

Case Study 5: A GPS Survey of Hambledon Hill#

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Hambledon Hill, a major Neolithic and Iron Age settlement in Dorset, was surveyed at 1:1000 scale by the RCHME (Royal Commission on the Historical Monuments of England) in 1996. GPS surveying equipment was used on the site to survey the defences and to fix the position of the conventional graphical survey of the hillfort interior to the National Grid.

An advantage of using the GPS is that all the data collected have three-dimensional attributes, that is x, y and z coordinates. In addition to the detail points taken on the ramparts some 12,500 points were collected in a grid pattern within the hillfort and on the lower hillsides outside the defences. A Leica single-frequency roving unit was used to collect all the points while a similar receiver, acting as control or base station, occupied a nearby Ordnance Survey triangulation station. The roving unit was set to kinematic mode, that is it was set to record the three-dimensional position every five seconds as the surveyor walked backwards and forwards over the hill. Using GPS equipment meant that the relative accuracy of all the points collected was very high. The coordinate sets from the defences, the interior and the hillsides were then combined to create a computer-generated model that was in turn used to construct a contour plan and a digital terrain model (DTM) (Figure i).

■ **Figure i: Digital Terrain Model of Hambledon Hill**

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The Digital Terrain Model (DTM) shown in Figure i is a surface model, i.e. it has no thickness and contains no volume. The DTM was created from a mesh calculated from the three-dimensional coordinate points. Survey data is typically visualised in this form.
