GEOPHYSICAL SURVEY REPORT
FOR

Berkeley Castle Research Excavation 2006

(GSMR: 5112 – NGR: ST 68 98)

REPORT NO: ROWE 06/01

Work commissioned by:-

Dept of Archaeology & Anthropology,
University of Bristol

Philip R Rowe BA MA PIFA

August 2006

Berkeley Castle Research Excavation
Geophysical Survey Report

GSMR 5112 - NGR ST 68 98

On behalf of:

University of Bristol
Department of Archaeology & Anthropology

Report No: ROWE 06 /01-

Philip R Rowe BA MA PIFA

Aug 2006

CONTENTS

FIGURES

ACKNOWLEDGEMENTS

In the preparation of this geophysical survey report, acknowledgment is made, with many thanks, to the assistance given by the Berkeley Estate and the Board of Trustees, Jenner Museum & Gardens, for their kind permission in allowing the surveys to be conducted.

Additionally, thanks are also extended to Dr. Stuart Prior, Excavation Director, UoB, Sarah Parker, Curator Edward Dr. Jenner's House & Gardens, Robert Smisson for his geophysical investigation, and Robert Moore, UoB, who kindly assisted with the surveying / collation of information needed for the preparation of this report.

Finally, thanks must go to the archaeology / anthropology undergraduates, UoB, who completed the surveys in sometimes trying conditions.

Many thanks to you all.

NOTES

Whereas great care has been taken to produce a comprehensive summary of the known and recorded archaeological evidence, no responsibility can be accepted for any omissions of fact or opinion, however caused.

ABREIVIATIONS

GSMR- Gloucestershire Sites & Monuments Record
NGR - National Grid Reference
a.O.D - Above Ordnance Datum (Sea Level)
UoB - University of Bristol

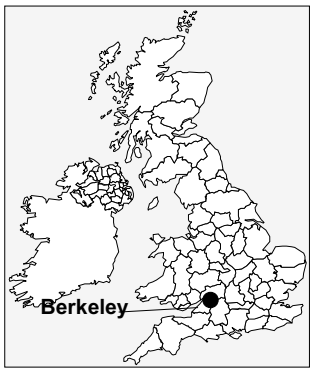
COPYRIGHT

All enquiries should be addressed to:

Philip R Rowe BA MA PIFA
University of Bristol
Department of Archaeology and Anthropology
43 Woodland Road
Bristol BS8 1UU
Email – PR1139@Bristol.Ac.UK.

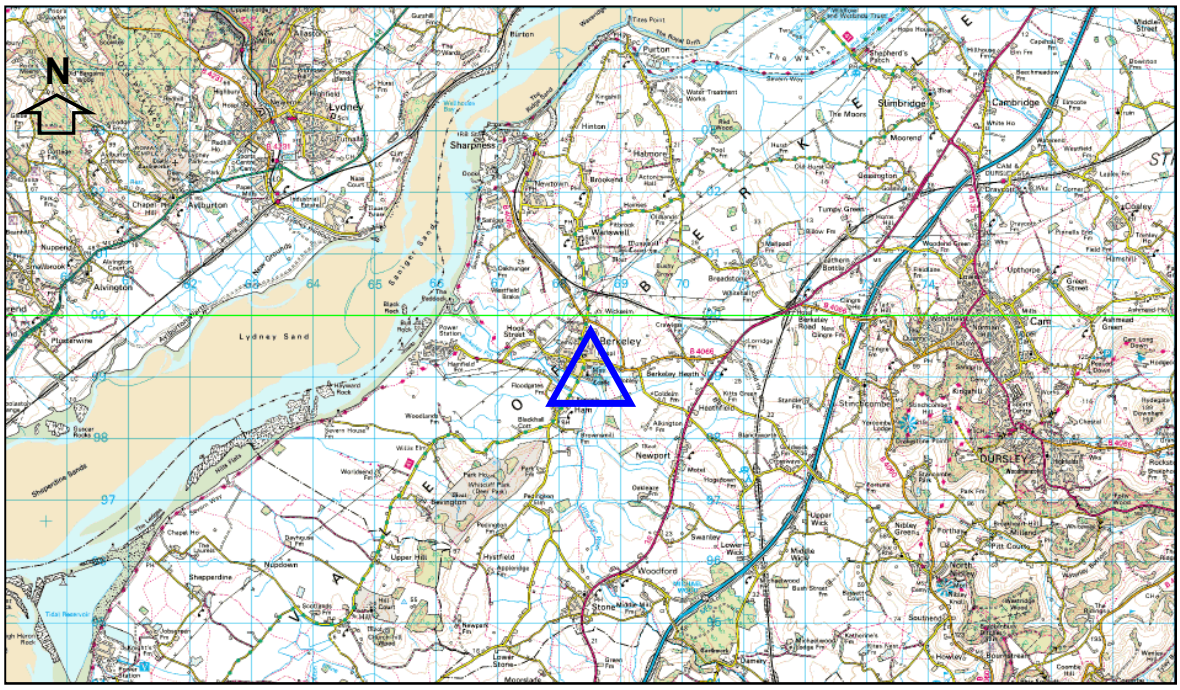
Figure 1

Location of the Study Area

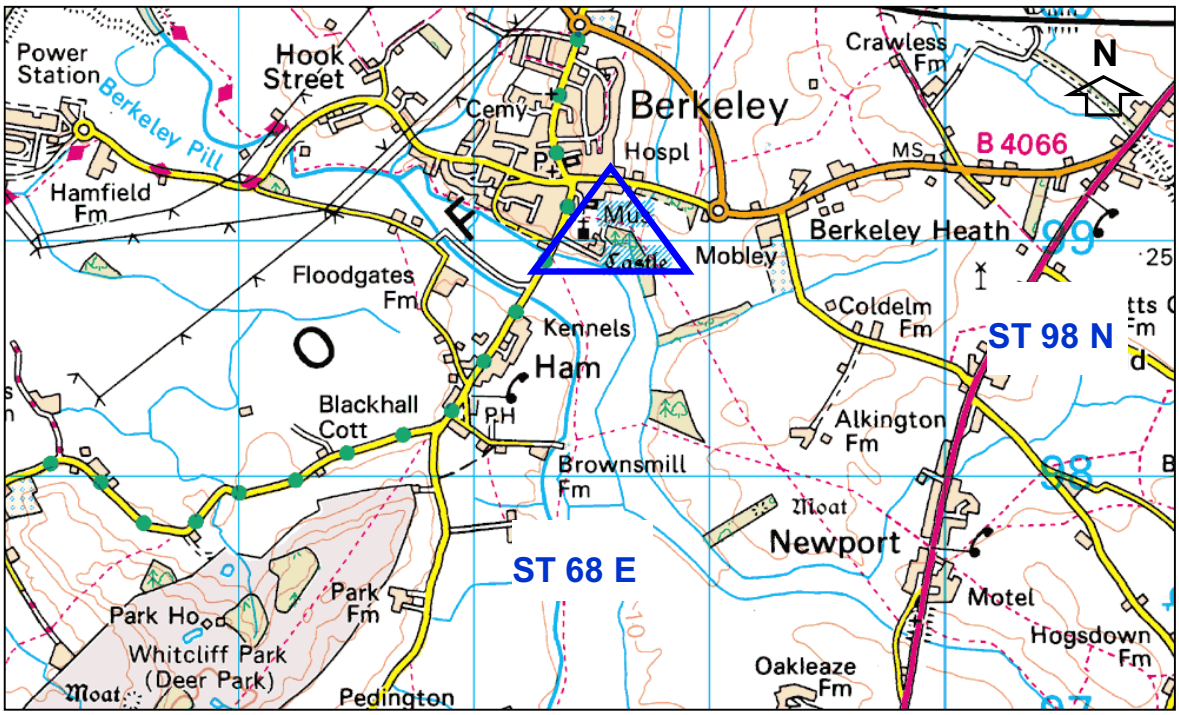


Site Location △

Plans and maps based on the Ordnance Survey Sheets are represented by the permission of Her Majesty's Stationery Office.



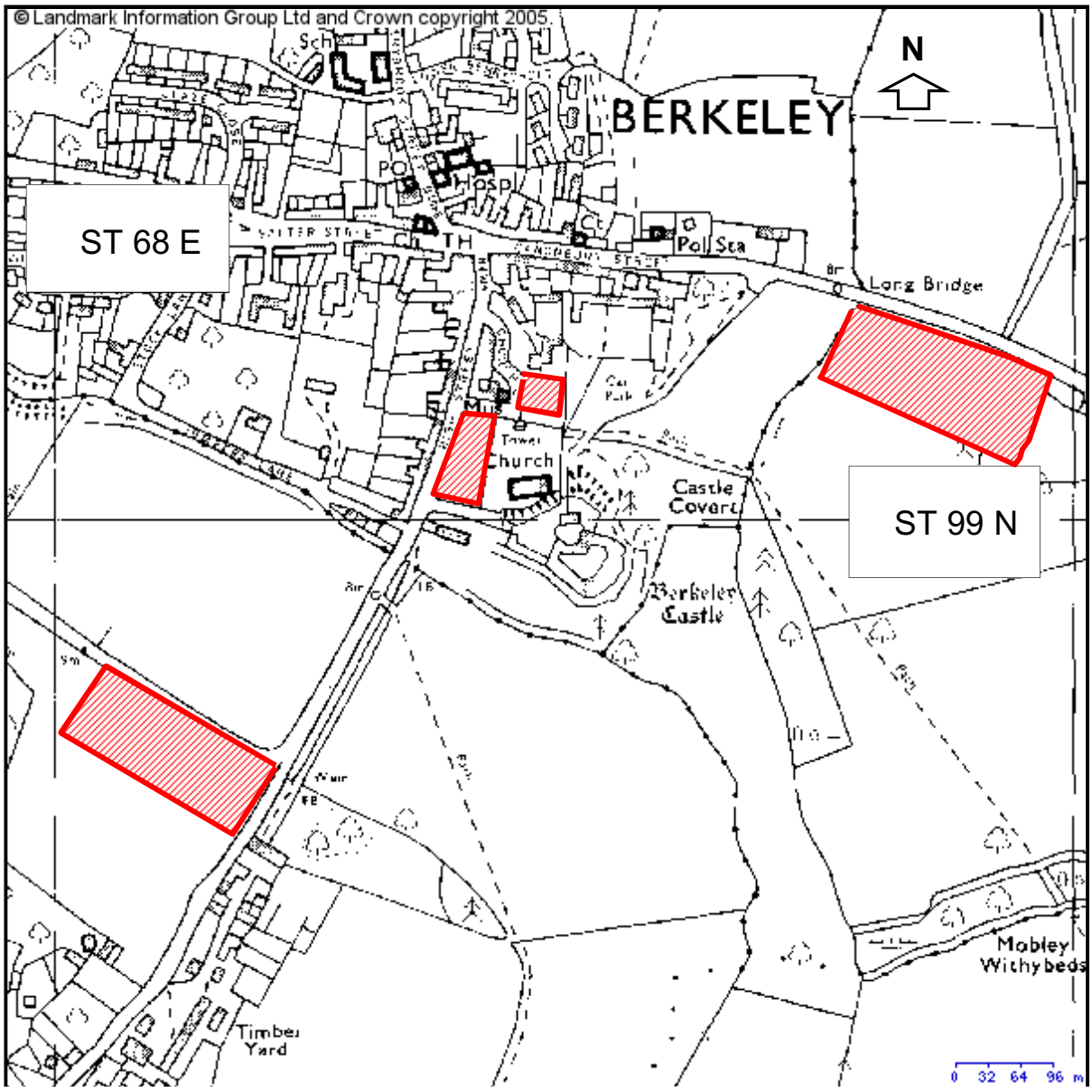
Scale 1: 50,000



Scale 1: 50,000

Figure 2

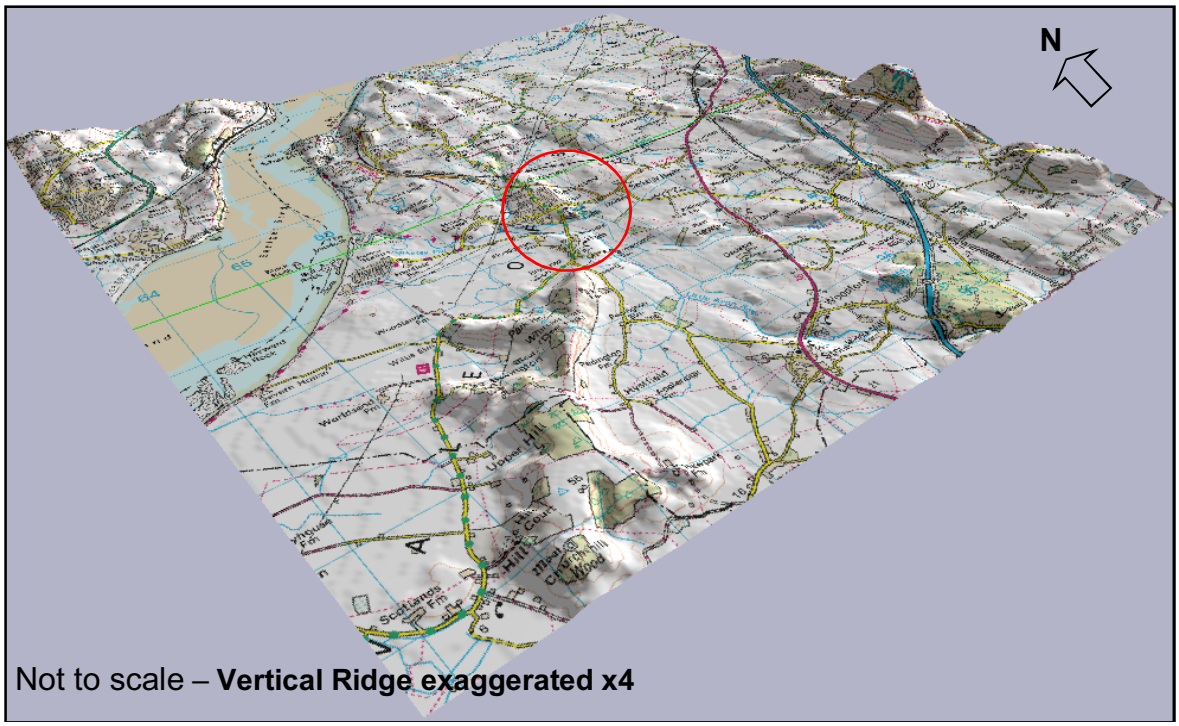
Approximate Boundary of Survey Area's (shaded in red)



Not to scale

Figure 3

Local Topography of the Study Area (case area outlined in red)



