REPORT ON TOPOGRAPHICAL SURVEY & DEM MODELLING AT CASTELPORZIANO

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Introduction

Since 2005 high-precision topographic modelling in the coastal zone of Castelporziano has been in progress. This began in the area between the westward boundary of the estate ('Villa del Confine') and the eastern limit of the *Vicus Augustanus*, which was surveyed during the September 2005 and April 2006 seasons. This was followed in September 2006 by a 60 m extension beyond the eastern limit of the *Vicus Augustanus* together with a 100 m 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. In 2007 the survey focussed on the remaining area to the north and the northeast of the Vicus. A second survey was also initiated in the same year in the area in and around the so-called fish farms (sites D5 and D6), approximately 1.2 km south-east of the Vicus and linked to the Vicus survey by a series of fixed points along the Via del Telefono. In 2008 this survey was subsequently extended further to the north of the Via del Telefono and also to the south, close to the large ditch, the Fossa dei Muraccioli.

The two parts of the model aim 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. It is intended to use the models (through a GIS) to explore and explain how the architecture of the Roman villas and the *Vicus Augustanus* responded to the continuing evolution of the coastline and any consequential environmental changes.

Methodology

The methodology established in the previous seasons was followed; 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. Thus the survey was conducted by a team of two; one person operating the total station while the second walks with the prism on a series of transects, taking points typically every 3-5 m, although increasing in density to 1-2 m over features or steep gradients. The Total Station employed was a Leica TPS400 and in april 2009 the survey was primarily conducted by James Andrews and Tim Evans.

2009 Season

In April 2009 the survey was carried out at both sites (fig. 1); the first stage focussing on the area to the east of the Vicus (figs 2-4) and the second stage at sites D5 and D6, the so-called Fish Farms (figs 5-6). In the area to the east of the Vicus it was decided to extend the survey south of the Via del Telefono 175 m to the east to include the next site, villa C1, in order to better understand its contextual relationship with the Vicus and the Roman coastline (fig. 2).[1] As this site had not previously been surveyed it was necessary to establish a new grid of fixed points along the Via del Telefono (W183-W187, W195). Further fixed points (W188-189, W191-W194 and W196-W201) were subsequently set up across the site in order to best cover the terrain. The survey extended approximately 150 m to the south of the road, in total taking 3,600 points and covering an area of roughly 26,250 m² (fig. 3). Some difficulty was encountered surveying the south-east corner of the C1 villa due to the density of foliage covering it and it was not possible to take as many points as wished, while time constraints meant that it was not possible to extend the survey on the north side of the road.

At sites D5 and D6 (figs. 5-6) the principal aim was to extend the existing survey approximately 70 m to the south to include the post-Roman dune ridge as in the Vicus survey, but also to complete the survey in the area to the west and northwest of the basin of site D5 (fig. 5). This work was complicated by several factors: extremely dense vegetation in a number of places, the filling of water, as a result of heavy rain, of the basin of D6 and the large ditch to the south of it, the Fossa dei Muraccioli, and also the loss of a number of fixed points from the 2008 season (at least W127, W129, W167, W179) that had either been destroyed during tree clearance along the Via del

[1] On the C1 Villa see: M.G. Lauro and A. Claridge. 1998. 'Litus Laurentinum: carta archeologica degli insediamenti litoranei a Castelporziano', p. 47.

Telefono or had been accidentally pulled up. Several new fixed points (W202-W204 and W206) were set up along the north side of the ditch in order to map it and the post-Roman dune ridge to its south (fig. 6). However, the density of the forest on the south side of the ditch made it necessary to shoot points from two further fixed points (W205 and W215) on that side. The flooding of the ditch meant it was not possible to survey a slight ridge in its centre that effectively had formed a small island. In order to survey the area to the east and northeast of the D5 basin, measuring approximately 70 × 80 m, it was possible to set up a series of new fixed points (W207-W214) from fixed point W128. Unfortunately, it was not possible in the time available to extend the survey to the north of the Via del Telefono or to the west, to include sites D3 and D4. In total, some 2,200 points were shot at the D5-D6 sites, extending the existing survey by about 25,200 m^2.

