

Oxford Castle  
Mound  
New Road  
Oxford

**Earthwork Survey**



**Oxford Archaeology**

23rd October 2002

**Client Name:**  
**Oxford Castle Ltd**

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**OA Digital Survey Department**

# **Oxford Castle Mound Earthwork Survey**

***SURVEY REPORT***

**OXCAS02**

**Final Version**

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**October 2002**

OA Digital Survey Department

# Oxford Castle Mound Earthwork Survey

## *SURVEY REPORT*

**Final Version**

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October 2002

# Oxford Castle Mound Earthwork Survey

## *SURVEY REPORT*

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## SUMMARY

*In September and October 2002 Oxford Archaeology carried out an earthwork survey on behalf of Oxford Castle Ltd at the site of Oxford Castle Mound. The following document outlines the methodology used and main results of the survey.*

### 1 INTRODUCTION

#### 1.1 Location and historical background

- 1.1.1 Oxford Castle is situated in the centre of Oxford, and is bounded by Castle Street to the east, New Road to the north, Tidmarsh Lane to the west and Paradise Street to the south. The castle was built on the southern spur of the Summertown-Radley gravel terrace, east of the River Thames and west of the river Cherwell. Overall the site slopes from north-east to south-west; at the north-east the ground level is at c 62.5 m OD, in the south-west it is at c 58.5 m OD. The archaeological background of the site has been extensively studied in *Oxford Castle – a Heritage Survey* commissioned by Oxford County Council (OAU 1996).
- 1.1.2 The castle was built in 1071 by Robert d'Oilli at the west side of the late-Saxon town, known to have been in existence as early as AD 911. In its original form the castle consisted of a motte and bailey, much of the latter of which survived into the 18th century, and the motte (the castle mound) still remains, located at the north-west corner of the castle complex. The motte is known to overlie late Saxon features.

#### 1.2 Acknowledgements

*The survey was carried out by Oxford Archaeology Digital Survey Department.*

### 2 SURVEY AIMS

- 2.1.1 The Survey was undertaken principally to record the mound in its present form, in advance of any alterations to the site as part of the redevelopment of the area, and any intrusive work at the edge of the mound, for example the proposed development of the Tidmarsh Lane end of the site. In the longer term it will assist in the interpretation of the Castle site overall and be useful as a management tool.
- 2.1.2 Specific aims were to identify the principal surface features and overall shape of the mound and provide information on its changing morphology, in particular the major break and base of slope, at a moderate level of detail.

### 3 SURVEY METHODOLOGY

#### 3.1 Scope of survey

- 3.1.1 The Survey covered the immediate castle mound area, approximately 70 metres in diameter.

#### 3.2 Survey methodology

- 3.2.1 It was initially proposed to carry out the survey utilizing a motorized Leica TCRA1105 Total Station Theodolite (TST). After conducting a risk assessment this was found to be impractical on safety grounds because of the steepness of parts of the mound. A revised methodology was therefore initiated, in which the initial set-out and gentler slopes would be surveyed using this method, and the steeper slopes covered by a team of two surveyors utilizing a safety harness.
- 3.2.2 A network of control stations was initially set out using a closed traverse and tied in to stations from the site engineers survey conducted by Alan Baxter and Associates.
- 3.2.3 This traverse was found to have a misclosure of 0.0076 metres. The survey was tied into OS NGR coordinates with an absolute accuracy of  $\pm 0.021$  metres and to OD height  $\pm 0.027$  metres. The survey was conducted at a scale of 1:100 or at a relative accuracy of  $\pm 0.01$  metres.
- 3.2.4 Over 3000 points were taken at, where possible, up to 1 metre intervals covering the whole mound (Figs. 1-2). It was unfortunately not possible to maintain this level of detail consistently as certain areas were inaccessible due to the presence of gorse, brambles and other dense undergrowth, and the difficulty of maintaining regular spacing on the steeper slopes. It may be desirable to cover these areas at a later date should any 'scrub clearance' be undertaken.

### 3.3 Processing methodology

- 3.3.1 The data was downloaded as points into a terrain modelling package (Surfer 8.0) and used to interpolate a Digital Elevation Model (DEM) using a Kriging algorithm based on a grid at approximately 0.75 metre intervals. On checking the model against original readings it was found that the average residual error between the predicted model height and the actual reading was 0.0031 metres, with 88.8% of readings being within  $\pm 0.1$  metres.
- 3.3.2 This DEM has been used to produce a contour plot of the mound with contour intervals at 0.2 metre and 1 metre intervals, and a surface model enabling the mound to be viewed 'three dimensionally' (Figs. 1-2 and 6-8). Areas not covered by the survey or interpreted as not representing the actual ground surface were 'blanked' out around the edge of the area. Breaklines were added derived from existing readings to enhance break of slope in areas where readings were sparse.

## 4 INTERPRETATION OF RESULTS

- 4.1.1 The survey has clearly revealed the two pathways up the mound, the 'zig-zag' path on the eastern side and the older 'spiral' path going around the whole mound. It has also given some indication of the amount of alteration from terracing of the lower slopes. Erosion gullies are clearly evident from the surface model, as well as recent intrusive holes dug into the top of the mound, the purpose of which are unclear (Figs. 1, 3-8).
- 4.1.2 The mound is steeper on the west and north sides, showing greater signs of 'spreading' on the north-east and the south-east sides. This may indicate greater