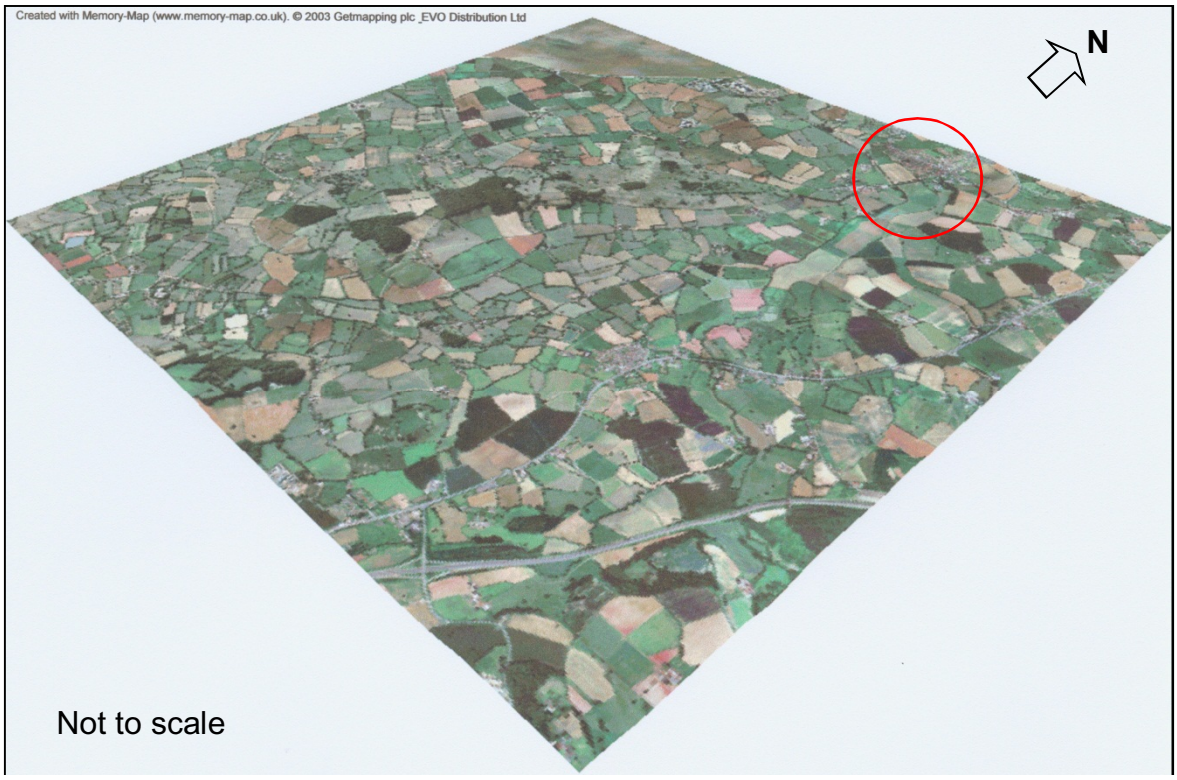
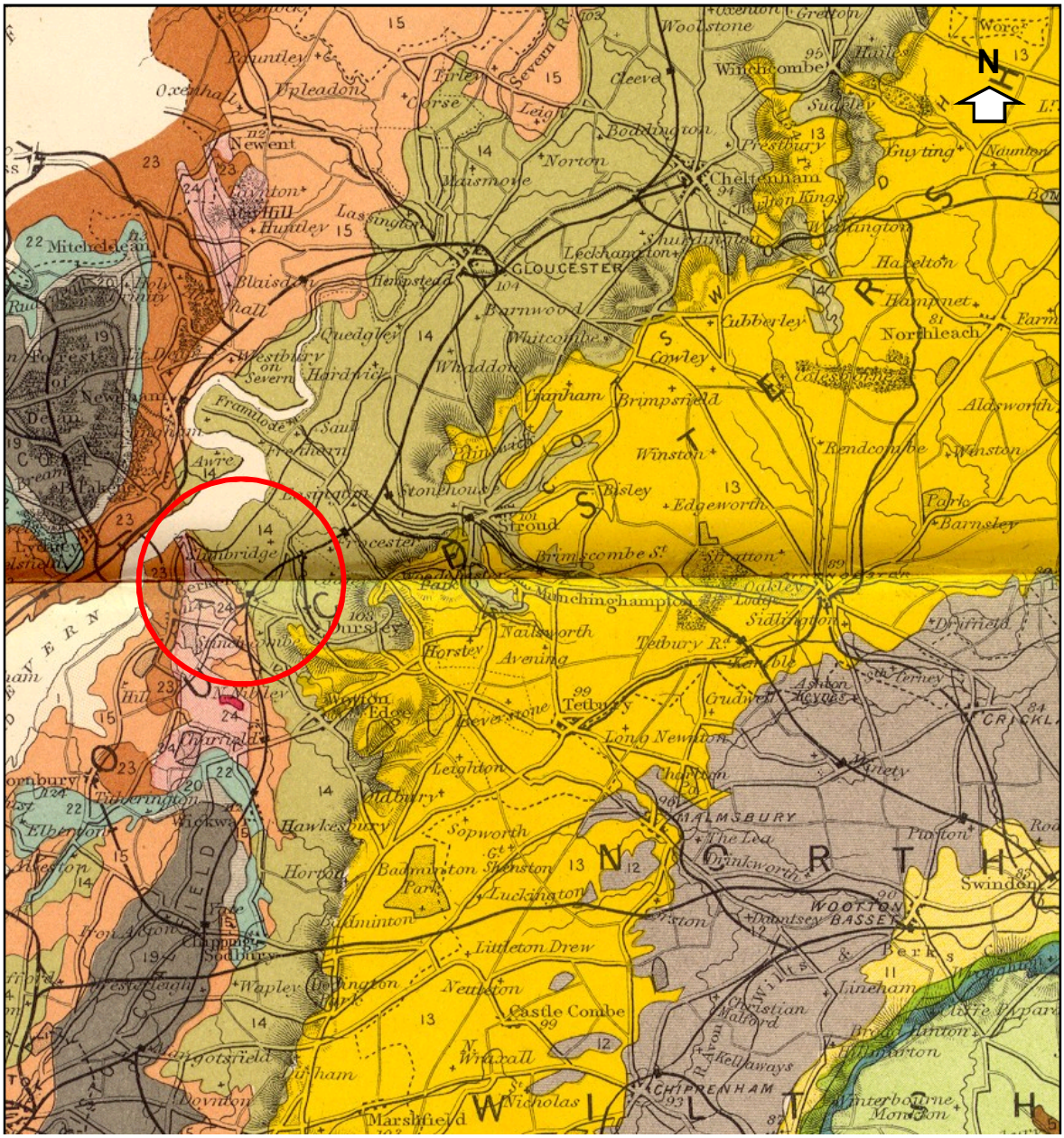


Figure 4

Overview of Study Area's Geology (case area outlined in red)

Plans and maps based on the Ordnance Survey Sheets are represented by the permission of Her Majesty's Stationery Office.

Geological Survey Map - © www.soton.ac.uk – School of Ocean & Earth Science.



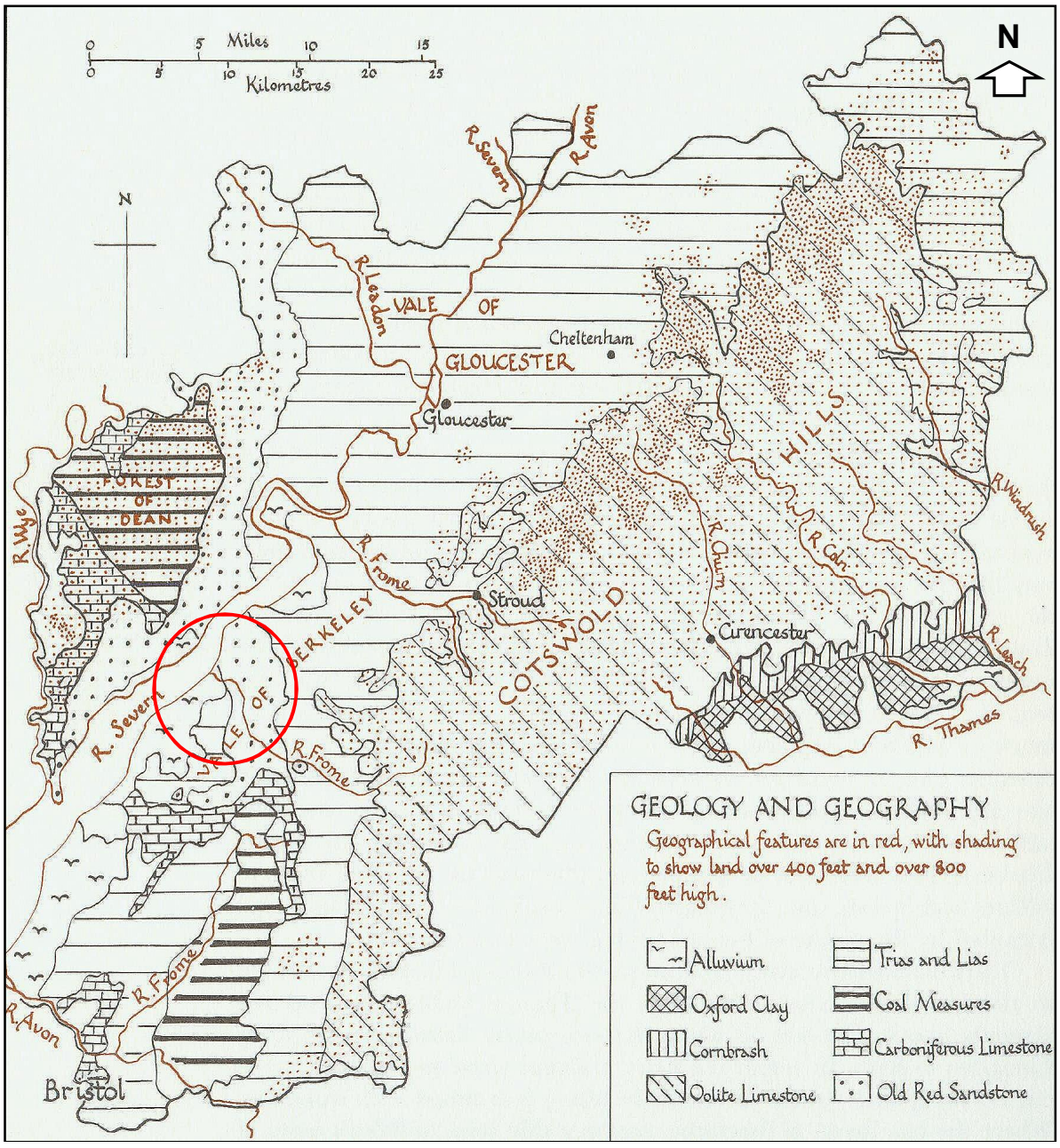
Not to scale

Figure 5

Local Geology of the Study Area (case area outlined in red)

Plans and maps based on the Ordnance Survey Sheets are represented by the permission of Her Majesty's Stationery Office.

Geological Map - © Smith & Ralph (1972) A History of Bristol and Gloucestershire (Beaconsfield) Darwen Finlayson Limited.



Scale as per figure 5

1 - INTRODUCTION (see Figures 1 & 2)

1.1 Commissioned to survey areas within / around Berkeley Castle, Gloucestershire (ST 686 989) as identified by the excavation Project Specification (BC Report No: 4, 6: i / 6: ii), a total of four locations, Nelmes Paddock, Jenner Museum & Gardens, Little Park / Castle Worthy (Longbridge) and Quarf Mead / Home Ground, were subsequently surveyed over a three week period, late May / early June 2006.

1.2 Producing eight separate resistance and gradiometer survey report summaries (Summary of Results – Paragraph 4.0 onwards); the subsequent findings will be used to enhance the archaeological knowledge of Berkeley town, as well as the castle / associated estate.

2 - METHODOLOGY

2.1 Using a Geoscan RM15 resistance meter, TR / CIA Resistivity Meter and Geoscan FM36 fluxgate gradiometer, two independent geophysical surveys (Rowe: 06/01 & Smisson: 2006[1]) were subsequently made of the areas identified in the excavation Project Specification. Indices and collections were consulted in the Gloucester Central Library, with all the information collated, summarized and presented in the report below. Photocopies, manuscript copies and notes, including still photographs, are preserved in the project archive, stored at University of Bristol, Department of Archaeology & Anthropology.

3 - TOPOGRAPHY, GEOLOGY AND CURRENT LAND USE (see Figures 3, 4, 5 & Cover)

3.1 Located on a natural spur that dominates both the main A38 road to the east, as well as commanding a vantage point over the River Severn to the west, the geophysical study areas of Nelmes Paddock and Dr Jenner's Garden can be found situated *c.*220m south east of Berkeley town centre and *c.*230m due east from the castle complex, on the south east end of the spur, *c.*19 - 21m aOD[2]. The third study area, that of Little Park / Castle Worthy (Longbridge), can be found lying on level ground, *c.*8 aOD[2], immediately east of the spur, *c.*400m from Berkeley town centre and c.300m north east of the castle complex. Whilst the fourth, Quarf Mead / Home Ground, can be found situated on low lying ground, *c.*11m aOD[2], south west of the spur, 650m south south-west of Berkeley and *c.*600m south west of the castle.

3.2 Geological soil association for Berkeley is Fladbury 1 813b, stoneless clayey soils and intermediately calcareous affected by surface water. Underlying can be found primarily solid Silurian (with Limestone's), Ludlow, Wenlock and Llandovery Bed geology, that is surrounded to the west by undulating solid Devonian (with Limestone's), and Old Red Sandstone, with alluvial deposits and Upper Trias (Rhætic Beds Keuper Marls and Sandstone) / Solid Lias geology to the east.

3.3 Nelmes Paddock, Little Park / Castle Worthy (Longbridge) and Quarf Mead / Home Ground, are areas of grassed pasture land used by Berkeley Estate tenants for the grazing of live stock, whilst the Jenner's Garden, is a lawned garden, seasonally open, as part of a museum dedicated to the work of Dr Edward Jenner.

---

[1] Results / extracts from Smisson's survey (2006 – CD ROM attached) have been incorporated into this report (Rowe 06/01: 2006) for ease of use and referenced where appropriate.

[2] Information obtained using handheld Garmin *Etrex* 12 Channel GPS system (accuracy *c.*5m)

4 - RESULTS

4.1 REPORT A - NELMES PADDOCK

4.1.1 SUMMARY OF RESULTS

SITE RESULTS SUMMARY 1

GEOPHYSICAL SURVEY REPORT NO: Rowe 06/01 - A **NGR**: ST 684 990

SITE NAME: Nelmes Paddock, Berkeley, Gloucestershire

SITE TYPE: Grassed area

DESCRIPTION: Located *c.*230m due west from the main castle site between Berkeley churchyard and High Street, Nelmes Paddock is a south westerly sloping grassed area that runs for *c.*94m in a north north-east direction, parallel to High Street, Berkeley.

PERIOD: Early Medieval? – 18th century.

