



Arts & Humanities
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REPORT ON TOPOGRAPHICAL SURVEY & DEM MODELLING AT CASTELPORZIANO

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Introduction

Fieldwork seasons 15-30 September 2005 and 5-21 April 2006 (with a third planned for September 2006) collected data for a high-precision topographic model of the area from the westward boundary of the estate ('Villa del Confine') as far as the eastern limit of the *vicus Augustanus* (sites B1-B2-B3-B4 on the Carta Archeologica of 1998)

Aims and Objectives

The model will map both the archaeological and natural features of the present landscape and will 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 (to be carried out by Prof. Helen Rendell, Loughborough University).

It is intended to use the model to explore and explain how the architecture of the Roman villas, the associated *vicus* 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. The Total Station employed is a Leica TPS400

Results

The area surveyed now covers 600 by 150 metres, within which 11,500 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. The covered area might also serve in the future as test case for deriving a more extensive though less precise elevation model of the rest of the ancient coast line from satellite images. 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. 1 with details of the possible portico extending at right angles towards the sea from porticus B2 (Fig. 2) and the dune system in front of B3B-D, which may mark some form of harbour installation (compare Fig. 3).

Future work

Work remains to be done on the survey of the eastern limit of the Vicus (with a margin beyond) and the model has to be extended for a distance of 100 metres into the 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.

Photogrammetry

Peter Rose also collected data for experimentation with digital photogrammetry on the archaeological features excavated during the April season. He has previously employed the method

at Ostia in the modelling and analysis of standing buildings where the approach has offered great advantages over traditional building survey and recording systems. It permits an objective visualisation of the structures in their present state; reconstructions can be produced from these visualisations and used in more detailed analyses. The approach has proven to be both an accurate and easy way of capturing a large amount of data in a short period of time. The results of the photogrammetric image of the rubble platform in Trench H are illustrated here (Fig. 4).