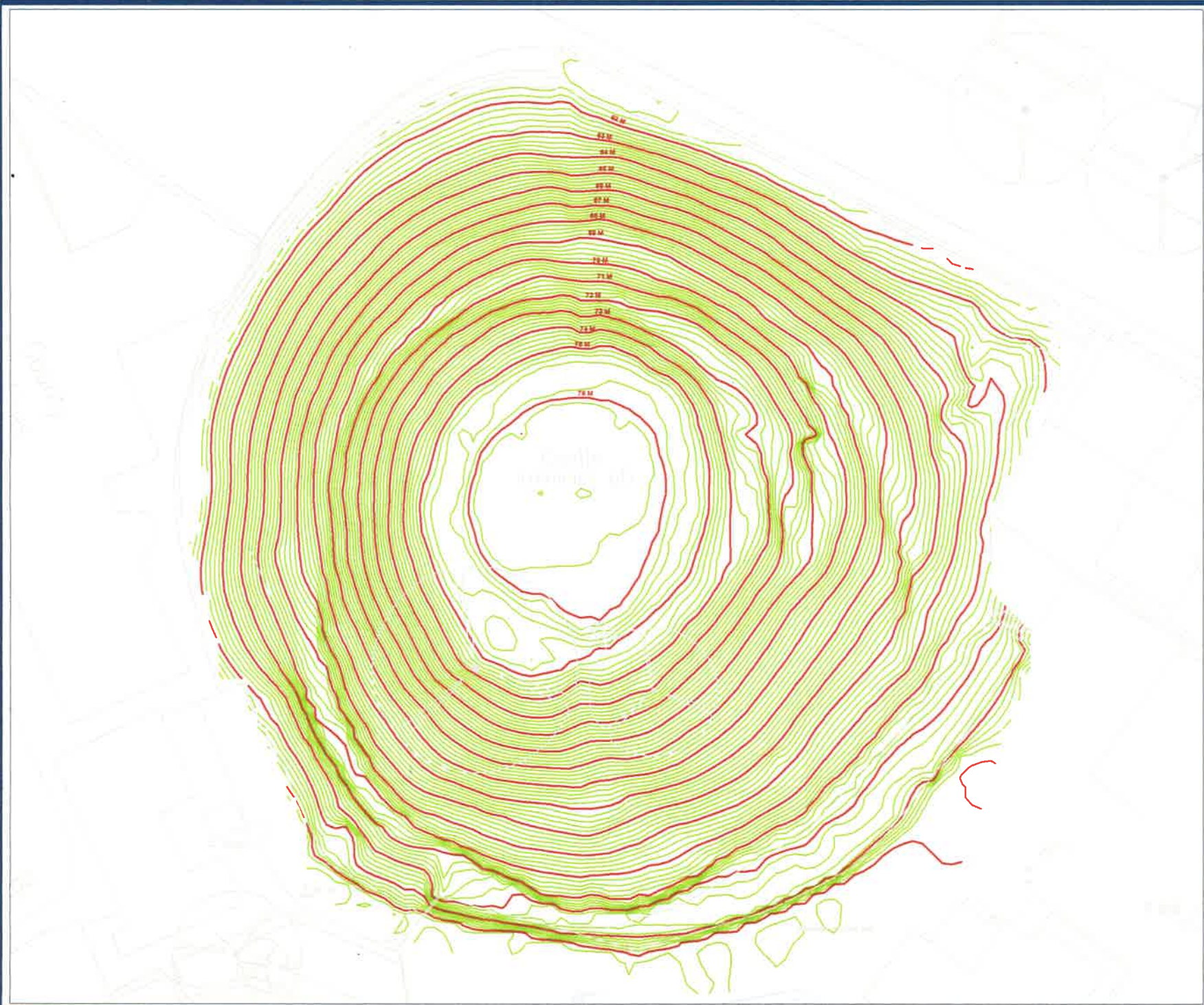
dumping activity on these sides or result from greater erosion caused by the terracing and pathways on these sides (Figs 1, 3-4 and 5-8). A small southward projection out from a notional regularly circular plan is less easily explained by erosion, however, and possibly represents an aspect of the original form of the mound. Current evaluation work on the west side of the mound has shown that the original profile lies close to the modern ground surface here and that there has been minimal modification of this profile through slumping or additional deposition. At this point the original slope of the mound can be estimated to be approximately 40°.

- 4.1.3 A noticeable 'ring' approximately 2.5 metres wide is evident on top of the mound, with an asymmetrical platform 0.5 metres above this of approximately 14-16 metres diameter.
- 4.1.4 An attempt was made to overlay onto this, using a 'best fit', the results of the excavations carried out in the 1790s on the multangular tower which at one time stood on the top of the mound. The report for this gives a plan, with details of the dimensions of what was found in the text. This consisted of a decagonal wall 58 feet in diameter with sides 5-6 feet thick, each side of the decagon being 18 feet long. This wall was dressed on the inside, but roughly hewn on the outside suggesting that the walls were originally thicker. As well as this two walls 3 feet wide and 7 feet long were found at the centre of the mound 22 feet apart; these being interpreted as the remains of an inner hexagonal structure.
- 4.1.5 The original 1796 plan was scanned and scaled to the dimensions given, and then digitized. The result was 'best-fitted' onto the top of the mound. The footprint of the wall bears a close resemblance to the 'ledge' around the top of the mound, except on the eastern side, where the slight mismatch could easily be the result of erosion caused by the cutting of the pathways. There is a slight rise of around 0.1 metres on the east side of where the inner hexagonal wall was interpreted as lying, and a slight hollow of the same amount on the western side of this area. The top 'platform' of the mound slopes down from the north-west to the south-east and has a slight ridge of approximately 0.1 metres on the north-west quarter approximately 2 metres wide (fig. 5).
- 4.1.6 The volume of the mound has been calculated as 20143.424 cubic metres, taken as the area above the 62 metre contour. Using D.W.A. Startin's model for estimating the number of man hours required to build Silbury Hill it is estimated that the material of the Castle Mound could have taken approximately 322300 man hours to shift, (to put it another way it would have taken one man over 80 years to build working 11 hours a day with no weekends or bank holidays! - alternatively a workforce of 200 would have required about 160 10-hour days). The surface area has been calculated as 3744.6 square metres taken from above the 62 metre contour line. The original surface area of the mound is likely to have been smaller, on the basis of extrapolation of its base diameter from the likely original profile as seen on the south-west side. A very approximate base diameter of 60 metres can be suggested.

## 5 FURTHER WORK

5.1.1 It may be desirable to provide more detail for the areas of the mound currently inaccessible through undergrowth should these ever be cleared. Further processing of the model could be carried out to bring it within the English Heritage Standard for topological metric survey (all readings within 0.1 metres of the model, currently 88.8% are within this range).