Results

The survey site to the east of the Vicus revealed several distinct features (fig. 3). In the open area between the Via del Telefono and the ridge of the villa (C1) the survey picked up a series of north to south ridges that seemingly correspond to the planting pattern of trees in the 20th century. Also in this area, the survey highlights a deep, roughly circular, depression a few metres from the road. A broadly analogous feature was revealed in a previous season by the DEM in the centre of the B2 villa porticus, to the west of the Vicus. Of the C1 villa, its broadly L-shaped form is clearly discernible. To the east side of the east-west ridge, it is also possible to discern a wide slope between it and the next site, site C2 ('Villa Magna' or 'Grotte di Piastra'). The slope descends towards the south, terminating close to the southeast corner of the villa. This may have formed a slipway down to the ancient shoreline, perhaps similar to that proposed for the B2 porticus, or alternatively may represent the original profile of the Roman dune ridge sloping down towards the sea. Finally, to the south of the east-west villa ridge, the survey indicates a number of large sand dunes which comprise a part of the post-Roman dune ridge.[2]

The survey at D5 and D6 (fig. 5) has now put the two sites in context with the same post-Roman dune ridge, which is clearly recognisable along the southern extremity of the survey, running roughly parallel to both. Conversely, few features were picked up in the north-western extension. The digital elevation model covers an area measuring approximately 58,800 m^2.

Future work

The season marks the culmination of the AHRC-funded project and no further work is currently planned. However, future work to the east of the Vicus could complete the survey to the north of the Via del Telefono, in line with the previous seasons' survey work. The survey might also be extended eastwards to include the Grotte di Piastra (C2) site, in order to better understand the relationship between the natural topography, specifically a large and deep depression in its centre, and the Roman exploitation of it. Further work at the D5 and D6 sites might be extended to the west to include the next two sites and the area to north of the Via del Telefono, in line with an area surveyed in 2008.

[2] Pers. Comm. Andy Bicket (Department of Geography, Loughborough University).

Fig. 1. Digital elevation model (DEM) of the Vicus Augustanus (left) and sites D5 and D6 (right).

