BARBY POOLS MARINA
NORTHAMPTONSHIRE AND WARWICKSHIRE

Report on Archaeological Geophysical Survey
2011

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Surveyed by:

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Barby Pools Marina,
Northamptonshire and Warwickshire

Report on Archaeological Geophysical Survey, 2011

Introduction

This report describes a geophysical survey undertaken as part of an archaeological evaluation of land at the proposed Barby Pools Marina site in Northamptonshire and Warwickshire (centred at NGR SP 5184 6976). The survey was commissioned by Cotswold Archaeology on behalf of J Marine Ltd, and fieldwork was done between 22-29 March 2011.

The survey was carried out in response to requirements and following procedures as stated in the Written Scheme of Investigation for the project. This was prepared by Cotswold Archaeology (Project 3174), and issued on 18 March 2011. The site has also been the subject of detailed Cultural Heritage Assessment (CHA) by Cotswold Archaeology (Report 11010; January 2011). Some of the following introductory background notes are summarised briefly from this document.

The Site

The site is located to either side of the Oxford Canal (and adjacent former railway) between Onley and Barby in Northamptonshire, and c. 2km south east of Dunchurch, Warwickshire.

The areas which were specified for survey coverage are indicated approximately (by blue cross hatching) on figure 1, and amount to c. 30ha (from a total proposed development area of 57ha). The four areas extend across eight fields, and are labelled on figures 1 and 12-13. It is noted in the WSI that areas of the site which are subject to previous impacts, or which will not be subject to development impacts are excluded from the survey area. The final survey coverage (adjusted according to ground conditions) is shaded on figure 1, and amounts to 30.1ha.

Topography and geology

The fields investigated by the survey are all pasture. They are bordered to the east by the canal and field boundaries, and to the north and north west by HM Prison Onley and the Onley Grounds housing estate. The topography is generally flat, with a slight west facing slope to the east of the canal.

The underlying solid geology is described in the CH report as Mudstone of the Charmouth Formation. The site appears to be free of drift deposits, with the exception of a possible

band of alluvium near to the (east-west) stream. Previous magnetometer surveys carried out at sites with similar geology (broadly classified as Jurassic Lower Lias) have provided favourable conditions for the magnetic detection of archaeological features.

Archaeological background

There is only limited evidence for previously identified archaeological findings from the site, or from the surrounding study area which is examined in the CHA report. The nearest Bronze Age, Iron Age and Roman findings are from locations 5-600m to the north east.

No medieval earthworks indicative of settlement have been recorded, but the site does contain well-preserved ridge and furrow earthworks extending across the greater part of the survey area. (A plan of extant ridge and furrow from the CHA report is reproduced here in figure 11ii.) The directions and dimensions of the ridges are indicated also by irregularities in the contours (as indicated in the topographic site plan; figure 11iv.) The nearest identified medieval settlement is Onley deserted medieval village located 300m to the north west of the site.

Area 3 of the survey is intersected by the former line of the Great Central Railway, and also by a disused section of the Oxford Canal. The present (north-south) canal alignment lies between areas 3 and 4. Extracts from a number of historical maps (from a tithe map of 1849 onwards) are reproduced in the CHA report. Various former boundaries (as indicated on the 1889 OS map and reproduced here as figure 11iii) are no longer present in area 4.

Survey Procedure

Readings were collected using Bartington 1m fluxgate magnetometers, and are plotted at 25cm intervals along transects 1m apart. The results of the survey are shown as grey scale plots at 1:2000 scale in figures 2-3, and as a graphical (x-y trace) plot at 1:1250 scale which is reproduced in sections as figures 4-10. Magnetic susceptibility readings (and other site plans) are reproduced in figure 11. An interpretation of the findings is shown superimposed on figures 4-10, and is reproduced separately to provide a summary of the findings on the final plans (figures 12-13).

The survey plots show the magnetometer readings after standard treatments which include adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering has been applied to the grey scale plot to reduce background noise levels.