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**Oxford Castle  
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**DIGITAL  
ELEVATION  
MODEL**

**Oxford Archaeology**

Janus House,  
Osney Mead,  
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— 1 Metre  
Contours

— 0.2 Metre  
Contours

**Alan Baxter &  
Associates Site  
Survey**



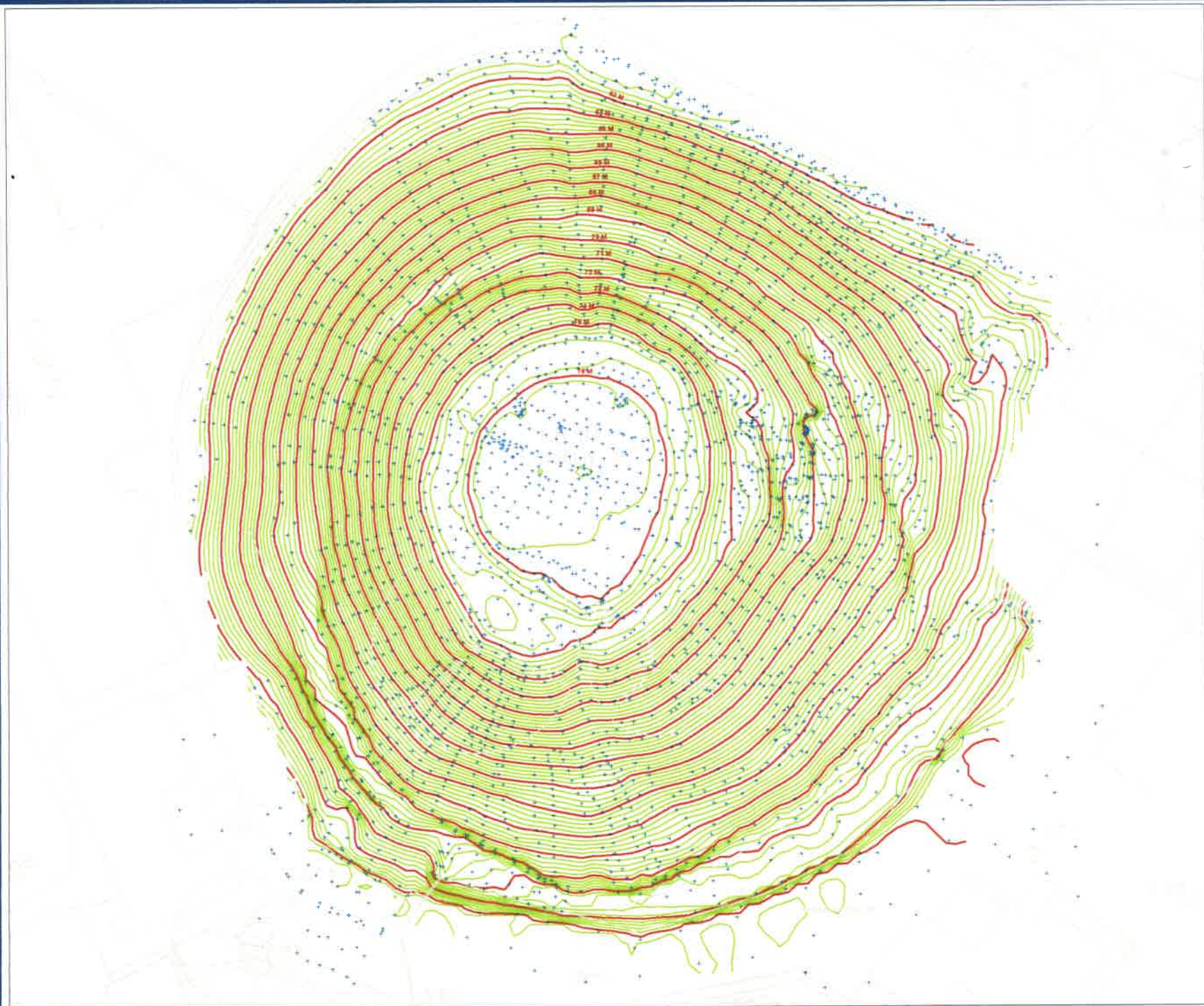
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Drawing  
Title  
**Contour Plan**

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### DIGITAL ELEVATION MODEL

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-  1 Metre Contours
-  0.2 Metre Contours
- Alan Baxter & Associates Site Survey
-  Points taken for earthwork survey



Scale at  
A4 1:400

Drawing  
No. Figure 2

Drawing  
Title Coverage of points  
taken and used to  
generate the DEM

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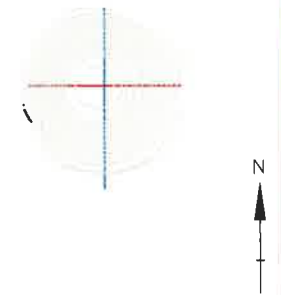
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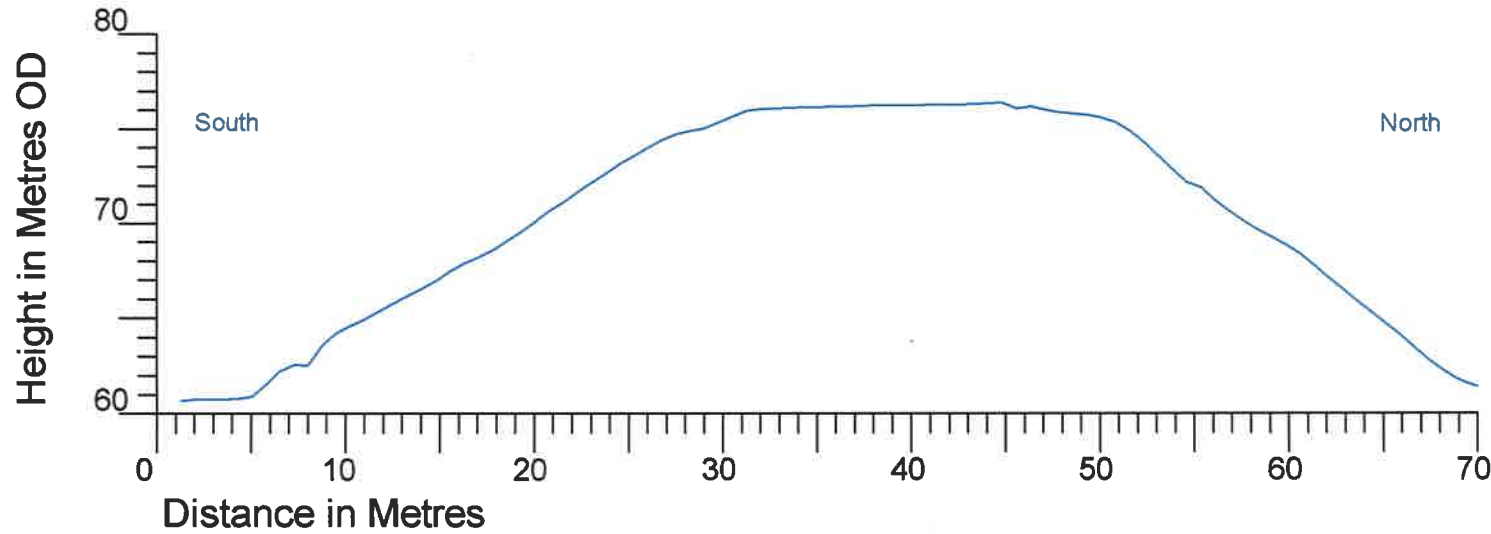


