# 3D LASER SCANNING: TUNNEL PROFILING

IRELAND and the southern areas around the Ring of Kerry are famous tourist attractions for its scenic beauty. The roads are often narrow passing through step rugged mountains with spectacular views. Traffic volume along these narrow roads is relatively high.

Naturally some of these roads pass through tunnels, which were built in the 19th century, over 100 years ago.

Some of these tunnels are up to 180 meters in length with no lighting. In addition the walls of the tunnels are very irregular. These conditions have led to several incidents over the years with inadequate clearance leading to HGV's and larger vehicles becoming stuck in the tunnels. Such an incident takes several hours to clear and causes major traffic delays with alternative detour routes of around 50 miles required

The local council engineering department required a **survey of four(4) of the tunnels.** The tunnels varied in length between 30 meters and 180 meters. Deliverables required were site plans of each tunnel and 2D cross section profiles every 5 meters.

**The survey could only be carried out at night time** with road closures between the hours of 9.00pm and 7.00am to minimize disruption to the general public

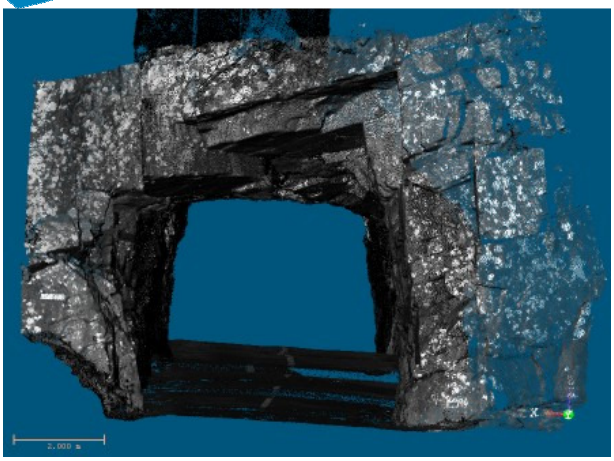
KIWI SURVEYS and 3D Laser Scanning was selected as the ideal solution

.3D Laser Scanners are an exciting new technology which capture thousands of coordinates(3D) every second. With fields of view of 360 degrees and measurement ranges of up to 100 meters they are ideally suited to a range of applications in land survey, civil engineering and M&E.

T : 64-7-5443942
E : info@surveysolutions.co.nz
W : www.surveysolutions.co.nz

3D Laser Scanning | Sales | Land Survey

192 Welcome Bay Road
Tauranga 3112
New Zealand
Company No. 3036769
VAT No. 105-162-170



*3D Pointcloud rendered grey scale*
*(raw field data)*

**The field survey was carried out over 2 nights** to complete all 4 tunnels.

GPS was used to establish primary survey control stations at each end of all the tunnels.

A Total Station was used to provide survey control inside the tunnels and to QC the 3D laser scan data at regular intervals

Winds, rain and sleet were the norm for most of the time making working conditions challenging around the tunnel entrances.

**Office processing was completed in 4 man days** and covered processing raw field data, generate 2D site plans, 2D profiles every 5 meters and 3D profiles every 1 meter.

KIWI SURVEYS and the use of 3D laser scanning exceeded the clients expectations.

The client had originally budgeted to carry out the survey over 3 nights. Considerable savings were made as the cost of a road closure on the third night was not required and disruption to the public was further minimized.

The use of 3D laser scanning enabled the survey to be completed in a fraction of the time it would have taken using conventional Total Stations. In addition the **overall cost of the survey is substantially less**.

The director of SURVEY SOLUTIONS, Allan Hosking, was the founding director of KIWI SURVEYS in England.

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