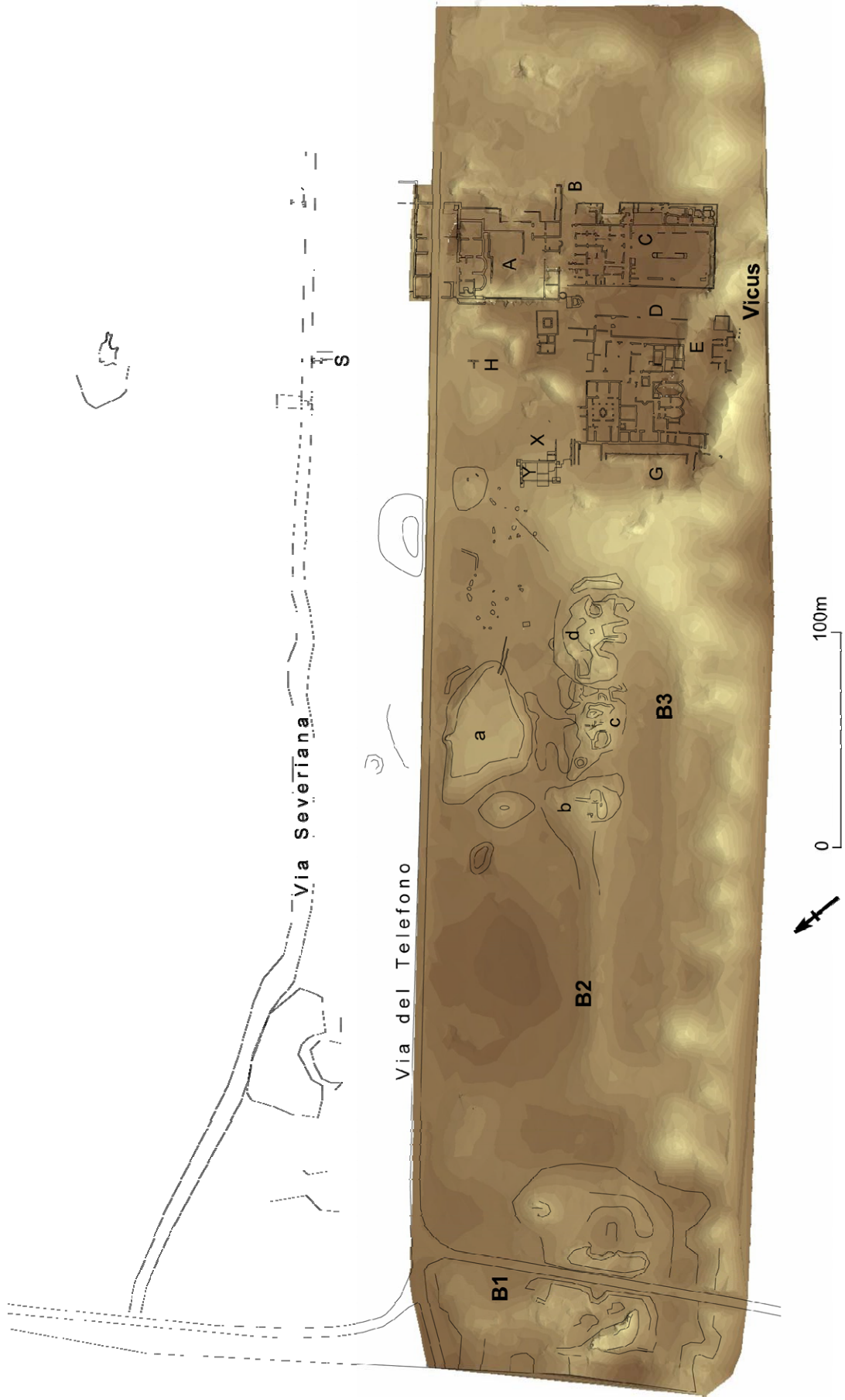


Fig 1 Digital elevation model (DEM) of Vicus Augustus and earthworks to the west

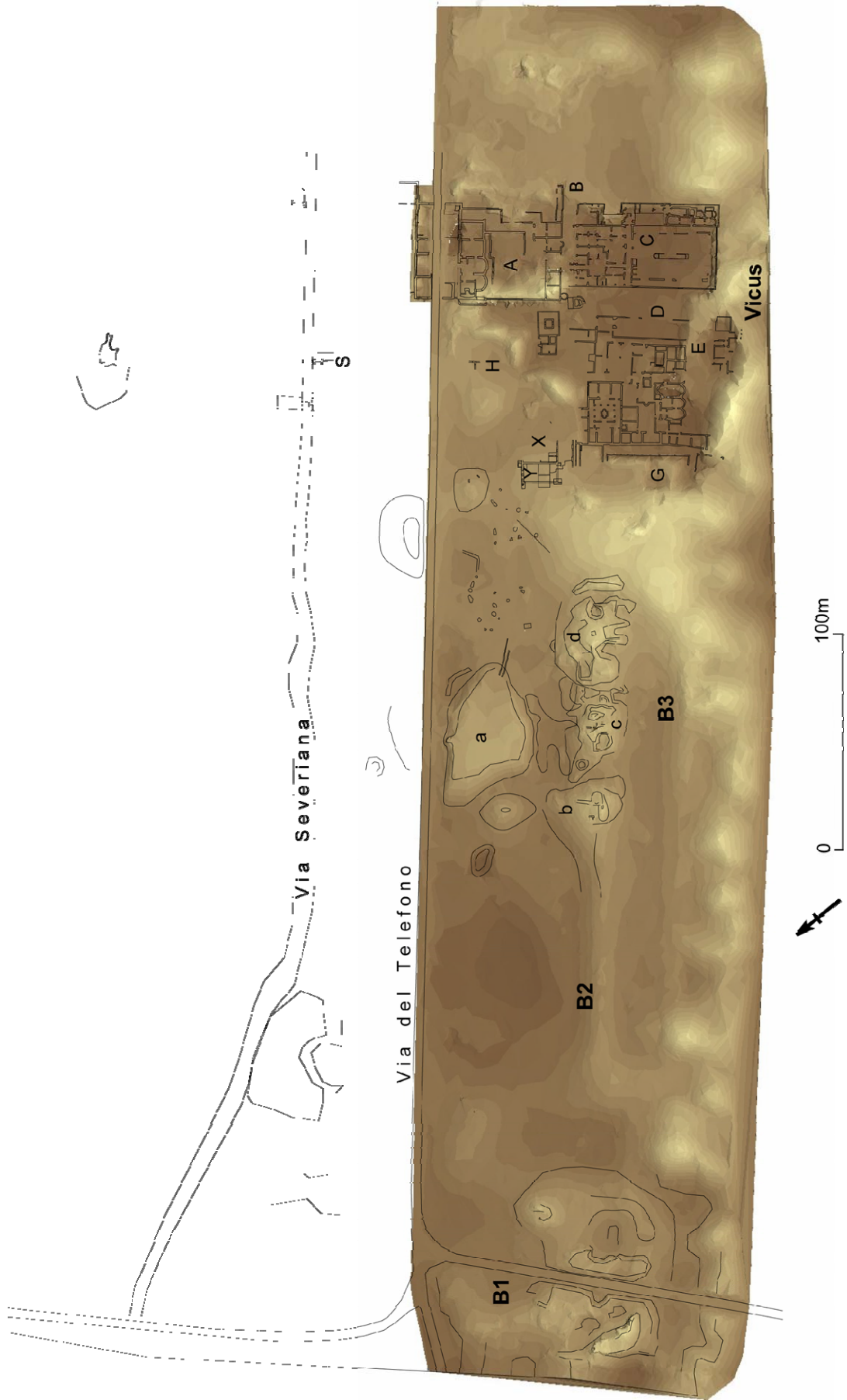


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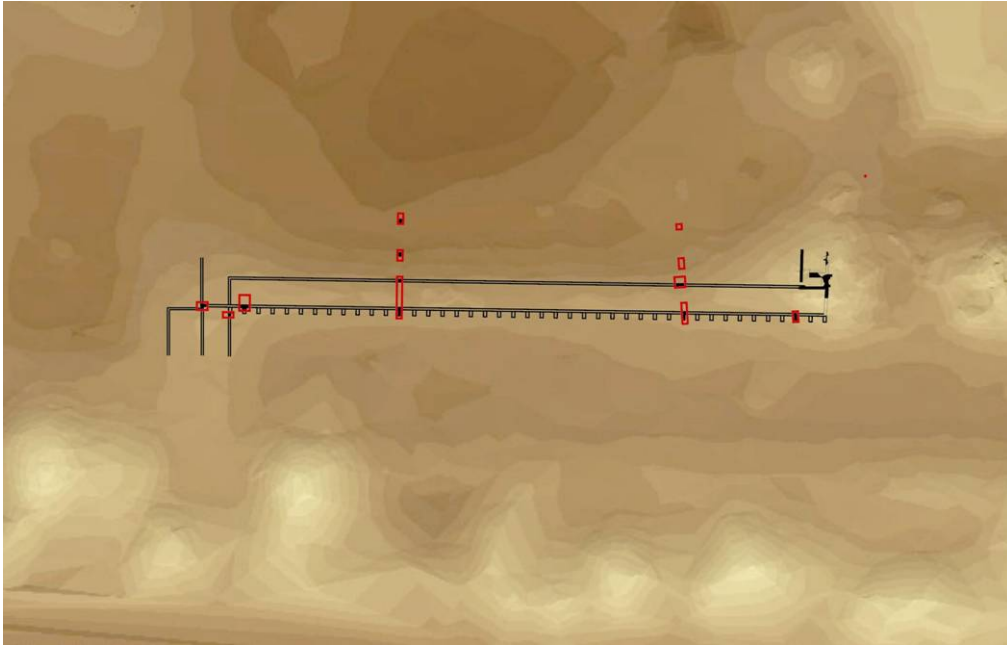