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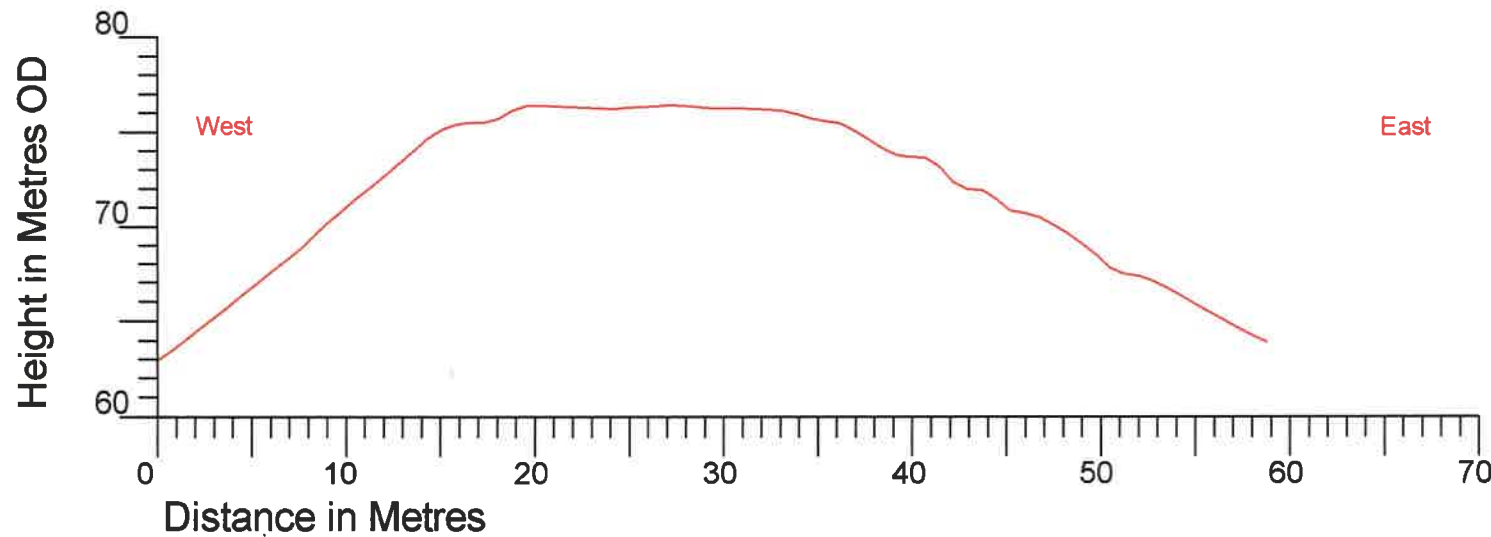
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West to East and  
North to South  
Profiles through  
castle mound

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NORTH TO SOUTH



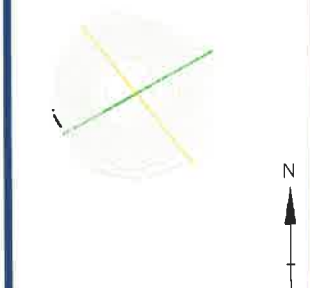
WEST TO EAST



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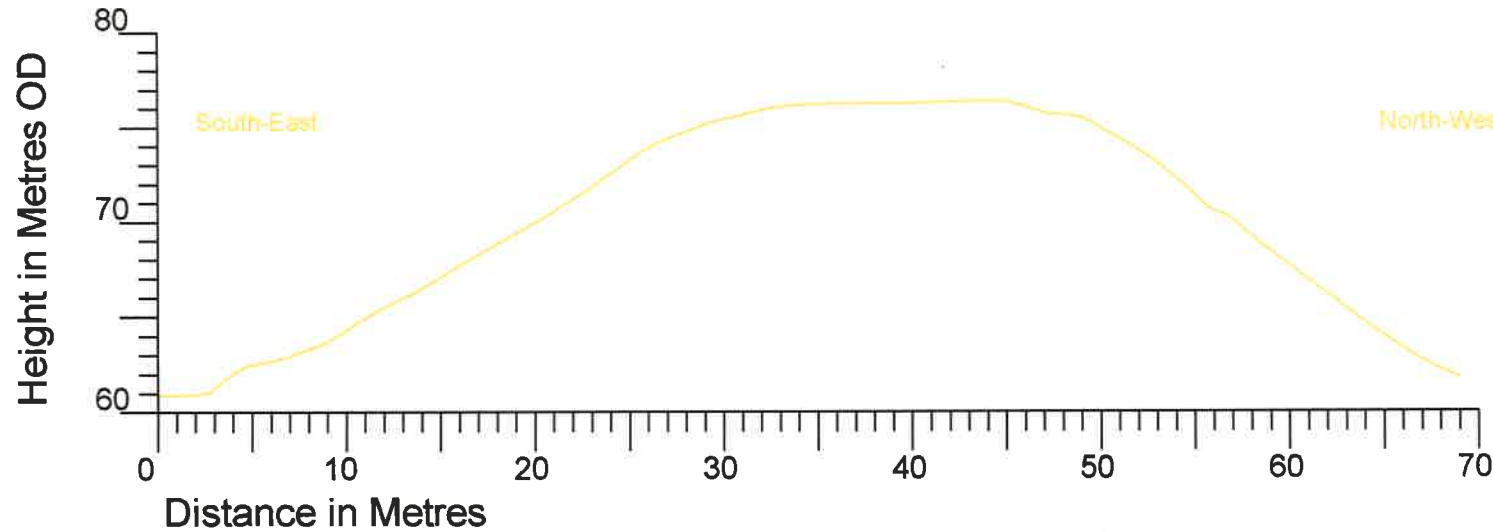


