ANCIENT MONUMENTS LABORATORY – GEOPHYSICAL SURVEY REPORT No. 19/80

SURVEY: BUCKLERS HARD **DATE:** 7-8/7/80

1. SITE

OS grid reference: SU 409001 **Field no.** 9506

Location: uneven sloping ground due East of the Masters Builders House Hotel, and between this and the present day quay and slipway.

Geology: Oligocene Osborn and Headon beds.

Archaeological evidence: a long history of shipbuilding activity in the vicinity.

2. SURVEY

Object: to locate the presence of any buried structures or features relating to the original shipbuilding industry.

(a) Magnetic survey

Type of survey:
Magnetometer: **Range:** 0 – 50 γ
Chart recorder setting: 20 γ/cm **Logged for computing:** ~~yes~~/no

(b) Resistivity survey

	(i) Area survey	(ii) Traverses
Configuration	Twin Electrode	
Spacing – probes	0.5 m.	
traverses	1.0 m.	
Meter	Martin-Clark	

(c) Other tests

(i) Magnetic susceptibility –
topsoil: 51.8 **subsoil:** **fill:** **$\times 10^{-6}$ emu/gm**
(ac bridge readings)

(ii)

Survey grid measured to: nearby buildings

Plans/charts enclosed:
A – map. 1820
B – map. 1845
1 – location plan 1:2500
2 – resistivity survey, contour plot 1:200
3 – magnetometer survey, traces 1:200

cont/

3. BACKGROUND

According to early maps (1820 and 1845, plans A and B enclosed) the shipbuilding yard at Bucklers Hard would have covered somewhere in the region of a hectare of ground due north and east of the bottom of the settlement's High Street. Vestiges of timbers visible in the mud below high-water mark remain as evidence of slipways and quays, otherwise there is little else except generally uneven ground to indicate the presence of the yard. Large areas of the yard might be expected to leave little in the way of substantial below-ground structures - brick foundations perhaps, for the few timber-built sheds; cobbling; rubble; and structures relating to iron-working. Fragments of slag occur on the ground surface on the eastern edge of the site, and this has been taken to represent the location of contemporary iron-working.

Since the heyday of shipbuilding, the area has continued to be used for various riverside activities, and in the last war the site again saw use as a shipyard. In the last two centuries therefore, the area has been the scene of considerable activity and subsequent alteration in the local land surface. It is a possibility that a certain amount of landscaping has taken place, and at present the ground is interrupted by gravel and tarmac paths, cable and pipe trenches, man-hole covers and slipway foundations. Much of the eastern part of the site is overgrown.

4. GEOPHYSICAL TESTS

The conditions described above are far from ideal for geophysical prospecting methods. Detailed magnetic scanning over the area showed very widespread and confused magnetic disturbance, exactly as one would expect from generations of iron litter absorbed by the topsoil. Amongst the strongest anomalies were those detected in that part of the site where iron slag could be seen in the turf. Owing to the strength and complexity of these anomalies, and the dense undergrowth hereabouts, it was not possible to locate any specific features, although this must be the most likely spot for iron-working actvity.

Bearing in mind the complex nature of the ground and the obstructions on it, it was decided to investigate the turfed area in front of the Masters Builders House Hotel. Although there is no documentary evidence for buildings on this exact spot the ground is slightly hummocky and well placed above the break of slope leading down to the quays. A 30 metre square was accordingly laid out here on the most level and accessible area.

