTRUCTION

Setting Out for
Construction

3D Ground Modelling and
Volumetrics

3D Laser Scanning

Machine Control

Drone Survey

Progress Survey (As-Built
Survey)

360° Virtual Tours

④ POST CONSTRUCTION

Topographic Survey

Progress Survey (As-Built
Survey)

3D Mesh Models

3D Laser Scanning

Deformation and
Movement Monitoring

Drone Survey

360° Virtual Tours

Topographic Surveys

Topographic surveys are designed to gather data on the natural and manmade features of the land, and the contours of the terrain.

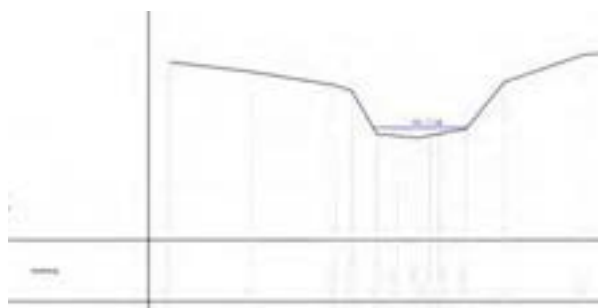


TOPOGRAPHICAL SURVEYS

To provide a complete picture of your site above ground, we undertake accurate hi-tech, high-precision topographical surveys using GNSS and total stations. We analyse, interpret and record data on natural and manmade features and the contours of the terrain turning it into 2D or 3D models.

DID YOU KNOW?

Combining your **topographical survey** with an **underground utilities** or **measured building survey** can reduce the overall cost of survey work



RIVER SECTIONS

River sections show a slice through a river at various points along the watercourse. They are important surveys for flood risk assessment and are used to determine the potential effects of the project on the site's drainage capability.

Developers are being urged to get a flood risk assessment done especially in areas with critical drainage problems or in flood zones 3, 2 and 1.



AS BUILT SURVEYS

As built, also called 'as constructed', surveys are usually produced at the end of the project and are used to illustrate where buildings, pavements, roads and features have been built. Development progress surveys can also be carried out during the different stages of construction, to provide a 'point in time' view.

As built surveys are used to demonstrate to building instructors that the project conforms to regulations and can be used for road adoption or land registry titles.

Measured Building Surveys

From refurbishment and redevelopment changes, to use in sales of estates, letting or land registry, measured building surveys provide accurate layouts for interior design or fit-out plans.



3D LASER SCANNING

Complex mapping is what we do best. Our 3D laser scanners capture point cloud scans in a matter of minutes, they are suitable for complex data capture requirements, and produce 3D point cloud models, 3D mesh models or 3D Revit models from the stitched scans.

From the 3D models we can produce external building elevations, internal floor plans, building cross-sections and roof plans.

DID YOU KNOW?

Laser scanning collects millions of points per second, with an **accuracy of 1.2mm**, and work can be completed **at speed**.



3D POINT CLOUD MODELS

3D point cloud models are digital models created from multiple laser scans stitched together to create a 3D point cloud of an existing building or piece of land.

3D point cloud models are suitable for companies who have in-house 3D technical knowledge and are capable of creating their own models or designs from the point cloud. For companies who don't have this capability, we can provide a 3D mesh model, Revit model or 2D line drawing depending on your needs.



3D REVIT MODELS

We know that our clients very often require a Revit model of their site or building from a 3D laser scan with basic family objects that can be changed and updated to their bespoke objects at the design stage.

You may not want to spend time transferring data from a point cloud model so let us take the hard work out of the project and provide you with a Revit model to start your designs or BIM models from.

If it would help to have a 3D mesh of the model underlaying your Revit model just let us know, we do those too.