GEOLOGY: Solid Silurian (with Limestone's): Ludlow, Wenlock and Llandovery Bed geology, overburden to an unknown depth by re-deposited soil

LAND USE: Grassed area used for the grazing of livestock.

SURVEY TYPE:	Resistance	**METHOD:**	Zig – Zag
INSTRUMENT:	Geoscan RM15	**SURVEY AREA:**	90m x 40m
SAMPLE INT:	1m	**TRAVERSE INT:**	1m

RESULTS SUMMARY:

A RM15 resistance survey, total area 90m x 40m (32 x 10m² grids), was completed May / June 2006, providing, as a result, mixed geophysical raw data that has only partially assisted the archaeological knowledge of the site.

Suggesting the presence of buried material possibly pertaining to medieval /Tudor structures that formerly stood upon the site, as well as a roadway (St Michael's Lane) that led from High Street to Berkeley church; limited archaeological data recovered for the site has made interpretation difficult. Limited areas of high resistance was identified to the north north-east, east south-east and south south-west of the study area, possibly relating to building material. Transecting the site in an east south-east direction is a line of high and low resistance, suggesting the possible course of St Michael's Lane, whilst an area of low resistance parallel to High Street in a north north-east direction has been interpretated as soil creep or pipeline.

Overall, varying factors may have contributed to the lack of positive geophysical

data, with both extreme weather conditions making the collection of data difficult, as well as probable soil overburden following the removal of the medieval / Tudor buildings, depicted on 16th cartographic documents, to a level beyond the range of the instrument (>0.75m).

Further archaeological investigation is required.

SURVEY DATE(S): 30th May - 5th June 2006 **REPORT DATE:** 3rd August 2006

COMPLETED BY: Undergraduate Students **REPORT AUTHOR:** Philip R Rowe

SITE RESULTS SUMMARY 2

GEOPHYSICAL SURVEY REPORT NO: Smisson: 2006[1] – A **NGR**: ST 684 990

SITE NAME: Nelmes Paddock

SITE TYPE: Grassed Area – Former garden now sheep grazing.

DESCRIPTION: Immediately west of Berkeley churchyard, sloping to the southwest, towards the High Street and Castle entrance.

PERIOD: Medieval.

GEOLOGY: Soil and Garden soils overlying Silurian limestone.

LAND USE: Grazing land (former garden).

SURVEY TYPE:	Resistivity	**METHOD:**	Zig – Zag
INSTRUMENT:	TR/CIA Meter twin probe array	**SURVEY AREA:**	0.24 ha
SAMPLE INT:	1m	**TRAVERSE INT:**	1m

RESULTS SUMMARY:

No evidence was found for suspected medieval buildings along the High Street boundary to the west.

High resistance in southeast corner may mark the location of suspected former barn.

High resistance at the entrance may mark a stone spread or paved area.

Low resistance near the retaining wall along the High Street boundary may be due to a pipeline or soil creep.

The survey may have detected the route of an old lane leading up to the church in the upper, eastern, area of the field.

Generally the lack of detail suggests either the ground has been made up so any archaeology has been buried in soil beyond the range of the instrument or it has been removed.

SURVEY DATE(S): 31st May 2006 **REPORT DATE:** 21st June 2006

COMPLETED BY: R P M Smisson, Angie Newcombe, Bryan Moore, Ian Shingles

REPORT AUTHOR: R P M Smisson

---

[1] Results extracted from Smisson: 2006 (Full report held on CD ROM attached).

SITE RESULTS SUMMARY 3

GEOPHYSICAL SURVEY REPORT NO: Rowe 06/01 - A **NGR**: ST 684 990

SITE NAME: Nelmes Paddock, Berkeley, Gloucestershire

SITE TYPE: Grassed area

DESCRIPTION: Located *c.*230m due west from the main castle site between Berkeley churchyard and High Street, Nelmes Paddock is a south westerly sloping grassed area that runs for *c.*94m in a north north-east direction, parallel to High Street, Berkeley.

PERIOD: Early Medieval? – 18th century.

GEOLOGY: Solid Silurian (with Limestone's): Ludlow, Wenlock and Llandovery Bed geology, overburden to an unknown depth by re-deposited soil.

LAND USE: Grassed area used for the grazing of livestock.

SURVEY TYPE:	Fluxgate Gradiometer	**METHOD:**	Zig – Zag
INSTRUMENT:	Geoscan FM36	**SURVEY AREA:**	90m x 40m
SAMPLE INT:	0.25m	**TRAVERSE INT:**	1m

RESULTS SUMMARY:

A FM36 gradiometer survey of a total area 90m x 40m (32 x 10m² grids) was completed in June 2006, providing, as a result, inconclusive geophysical raw data that has provided very limited assistance with the interpretation of the site.

An area of low readings parallel to High Street in a north north-east direction has been interpretated as soil creep or pipeline, substantiating the previous resistance surveys results, whilst high readings north north-east of the study area may relate to possible buried building material. An area of high readings south south-east of the paddock has been attributed too non archaeological ferrous anomalies (barbed wire attached to trees).

With very few readings of magnetic variation found within the study area, it is the conclusion that varying factors may have contributed to this lack of positive geophysical data, with both extreme weather conditions making the collection of data difficult, as well as probable soil overburden following the removal of the medieval / Tudor buildings to a level beyond the range of the instrument (>0.75m – 1m), affecting the results.

SURVEY DATE(S): 8th – 9th June 2006	**REPORT DATE:** 3rd August 2006
COMPLETED BY: Julian Gronfell	**REPORT AUTHOR:** Philip R Rowe

4.1.2 INTRODUCTION

4.1.2.1 Detailed to survey Nelmes Paddock as per Project Specification 6: ii -BC Report No: 4, a grid area totalling 90m x 40m was subsequently laid out over the case study area (**Fig.6**). 16th c cartographic evidence / historical research (Tandy: 2003:18) has indicated that the parcel of land was formally the site of medieval / Tudor buildings and roadway (**Fig.7)**.

4.1.3 LOCATION, TOPOGRAPHY AND GEOLOGY

4.1.3.1 Located between Berkeley church and High Street, *c.*230m west of the main castle site and *c.*205m south south-east of Berkeley town centre, Nelmes Paddock (ST 684 990), a south west sloping grassed area used for livestock grazing, can be seen to run *c.*94m in a north north-east direction, parallel to High Street, Berkeley.

4.1.3.2 Lying *c.*19m aOD[1], the geological make up for the site is Silurian (with limestone), overburden to an unknown depth by re-deposited garden soils.

4.1.4 GEOPHYSICAL SURVEY

4.1.4.1 Point of Note: Whilst all survey reports are produced as correctly as possible, the resulting information is based on the accuracy of the equipment therefore no responsibility is taken for any errors or omissions.

4.1.4.2 INSTRUMENTATION

4.1.4.2.1 Resistance Meter – Geoscan RM15 - TR/CIA Resistivity Meter: Measuring the electrical resistance of the earth to a current being passed through it via a system of four electrodes (two current and two potential), a twin probe arrangement (0.5m interval) that involves the paring of electrodes (one current / one potential) was passed over a measured grid, with the results being compared to a back ground reading obtained from a pair of electrodes placed in a 'fixed' position.

4.1.4.2.2 Measured in Ohms and calculated resistivity in Ohm – Metres, the effective dept of penetration is *c.*0.75m, although the nature of the overburden as well as underlying geology will cause variations in this generality.

4.1.4.2.3 Fluxgate Gradiometer – Geoscan FM36: Carried by hand with the bottom sensor *c.*0.1 – 0.3m from the ground, two fluxgate sensors are mounted vertically within the instrument, *c.*0.5m apart.

4.1.4.2.4 Reading the difference in the magnetic field at each survey station, the measurements are taken in nanoTesla (nT) or gamma and are effective to a dept of penetration approximately 1m, with the fluxgate gradiometer suppressing any diurnal / regional effects.

4.1.4.3 SURVEY AREA

4.1.4.3.1 A Geoscan RM15 resistance survey (Rowe 06/01 - A) (32 x 10m²), a TR/CIA resistivity survey (Smisson: 2006) (6 x 20m²) and a Geoscan FM 36 Fluxgate gradiometer survey (Rowe 06/01 – A) (32 x 10m²), was completed over a 90 x 40m grid area, as detailed in **Fig's 8 / 9 & 10**.

4.1.4.3.2 Set out by undergraduate students with the assistance of R.Moore, the grids were measured in using taped offsets from a 90m baseline running in a north

[1] Information obtained using handheld Garmin *Etrex* 12 Channel GPS system (accuracy 5m)

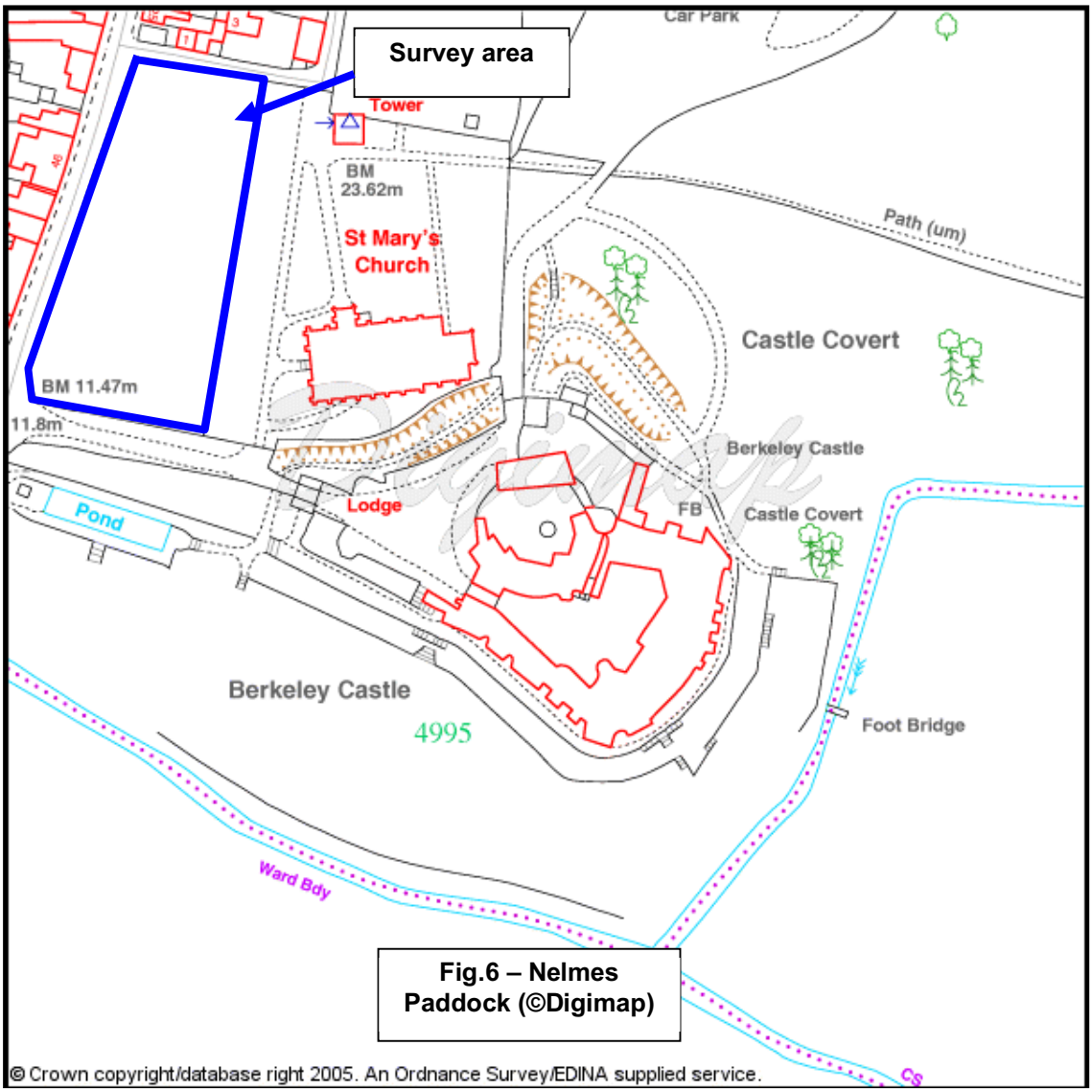


Fig.6 – Nelmes Paddock (©Digimap)

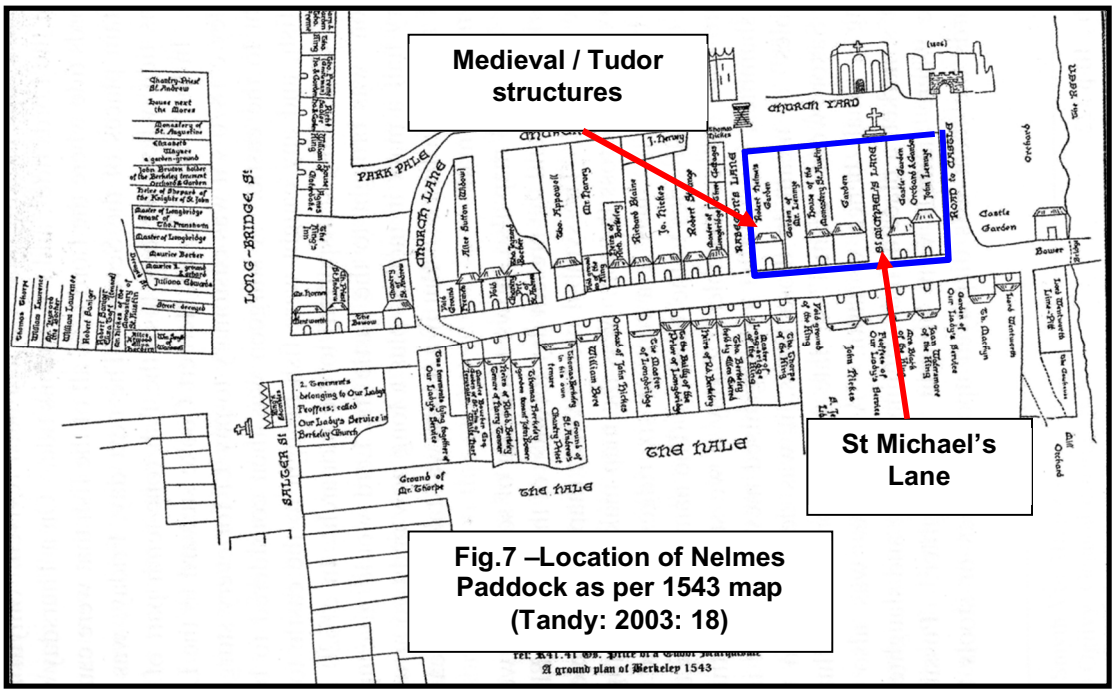


Fig.7 –Location of Nelmes Paddock as per 1543 map (Tandy: 2003: 18)

