

# Control in LASER Scanning of Coastal Erosion at Happisburgh, North Norfolk, Uk

Derek Spalton (United Kingdom)

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## SUMMARY

Coastal erosion is constantly being researched in the UK and around the world, the establishment of detailed 3D models which can be overlaid with high degrees of accuracy is essential to the calculation of erosion rates and volumes of material being displaced. The establishment of the erosion rate is critical for infrastructure and people residing near the coast as protection or relocation might be required. Parts of the North Norfolk coastline have one of the highest rates of coastal erosion in the UK (Cambers, 1976; HR Wallingford, 2001, 2002; Thomalla & Vincent, 2003), which makes them excellent locations for research into monitoring through the use of LASER technology.

This project investigated using multiple Topcon LASER scanners for the creation of a 3D model to assess erosion at Happisburgh in North Norfolk, one of the quickest eroding coastlines in the UK and the establishment of survey control over 1000+ metres of coastline. The main problem encountered at Happisburgh is due the high rate of erosion the first 50 metres in land could be considered unstable (Poulton, et al., 2006) and therefore not suitable for the installation of permanent reference datum' (Lim, 2005). During the survey numerous issues were encountered, some were solved before the returning site visit, others would be addressed if the project was undertaken again.

The conclusion reached at the end of the project was that it is possible to detect and measure coastal erosion. Happisburgh has sections of coastline that are eroding at a rate of 13 metres per year this is within the bounds of other surveys findings over the last 20 years (Poulton, et al., 2006). The establishment of control points in a large survey site of 1000+ metres is difficult to process within the survey using target reflectors as the local control grid, but it is possible with thorough planning and software manipulation to achieve control on a survey. This paper concludes with

suggestions for further research into this subject area based upon the findings of this project.

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