

Low Level Helicopter Survey for the Channel Tunnel Rail Link (June 1999)

Client: CTRL Ltd, London

Brief: To produce a survey of the rail network around Ashford International Station.

Photarc, over the last twenty years, have pioneered and developed a system of low level helicopter photography using a lightweight, easily installed and easily operated Zeiss UMK camera.

The technique provides road and rail level information remotely thereby avoiding the costs, dangers, and inconvenience associated with the coning restrictions or permanent way management necessary with ground survey.

The method involves the installation of control targets on both sides of the rail or motorway at 50m intervals. These provide the necessary density to maintain the very highest precision attainable of 5mm SD. The flying height for this precision is 75m above ground but this is variable according to the accuracy requirements of the engineer.

The advantages of using a photographic system are many and cannot be over emphasised. Whilst the ability to produce further information from the photography without revisiting the site are well known, other major advantages of the system are:



- non-intrusive measuring technique
- record photography produced
- limited traffic management required
- cost effective
- minimal site time
- production of large scale plans
- photography covers a large area
- high safety factor
- planning and design use of the photography

The engineers for the high speed line required revision of the existing survey. We were asked to produce mapping to a precision of 15mm over approximately 9km of track and sidings in the vicinity of Ashford station. This is a busy junction serving local lines as well as the main line to London from the tunnel. The method avoided intrusion on the lines which, even under normal circumstances, can take many months to arrange. From the photography the mapping was revised and orthophotos produced.

In a development of this for a subsequent project along the north London section we delivered the stereo model information and the digital imagery to the client so that the engineers could use a stereo viewer (DiAP Viewer from ISM) to further interpret the data. The viewer also allows the user to superimpose the 3D data directly and add new data and annotation if required.



The method was used in 1995 in Australia for Queensland Transport on the busy Gold Coast Highway and since the trial a duplicate system was licensed for subsequent operations. We have surveyed more than 200km of motorway on many projects in the UK, Netherlands and Belgium, the most recent being 20km of trunk road in East Anglia in November 2005.