Resistivity survey:

The area was initially surveyed for variations in ground resistance, as such variations are often liable to correspond with buried structures such as wall foundations. The data has been computed, and is presented as a contour plot (plan 2). The contours here surround anomalous areas of high resistance and these can be seen to concentrate in several discrete spots, and additionally in an arc-like pattern in the eastern half of the square. This arc probably continues under the adjacent track and may thus form part of a more extensive pattern very possibly relating to foundations. Masonry may actually remain in situ, or a foundation trench could be filled with a course fill such as rubble. Whatever the case, this particular feature must almost certainly indicate the presence of buried remains here, although it is surprising that what appears to be part of a circle (diameter about 30 m. is represented, rather than a linear arrangement. The other anomalies nearby are no less likely to result from artificial ground disturbance although no pattern is discernible. Accumulation of rubble or similar debris could well be responsible, and one is reminded of the uneven nature of the ground here.

cont/

Magnetometer survey:

In addition to scanning widely over the site with the poor results already mentioned, a part of the resistivity survey area was also surveyed in detail with the magnetometer and automatic recording system. The magnetometer is carried along successive 30 m. traverses separated by 1 m. intervals and a trace recording the signal is plotted to scale, and here reproduced on plan 3 at 1:200. As suspected, anomalies from iron objects near the surface are profuse and so strong as to blot out any of the subtler anomalies that may correspond to normal archaeological features.

5. CONCLUSIONS

The conventional methods of archaeological geophysics are somewhat inadequate in conditions such as these. The only promise is shown by the use of resistivity, but this can only be applied at the expense of considerable time and to piecemeal areas where surface interference has been and is at a minimum. A test area where detailed plotting was attempted, has shown that sub-surface features do exist, as one would indeed expect from the nature of the terrain and its favourable position. The character of these features and their relationship to ancient or more recent activity is unknown, and ultimately trial excavation, for instance of the apparent circular feature, must be the only truely satisfactory means of finding this out.

Surveyed and reported by A. David, with B. Thomas.

For: Mr J. G. Coad
Mr. A. J. Holland

Date: 24/11/80

Ancient Monuments Laboratory Geophysics Section,
Department of the Environment,
Fortress House,
23 Savile Row,
London W1X 2HE tel: 01 734 6010 ext. 591.

An interim report by Leo Biek of the Laboratory's Technology Section on the sample of slag from the supposed iron-working area, follows this account.

Interim report on sample of slag from Bucklers Hard, Beaulieu, collected during geophysical examination of the area by A. David.

A. M. Lab. No. 801512

Approx. triangular lump, sides c. 200 mm., by about 100 mm. deep (max). Grey-brown and ferruginous surface all round with included flint/chert (?) pebbles and fragments.