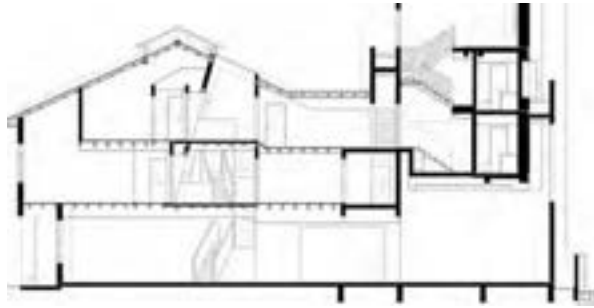
Measured Building Surveys



EXTERNAL ELEVATIONS AND STREETSCENES

External elevations are as-built drawings that show the exterior façades of a building. Elevation drawings are made from a 3D point cloud which is converted into a 2D line drawing.

External elevations and streetscenes are ideal for heritage and building restoration, as they show all the architectural elements and features of the building within the context of its neighbours.



BUILDING SECTIONS

Building sections allow the viewer to see a slice through a building at any location specified.

Architects and designers can then see the sectional layout of a building and the relationship between beams, ceilings, doors, windows and varying floor levels.



INTERNAL FLOOR PLANS

We provide clients with internal elevations and floor plans as part of our measured building services. These drawings are used to support renovation plans, which may require sill or beam heights and door widths or understanding the different floor levels across the same floor, where the building has been added to over time.

These drawings provide much needed accurate, measured internal room layout data for clients to design their renovation and redevelopment plans.

Underground Utilities

Underground detection equipment enables us to provide you with comprehensive underground utility surveys, showing position, type and depth of service networks.



UNDERGROUND UTILITIES DETECTION (GPR SURVEY)

Our underground utility detection and utility mapping surveys utilise ground penetrating radar (GPR) and electro-magnetic (EM) capabilities to map the services below the surface.

Carrying out these surveys can prevent utility strikes, project delays or even injury. Powers are one of the first companies to become PAS 128 accredited, providing utilities surveys as 2D drawings, 3D models or as 3D Augmented Reality models to view on site.



CCTV DRAINAGE SURVEYS

Powers offers CCTV surveys for drainage and sewer inspection that is affordable and gives an accurate, detailed view of their condition.

We can acquire the best results from an underground drain survey using our highly advanced CCTV survey equipment, camera units, and software, and we can provide both detailed technical reports and visual documentation of the condition of your site's drains.

DID YOU KNOW?

We also provide **topographic surveys**, in addition to **GPR surveys**, so you can see where the services are in context of your site



Drone Survey

Unmanned Aerial Vehicle surveys are a cost-effective way to survey large areas of land, in a short period of time.



DRONE SURVEY

UAV surveys are a great way to plan large projects since they collect large amounts of data in a short space of time. We collaborate with you to ascertain your needs, fill you in on the technical details, and carry out UAV surveys in the most economical way possible. To maximise the advantages of this technology for you, we capture, verify, and manage the data created in order to produce high-quality 2D or 3D models, which gives you free reign to plan and design accordingly.

DID YOU KNOW?

Combining your **UAV survey** with a **topographical survey** of specific areas will give you a feasibility study with vital detail of specific parts of a site.

Mobile Mapping

Capturing geospatial data safely and at speed via a mobile vehicle.



MOBILE MAPPING

By equipping a vehicle with GNSS, photographic, radar, laser, LiDAR or any number of remote sensing devices, we are able to capture vast amounts of data quickly. With mobile mapping there is no need for expensive traffic management, which causes delays by waiting for permission to close a road. The outputs include GIS data, 2D digital maps or 3D digital models, and georeferenced pictures or videos.

DID YOU KNOW?

Mobile Mapping can be 40 times faster than using **traditional survey methods**.

Site Engineering

Our complex measurements are executed in real time, on site, to keep projects on track and within budget. We provide expertise in setting out and modular construction to ensure projects are highly accurate throughout the lifetime of the build, preventing mistakes or re-designs.



SETTING OUT FOR CONSTRUCTION

Absolute accuracy when setting out buildings or infrastructure is crucial. Our experienced and dedicated site engineers use a combination of Leica robotic total stations and GNSS equipment. We make sure we have the most up-to-date version of a site plan and that the building coordinates are digitally calculated and uploaded onto our Leica Total Stations – rather than calculated by hand – helping to safeguard against human error and guaranteeing accuracy.

DID YOU KNOW?