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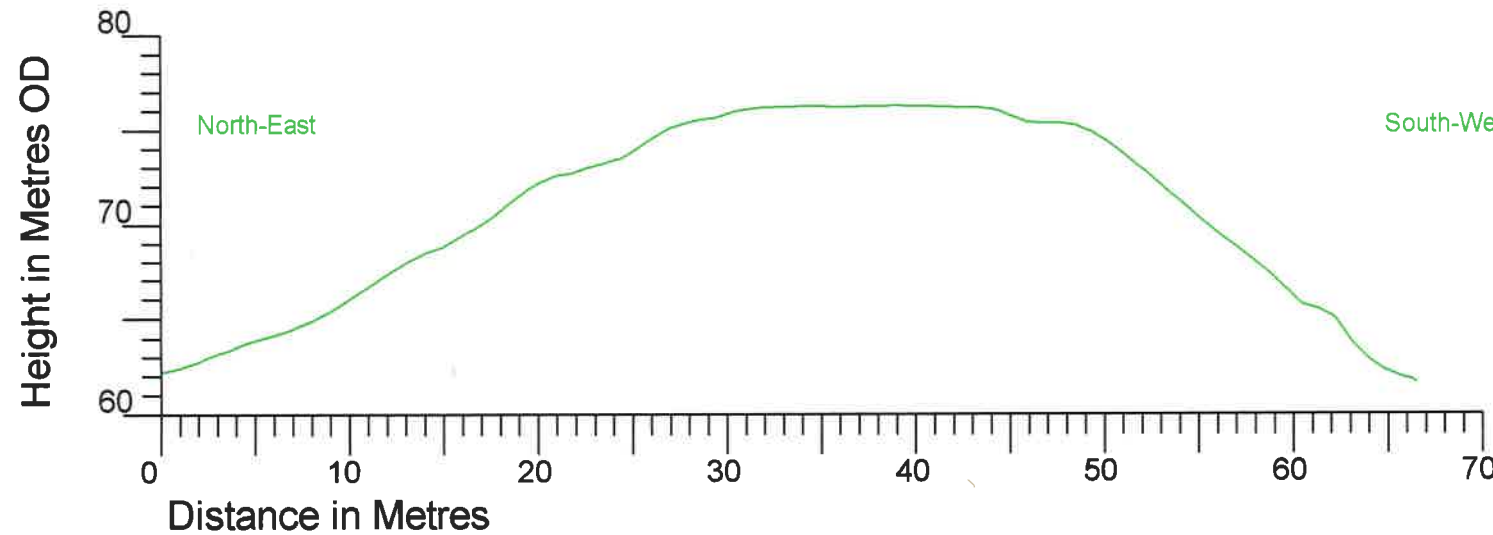
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South-West and  
South-East to  
North-West Profiles  
through castle  
mound

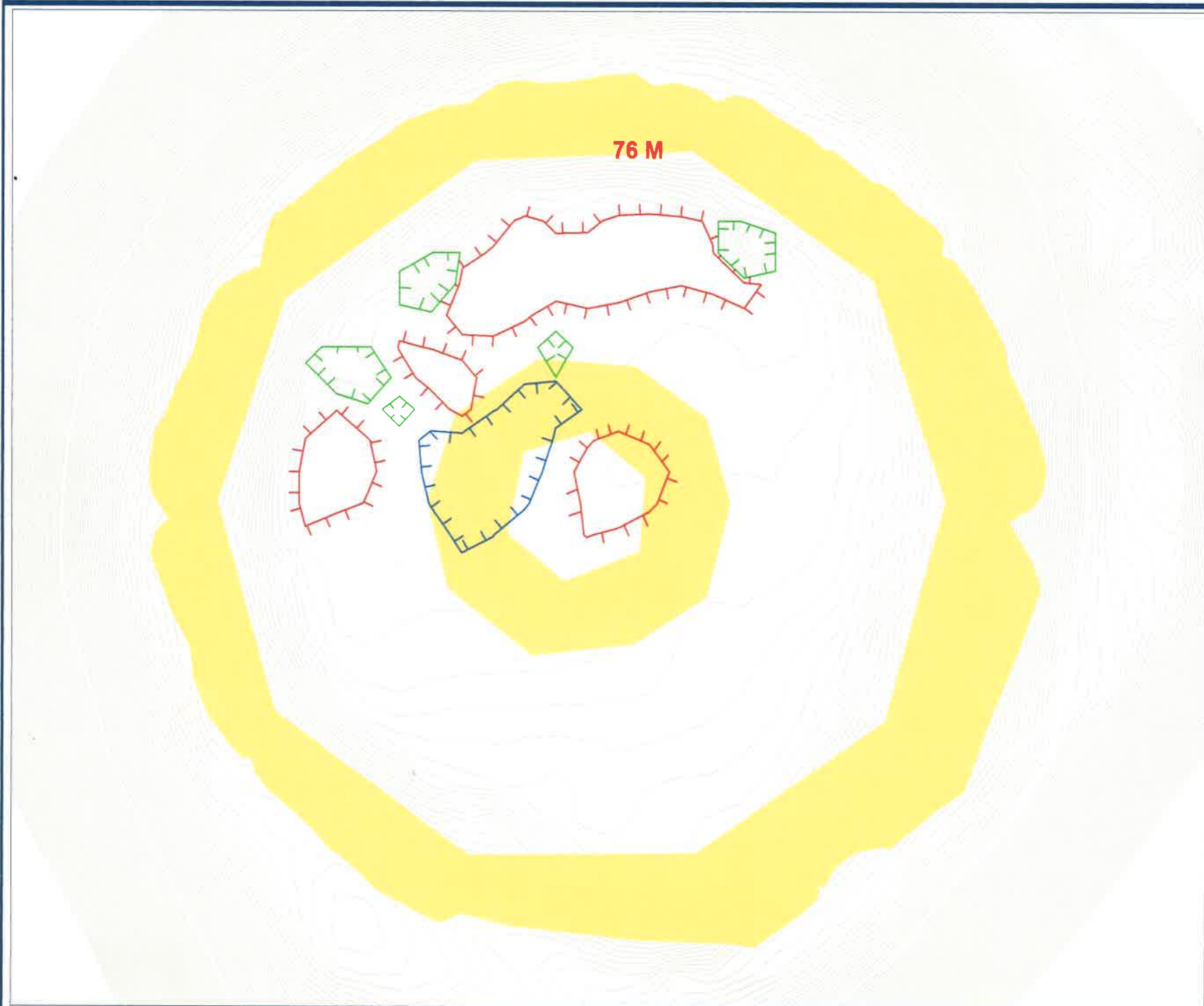
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SOUTH-EAST TO NORTH-WEST