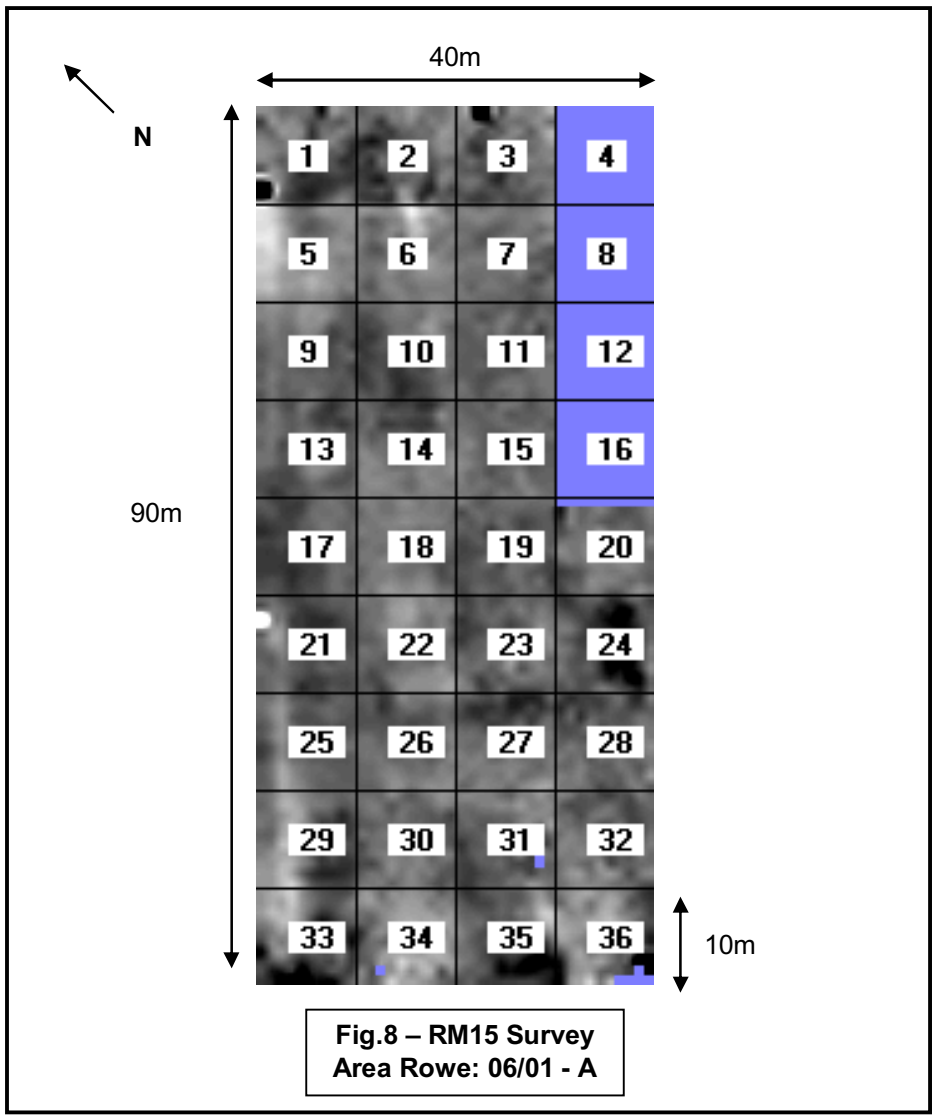


Fig.8 – RM15 Survey Area Rowe: 06/01 - A

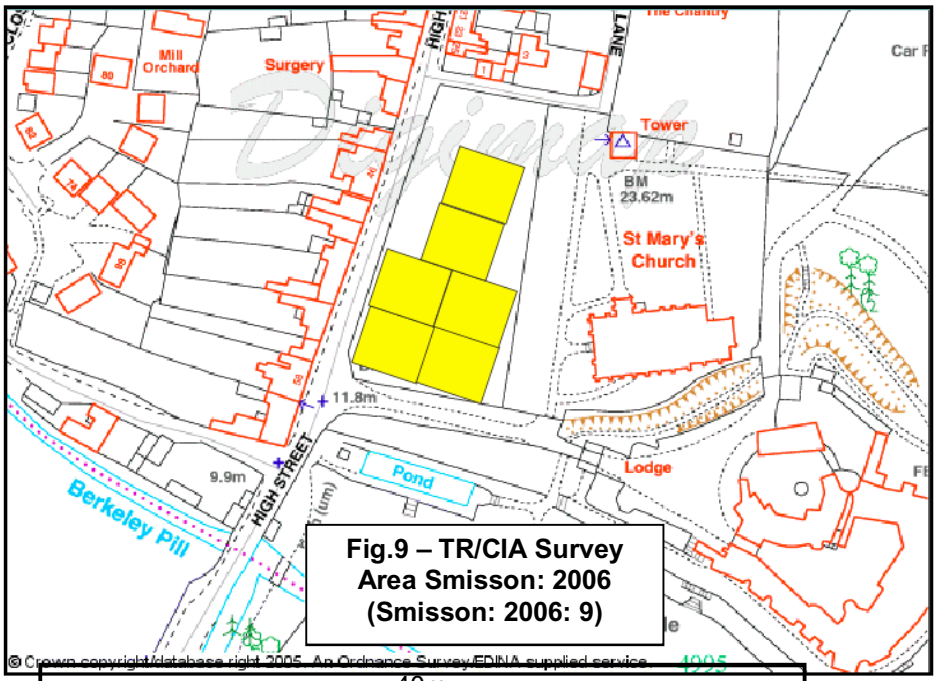
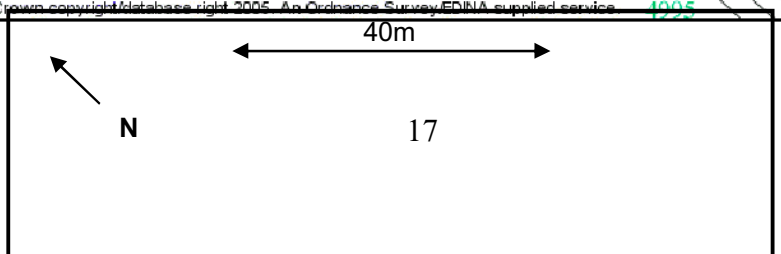


Fig.9 – TR/CIA Survey Area Smisson: 2006 (Smisson: 2006: 9)



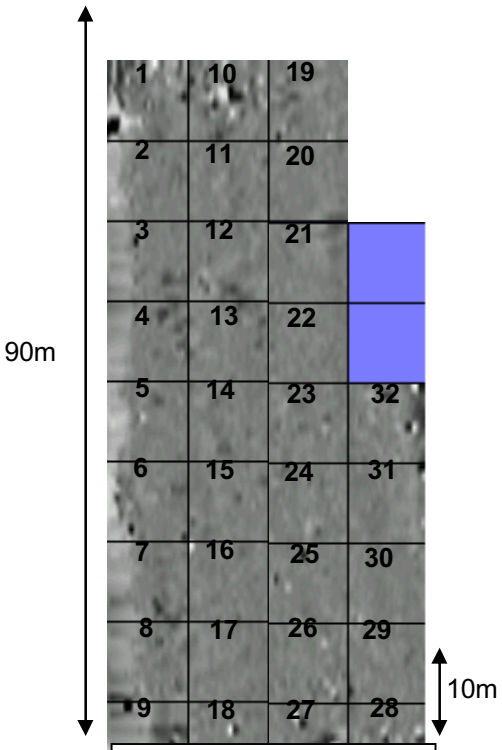


Fig.10 – FM36 Survey Area – Rowe 06/01 - A

north-east to south south-west directi
Ordnance Survey grid system (Rowe 06/01 – A - Appendix B).

4.1.4.4 **DISPLAY**

4.1.4.4.1 Displayed as greyscale images, this visual format divides a given range of predefined arrangement of dots / shades of grey readings into a set number of classes.

4.1.4.4.2 Increasing in intensity as the value increases, the resulting image is displayed as a toned / grey scale enabling fast and accurate interpretation of any sub-surface archaeological features discovered.

4.1.4.5 **COMPLICATING FACTORS**

4.1.4.5.1 Various complicating factors were encountered during the geophysical survey. These include uneven, sloping ground level, long grass interspersed with thick patches of stinging nettles and extreme weather conditions that ranged from heavy rain at the start of the survey, water logging the site as a consequence, to hot, dry, sunny conditions at the end, which conversely left the ground parched.

4.1.5 **- RESULTS**

4.1.5.1 – **Survey 1 – Rowe 06/01 – A - RM15 Resistance Meter**

4.1.5.1.1 Limited areas of high resistance was identified north north-east, east south-east and south south-west of the study area, possibly relating to buildings as depicted in surviving 16th c cartographic evidence. Transecting the site in an east south-east direction is a line of high and low resistance suggesting the possible

course of St Michael's Lane, whilst an area of low resistance parallel to High Street in a north north-east direction can be interpretated as soil creep or pipeline (**Fig.11** – Full data processing information - Appendix A).

4.1.5.2 - **Survey 2 - Smisson: 2006[1] - TR / CIA Resistivity Meter**

4.1.5.2.1 Generally the results were disappointing with few clear responses.
In the southeast corner an area of high resistance may mark the location of a suspected barn. High resistance around the entrance gate through the south wall may mark a paved area or a stone spread. High resistance in the southwest corner marks an area where stone could be felt on the probes, possibly tipped material.
The low resistance near the wall may be due to soil creep and accumulation behind the retaining wall or may indicate a trench feature. The survey may have detected the route of an old lane leading up to the church (Smisson: 2006) (**Fig.12**).

4.1.5.3 - **Survey 3 – Rowe 06/01 – A – FM36 Fluxgate Gradiometer**

4.1.5.3.1 Low readings parallel to High Street in a north north-east direction can be interpretated as soil creep or pipeline, substantiating previous resistance survey results, whilst high readings north north-east of the study area may relate to possible buried building material. An area of high readings south south-east can be attributed to non archaeological ferrous anomalies (barbed wire) (**Fig.13** – Full data processing information – Appendix A).

4.1.6 **Conclusion**

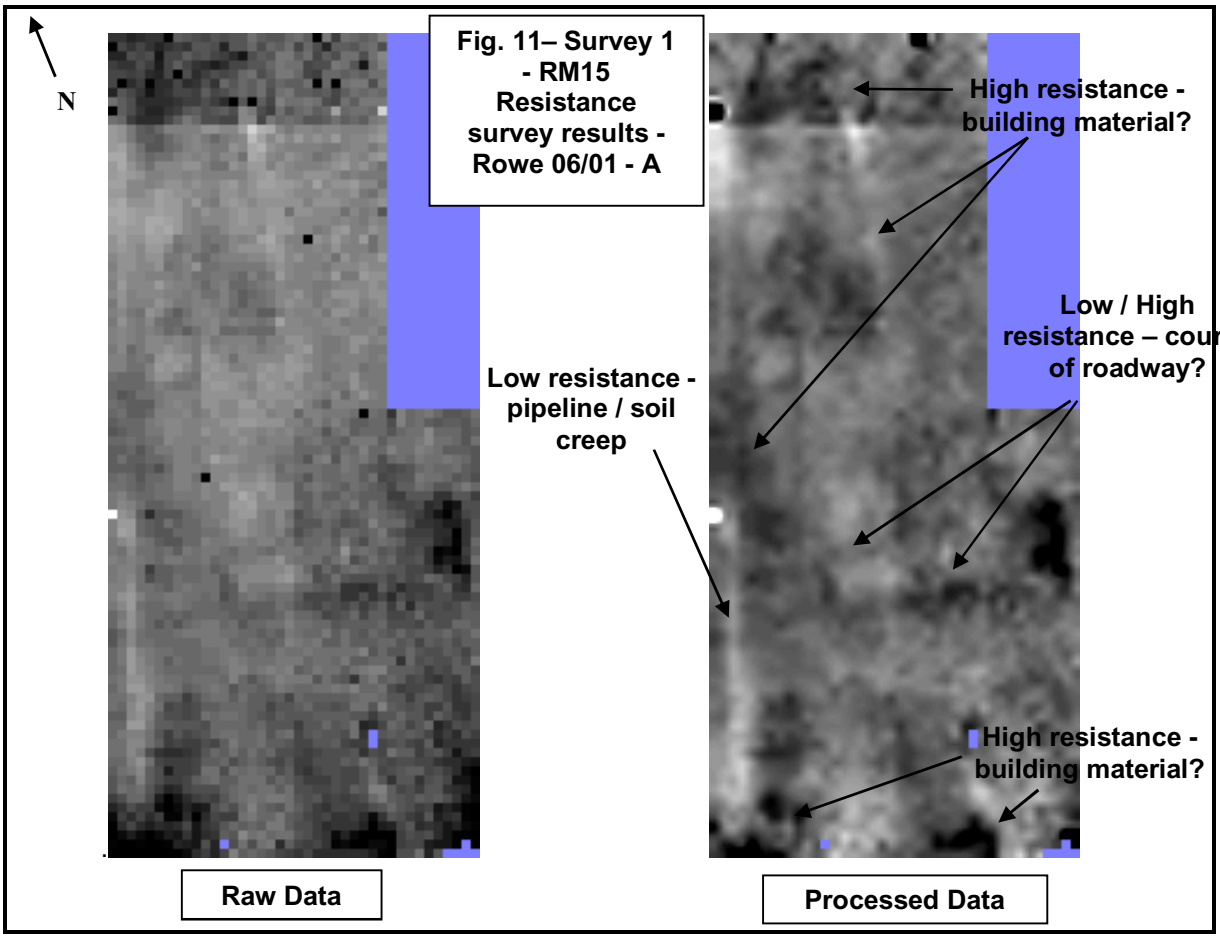
4.1.6.1 The archaeological interpretation of the RM15 - TR / CIA resistance survey results for Nelmes Paddock suggest the presence of possible buried building material pertaining to structures, possibly that of the medieval / Tudor buildings, as well the possible roadway, as depicted in 16th c cartographic documents.

