

CASE HISTORY

Application: **Shaft Survey**

Technology: **Sonar Caliper, CCTV**

Location: **Redruth, Cornwall, UK**

Robertson Geo Services were contracted to conduct a sonar and CCTV survey at an impressive Cornish beam engine and industrial heritage site at the heart of the Cornish Mining World.

Preserved in its towering engine house, as a reminder of Cornwall's days as a world-famous centre of industry, engineering and innovation is the pumping engine itself which goes into Taylors shaft. The pumping engine is one of the largest surviving Cornish beam engines in the world. The shaft was originally over 500 metres deep, pumping water for the East Pool and South Crofty Mines.



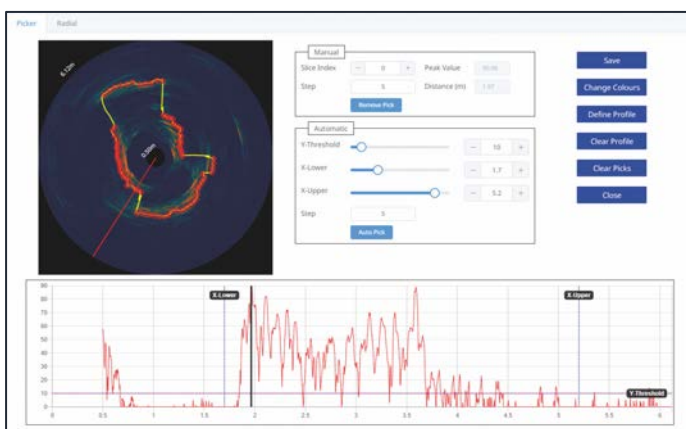
Requirement:

The purpose of the survey was to check the integrity of the shaft with the CCTV camera, looking for possible collapse zones. Cross sections of the shaft at 5 metre depth intervals were to be measured by the Sonar Caliper to form a 3D model of the shaft.

How the Sonar Caliper Probe Works:

The Sonar Caliper Probe provides a scaled and orientated cross-section of large bores, shafts, caverns and trench walls; combining accurate diameter measurements with a fully orientated 360° view of its surroundings.

The Sonar operates by emitting a pulse of sound that is reflected by a solid object; timing the delay between emission and the arrival of the reflected sound wave back at the probe allows for a calculation of distance. The probe makes 400 individual radius measurements in a 360° arc around the probe and then orientates them to magnetic north.



The Data:

The CCTV camera recorded a video of the condition of the walls from surface to the water table and until the water became increasingly opaque and the video was stopped.

The Sonar Caliper recorded cross sections at 5m intervals from the water table until the bottom of the shaft was reached. The sonar data obtained was presented as cross sections with minimum and maximum radius and area automatically calculated. A vertical profile and a 3D view were also derived.

End Value to Client:

The data obtained helped the client understand the condition of the shaft, enabling them to make better informed decisions regarding the future of the shaft.