Our team, relish the **complex mathematical challenges** on site, which is underpinned with their **training, experience and expertise.**



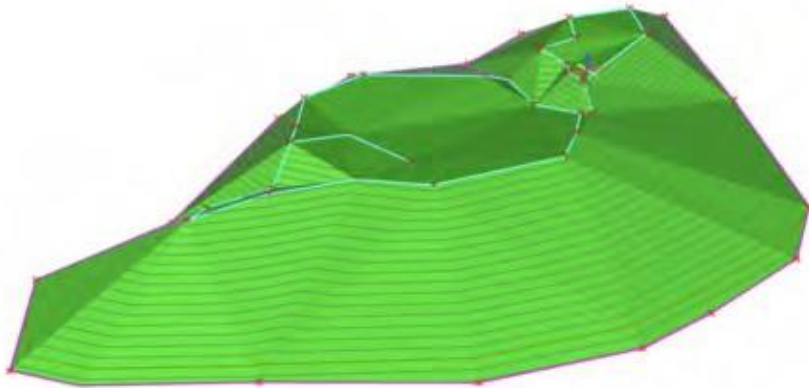
MACHINE CONTROL

Machine Control enables the seamless transfer of 3D digital design data directly into construction vehicles including excavators and bulldozers.

The construction vehicles are fitted with GNSS receivers which are linked into the site control network along with an interactive tablet display within the cabin showing the 3D digital design and where the bucket or blade is located.

Machine control reduces the reliance on labour to set out lines and levels prior to construction which also reduces the risk of injury to site staff working close to construction machines.

Site Engineering



3D GROUND MODELLING AND VOLUMETRICS

Before any groundbreaking activities, an initial level survey of the site should be completed in order to obtain accurate Original Ground Survey (OGL) data. Following processing, a digital terrain model (DTM) of the site is created, which can be used as the basis for all further surveys and volume computations. Additional surveys can be conducted at various milestones throughout the project to provide updated 3D digital models that can be compared to the OGL to determine the volume excavated or filled.

Similar CAD modelling of the design levels of a site, whether cut or fill, can be utilised as a foundation for directing the earthworks as it advances. At any point on-site we are able to provide accurate level data from existing to design by using a DTM or "TIN" model (triangulated irregular network), which is created from the design drawings and then transferred to a GNSS device or total station.



DEFORMATION AND MOVEMENT MONITORING

Buildings or landscaped areas with poor foundations, can be subject to movement, such as land settlement or subsidence, resulting in the need for a number of surveys to check ground, floor and wall levels or to check steelwork alignment.

Depending on the project requirements, a subsidence survey, a levelling survey or a settlement survey could be used to measure the speed at which an object is moving at ground level.

Viewpoints

Using photography and hi-tech precision equipment, our team can exactly pinpoint where a building will be placed within an urban setting.



ACCURATE MEASURED VIEWPOINTS

Accurate measured viewpoints, or verified view surveys, provide a visual representation of a proposed new building within an existing cityscape. They are increasingly being requested by planning authorities to communicate where and how a building will sit within the current landscape or skyline.

360° Virtual Tours

Using photographic scanning equipment, we can create 'in real life' walk throughs to complement digital surveys of buildings



360° VIRTUAL TOURS

Sometimes you need to see what the inside of a building looks like to communicate your ideas to a number of stakeholders. Being able to view the reality of what exists within a building alongside the digital model, map or drawing enables everyone to completely understand your ideas and how they will work in situ.

Photographic scanning equipment can pick up measured 360° photos of the internal aspect of any building.



We are dedicated to keeping your project on course and within budget, with a fast, accurate and flexible service.

We are discreet and understand the confidential nature of pre-construction projects. Our experienced team is able to head off complex mapping issues before they arise. We initiate management processes of meticulous record keeping, ensuring you receive a high-quality product or service via our ISO 9001, 45001 and 14001 Information Management Systems. We are audited by a UKAS accredited company every year which means our management systems are robust enough to work in the aviation, aerospace, security and defence sectors.

Drop in for a chat, call to discuss your project, or if you're pushed for time, send all your plans and project outlines to Matt Powers: matt@powersuk.com

We look forward to hearing from you.

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