Colour coding has been used in the interpretation to distinguish different effects. Magnetic anomalies of possible archaeological interest, or at least those which may not be of geological or recent origin, are outlined in red, with weak (and probably natural) features in a light brown. Stronger, and probably recent, magnetic disturbances are outlined in a darker brown. Possible cultivation effects are shown in green, and a pipe (and other ferrous objects) in shades of blue.

The magnetometer survey was supplemented by a background magnetic susceptibility survey with readings taken at 30m intervals using a Bartington MS2 meter and field sensor loop. The readings are presented in a data plot which is inset in figure 11.

Susceptibility surveying can provide a useful complement to a magnetometer survey, and indicates the strength of response which is likely to be obtained. It can also be used to provide a broad indication of previously occupied or disturbed areas in which burning associated with past human occupation has enhanced the magnetic susceptibility of the topsoil, although the readings may be affected by a number of non-archaeological factors, including geology, recent activity, and land use.

The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains. It is also strongly affected by ferrous and other debris of recent origin.

The survey grid was set out and located at the required national grid co-ordinates by means of a sub-1m accuracy GPS system. OS co-ordinates of map locations can be read from the AutoCAD (.dwg) version of the plans which can be supplied with this report.

Results

The survey has produced significant archaeological findings, but these appear to be confined almost entirely to area 4. Results are described below for the four areas in turn.

Area 1

The main finding here is the ridge and furrow, which is represented by linear east-west magnetic anomalies of varying strength. [It is often the case that surviving ridge and furrow responds less strongly in a survey than ridges or furrows which have been levelled. This is because infilled furrows contain a greater depth of detectable fill. The magnetic anomalies in the present survey appear mainly to represent ridges rather than furrows.] Some of the more distinct ridges are indicated in the interpretation by green outlines and broken lines.

Other features as marked include strong (and probably recent) disturbances near the farm and field boundaries (indicated in brown), and some weaker magnetic anomalies (light brown). These may represent naturally silted hollows or variations in topsoil depth. One rather stronger magnetic anomaly which could represent a silted pit 3-4m in width is outlined in red at A in the south west corner of the field. This is probably too isolated to be archaeologically significant.

Area 2

No findings of archaeological interest can be identified from the survey data in the western field. There are numerous magnetic disturbances of a strength which could represent either ferrous objects, or other modern debris (such as brick rubble). An aerial photograph dated 1948 which is reproduced in the CHA report (figure 8) does not show any activity in this field, but the field adjoins a military camp which is now the site of the housing estate near the prison. It is perhaps therefore possible that some earlier temporary military activity might have extended into this field (or that it has been disturbed in some way since 1948).

Findings from the eastern field in area 2 include the north-south ridge and furrow, and scattered ferrous objects. A few large pit-like magnetic anomalies (similar to A above) are outlined in red (as at B). These are again probably too large and widely dispersed to represent archaeological features.

Area 3

The survey has detected distinct ridge and furrow across much of area 3, but few other findings. The pit-like magnetic anomalies at C are rather more closely grouped than in area 2, and could perhaps therefore represent outlying features associated with the archaeological site in area 4. There is not otherwise any clear evidence that the features and enclosures seen in area 4 extend this far to the east.

Area 4

The survey plots show a distinct linear pattern corresponding to the north-south ridge and furrow (as indicated in green), but this intersects and is superimposed on a further system of narrow and clearly defined (but differently aligned) linear features (red). These define rectilinear enclosures of a kind which could indicate a settlement site, possibly of Roman date. Some possible curving ditch like features have also been detected in the north of the field near D. The enclosures contain varying numbers of individual magnetic anomalies (also outlined in red), which further suggest the presence of settlement features. The magnetic susceptibility readings (figure 11i) are higher in the west and centre of this field than to the east (and are also higher than in areas 1 and 2), which is consistent with this interpretation.

There appear to be strong disturbances in the north west of the field alongside the canal. Other disturbances of varying strength have been detected along the former field boundaries in the east of the field. The previous boundary alignments are indicated by grey broken lines. A strong magnetic disturbance at E suggests the site of a structure (or infilled pond ?) at the corner of the former fields.