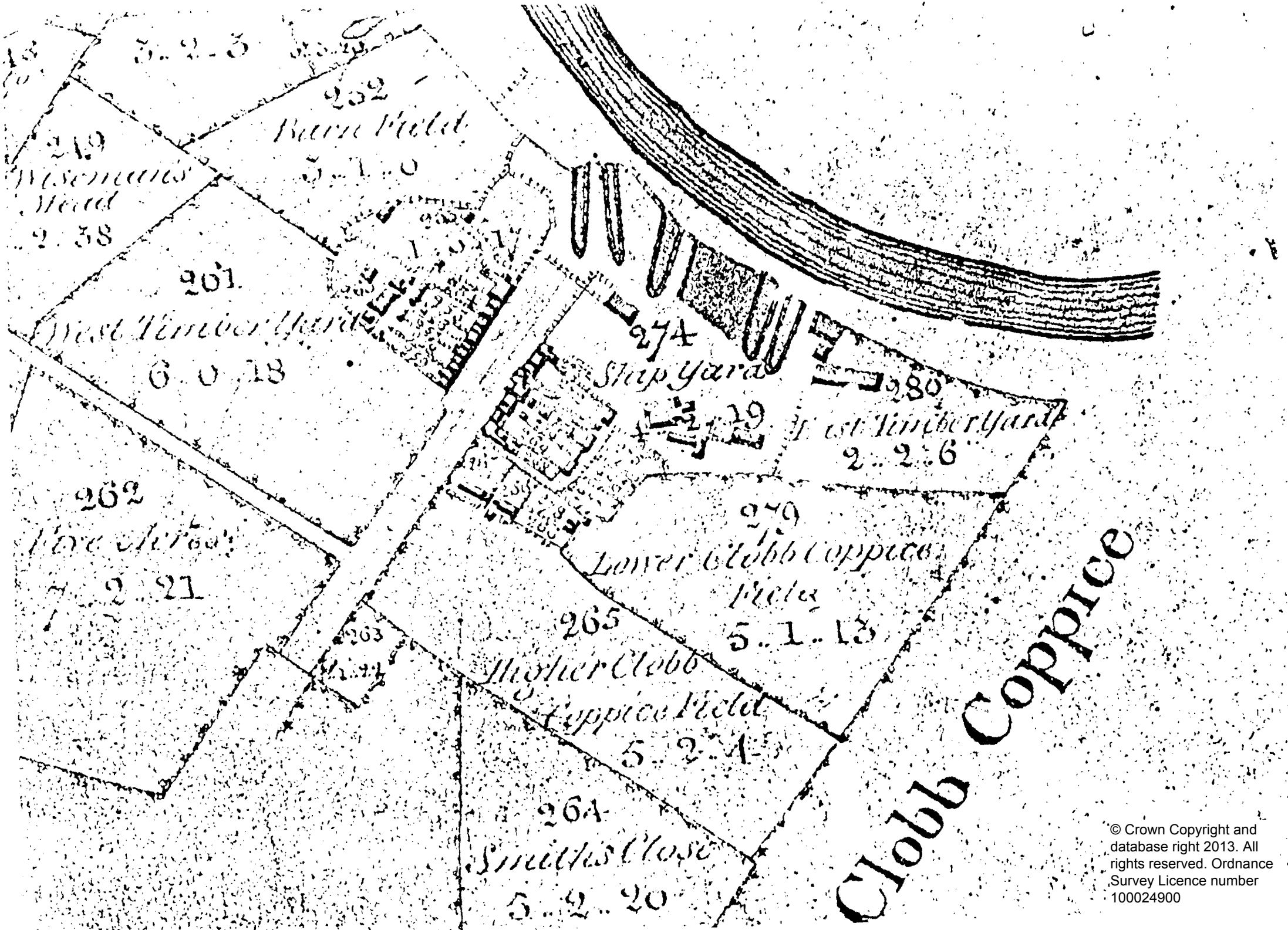
The lump was split and the fracture showed, in the main, a honeycome structure of purple cavities mostly between 4 and 14 mm across. Many of the cavities were empty but some were part-filled, to some extent with similar material; but there was also a general earthy/soily 'iron-panned' matrix cementing all this material - though no more than c 5% by volume/order.

Powdery material loosened by the splitting was strongly magnetic and included some characteristic small fragments of hammer scale. Some of the cavities were lined with 'limonitic' material suggesting alteration/corrosion subsequent to burial. Part of the fracture faces, on drying out, became covered with a dense white microcrystalline efflorescence of superficially moss-like structure, indicating the degree of interlocking porosity.

