Related products and services

BlomURBEX: An advanced imagery information system
provided by BLOM and delivered online via centremaps*live*.com. This unique product combines oblique aerial imagery with a state-of-the-art software system that provides unparalleled visual intelligence. This is a significant step forward in the application of oblique aerial photography with online tools for taking bearings, distance, area and most significantly height measurements directly from the screen.

National Benchmark Listing - FREE
There is a complete location finder and listing on centremaps*live*.com for all benchmarks within Great Britain.

UK Land Survey Register - FREE
There is a listing available on centremaps*live*.com which details the location of many of the recently undertaken topographical surveys within the UK. The contact details of the company which undertook the survey are also provided. Subject to the copyright conditions of the surveyed data, it may then be possible to contact and acquire this detailed and valuable survey data from the company in question.

Mapping Services from Laser Surveys
Laser Surveys is the parent company of Centremaps. Established for over 30 years it is one of the longest established survey companies in the UK. To complement the data available via centremaps*live*.com, Laser Surveys is able to offer a full range of pre-contract mapping services. This includes;

- Topographical Surveys
- Measured Building Surveys
- Underground Services Surveys
- Drainage Connectivity Surveys & Culvert Alignment
- CCTV Drainage Condition Surveys

To get a quote to commission a survey, please contact us directly.

Your next step

Log on to www.centremaps*live*.com and register. Follow the straightforward step-by-step guide to place your order.

Alternatively call 01886 832972 or e-mail enquiries@centremaps.co.uk for further information.

....centremaps*live*.com is different

With our unique knowledge of mapping and geology we have designed and developed a mapping delivery system to meet your needs and give best value.

The full range of products and features available on centremaps*live*.com also includes;

- **OS Mastermap® data: Now available with new Plan Design and Build (PDB) Licence**
- **Ordnance Survey Raster Products**
- **Precision drawing and area measurement tools**
- **Aerial Imagery**
- **Historical Mapping**
- **GroundSure Environmental Data**
- **GroundSure Environmental Reviews**
- **BGS Geological Information**
- **Geospatial Data for Northern Island**
- **Underground Utility Searches**
- **Integrated licence and account management tools**
- **Mac and PC compatible interface**

Centremaps is an approved member of the RIBA CPD Providers Network with a seminar entitled 'Mapping Data – 2D and 3D Information'. Please contact us for further information or to request a free seminar.

centremaps*live*.com
the mapping portal from Laser Surveys

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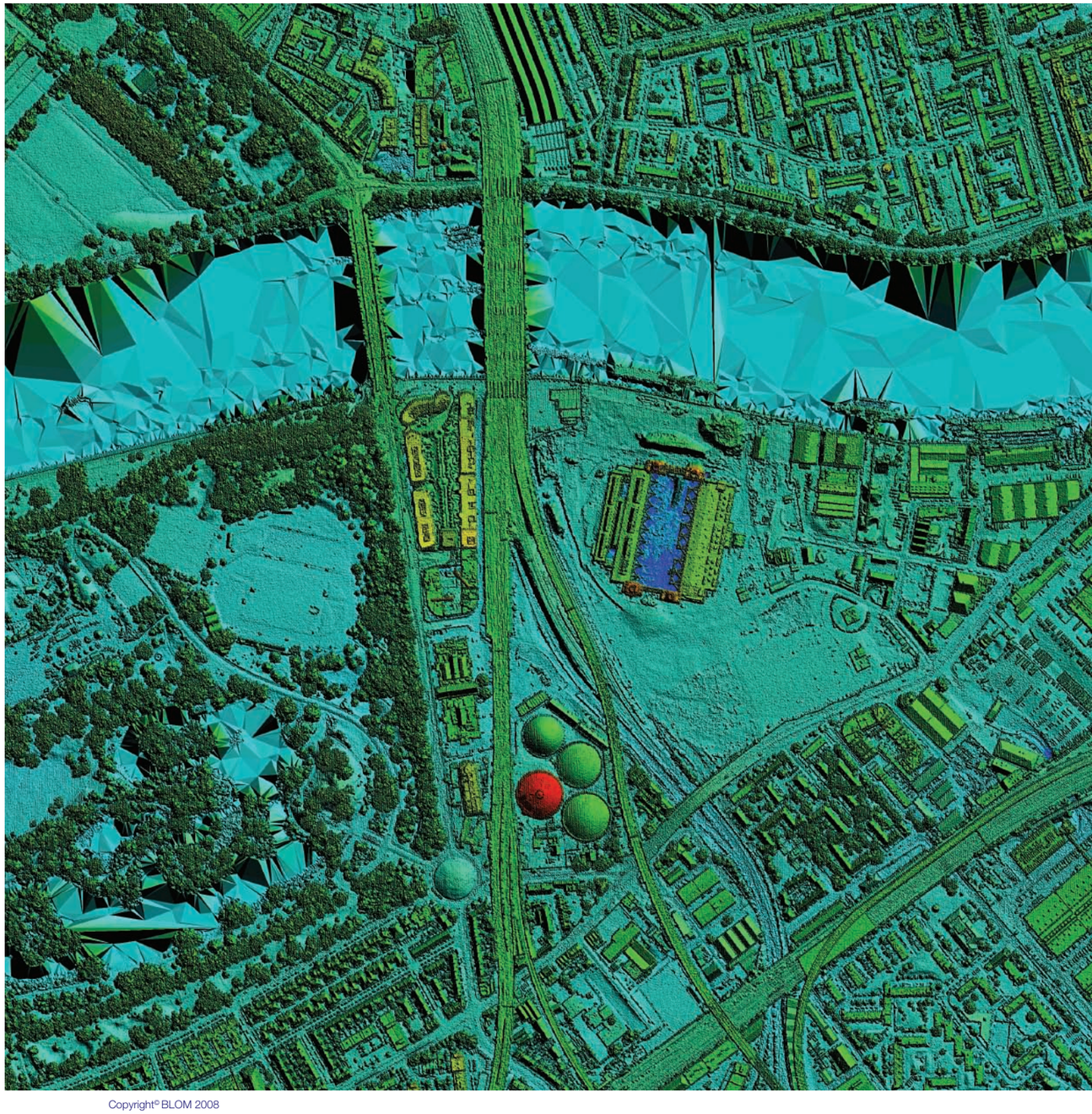
Height Data