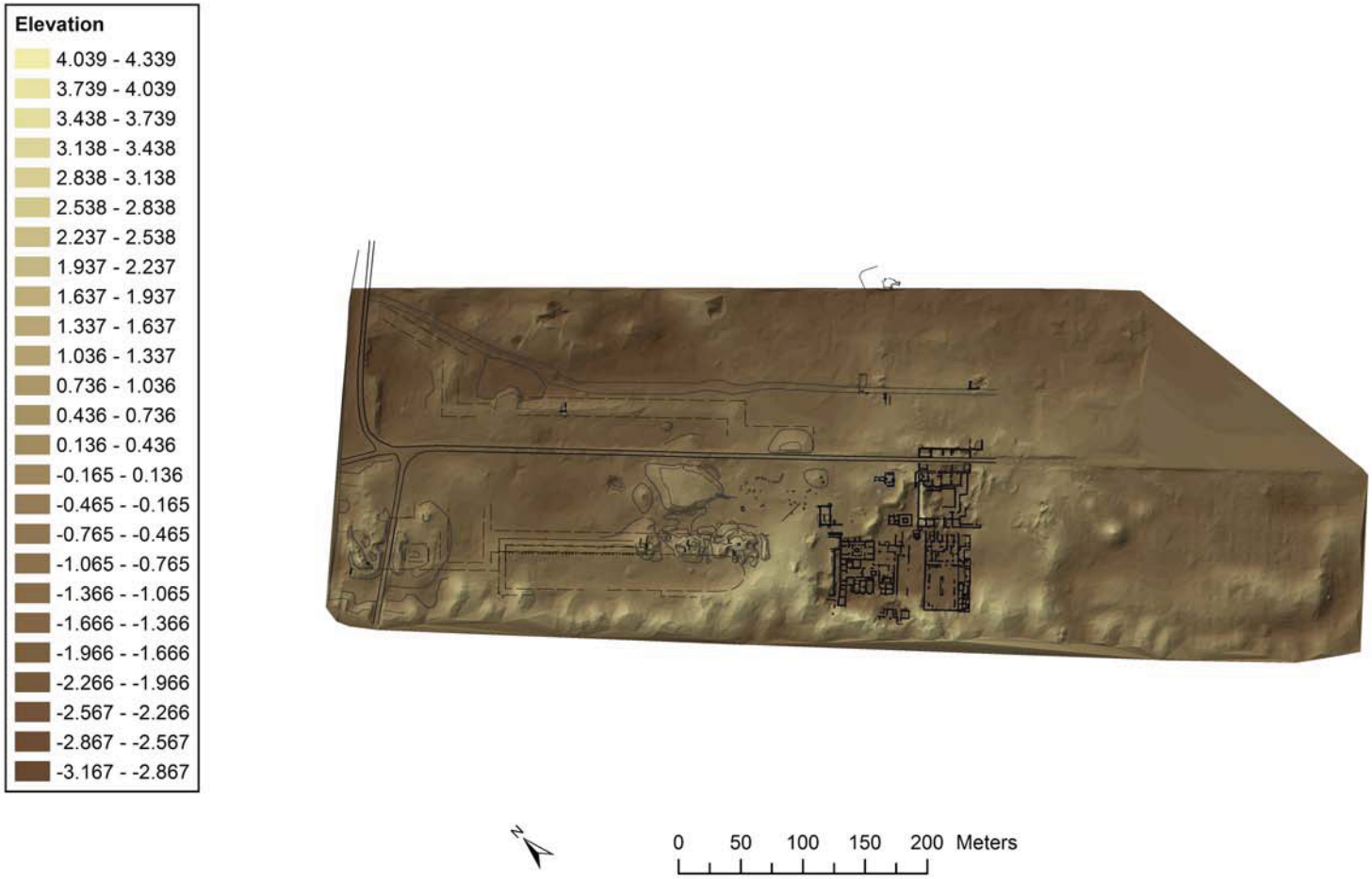

Fig. 2. Digital elevation model (DEM) of the Vicus Augustanus.

