

Bathymetry integrated with LIDAR surface data and aerial photography
Clatworthy Reservoir, Somerset

Case Study Wessex Water Bathymetry

Overview

Wessex Water is the regional water and sewage treatment business serving an area of the south west of England, covering 10,000 square kilometres including Dorset, Somerset, Bristol, most of Wiltshire and parts of Gloucestershire and Hampshire. Wessex Water owns 12 surface water reservoirs, supplying approximately 20% of their water.

The Challenge

Water companies have a statutory duty to compile a water resources management plan, which demonstrates to regulators, customers and stakeholders how they intend to provide sufficient water and protect the environment over the

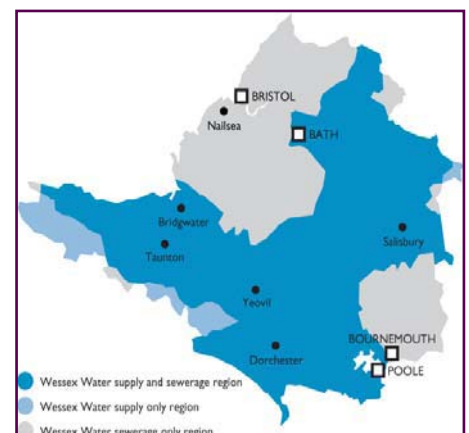
next 25 years. In order to estimate water resources, accurate reservoir models were required, providing precise water volume data. The existing volume data, gathered using manual techniques was considered to be out of date and inaccurate due to silt, vegetation and debris accumulation in the reservoirs

The Solution

Using Swath Bathymetry, Geomatics Group scanned eight Wessex Water reservoirs in West Somerset. The system used a combination of swath, single beam and echo, to give a bottom classification as well as to provide highly accurate bottom topography. The data were then merged with aerial LIDAR data and

referenced to the Ordnance Survey National GPS Network, to generate data that was seamlessly merged across the water line.

Adding to the overall effectiveness of

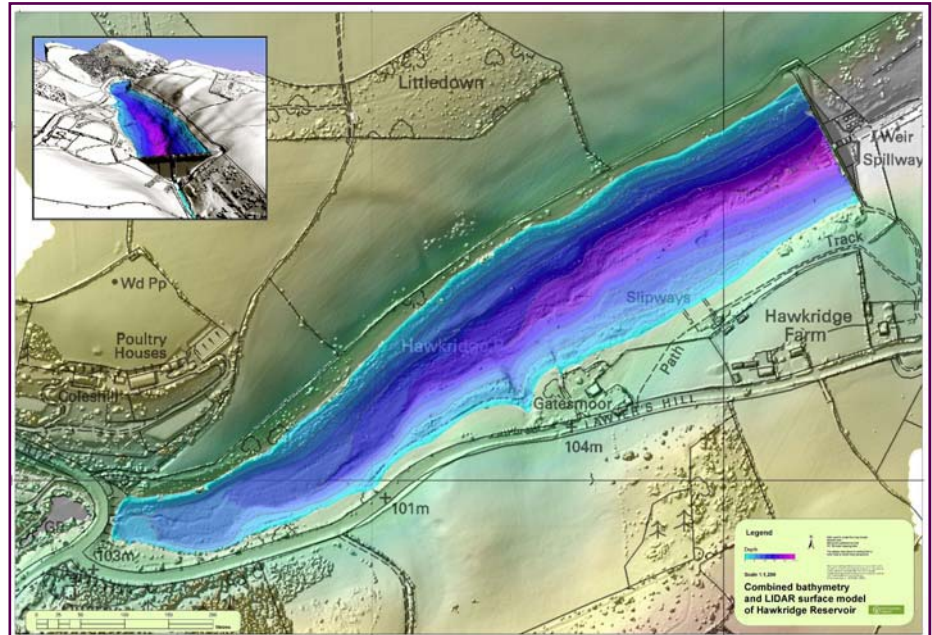


the data, Geomatics Group developed software that gives Wessex Water accurate volume calculations when the level of water is raised or lowered. Using this tool, Wessex Water discovered that some of the reservoirs had a variance in volume of nearly 10% relative to expected.

Additional benefits gained from the impressive modelling capabilities came in the form of the data being used to accurately model the flow of pesticides in the reservoirs, very important for water quality, and for use in a project on phosphate trial dosing. A totally unexpected, but very popular use, has been to provide the images to fishermen, enabling them to see where underwater obstructions and reefs are helping them to fish more successfully.

Key Features & Benefits

- Product is a surface of elevation points at 50cm intervals
- Data referenced to OS National grid, to allow full integration with other survey datasets
- Data map ready and provided in a range of digital formats
- Swath bathymetry system fully integrated with survey grade positioning and motion referencing unit
- Highly accurate: elevations +/- 10cm accurate relative to OS National grid



"The accuracy and quality of the Bathymetry data provided by Geomatics Group was excellent. There were a surprising number of additional benefits to having our reservoirs surveyed, which has only added to the cost-effectiveness of Geomatics' services."

Fiona Bowles, Project Manager, Wessex Water

- 3D visualisation of the reservoirs
- Modular equipment and a variety of survey vessels provide a scalable solution to suit any survey site
- Able to survey much larger areas than traditional techniques, providing a denser surface of measurements
- Data can be used for many different applications

Applications for bathymetry include:

- Water resources
- Flood risk modelling
- Navigation
- Construction planning
- Dredging applications
- Maritime archaeology

Geomatics Group is a leading provider of high quality survey solutions. As a specialist business unit within the Environment Agency, we deliver integrated spatial data products to government and commercial clients. Combining cutting edge technology with expert personnel, we work to the highest scientific and ethical standards to provide accurate and high quality spatial data.