A guide to the unrivalled product range available on centremapslive.com

centremaps*live*.com
the mapping portal from Laser Surveys

HEIGHT DATA



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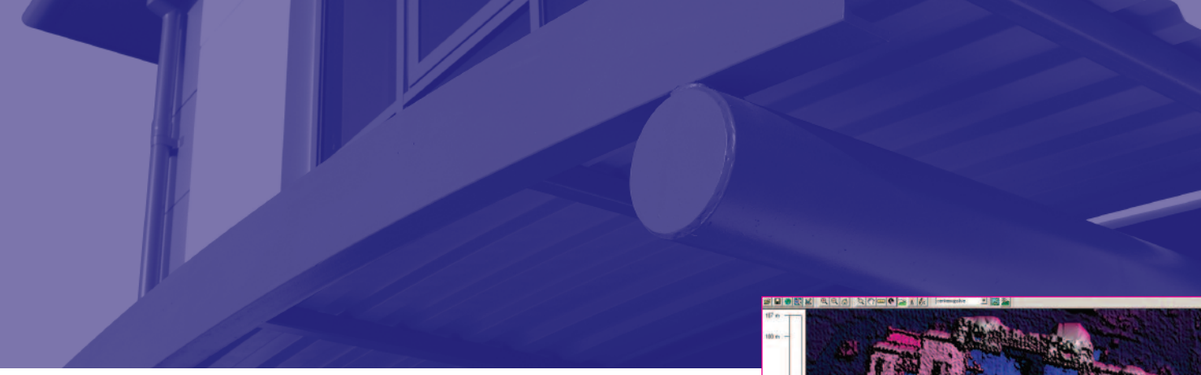


Data Sources

- Ordnance Survey®
- Cities Revealed
- Infoterra
- The Environment Agency
- NEXTMap
- BLOM

Data Types

• Digital Surface Models (DSM) :
DSM's measure the height values of the first surface on the ground. This therefore includes terrain features, buildings, power lines and vegetation such as large trees or forests, thus providing a topographic model of the earth's surface.

• Digital Terrain Models (DTM) :
DTM's are usually derived from DSM's by digitally removing the cultural (man-made) and vegetation features described above. DTM's therefore provide a topographic model of the underlying terrain / bare earth.

Collection Methods

• LiDAR (Light Detection and Ranging):
This technique measures distances using Laser technology, i.e. by measuring how long it takes for a light wave to travel from an airborne location, usually an aeroplane, to bounce off the object and come back. By dividing the time by two (to measure the distance one-way instead of the round trip), and multiplying the result by the speed of the light wave, a height value is therefore obtained. It is the predominant data collection method used today.

• IFSAR (Interferometric Synthetic Aperture Radar):
This technique works on the same principle as LiDAR except using radio waves instead of light waves. Notably used by Intermap in production of the NEXTMap Britain dataset.

• Photogrammetry:
This is the practice of obtaining information, about physical objects, including height values, through the process of recording, measuring, and interpreting photographic images.

• Topographical Survey:
GPS survey and in the past, surveys levelled to the national benchmark network have been included in some datasets. However, due to the high cost of collecting data in this way, survey data has not been widely used to collect and produce commercially available datasets and is primarily used to verify other capture methods.

Resolution / sampling density

The level of detail shown by any height dataset will vary depending on the density at which the height values are collected. The smaller the interval between height values, the more detailed the grid of height values, and therefore the dataset, that it forms.

Most height datasets are collected as a grid with an interval of between 1 metre and 5 metres between each height value. More recently however, LiDAR data has been collected at 0.5 metre and even 0.25 metre intervals in some areas.

Accuracies

• LiDAR
Currently available LiDAR data has been collected with a stated vertical accuracy of up to +/- 0.10m RMSE. Horizontal accuracy is normally within +/- 1m RMSE.

