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REPORT ON TOPOGRAPHICAL SURVEY & DEM MODELLING AT CASTELPORZIANO

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Introduction

The fieldwork season 15 April to 12 May 2007 continued the collection of data for a high-precision topographic model. The whole model in its current state is reproduced in Fig. 1.

The area from the westward boundary of the estate ('Villa del Confine') as far as the eastern limit of the *vicus Augustanus* had been covered during the September 2005 and April 2006 fieldwork seasons. This was followed in the September 2006 fieldwork season by a 60 metres margin beyond the eastern limit of the *vicus Augustanus* together with a 100 metres zone on the inland (northern) side of the Via del Telefono, along its entire length, so as to include the line of the Via Severiana and its associated terrain.

This season focused on closing any gaps in the areas covered so far, especially along the north and north-eastern margin of the 100 metres zone on the northern side of the Via del Telefono.

A second topographic model was also initiated in the area in and around the so-called fish farms, together with a series of fixed points linking the two areas together along the approximately 1.2 km stretch of the Via del Telefono.

Aims and Objectives

The two models aims to map both the archaeological and natural features of the present landscape in order to form the basis for both the more detailed documentation and analysis of Roman occupation along the ancient sea front (c. 200 BC-c. AD 500) and the study of its environmental and geomorphological context (carried out by Prof. Helen Rendell, Loughborough University).

It is intended to use the models to explore and explain how the architecture of the Roman villas, the associated *vicus Augustanus* and a possible harbour responded to the continuing evolution of the coastline and to the environmental changes associated with this development.

Methodology

Since the site is heavily forested, the most feasible way of recording the surface co-ordinates is using a total station and a prism. The dense foliage impedes the use of a reflectorless laser setting for the total station, differential global positioning system and also remotely sensed images.

Instead a traditional topographical survey is conducted where one person operates the total station while a second person positions the prism on the surfaced to be surveyed in a grid-like formation with 0.3-5 metres intervals between each measurement.

The Total Station employed is a Leica TPS400

Results

The area surveyed around the *vicus Augustanus* now covers 660 by 290 metres, within which 19,750 points have been taken and used to create a three-dimensional digital elevation model (DEM) in the geographic information system ArcView. The DEM has already highlighted several areas which require further investigation by other means, such as test trenches, geophysical survey and geomorphological coring, some of which were also carried out during this fieldwork season.

Work on integrating the three-dimensional data of the previously recorded archaeological features and new reconstructions into the model is currently ongoing: this phase is carried out in CAD and the resulting models are imported to ArcScene. The whole model in its current state is reproduced in Fig. 2.

The new area surveyed around the so-called fish farms, including a 450 metres section of the Via del Telefono, covers 450 by 150 metres, within which 1475 points have been taken and used to create a three-dimensional digital elevation model (DEM). The topographical model of the fish farms in its current state is reproduced in Fig. 3.

Future work

Survey work is planned beyond the eastern limit of the *vicus Augustanus* for a further 100 metres in order to clarify its associated terrain.

More work is also needed around the so-called fish farms, especially to the north and south, so as to include the line of the Via Severiana and the ancient sea front.

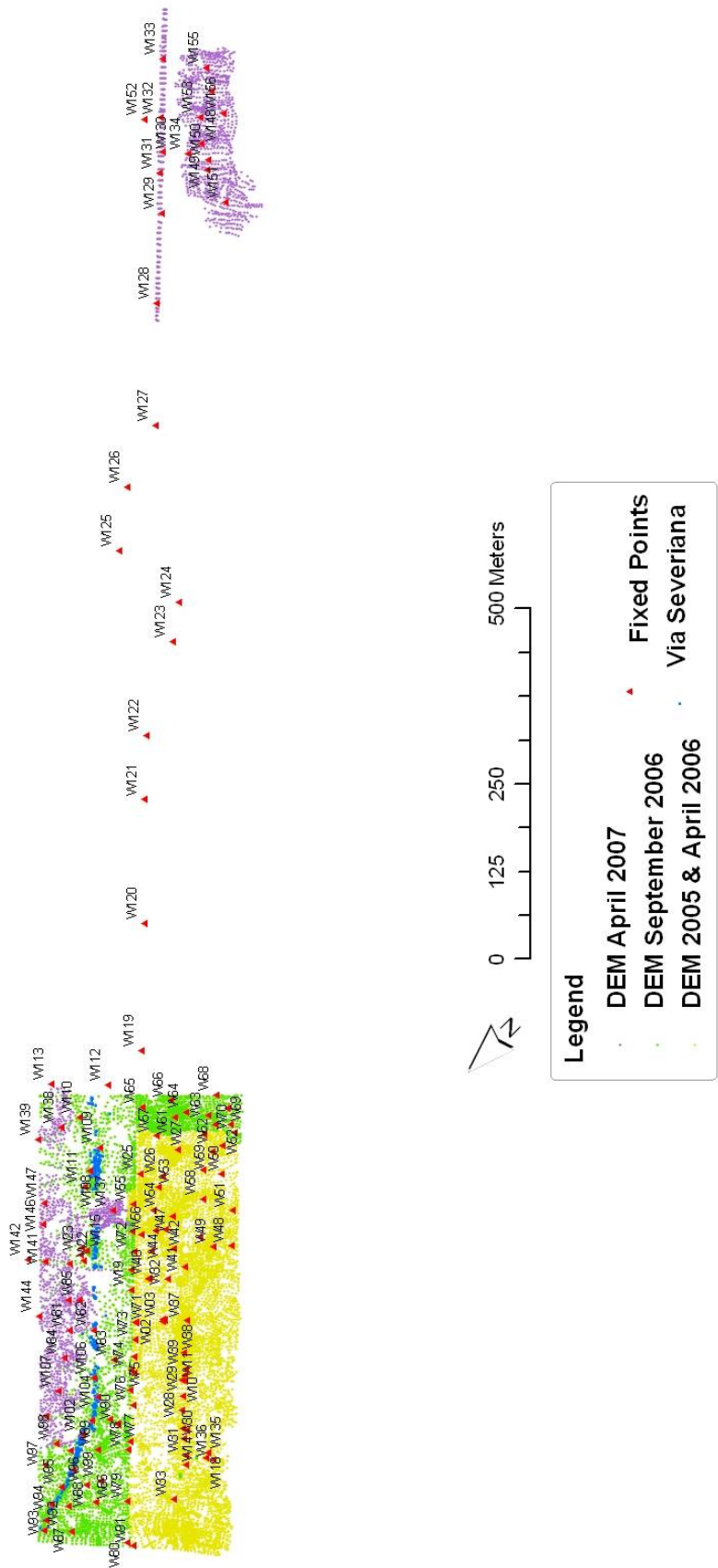


Fig 1 Digital elevation model (DEM) and fixed points taken during the 2005-2007 fieldwork seasons.



Fig 2 Digital elevation model (DEM) of Vicus Augustanus and the northern side of the Via del Telefono



Fig 3 Digital elevation model (DEM) of the fish farms and adjacent section of the Via del Telefono