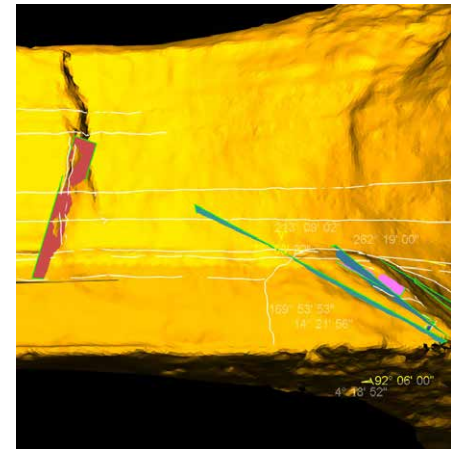


## Coastal cliff survey

Maptek™ I-Site™ scanning systems were used to develop a detailed model to assess the geotechnical features of one of Australia's most famous stretches of coastline.



The Great Ocean Road stretches between Geelong and Portland in south west Victoria, and is one of the most scenic drives in the world. Thousands of tourists visit the area each year.

Formed over 15 million years ago, the Twelve Apostles are rock stacks created as a result of erosion of the headland. The rock is predominantly limestone and is horizontally bedded. Over the years the rock has been gently uplifted due to marine erosion and only nine of the original 12 stacks remain standing today.

Maptek was commissioned to create a visual representation of the area surrounding the Twelve Apostles. The cliff face is being eroded at a rate of 2.5 centimetres a year, resulting in the formation of platforms, arches and bridges which develop into undercuts.

Repeat surveys will allow authorities to manage the coast for environmental and safety issues.

Undercutting causes collapse along the vertical joints resulting in steep slopes along the cliff face. Scanning the area using the Maptek™ I-Site™ 8800 will monitor these undercuts for change.

Accessing the beach to scan the cliff face was not an easy task. Maptek I-Site Manager, Jason Richards explains, 'The beach was only accessible at low tide and strict timing was essential to ensure we collected all of the data'.

'We scanned an area of 850 metres, which was predominantly the cliff face and headland below the lookout, in 1.5 hours. From 13 setups we collected more than 18.5 million points.'

As there were no survey locations, Google Earth was used to extract the longitude and latitude of prominent features. This was then converted to UTM coordinates, allowing the data to be located within a couple of metres of the true position.

From the scanning and subsequent 3D model, a base surface of the area has been developed allowing, for comparison of weathered features.

Major structures have also been defined and angles of the structures in the cliff face can be calculated. In addition, triangulations of the structural features within the cliff face can now be exported to Maptek™ Vulcan™ software for further geotechnical analysis.

A detailed model was created to model the major focal points, such as caverns and undercuts. An overview model was also developed in less detail for visualisation. This provided the client with information in two different formats.

The I-Site 8800 laser scanner achieved all objectives and excelled in challenging conditions. Its portability was much appreciated by the operator who had to crawl through caves when the tide came in!

Maptek will survey the coastline regularly with the I-Site 8800 laser scanner. Changes in the cliff face will be monitored by comparison to the baseline 3D model.

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