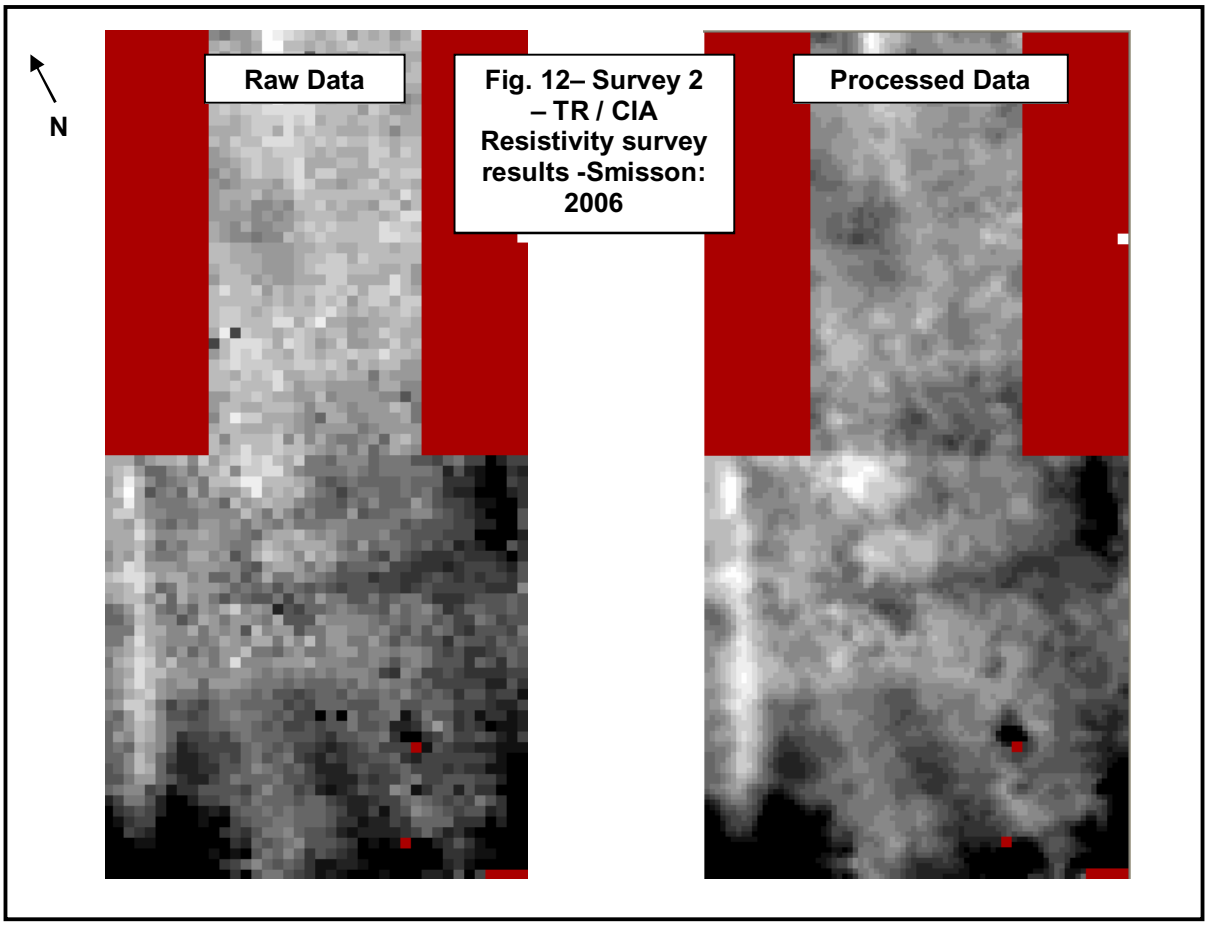
4.1.6.2 No further evidence to enhance interpretation of the site could be gained from the FM 36 Gradiometer survey.

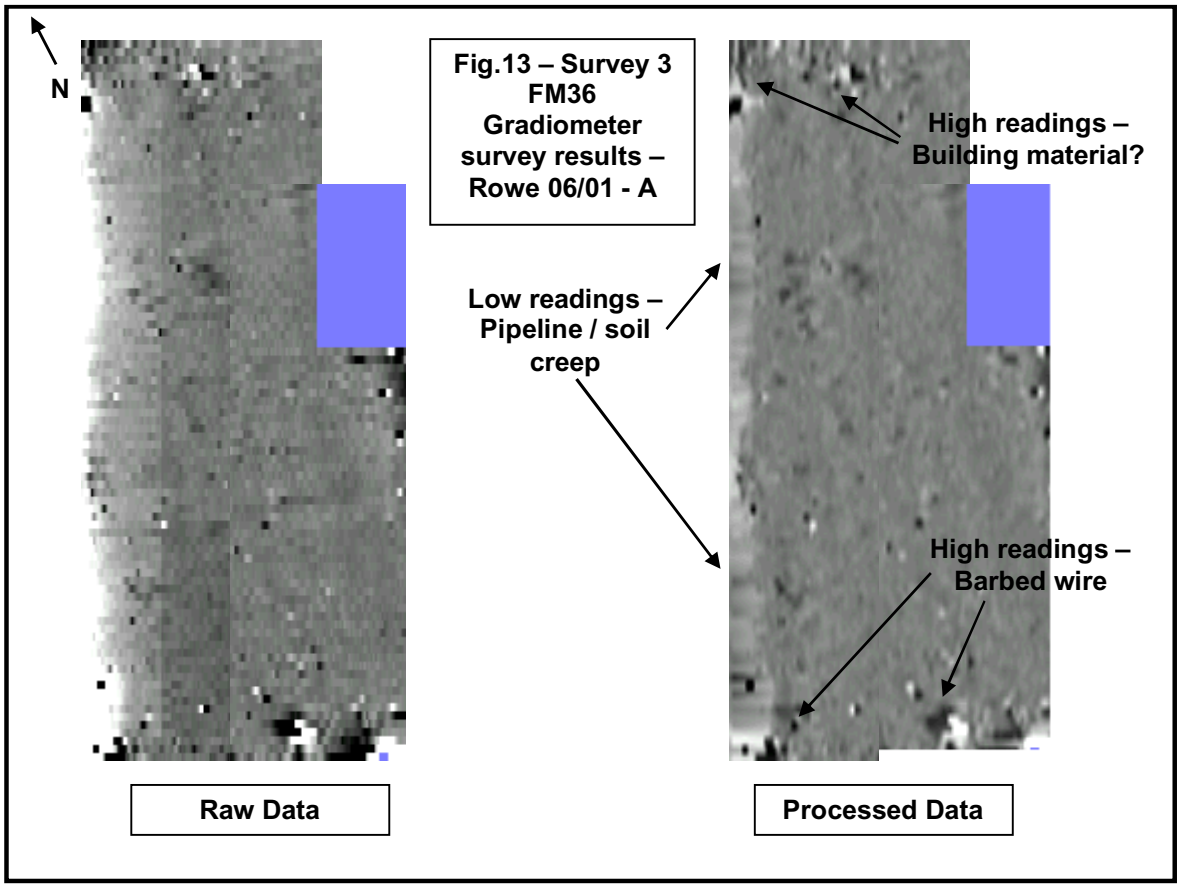
4.1.6.3 Drawing upon the evidence presented, it is recommended that an archaeological evaluation of the site should be conducted to fully establish the presence of any building(s) / roadway.

---

[1] Results extracted from Smisson: 2006.


N
Fig. 11– Survey 1 - RM15 Resistance survey results - Rowe 06/01 - A
High resistance - building material?
Low / High resistance – course of roadway?
Low resistance - pipeline / soil creep
High resistance - building material?
Raw Data
Processed Data


N
Raw Data
Fig. 12– Survey 2 – TR / CIA Resistivity survey results -Smisson: 2006
Processed Data


N
Fig.13 – Survey 3
FM36
Gradiometer
survey results –
Rowe 06/01 - A
High readings –
Building material?
Low readings –
Pipeline / soil
creep
High readings –
Barbed wire
Raw Data
Processed Data

4.2 REPORT B – DR JENNER'S MUSEUM & GARDENS

4.2.1 SUMMARY OF RESULTS

SITE RESULTS SUMMARY 4

GEOPHYSICAL SURVEY REPORT NO: Rowe 06/01 - B **NGR**: ST 686 991

SITE NAME: Dr Jenner's Museum & Gardens, Gloucestershire

SITE TYPE: Grassed lawn

DESCRIPTION: Located *c.*220m south east of Berkeley town centre and *c.*230m due east from the castle complex, on the south east end of the spur, *c.*19 - 21m aOD, Dr Jenner's garden is a lawned area situated due south of the main house / museum.

PERIOD: Early medieval? – 18th century

GEOLOGY: Solid Silurian (with Limestone's): Ludlow, Wenlock and Llandovery Bed geology, overburden to an unknown depth by re-deposited soil

LAND USE: Grassed lawn within museum grounds.

SURVEY TYPE:	Resistance	**METHOD:**	Zig – Zag
INSTRUMENT:	Geoscan RM15	**SURVEY AREA:**	40m x 30m
SAMPLE INT:	1m	**TRAVERSE INT:**	1m

RESULTS SUMMARY:

A RM15 resistance survey of a total area 40m x 30m (11 x 10m² grids) was completed in June 2006, providing, as a result, good geophysical raw data that has partly assisted with the interpretation of the site.

Indicating the presence of possible building material pertaining to features associated with a formal garden that once stood on the site, areas / lines of both high and low resistance can be clearly identified south-west, south-east as well as south of the main house.

Whilst suggesting these areas / lines of high / low resistance are probably associated with a 18th / 19th c formal garden, there is a possibility that they could, alternatively relate to foundations of the earlier chantry known to have once stood on the site, and even, as a possibility, the Anglo-Saxon nunnery that was once located within this site vicinity.

Further archaeological investigation is required.

SURVEY DATE(S): 3rd June 2006 **REPORT DATE:** 3rd August 2006

COMPLETED BY: Undergraduate Students **REPORT AUTHOR:** Philip R Rowe

SITE RESULTS SUMMARY 5

GEOPHYSICAL SURVEY REPORT NO: Smisson: 2006[1] **NGR**: ST 686 005

SITE NAME: Jenner Museum Garden

SITE TYPE: Main lawn and shrubbery

DESCRIPTION: Garden south of the Jenner Museum House

PERIOD: Post Medieval and Anglo-Saxon

GEOLOGY: Soil and Garden soils overlying Silurian Limestone

LAND USE: Formal Garden.

SURVEY TYPE:	Resistivity	**METHOD:**	Zig – Zag
INSTRUMENT:	TR / CIA Meter twin probe array	**SURVEY AREA:**	0.09 ha
SAMPLE INT:	1m	**TRAVERSE INT:**	1m

RESULTS SUMMARY:

Evidence of considerable activity under the lawn could be seen, possibly the foundations of buildings or the remains of a formal 18th century garden.

It is suspected buildings associated with an Anglo-Saxon nunnery may be close to the southern boundary of the garden, if as suspected the Tower is built on Anglo-Saxon foundations.

SURVEY DATE(S): 1st June 2006 **REPORT DATE:** 21st June 2006

COMPLETED BY: R P M Smisson, Angie Newcombe, Ian Shingles

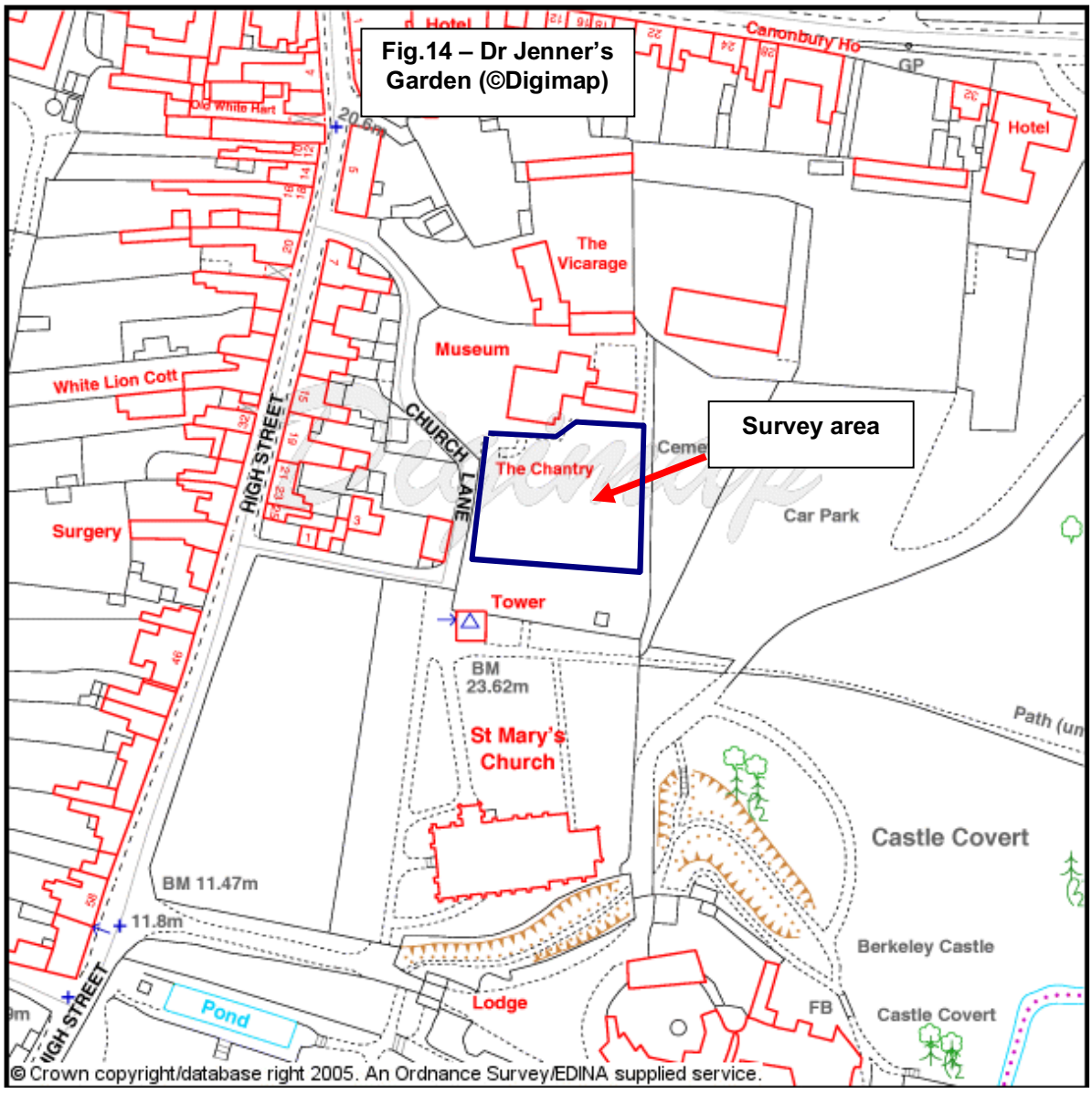
REPORT AUTHOR: R P M Smisson

---

[1] Results extracted from Smisson: 2006.

4.2.2 INTRODUCTION

4.2.2.1 Detailed to survey Dr Jenner's Garden as an addition to the Project Specification BC Report No: 4, a grid area totalling 40m x 30m was subsequently laid out over the case study area (**Fig.14**). Historical research by Tandy (2003) has suggested that this parcel of land, formerly a vicarage as well as Jenner's house / gardens, is in the vicinity of an Anglo-Saxon nunnery that is believed to once have stood in Berkeley.



4.2.3 LOCATION, TOPOGRAPHY AND GEOLOGY

4.2.3.1 Located *c.*220m south east of Berkeley town centre and *c.*230m due east from the castle complex, Dr Jenner's garden (ST 686 991) is a lawned area situated due south of the main house / museum.

4.2.3.2 Lying on the south east end of the spur, *c.*19 - 21m aOD, the site can be seen to lie upon a Solid Silurian (with Limestone's): Ludlow, Wenlock and Llandovery Bed geology, overburden with a soil deposit of unknown depth.