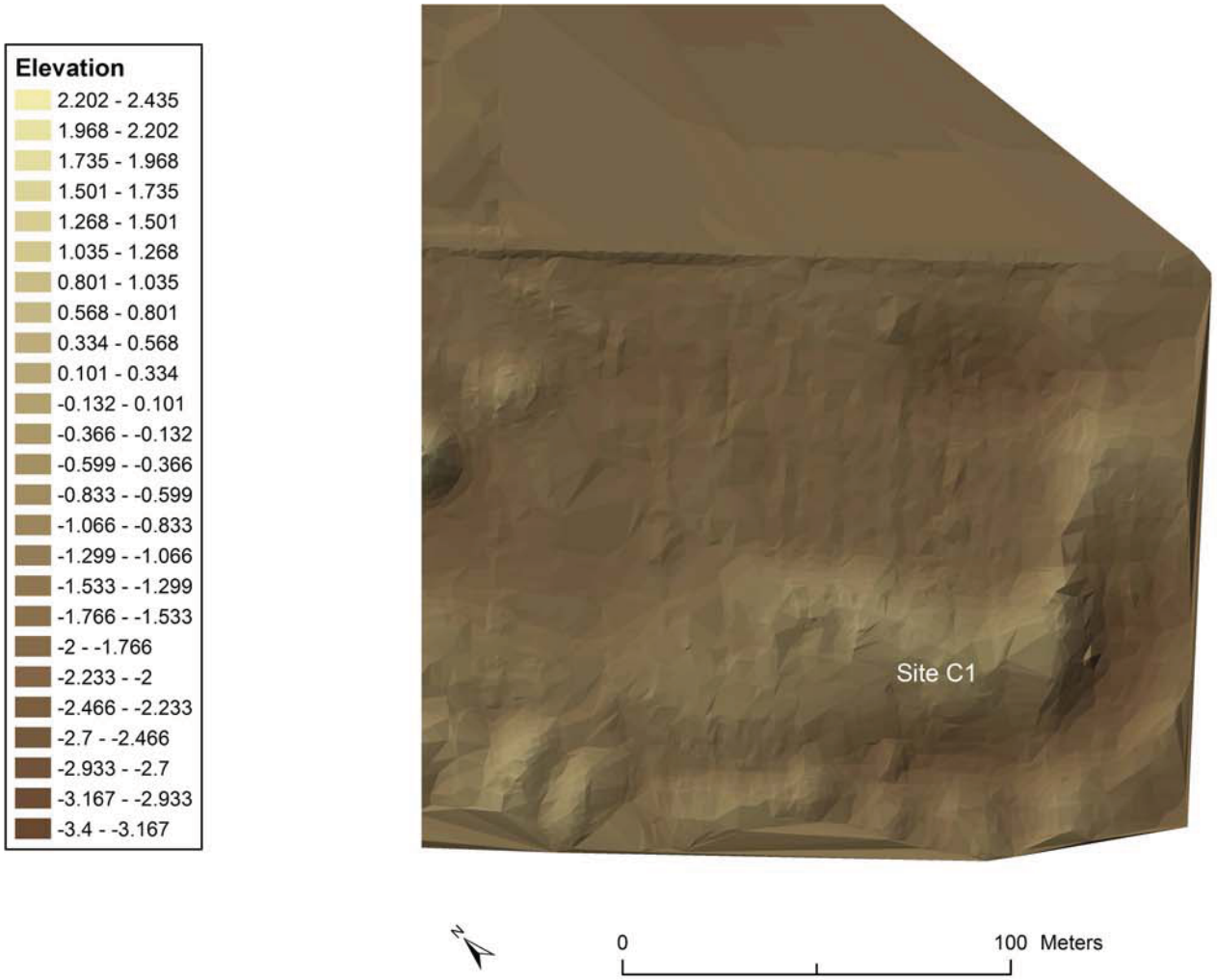

Fig. 3. Digital elevation model (DEM) of the area to the East of the Vicus Augustanus including site C1.