Fig. 2 Details of the possible portico extending at right angles towards the sea from porticus B2.

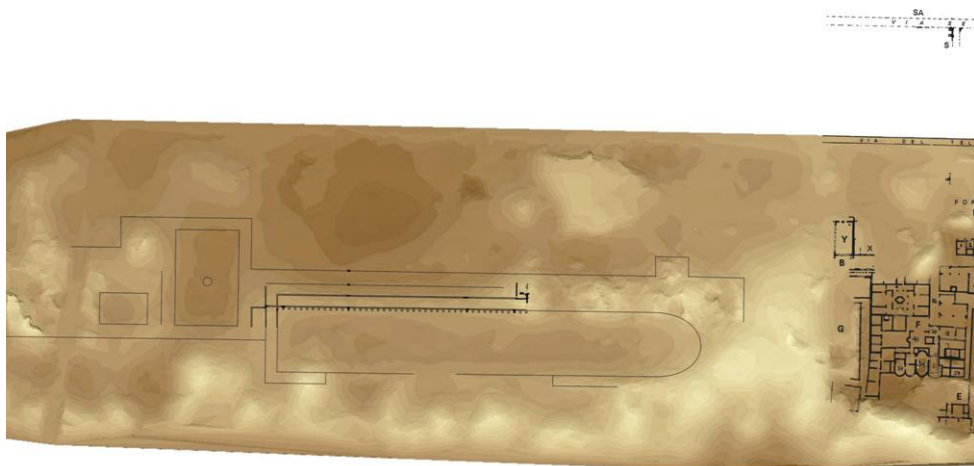


Fig. 3 Dune system in front of B3B-D, which may mark some form of harbour installation.