4.2.4 GEOPHYSICAL SURVEY

4.2.4.1 Point of Note: Whilst all survey reports are produced as correctly as possible, the resulting information is based on the accuracy of the equipment therefore no responsibility is taken for any errors or omissions.

4.2.4.2 INSTRUMENTATION

4.2.4.2.1 Resistance Meter – Geoscan RM15 - TR/CIA Resistivity Meter: Measuring the electrical resistance of the earth to a current being passed through it via a system of four electrodes (two current and two potential), a twin probe arrangement (0.5m interval) that involves the paring of electrodes (one current / one potential) was passed over a measured grid, with the results being compared to a back ground reading obtained from a pair of electrodes placed in a 'fixed' position.

4.2.4.2.2 Measured in Ohms and calculated resistivity in Ohm – Metres, the effective dept of penetration is approximately 0.75m, although the nature of the overburden as well as underlying geology will cause variations in this generality.

4.2.4.3. SURVEY AREA

4.2.4.3.1 A Geoscan RM15 resistance survey (Rowe 06/01 - B) (11 x 10m²) and a TR/CIA resistivity survey (Smisson: 2006) (2 x 20m² & 1 x 10m²) was completed over a 40 x 30m grid area, as detailed in **Fig's 15 / 16.**

4.2.4.3.2 Set out by undergraduate students with the aid of P R Rowe, the survey grid was measured in using taped offsets from a 40m baseline running in south-east to north-west direction, and was surveyed into the current Ordnance Survey mapping system (Rowe 06/01 – B - Appendix B).

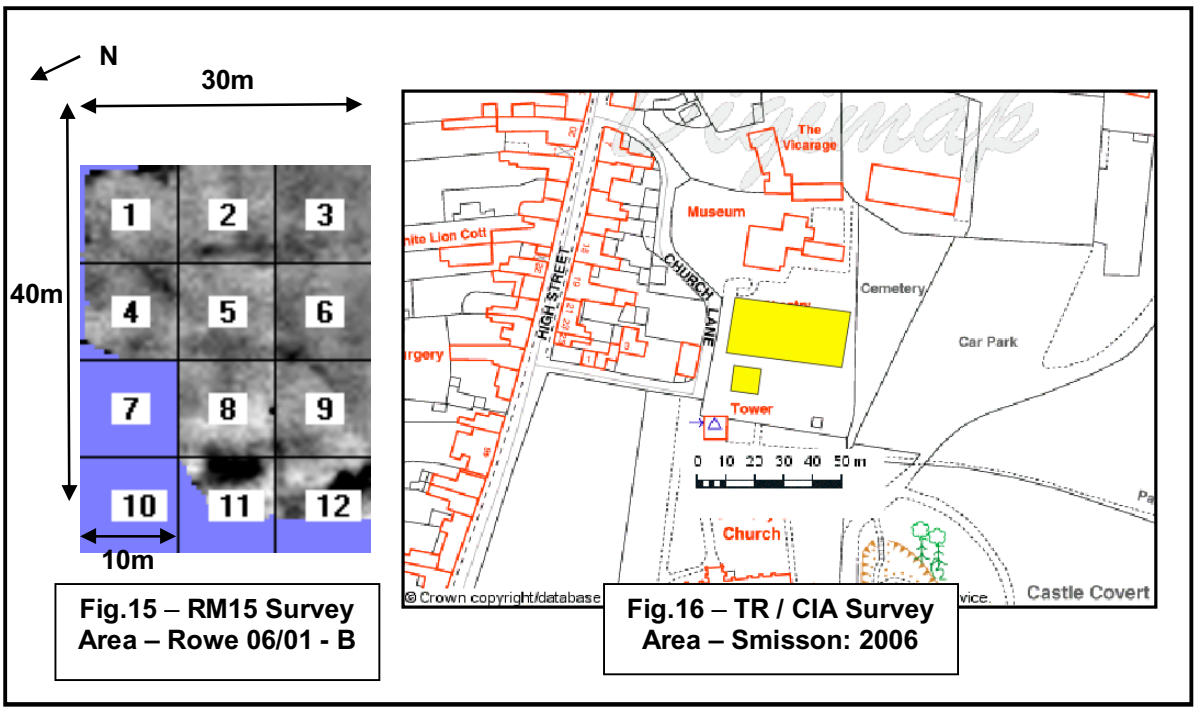


Fig.15 – RM15 Survey Area – Rowe 06/01 - B

Fig.16 – TR / CIA Survey Area – Smisson: 2006

4.2.4.4 DISPLAY

4.2.4.4.1 Displayed as greyscale images, this visual format divides a given range of predefined arrangement of dots / shades of grey readings into a set number of classes.

4.2.4.4.2 Increasing in intensity as the value increases, the resulting image is displayed as a toned / grey scale enabling fast and accurate interpretation of any sub-surface archaeological features discovered.

4.2.4.5 COMPLICATING FACTORS

4.2.4.5.1 The survey conditions of the site were excellent, with the ground being flat and under short grass, though a small part of the survey area was obstructed by bushes / partially metalled footpath that resulted in the logging of 'dummy' readings.

4.2.5 RESULTS

4.2.5.1 Survey 4 – Rowe 06/01 – B - RM15 Resistance Meter

4.2.5.1.1 Indicating the presence of possible building material pertaining to features that can be associated with a formal garden that once stood on the site, areas / lines of both high as well as low resistance can be clearly identified south-west, south-east and south of the main house (**Fig.17** – Full data processing information – Appendix A).

4.2.5.1.2 There is, however, the possibility that these responses could be attributed to foundations pertaining to buildings / structures that once stood on the site.

4.2.5.2 Survey 5 – Smisson: 2006[1] - TR / CIA Resistivity Meter

4.2.5.2.1 At this stage it is difficult to be sure, but the resistivity results do seem to suggest much 'activity' under the lawn area.

4.2.5.2.2 It is possible that the lines of dark, high resistance, across the lawns may be the foundations of buildings, or equally the remains of an 18th century formal garden. A drawing does survive of such a formal garden to the Chantry that predates Jenner's time [pers com Stuart Prior].

4.2.5.2.3 Tandy suggests the route of Church Lane, bounding the garden to the west was altered c1828 to expand the garden [Tandy 2003, 94], so the dark area to the west may be the former road, although its outline looks more like a building. It may be significant that the most prominent features align to the present building lines, so potentially being associated with the Jenner's Museum building.

4.2.5.2.4 There also appears to be a less obvious feature on a completely different alignment, potentially something quite different (Smisson: 2006) (**Fig.18**).

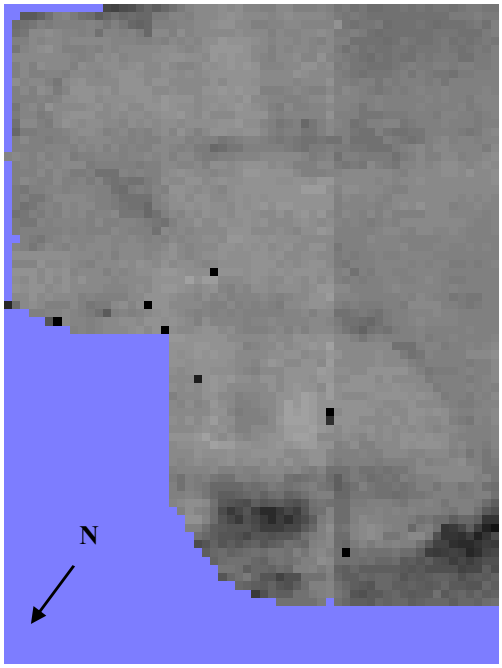
4.2.6 CONCLUSION

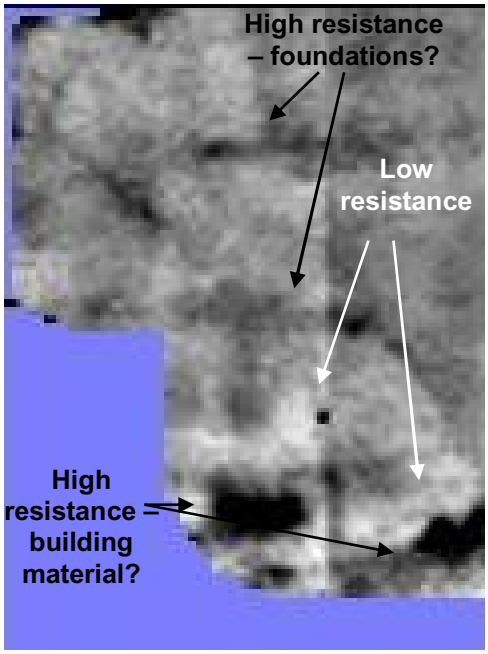
4.2.6.1 The result of the RM15 resistance - TR / CIA Resistivity surveys within Dr Jenner's garden suggest that whilst the areas / lines of high / low resistance are more than likely associated with a 18th / 19th c formal garden, there is the possibility they could, alternatively relate to foundations of the earlier chantry known to have once stood on the site. Moreover, a further possibility is that they relate to the Anglo-Saxon nunnery that was once located within the site vicinity, with the museums lawns in alignment with the present church tower, a structure known to have medieval foundations.

4.2.6.2 Only an archaeological evaluation of the site would fully establish the presence of any of these features.

---

[1] Results extracted from Smisson: 2006.

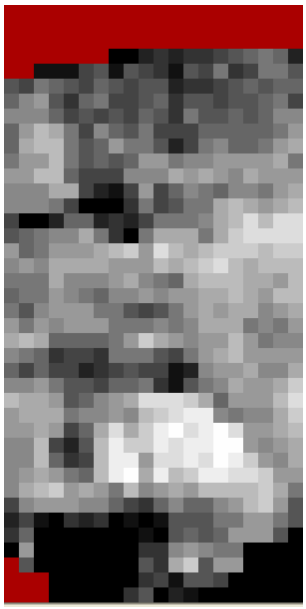


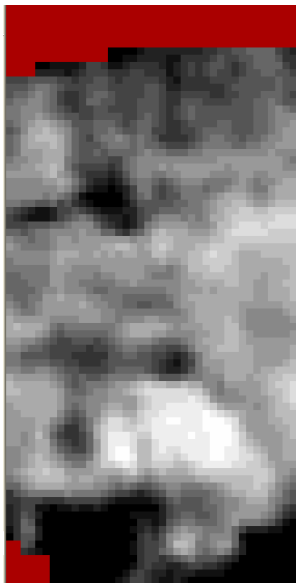


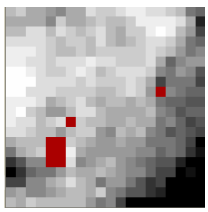
Raw Data

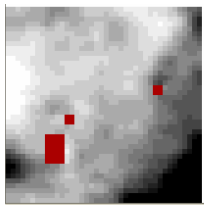
Processed Data

Fig.17 – Survey 4 RM15 Resistance survey results – Rowe 06/01 - B









Raw Data

Fig.18 – Survey 5 TR / CIA Resistivity survey results – Smisson: 2006

Processed Data

4.3 REPORT C - LITTLE PARK / CASTLE WORTHY (LONGBRIDGE)

4.3.1 SUMMARY OF RESULTS

SITE RESULTS SUMMARY 6

GEOPHYSICAL SURVEY REPORT NO: Rowe 06/01 - C **NGR**: ST 687 992

SITE NAME: Little Park / Castle Worthy (Longbridge), Gloucestershire

---

SITE TYPE: Grassed area.

DESCRIPTION: Located on level ground, *c.*8 aOD, immediately east of the spur, *c.*400m from Berkeley town centre and c.300m north east of the castle complex.

PERIOD: Medieval.

GEOLOGY: Upper Trias (Rhætic Beds Keuper Marls and Sandstone) / Solid Lias geology, overburden to an unknown depth by alluvial / soil deposits.

LAND USE: Grassed area used for the grazing of livestock.

SURVEY TYPE:	Resistance	**METHOD:**	Zig – Zag
INSTRUMENT:	Geoscan RM15	**SURVEY AREA:**	100m x 40m
SAMPLE INT:	1m	**TRAVERSE INT:**	1m

RESULTS SUMMARY:

A RM15 resistance survey of a total area 100m x 40m (10 x 20m² grids) was completed in June 2006, providing, as a result, positive geophysical raw data that has assisted with interpretation of the site.

Documentary evidence suggests this to be the area where, in medieval times, the hospital complex of Holy Trinity (*c.*1170–1547AD) once stood[1]. In support, an archaeological earthwork survey completed during the Berkeley Castle Research Excavation 2006[2] located possible platforms, a notion that the geophysical evidence possibly supports. Areas of high resistance can be seen to run parallel to the road in a north-west to south-east direction, whilst an area of mid – low resistance with possible right-angles, interspersed by patches of higher resistance, can be seen in the south-west area of the survey site.

Not conclusive, the former response can possibly be attributed to either building material or a pipeline (sewage pumping station nearby), whilst the latter (mid-low resistance) does interestingly correspond with the earthwork platforms, suggesting the possibility of building material / foundations.

SURVEY DATE(S): 6th – 9th June 2006 **REPORT DATE:** 3rd August 2006

COMPLETED BY: Undergraduate Students **REPORT AUTHOR:** Philip R Rowe

---

[1] BC Report No: 4, 6: i

[2] Results to be published in forthcoming excavation report.

SITE RESULTS SUMMARY 7

GEOPHYSICAL SURVEY REPORT NO: Smisson: 2006[1] **NGR**: ST 686 005

SITE NAME: Longbridge

SITE TYPE: Low embankment platform in low-lying pasture

DESCRIPTION: Castle Worthy, south of road into Berkeley from the east.

PERIOD: Medieval.

GEOLOGY: Tertiary deposits overlying Lias Clays.

LAND USE: Pasture.

SURVEY TYPE: Resistivity **METHOD:** Zig – Zag

INSTRUMENT: TR/CIA Meter twin probe array **SURVEY AREA:** 0.44 ha

SAMPLE INT: 1m **TRAVERSE INT:** 1m

RESULTS SUMMARY:

On a platform feature in the field a number of features can be made out in the resistivity data, including what looks like a clear building outline with internal divisions. The area of strong response in the centre of the survey area was characterised on the ground by a quantity of dressed stone blocks within which no modern materials such as brick were visible. Potentially these cover other building foundations.

Potentially the survey has located the Augustinian Chapel and Hospital, but excavation would be needed to confirm this.

SURVEY DATE(S): 5th – 9th June 2006 **REPORT DATE:** 21st June 2006

COMPLETED BY: R P M Smisson, Angie Newcombe

REPORT AUTHOR: R P M Smisson

---

[1] Results extracted from Smisson: 2006.