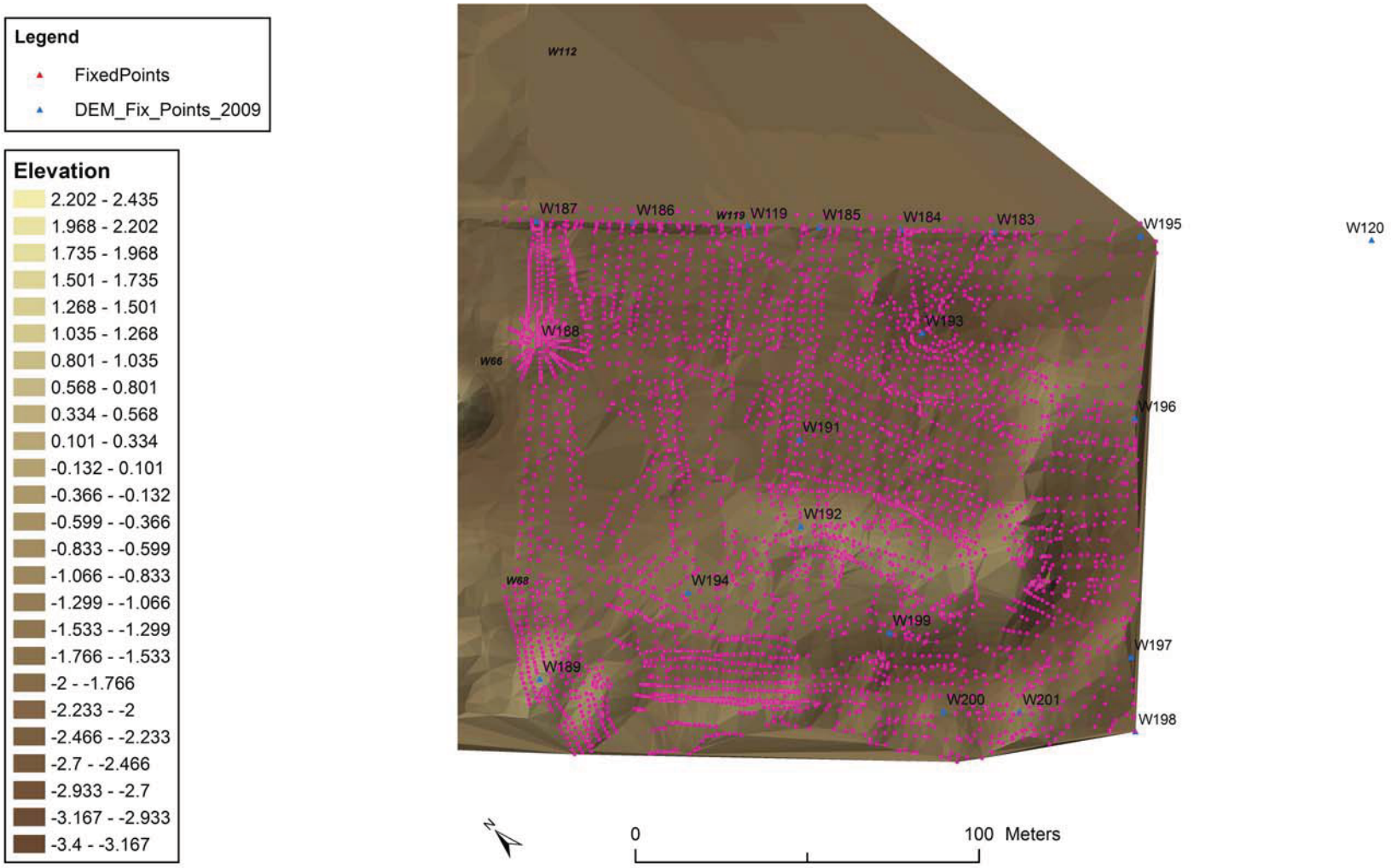

Fig. 4. Digital elevation model (DEM) of the area to the East of the Vicus Augustanus including site C1 showing new fixed points and survey points for the 2009 season.

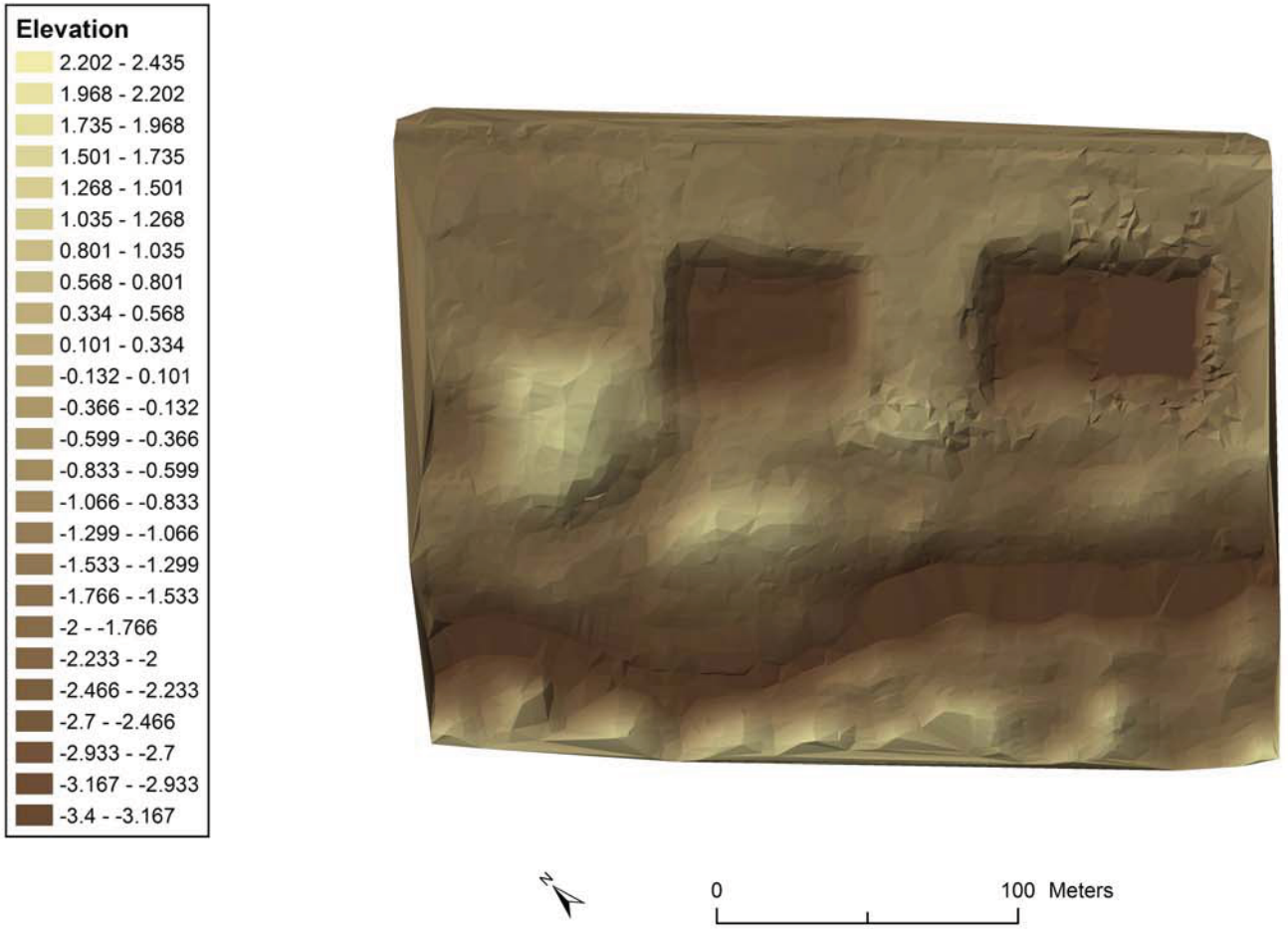

Fig. 5. Digital elevation model (DEM) of sites D5 and D6.