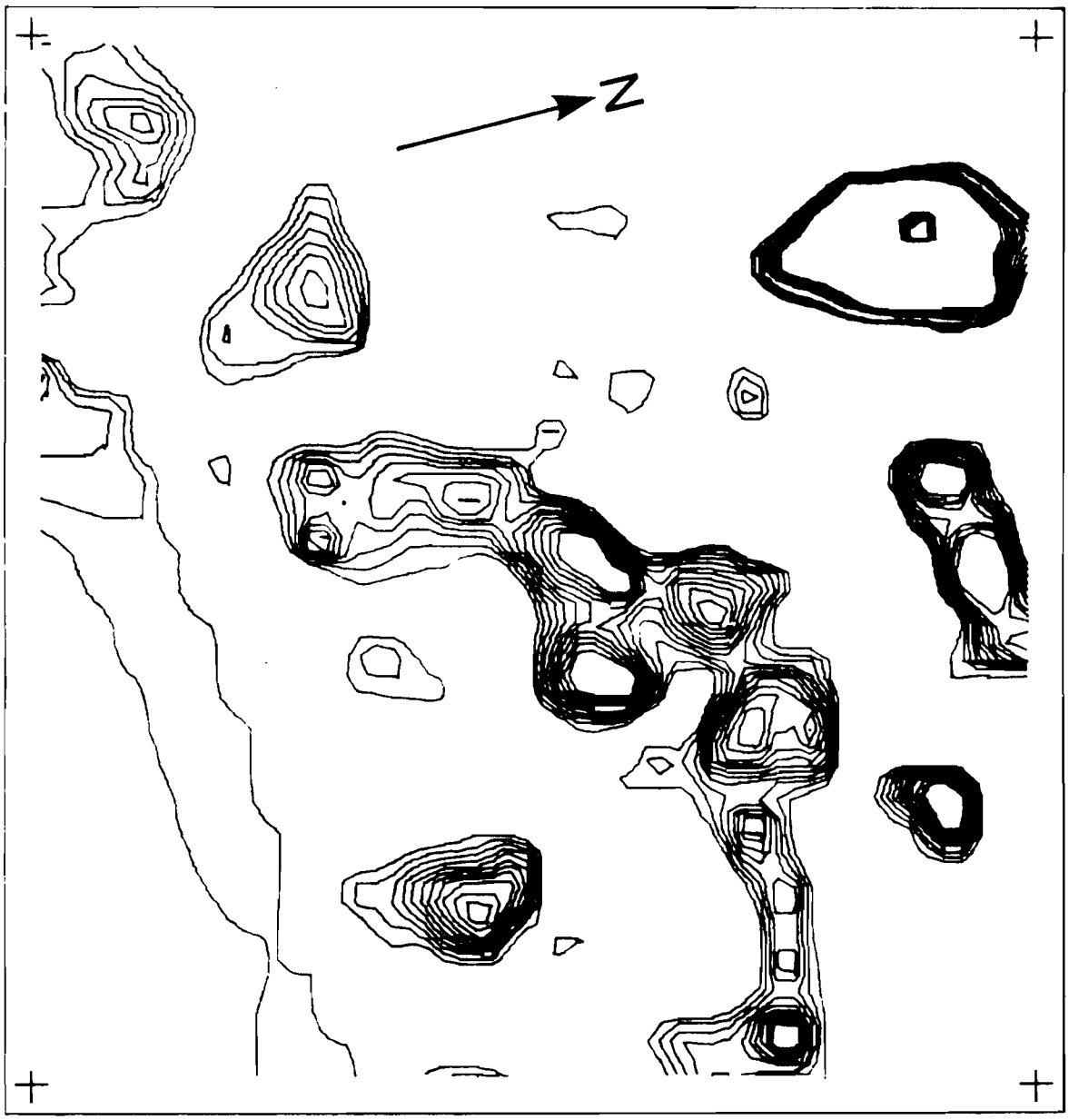
The lump is similar to smithing or forge slag of earlier periods and could represent part of an iron-working floor which had accumulated as a result of a considerable amount of hot-working the metal. More detailed interpretation must await the results of more specific investigations being undertaken as part of a research project at the University of Aston in Birmingham.