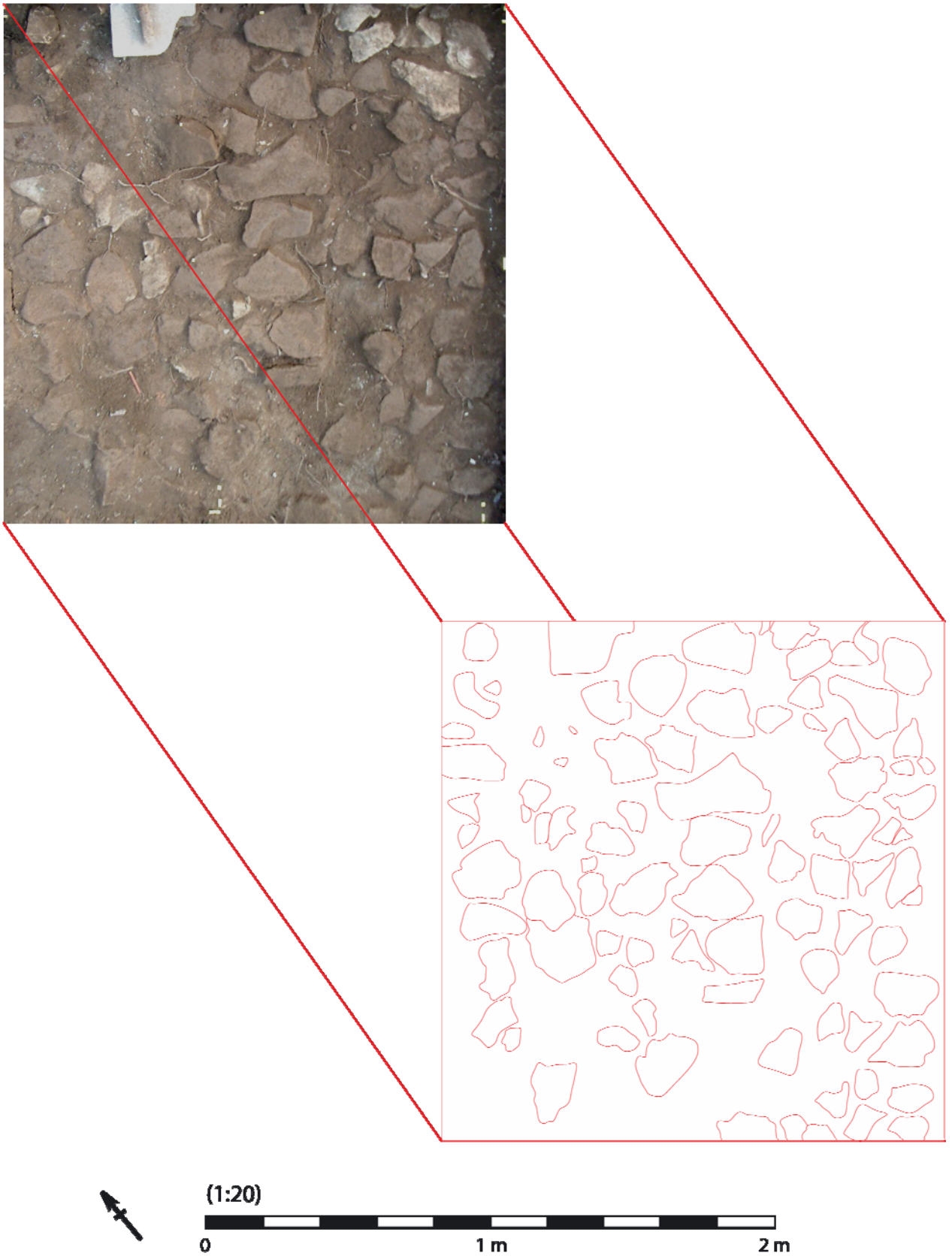


Fig. 4 Photogrammetric image and illustration of the rubble platform in Trench H