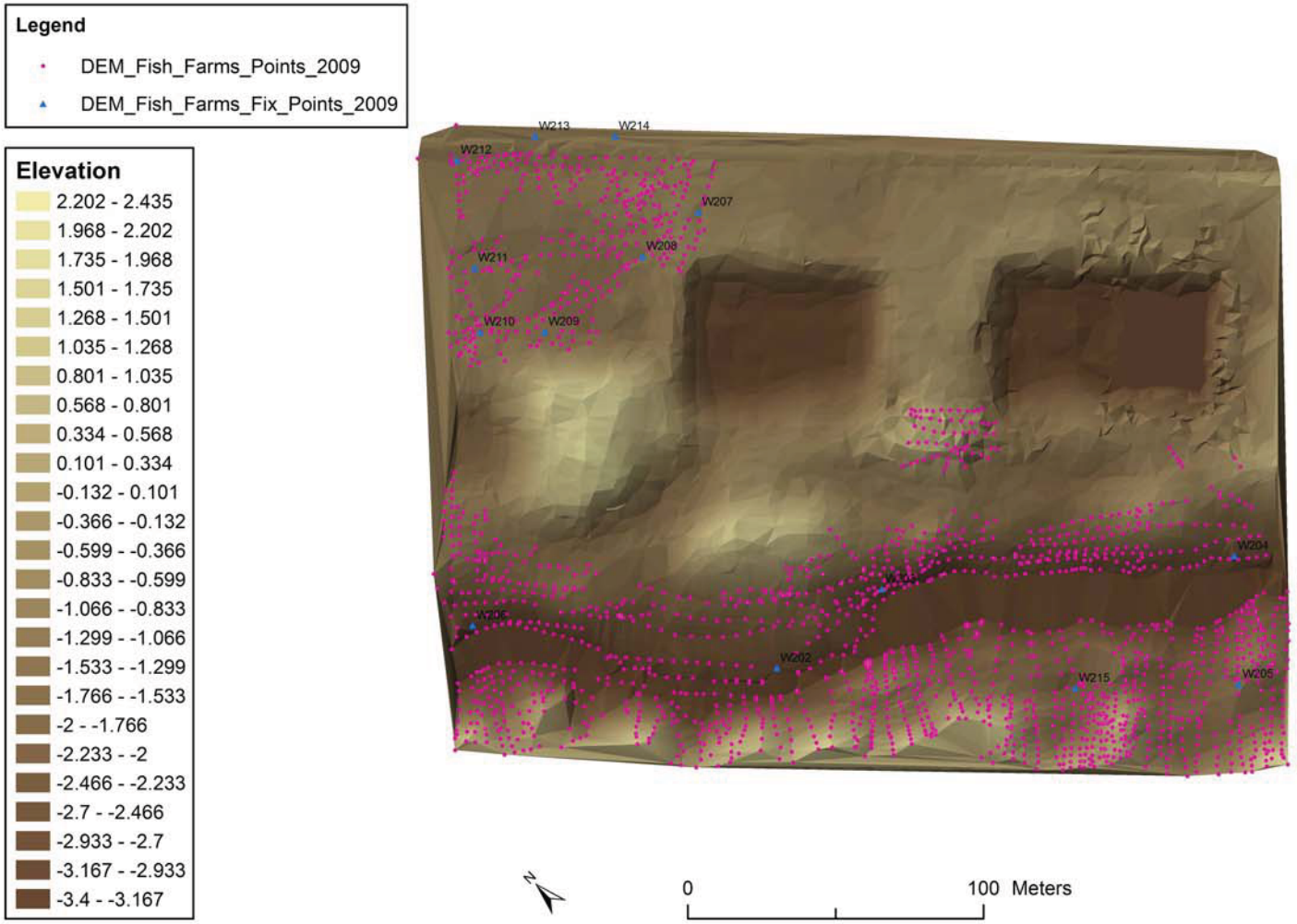

Fig. 6. Digital elevation model (DEM) of sites D5 and D6 showing new fixed points and survey points for the 2009 season.