The magnetic anomalies around F at the east of the survey are weaker than would be expected from recent disturbances, but are more concentrated than the clearly archaeological features detected elsewhere in the field. They have therefore been outlined in light brown (indicating possibly non-archaeological features). This colouring may be incorrect, but it distinguishes some linear features detected here (which are outlined in red,

and could indicate a further enclosure) from the surrounding disturbances.

Conclusions

The survey has responded to much of the visible ridge and furrow, but has also detected an extensive and previously unknown complex of mainly rectilinear ditched enclosures in area 4. A number of the enclosures contain internal features suggesting this is a settlement site, perhaps of largely Roman date.

Ridge and furrow was detected across much of areas 1-3, but other findings of potential archaeological significance from these areas are perhaps limited to a group of pit-like magnetic anomalies (at C) in area 3.

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14 April 2011

The fieldwork for this project was done by F.S. Prince, P. Cottrell, C. Oatley and N. Paveley.

452000E

453000E

270000N

269000N

N

HM Young Offender Institution

Rainsbrook Secure Training Centre

Onley

Onley Fields Farm

Area 1

Area 2

Area 3

Area 4

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

Figure 10

Figure 12

Figure 13

Area proposed for magnetometer survey

Approximate extent of magnetometer survey

Location of 1:2000 scale grey scale plots (figures 2-3)

Location of 1:1250 scale figures (4-10)

Location of 1:2500 scale summary plans showing interpretation of findings (figures 12-13)

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Figure 1: Location of survey

0 1:5000 200m

EEK & Co Const Bay

Oxford Canal

- magnetic anomalies (archaeological ?)
- magnetic disturbances (recent / non-archaeological)
- background magnetic activity (natural / non-archaeological ?)
- ridge and furrow
- former boundary ?
- recent cultivation ?
- strong (ferrous) magnetic anomalies
- pipe (and associated magnetic disturbance)

N

50 nT

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Figure 10: Magnetometer survey (with interpretation)

0 1:1250 50m

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Figure 2: Magnetometer survey (grey scale plot)

0 1: 2000 100m

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Pond

Track

Towing Path

CS

CCS

CS

Def

Oxford Canal

EER & Co Const Bdy

1.23m RH

Old Canal

N

2.2nT

-2.0

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Figure 3: Magnetometer survey
(grey scale plot)

0 1: 2000 100m

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magnetic anomalies (archaeological ?)

magnetic disturbances (recent / non-archaeological)

background magnetic activity (natural / non-archaeological ?)

ridge and furrow

former boundary ?

recent cultivation ?

strong (ferrous) magnetic anomalies

pipe (and associated magnetic disturbance)

N

50 nT

Towing Path

Towing Path

Oxford Canal

Barby Pools Marina

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Figure 4: Magnetometer survey (with interpretation)

0 1:1250 50m

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- magnetic anomalies (archaeological ?)
- magnetic disturbances (recent / non-archaeological)
- background magnetic activity (natural / non-archaeological ?)
- ridge and furrow
- former boundary ?
- recent cultivation ?
- strong (ferrous) magnetic anomalies
- pipe (and associated magnetic disturbance)

N

LB

TCB

CG

Barby Fields Farm

50 nT

EER & Co Const Bdy

CS

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Northamptonshire and Warwickshire
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Figure 5: Magnetometer survey
(with interpretation)

0 1:1250 50m

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for Cotswold Archaeology

Track

CG

Conway Fields Farm

LB

N

50 nT

Pond

EER & Co Const Bdy

CS

1.22m RH

magnetic anomalies (archaeological ?)

magnetic disturbances (recent / non-archaeological)

background magnetic activity (natural / non-archaeological ?)

ridge and furrow

former boundary ?

recent cultivation ?

strong (ferrous) magnetic anomalies

pipe (and associated magnetic disturbance)

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Figure 6: Magnetometer survey (with interpretation)