NORTH-EAST TO SOUTH-WEST



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## DIGITAL ELEVATION MODEL

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0.05 Metre  
Contours



Recently dug  
intrusive holes



Ridges



Hollow



'Best fit' for  
structure  
found in 1790  
excavations



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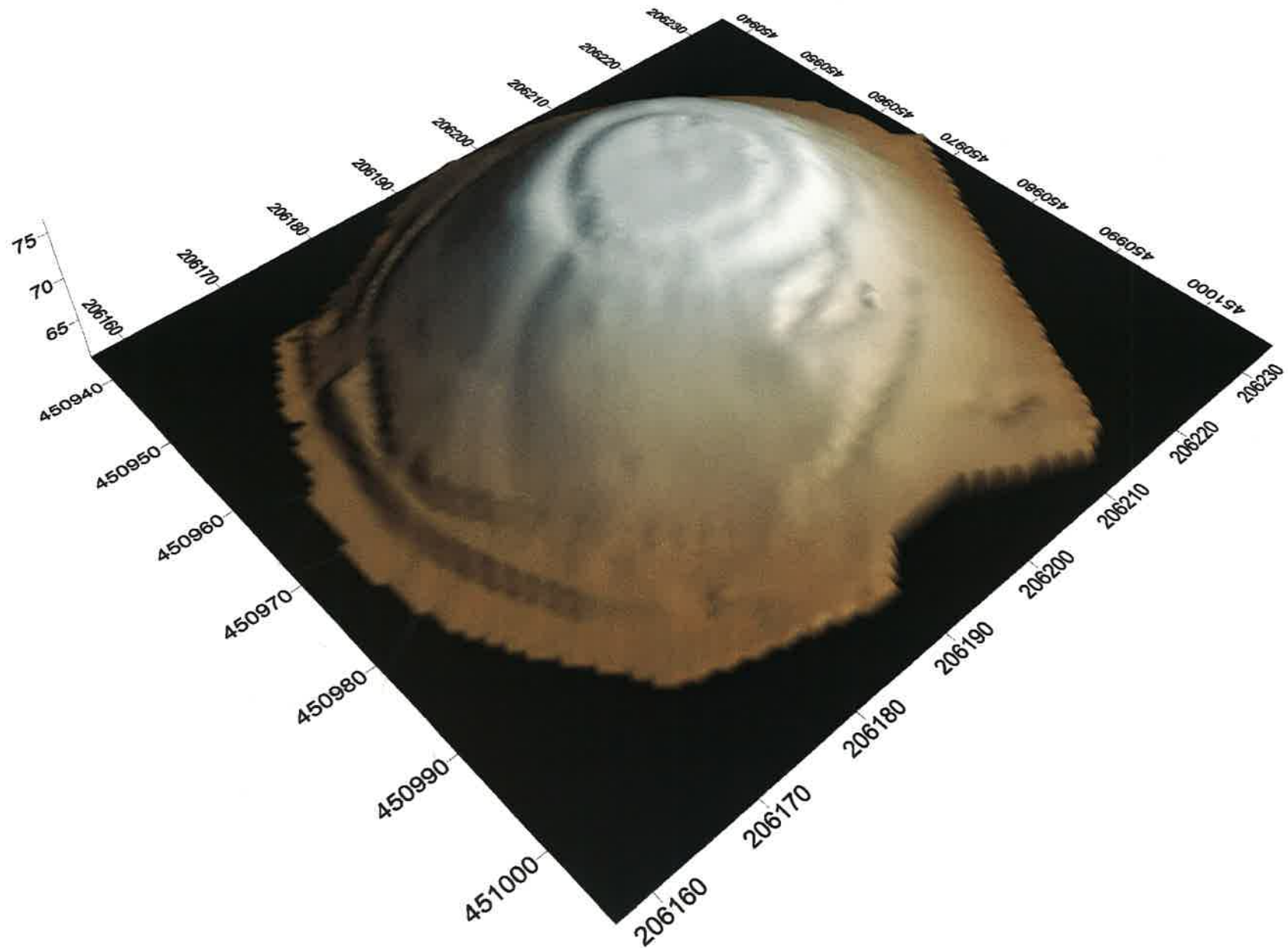
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Figure 5