The accuracy of LiDAR data will usually vary in relation to the resolution of the data collected. The higher the resolution the more accurate the data is likely to be.

As DTM's are derived from what is originally a DSM, they will generally be slightly less accurate.

The accuracy of LiDAR data can also vary depending on the type of area for which data is being collected. For instance, the following factors may have a negative influence on the accuracy of the data.

- Areas of continuous and dense building or tree coverage (this also makes it more difficult to convert a DSM dataset into a DTM dataset).

- Rapid Changes in terrain or steeply sloping terrain.

• IFSAR:
Tested vertical accuracy of +/- 1.0m RMSE for 95% of the DSM dataset collected on a 5 metre grid. Tested vertical accuracy of +/- 1.5m RMSE for 95% of the derived DTM dataset, also on a 5m grid.

Horizontal accuracy for data collected on a 5 metre grid has been verified to within +/- 2.5m RMSE

As the collection and collation methods are similar to that of LiDAR data, the same factors are liable to effect the accuracy of IFSAR data.

• Photogrammetry
Typically, photogrammetry is more accurate than LiDAR and IFSAR in the x and y (horizontal) direction while IFSAR and especially LiDAR are more accurate in the z (vertical) direction.

Furthermore, photogrammetry often provides more reliable data in areas where LiDAR and IFSAR data are relatively unreliable. Factors such as the coverage of buildings and trees, rapid changes in terrain or steeply sloping terrain, are less likely to result in higher levels of inaccuracies in the data. For instance, photos can clearly define the edges of buildings when the point cloud footprint from LiDAR and IFSAR can not. Conversely, photogrammetry is less reliable in flat and featureless areas.

For these reasons, photogrammetry has been included within some datasets for which LiDAR data has predominantly been used in order to incorporate the advantages of both systems and integrate it to create a better product.

• Topographical Survey
Current GPS survey techniques provide highly accurate data, with achievable vertical accuracies of within +/-10 mm.

Data Formats

The majority of the height datasets on centremaps*live*.com are available in a number of different formats.

The following formats provide the data as a grid in x,y,z format points. They can be used in a variety of CAD and GIS packages.

• DXF

• DWG

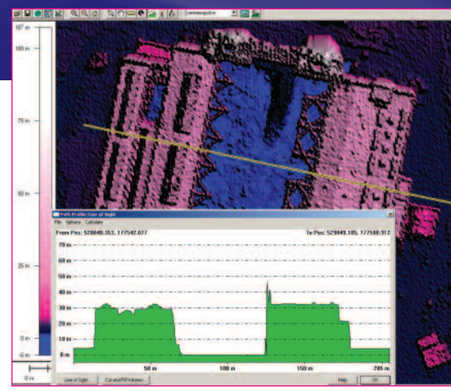
• ASCII GRID

• CSV / XYZ

Contours
Contours are the most popular and widely understood way of visualizing and presenting height data. They are derived from the measured height values and are available in DXF and DWG formats to suit a range of CAD and GIS packages. Contours can also be generated in CAD or GIS from the original grid of point values when provided in an appropriate format.

Contours may also be purchased in instantly accessible raster formats (PDF / TIFF). In these formats they are generally presented overlain on other layers of mapping and/or imagery. The 'layered PDF' format available on centremaps*live*.com allows you to view each of these layers separately or in combination, as required.

Generating contours always involves a certain amount of approximation and the accuracy of contours depends almost entirely on the accuracy and density of the height values from which they are derived. The more accurate and detailed the source data, the more reliable and detailed the contour map that can be produced.



Purchasing your height data on centremaps*live*.com
Centremaps*live*.com will provide you with a listing of available height data for your chosen site, thus effectively acting as a menu of height data. For each available option the following information will be listed in order to help you make the correct purchase;

- Data Supplier
- Dataset
- Sampling density / resolution
- Date of collection
- Price

Height Data grids currently available on centremaps*live*.com

Source	Datasets	Data collection method	Resolution	Vertical Accuracy (RMSE)	Coverage
The Environment Agency	LiDAR	LiDAR & photogrammetry	2m to 0.25m	+/- 15cm	Coastal areas, flood risk zones, urban centres
BLOM Aerofilms	LiDAR	LiDAR	0.5m	+/- 15cm	London
Infoterra	LiDAR	LiDAR	2m or 1m	+/- 15cm	100+ GB Urban areas
	Terrain Model	Photogrammetry	5m	+/- 1.5m	England
Cities Revealed	LiDAR	LiDAR	2m or 1m	+/- 15cm	Numerous urban centres and environs
Intermap	NEXTMap Britain	IFSAR	5m	+/- 1m	GB
	NEXTmap2 (coming 2009)	IFSAR + EA LiDAR	5m	up to +/-15cm	GB, with higher detail for EA captured areas
Ordnance Survey	OS Profile	Photogrammetry, topographical survey	10m	+/- 2.5m lowland, +/- 5m mountain / moorland	GB
	Landform Panorama		50m	+/- 5m	GB