0 1:1250 50m

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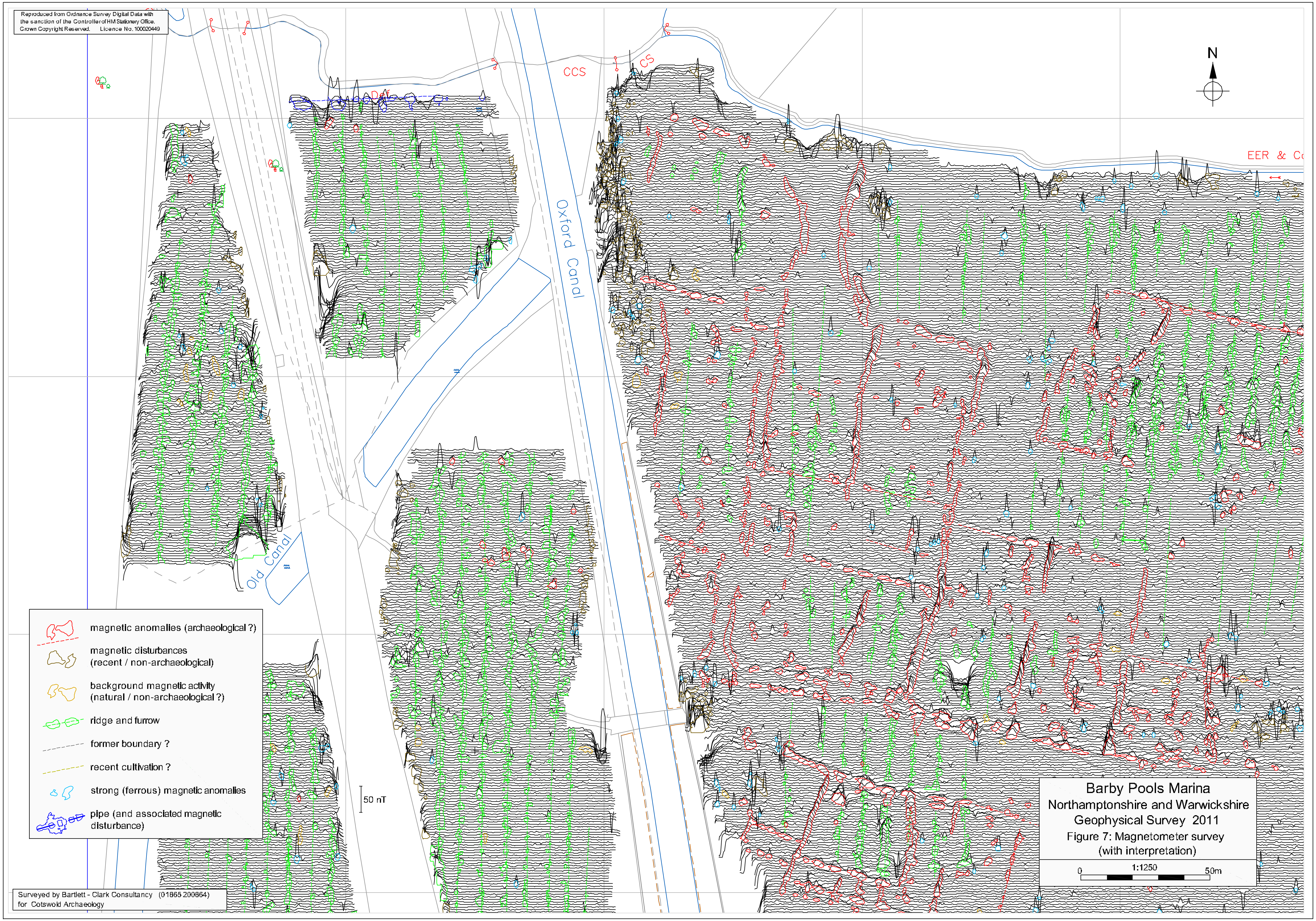
Reproduced from Ordnance Survey Digital Data with the sanction of the Controller of HM Stationery Office. Crown Copyright Reserved. Licence No. 100020449
N
CCS
CS
EER & Co
Oxford Canal
Old Canal
50 nT
magnetic anomalies (archaeological ?)
magnetic disturbances (recent / non-archaeological)
background magnetic activity (natural / non-archaeological ?)
ridge and furrow
former boundary ?
recent cultivation ?
strong (ferrous) magnetic anomalies
pipe (and associated magnetic disturbance)
1:1250
0
50m
Surveyed by Bartlett - Clark Consultancy (01865 200864) for Cotswold Archaeology