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Title

Key Features on  
top of the mound

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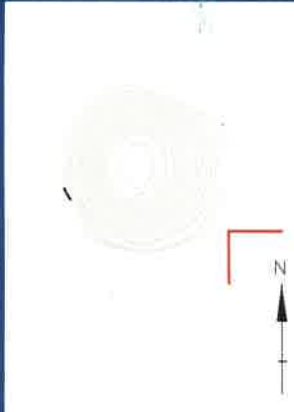


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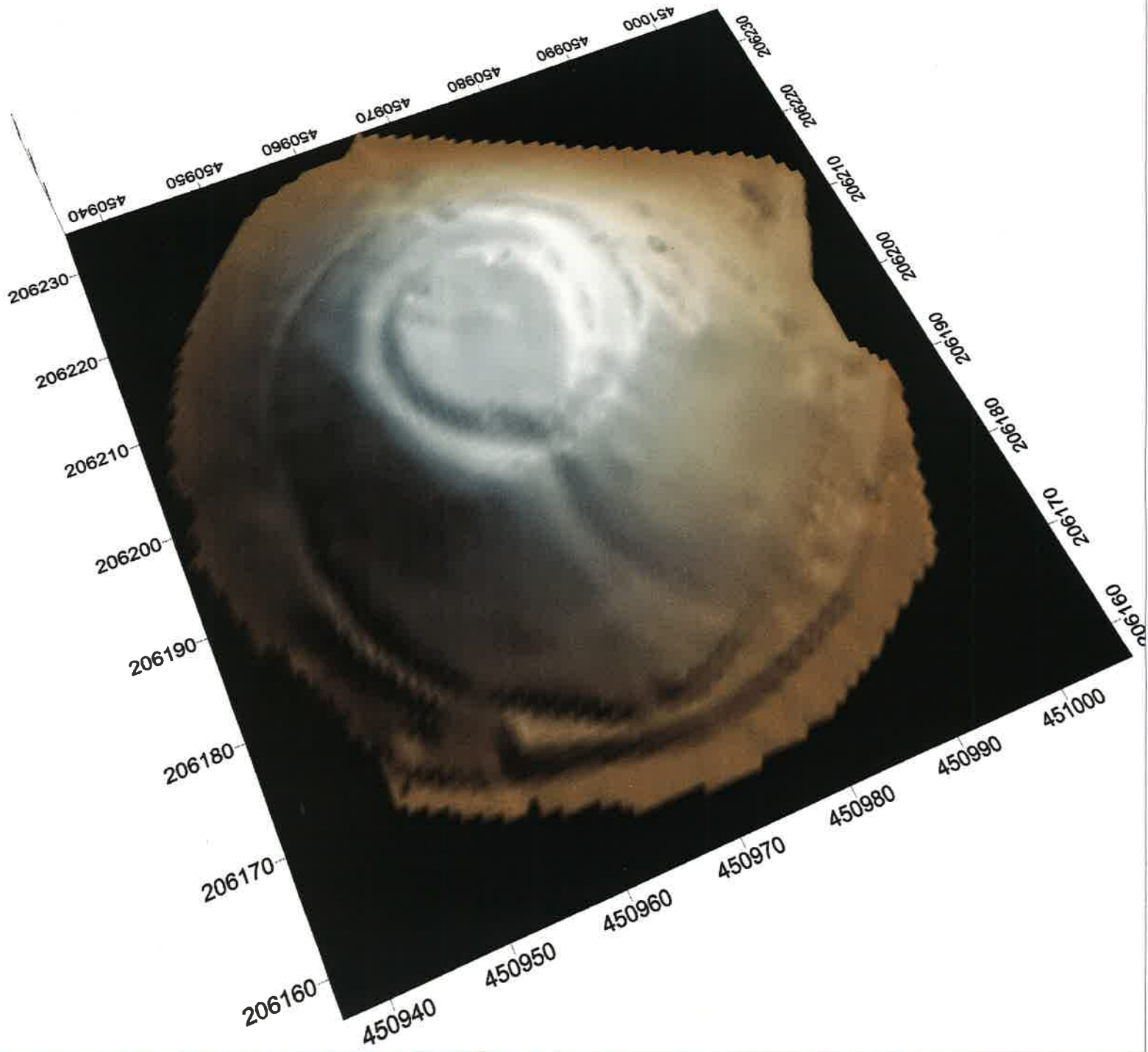



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 No. Figure 6

Drawing  
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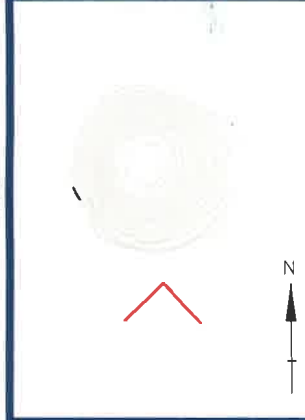