L. Biek.

Ancient Monuments Laboratory.
6.8.80



Plan 2



BUCKLERS HARD

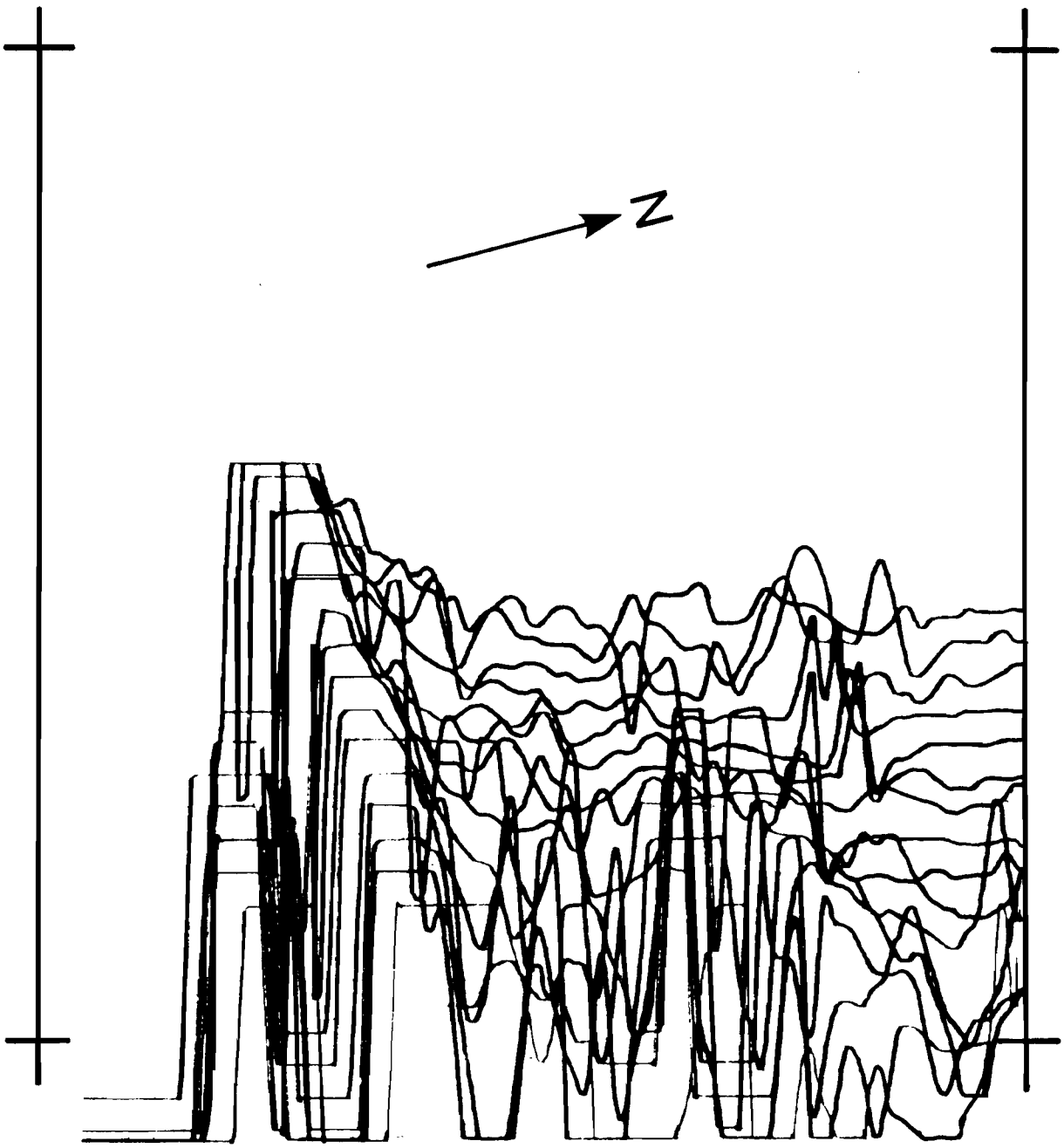
RESISTIVITY SURVEY

Filtered plot. Contours above mean.