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Geophysical Survey 2011
Figure 7: Magnetometer survey (with interpretation)

CCS

CCS

Oxford Canal

EER & Co Const Bdy

N

50 nT

magnetic anomalies (archaeological ?)

magnetic disturbances (recent / non-archaeological)

background magnetic activity (natural / non-archaeological ?)

ridge and furrow

former boundary ?

recent cultivation ?

strong (ferrous) magnetic anomalies

pipe (and associated magnetic disturbance)

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Figure 8: Magnetometer survey (with interpretation)

0 1:1250 50m

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N

Old Canal

magnetic anomalies (archaeological ?)

magnetic disturbances (recent / non-archaeological)

background magnetic activity (natural / non-archaeological ?)

ridge and furrow

former boundary ?

recent cultivation ?

strong (ferrous) magnetic anomalies

pipe (and associated magnetic disturbance)

50 nT

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Figure 9: Magnetometer survey (with interpretation)

0 1:1250 50m

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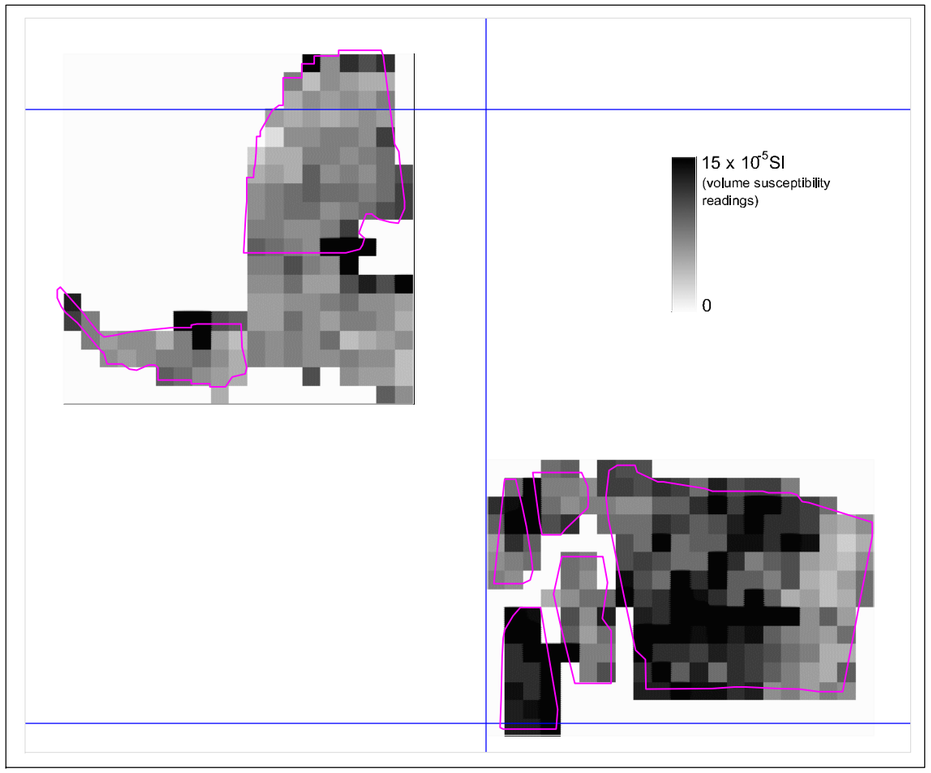
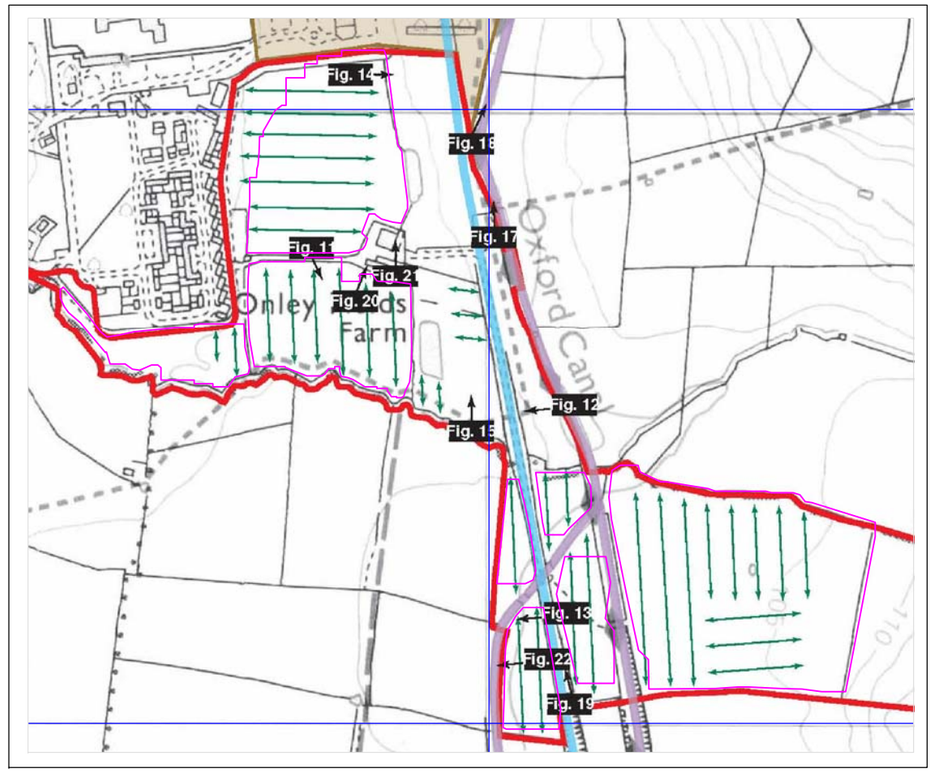
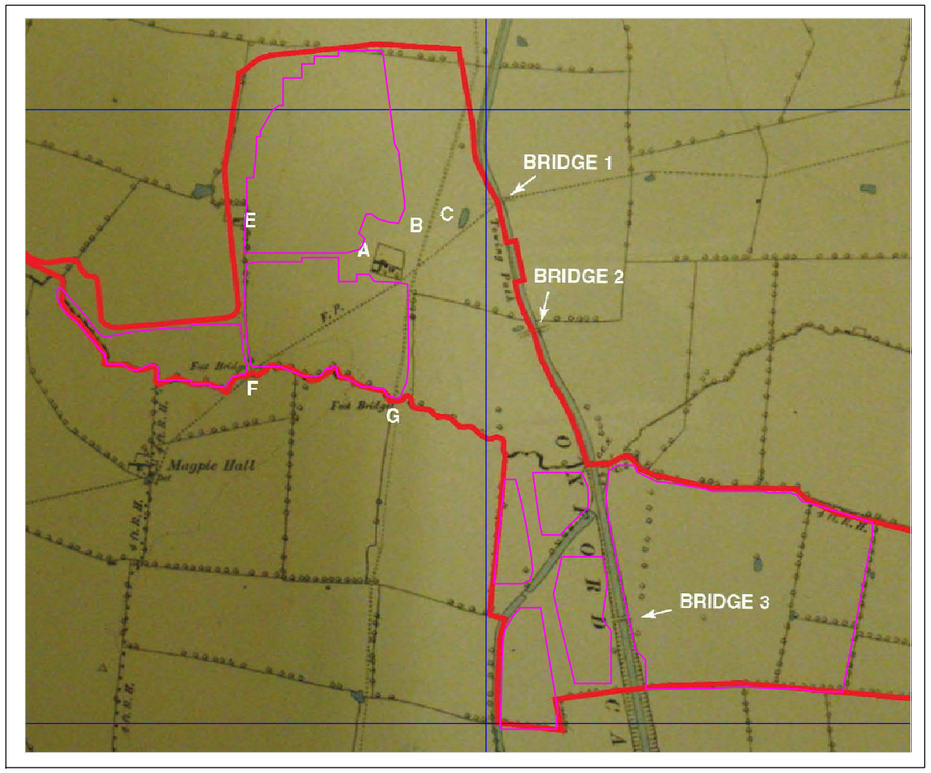