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Drawing  
No. Figure 7

Drawing  
Title Surface model of  
mound from South

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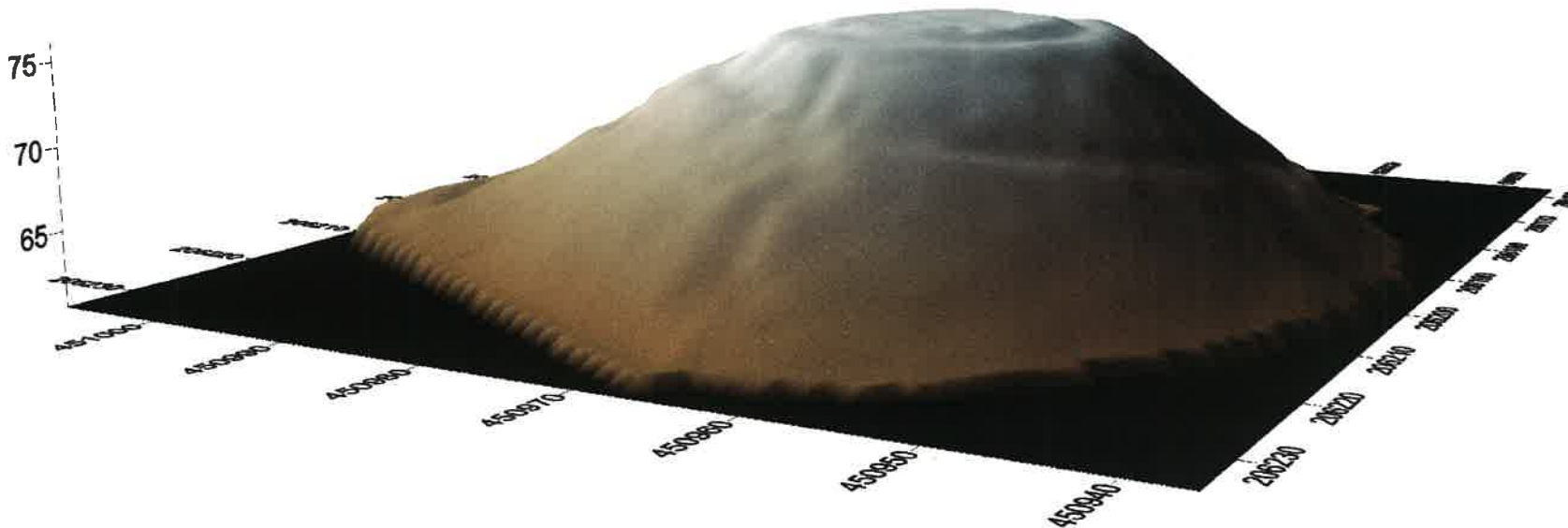
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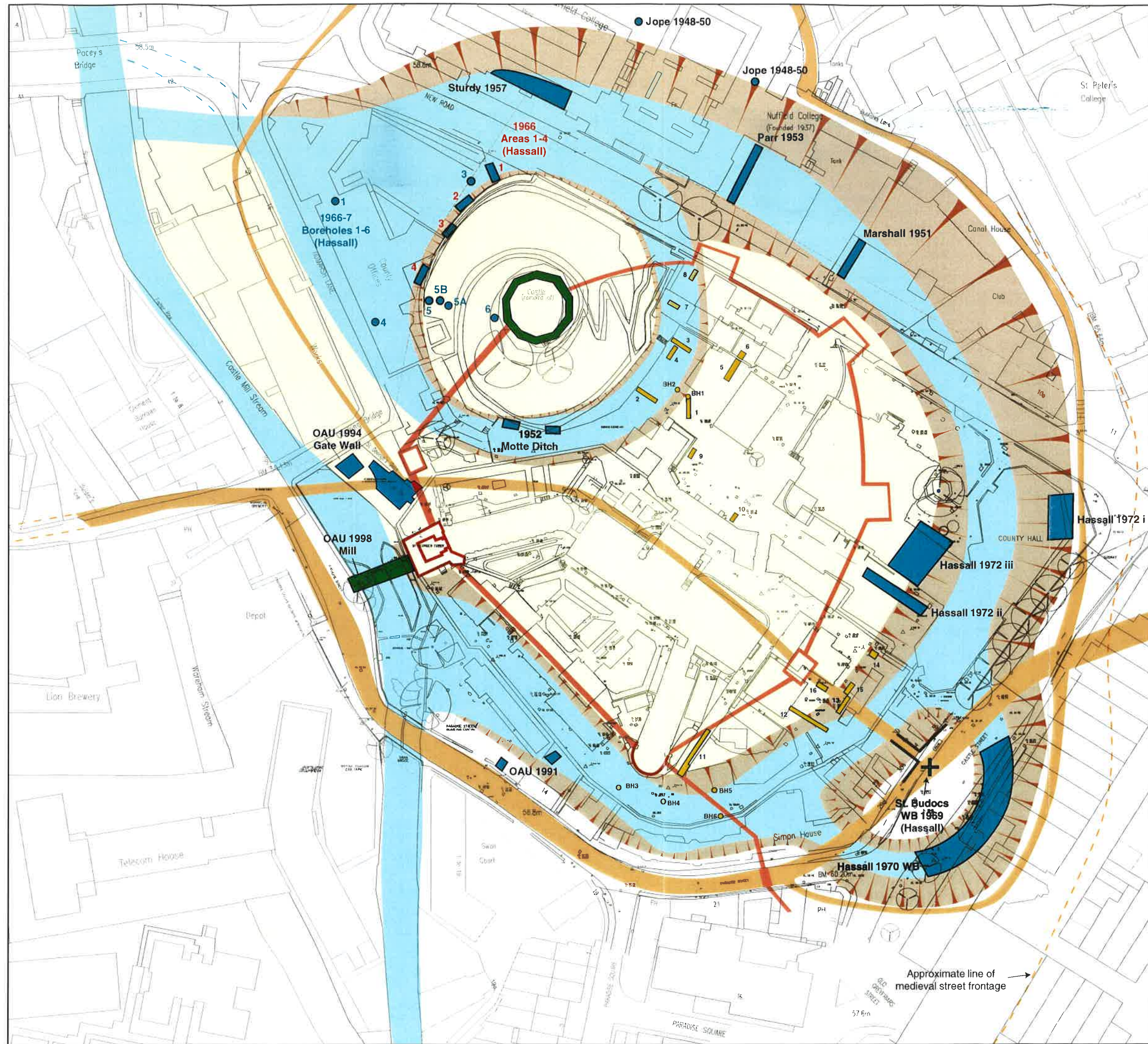
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No. Figure 8

Drawing  
Title Surface model of  
mound from North

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- Excavations 1949- 1998
- OAU 1999
- Projected pathways
- Projected wet ditch and watercourses
- Projected outer edges of defensive earthworks
- Standing buildings
- Projected structures
- Other suggested structures

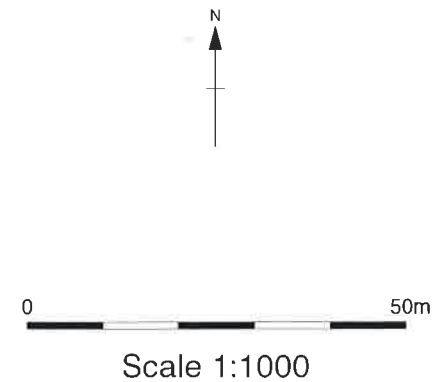


Figure 1: Conjectured topography of the medieval castle





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