4.3.2 INTRODUCTION

4.3.2.1 Detailed to survey Little Park / Castle Worthy (Longbridge), the believed location of the medieval hospital complex of Holy Trinity (*c.*1170 – 1547 AD), as per Project Specification 6: ii -BC Report No: 4; a grid area totalling 100m x 40m was subsequently laid out over the case study area and surveyed June 2006 (**Fig.19**).

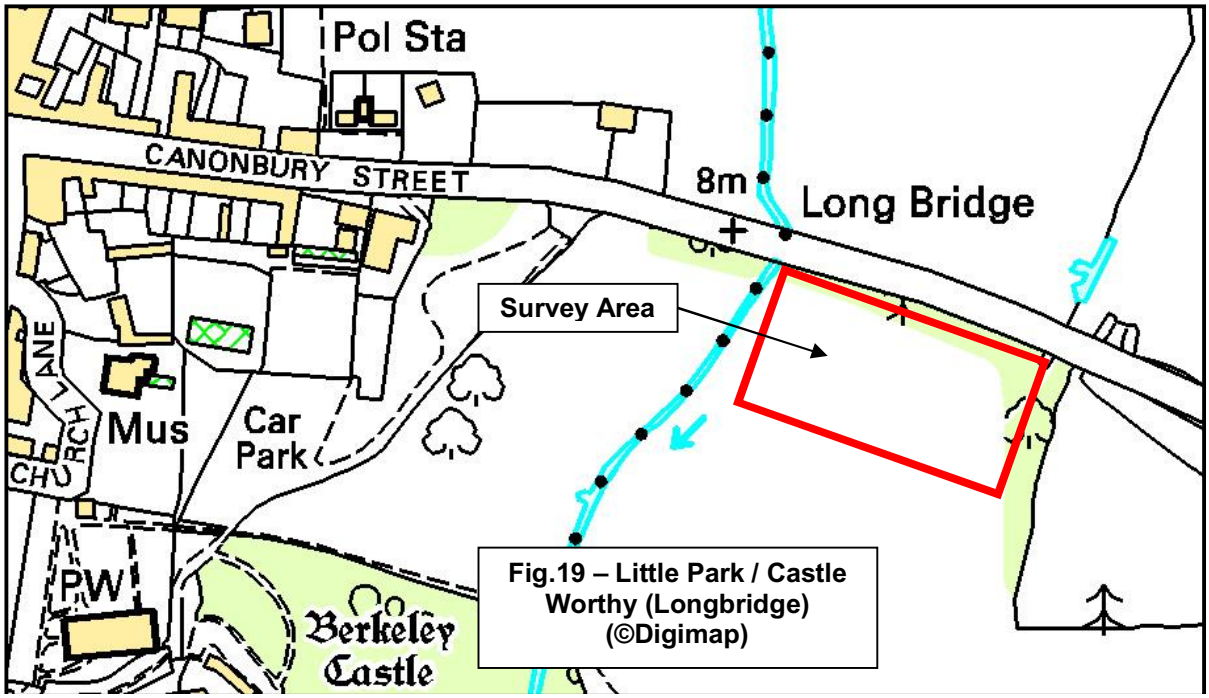


Fig.19 – Little Park / Castle Worthy (Longbridge) (©Digimap)

4.3.3 LOCATION, TOPOGRAPHY AND GEOLOGY

4.3.3.1 Situated on level ground, immediately east of the spur, *c.*400m from Berkeley town centre and *c.*300m north east of the castle complex, Little Park / Castle Worthy (Longbridge) (ST 687 992), is today a grassed area used for the grazing of livestock.

4.3.3.2 Lying *c.*8m aOD on flat level ground between two slopes, the site can be seen to lie upon Upper Trias (Rhætic Beds Keuper Marls and Sandstone) / Solid Lias geology, and overlaid by alluvial / soil deposits to an unknown depth.

4.3.4 GEOPHYSICAL SURVEY

4.3.4.1 Point of Note: Whilst all survey reports are produced as correctly as possible, the resulting information is based on the accuracy of the equipment therefore no responsibility is taken for any errors or omissions.

4.3.4.2 INSTRUMENTATION

4.3.4.2.1 Resistance Meter – Geoscan RM15 - TR/CIA Resistivity Meter: Measuring the electrical resistance of the earth to a current being passed through it via a system of four electrodes (two current and two potential), a twin probe arrangement (0.5m interval) that involves the paring of electrodes (one current / one potential) was passed over a measured grid, with the results being compared to a back ground reading obtained from a pair of electrodes placed in a 'fixed' position.

4.3.4.2.2 Measured in Ohms and calculated resistivity in Ohm – Metres, the effective dept of penetration for the RM15 resistance meter is approximately 0.75m,

although the nature of the overburden as well as underlying geology will cause variations in this generality.

4.3.4.3. **SURVEY AREA**

4.3.4.3.1 A Geoscan RM15 resistance survey (Rowe 06/01 - C) (10 x 20m²) and a TR/CIA resistivity survey (Smisson: 2006) (11 x 20m²)[1] was completed over a 100 x 40m grid area, as detailed in **Fig's 20/ 21.**

4.2.4.3.2 Set out by undergraduate students with the aid of P R Rowe, the survey grid was measured in using taped offsets from a 100m baseline running in a north-west to south-east direction, and was surveyed into the current Ordnance Survey mapping system (Rowe 06/01 – C - Appendix B).

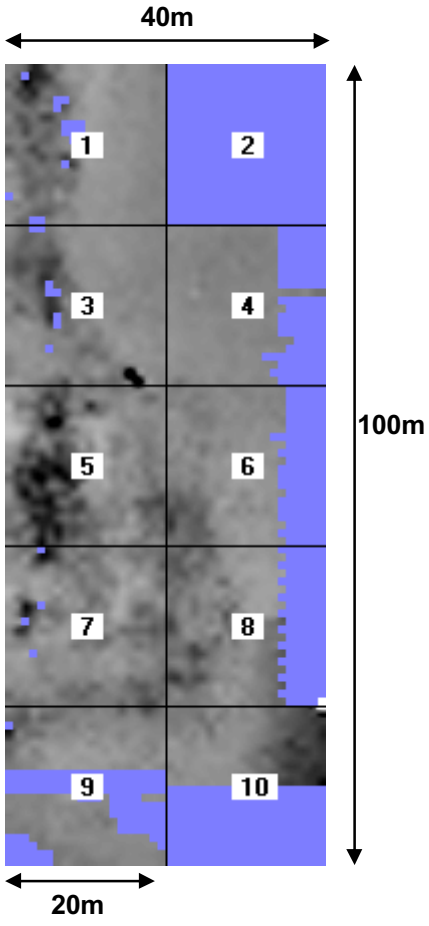


Fig.20 – RM15 Survey Area – Rowe 06/01- C

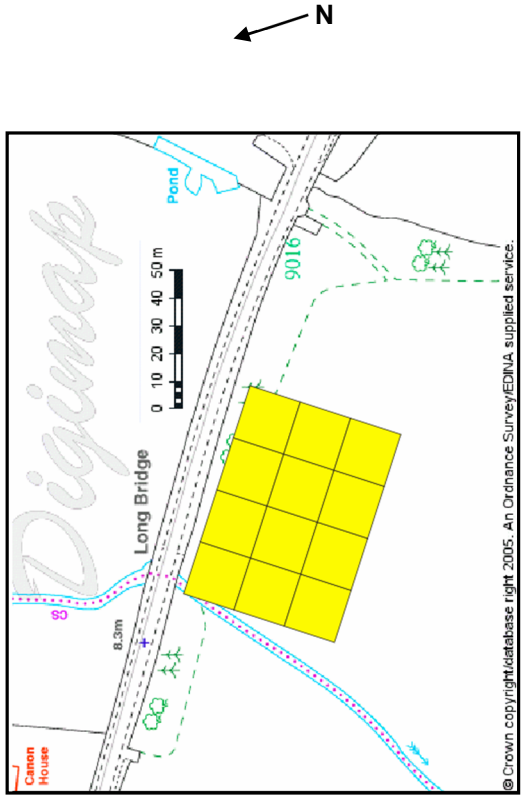


Fig.21 – TR/CIA Survey Area – Smisson: 2006

4.3.4.4 **DISPLAY**

4.3.4.4.1 Displayed as greyscale images, this visual format divides a given range of predefined arrangement of dots / shades of grey readings into a set number of classes.

[1] Exact number of grids / total area completed by Smisson not clear from report (2006).

43.4.4.2 Increasing in intensity as the value increases, the resulting image is displayed as a toned / grey scale enabling fast and accurate interpretation of any sub-surface archaeological features discovered.

4.3.4.5 COMPLICATING FACTORS

4.3.4.5.1 Overall, the survey conditions of the site were acceptable, with the ground being relatively flat and under short grass, though it must be noted that as the site has been prone to flooding, alluvium deposits if over 1m may obscure all but recent archaeology. Additionally, weather conditions during Survey 6 were dry and hot; leading to the possibility of lost data due to reduced ground moisture content.

4.3.5 - RESULTS

4.3.5.1 Survey 6 – Rowe 06/01 – C - RM 15 Resistance Meter

4.3.5.1.1 Believed to be the area where, in medieval times, the hospital complex of Holy Trinity (*c.*1170–1547AD) once stood, areas of high resistance can be seen to run parallel to the road in a north-west to south-east direction, suggesting the possibility of either building material or a pipeline (sewage pumping station nearby) (**Fig.22** – Full data processing information – Appendix A).

4.3.5.1.2 Whilst not archaeologically conclusive, an area of mid – low resistance with possible right-angles, interspersed by patches of higher resistance, located in the south-west area of the survey site, does interestingly correspond with surviving earthwork platforms.

4.3.5.2 Survey 7 – Smisson: 2006[1] - TR / CIA Resistivity Meter

4.3.5.2.1 When surveyed there was very little variation in response from the field outside the area of the platform visible on the ground (**Fig.23**). The only feature seemed to be a line of individual high resistance readings in the raw data running diagonally from the northeast corner of the field thought to be modern and associated with a rising main from the sewage pumping station, but this would need to be confirmed with Wessex Water.

4.3.5.2.2 On the platform a number of features can be made out in the resistivity data, including what looks like a clear building outline with internal divisions. The area of strong response in the centre of the survey area was characterised on the ground by a quantity of dressed stone blocks within which no modern materials such as brick were visible. Potentially these cover other building foundations.

4.3.6 - Conclusion

4.3.6.1 The result of the RM15 resistance - TR / CIA Resistivity surveys within Little Park / Castle Worthy (Longbridge) suggest that whilst the area of high resistance, parallel to the road in a north-west to south-east direction, is probably associated with a pipeline, there is the possibility that it could, alternatively, relate to building material from the medieval hospital. Moreover, high – low resistance with possible right-angles, interspersed by patches of higher resistance, in the south-west area of the survey site, can be seen to archaeologically correspond with surviving earthwork platforms suggesting the possibility of building foundations.

4.3.6.2 Only an archaeological evaluation of the site would fully establish the presence of any of these features.

---

[1] Results extracted from Smisson: 2006.

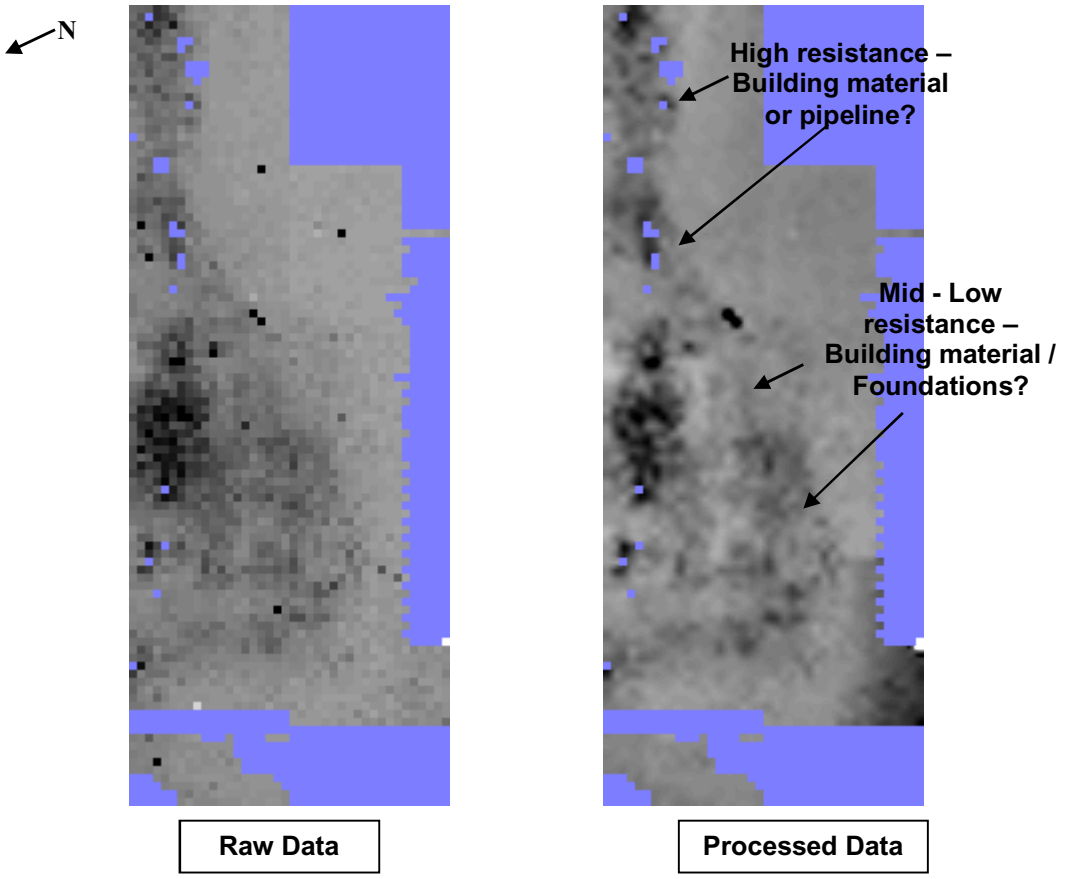


Fig.22 – Survey 6
RM 15 Resistance survey results – Rowe 06/01 - C

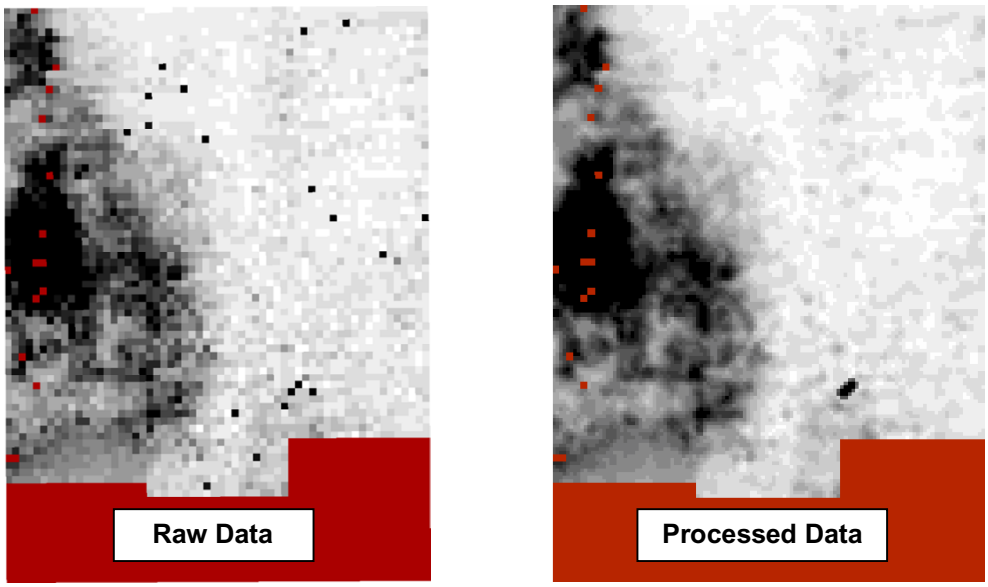


Fig.23 – Survey 7
TR / CIA Resistivity survey results – Smisson: 2006

4.4 REPORT D - QUARF MEAD / HOME GUARD

4.4.1 SUMMARY OF RESULTS

SITE RESULTS SUMMARY 8

GEOPHYSICAL SURVEY REPORT NO: Smisson: 2006[1] **NGR**: ST 6850 9118

SITE NAME: Floodgates Farm

SITE TYPE: Grassed area

DESCRIPTION: Home Ground, Floodgates Farm earthworks

PERIOD: Medieval

GEOLOGY: Tertiary deposits overlying Devonian limestones

LAND USE: Pasture

SURVEY TYPE:	Resistivity	**METHOD:**	Zig – Zag
INSTRUMENT:	TR/CIA Meter twin probe array	**SURVEY AREA:**	0.28 ha
SAMPLE INT:	1m	**TRAVERSE INT:**	1m

RESULTS SUMMARY:

The geophysics results appear to locate a field boundary that terminates at a holloway. Some 10 metres south of this a low resistance rectangle appears that coincides with the rectangular earthwork visible on the ground. This may be significant, or the parallel responses may be indicating this is all simply ridge and furrow on a new orientation not visible on the ground.