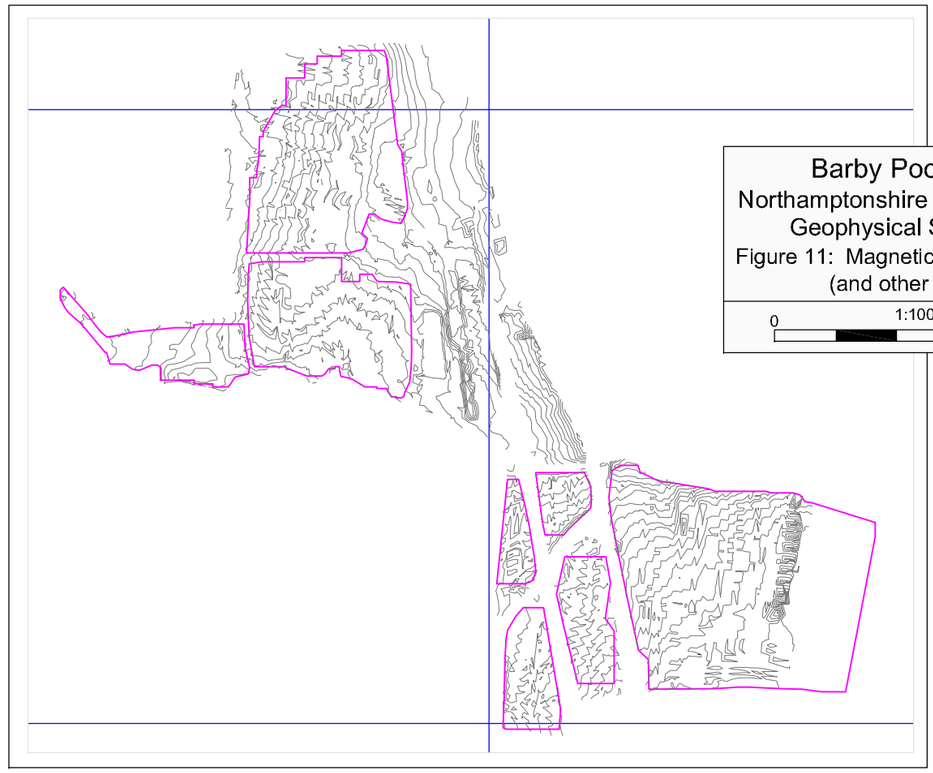
(i) Magnetic susceptibility survey



(ii) Ridge and furrow (from Cotswold Archaeology Cultural Heritage Assessment, figure 2)



(iii) OS map 1889 (from Cotswold Archaeology Cultural Heritage Assessment, figure 5)



(iv) Contours (from topographic site plan by Mayhew Callum Ltd)

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- magnetic anomalies (archaeological ?)
- magnetic disturbances (recent / non-archaeological)
- background magnetic activity (natural / non-archaeological ?)
- ridge and furrow
- former boundary ?
- recent cultivation ?
- strong (ferrous) magnetic anomalies
- pipe (and associated magnetic disturbance)

452000E

270000N

N

Area 1

Area 2

A

B

Onley

Onley Fields Farm

Brooklands

Tennis Court

Play Area

Play Area

El Sub Sta

Cattle Grid

Pond

Pond

Towing Path

Towing Path

Oxford Canal

Track

CG

LB

TCB

EER & Co Const Bdy

1.22m RH

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Figure 12: Summary of Findings

1:2500

0 100m

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N

magnetic anomalies (archaeological ?)

magnetic disturbances (recent / non-archaeological)

background magnetic activity (natural / non-archaeological ?)

ridge and furrow

former boundary ?

recent cultivation ?

strong (ferrous) magnetic anomalies

pipe (and associated magnetic disturbance)

Pond

Track

Towing Path

Oxford Canal

Old Canal

CS

CCS

Det

EER & Co Const Bdy

1.22m RH

Area 3

Area 4

A

B

C

D

E

F

269000N

452000E

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Figure 13: Summary of Findings

0 1:2500 100m

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