1:200

A. M. LAB.

Plan 3



BUCKLERS HARD

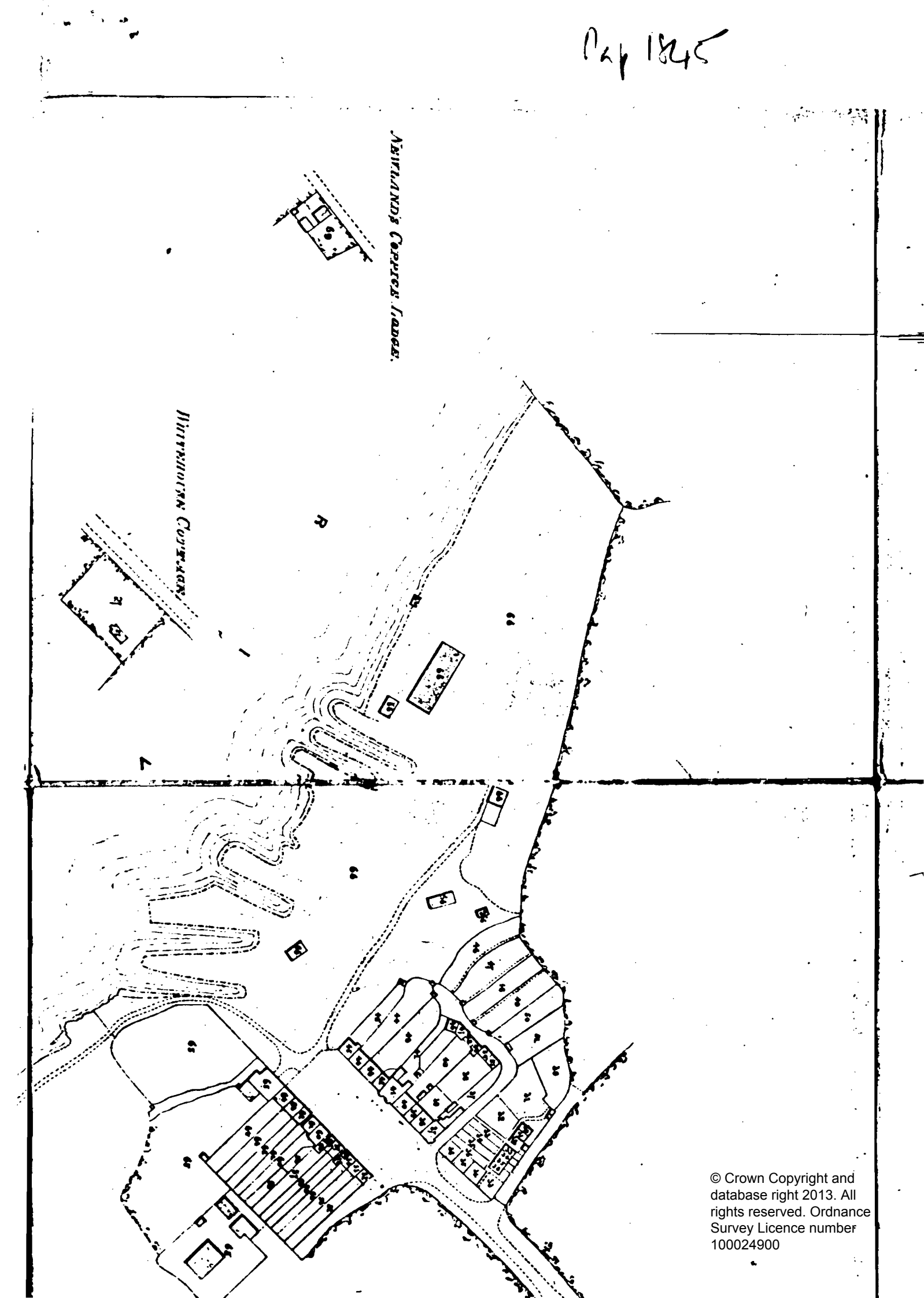
MAGNETOMETER SURVEY

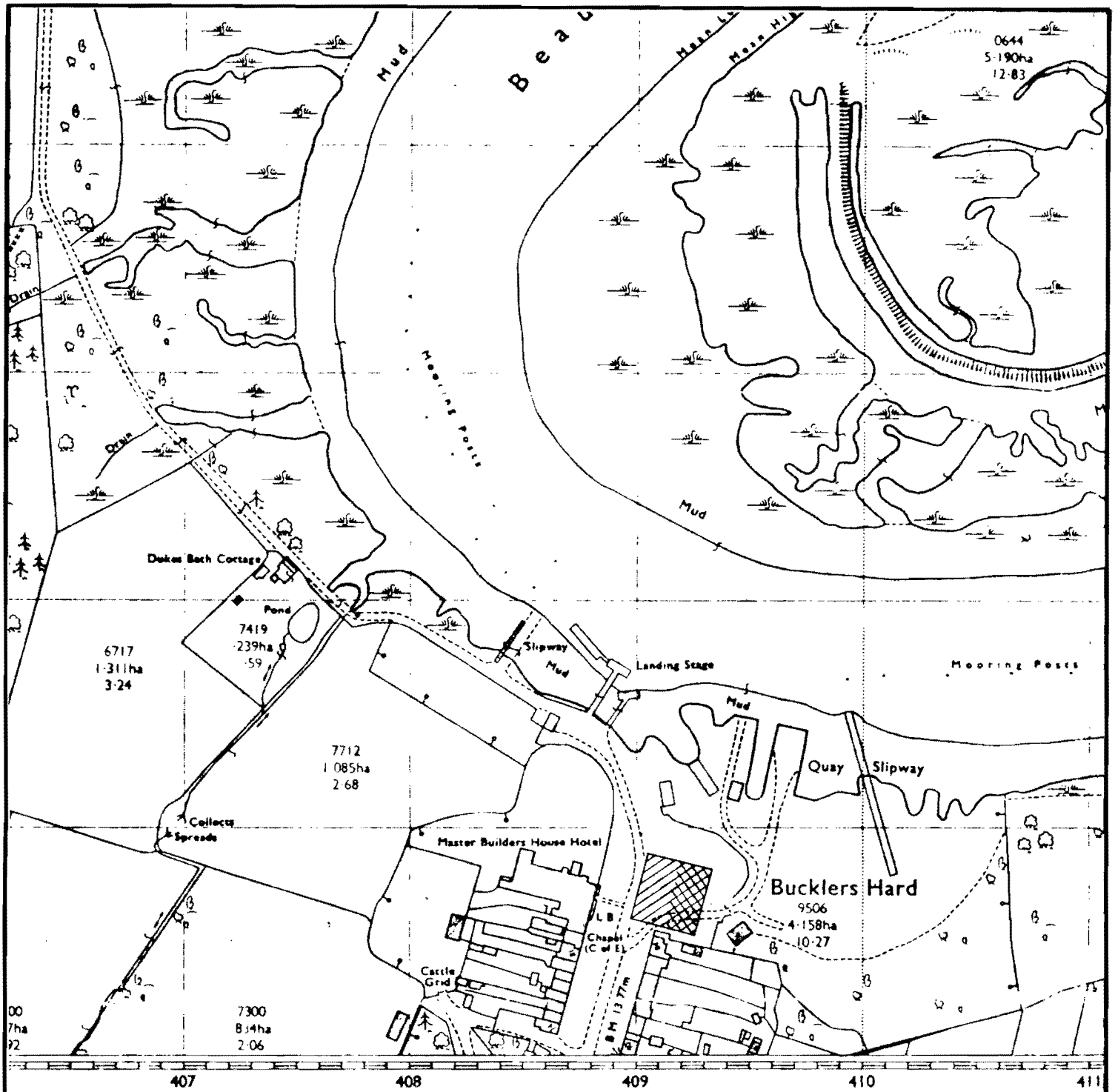
Vertical scale - 20 gammas/cm.

1:200

A. M. LAB.

Pay 1845





NEW FOREST CO CONST

SZ 4099-4199

CONVERSION SCALES

HECTARES-ACRES

5 6 7

12 13 14 15 16 17

METRES-FEET

420 440 460 480 500 520 540 560 580 600 620

1400 1500 1600 1700 1800 1900 2000

1 metre = 3·2808 feet 1 foot = 0·3048 metre

Resistivity survey

Magnetometer survey

BUCKLERS HARD

GEOPHYSICAL SURVEY

Location

Survey no. 19/80 Plan no. 1 of 3		NG ref. SU 409001 OS sheets SU 4000 – 4100
0 1:2500 200m		DoE A.M. Laboratory