The single grid looked at a small area, where an entrance seems to appear on the ground together with a possible triangular platform. The resistance survey shows the ridge and furrow, running north-south here, terminates at this platform although it continues past it on the east side. High resistances here may be indicating some kind of building.

SURVEY DATE(S): 5th June 2006 **REPORT DATE:** 21st June 2006

COMPLETED BY: R P M Smisson, Angie Newcombe

REPORT AUTHOR: R P M Smisson

---

[1] Extracted from Smisson: 2006

4.4.2 INTRODUCTION

3.4.2.1 Detailed to survey Quarf Mead / Home Ground, as per Project Specification 6: iii -BC Report No: 4; a grid area totalling 60m x 40m was subsequently laid out over the case study area and surveyed June 2006 (**Fig.24**).

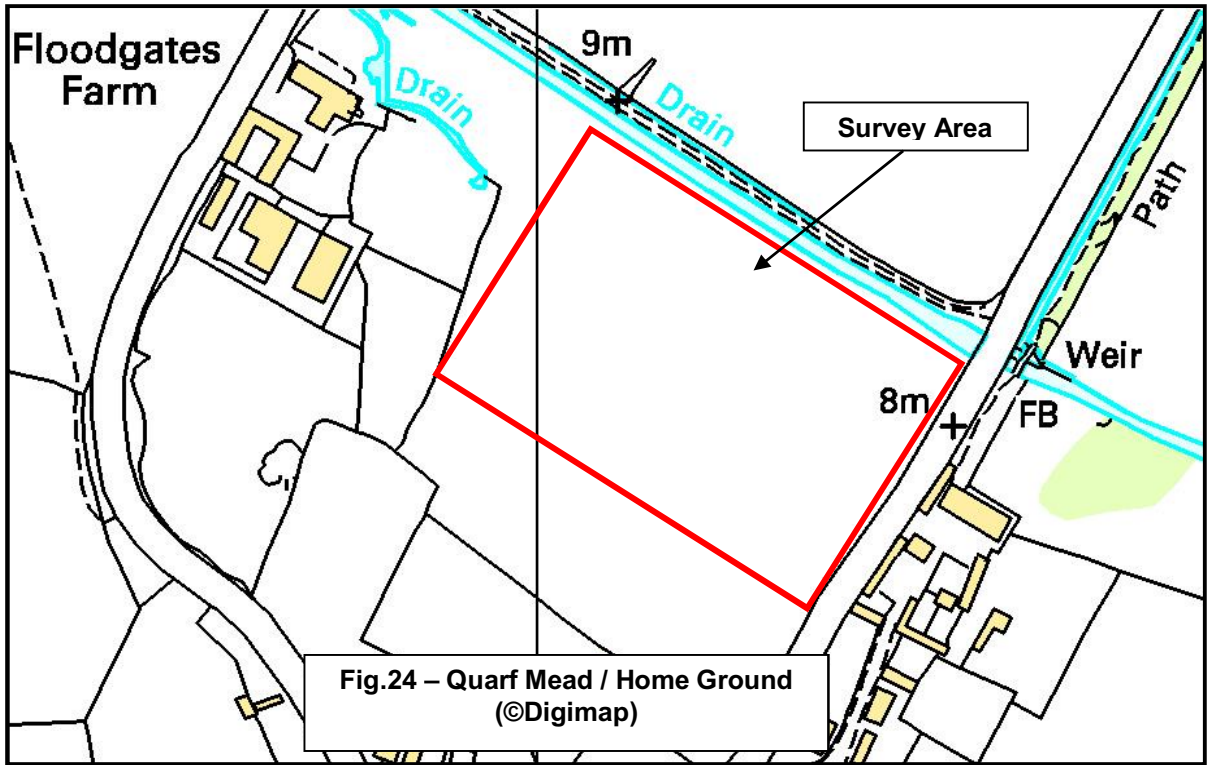


Fig.24 – Quarf Mead / Home Ground (©Digimap)

4.4.3 LOCATION, TOPOGRAPHY AND GEOLOGY

4.4.3.1 Situated *c.*620m south-west of the main castle complex / gardens and *c.*650m south south-west of Berkeley village, Gloucestershire (NGR ST 6850 9118) in a field known as Quarf Mead / Home Ground, the surveyed area can be found to contain various unknown earthworks that are in need of investigation.

4.4.3.2 Lying *c.*11m aOD on a slight south-west incline, the site can be seen to lie upon Tertiary deposits overlying Devonian limestones geology.

4.4.4 GEOPHYSICAL SURVEY

4.4.4.1 Point of Note: Whilst all survey reports are produced as correctly as possible, the resulting information is based on the accuracy of the equipment therefore no responsibility is taken for any errors or omissions.

4.4.4.2 INSTRUMENTATION

4.4.4.2.1 TR/CIA Resistivity Meter: Measuring the electrical resistance of the earth to a current being passed through it via a system of four electrodes (two current and two potential), a twin probe arrangement (0.5m interval) that involves the paring of electrodes (one current / one potential) was passed over a measured grid, with the results being compared to a back ground reading obtained from a pair of electrodes placed in a 'fixed' position.

4.4.4.2.2 Measured in Ohms and calculated resistivity in Ohm – Metres, the

effective dept of penetration is approximately 0.75m, although the nature of the overburden as well as underlying geology will cause variations in this generality.

4.4.4.3. **SURVEY AREA**

4.4.4.3.1 A TR/CIA resistivity survey (Smisson: 2006) (6 x 20m² & 1 x 20m²) was completed over a 60 x 40m grid area, as detailed in **Fig 25.**

4.4.4.3.2 Set out by undergraduate students with the aid of R P M Smisson, the survey grid was measured in using taped offsets from a 60m baseline running in south-east to north-west direction.

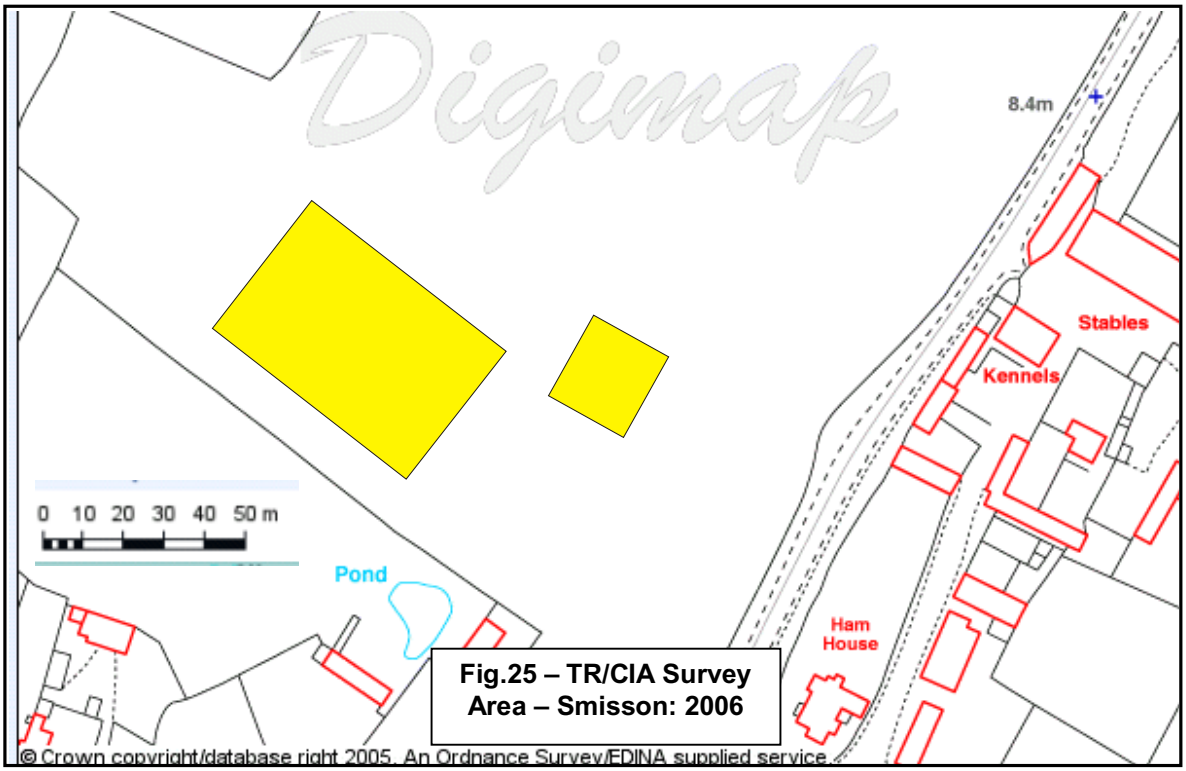


Fig.25 – TR/CIA Survey Area – Smisson: 2006

4.4.4.4 **DISPLAY**

4.4.4.4.1 Displayed as greyscale images, this visual format divides a given range of predefined arrangement of dots / shades of grey readings into a set number of classes.

4.1.4.4.2 Increasing in intensity as the value increases, the resulting image is displayed as a toned / grey scale enabling fast and accurate interpretation of any sub-surface archaeological features discovered.

4.4.4.5 **COMPLICATING FACTORS**

4.4.4.5.1 Overall site conditions were acceptable with the ground relatively flat and under short grass, with no obstructions save an electric fence which was switched off during the survey.

4.4.5 **- RESULTS**

4.4.5.2 - **Survey 8 - Smisson: 2006[1] - TR / CIA Resistivity Meter**

4.4.5.2.1 Within the area covered by the six 20m square grids the geophysics results appear to find another field boundary, indicated by the dark response that

terminates at the Holloway. Some 10 metres south of this a low resistance rectangle appears that coincides with the rectangular earthwork visible on the ground. This may be significant, or the parallel responses may be indicating this is all simply ridge and furrow on a new orientation not visible on the ground.

4.4.5.2.2 The single grid was surveyed over the small triangle identified by the earthworks survey where an entrance seems to appear on the ground together with a possible triangular platform. The resistance survey shows the ridge and furrow, running north-south here, terminates at this platform although it continues past it on the east side. High resistances here may be indicating some kind of building. (Smisson: 2006) (**Fig.26**).

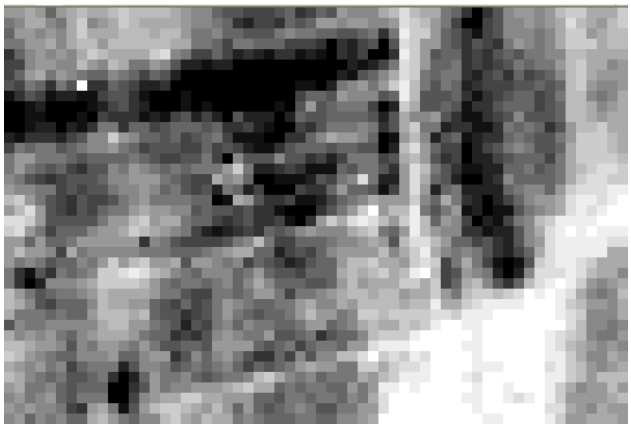
4.4.6 - Conclusion[1]

4.4.6.1 There seems to be a lot of activity in this area, and it would be interesting to carry out some investigative trenches to explore if there is archaeology relating to some early use of this field.

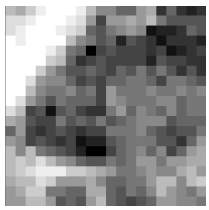
4.4.6.2 It is recommended that this site be considered for further investigation work; only a full archaeological excavation of the site would fully establish the presence of buildings or other features in this area.

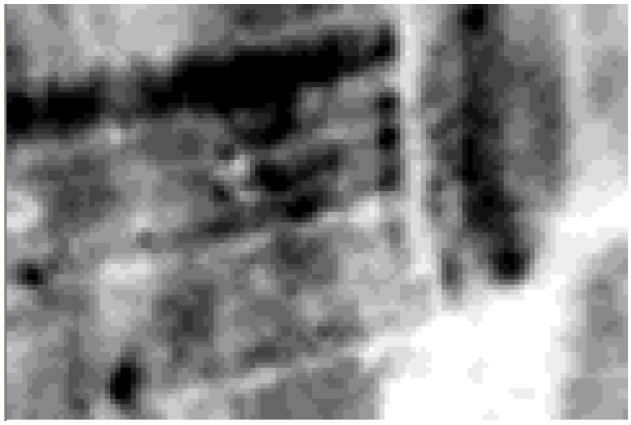
---

[1] Results extracted from Smisson: 2006.



Raw Data





Processed Data

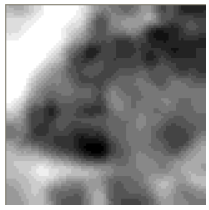


Fig.26 – Survey 8 - TR / CIA Resistivity survey results – Smisson: 2006

5 - BIBLIOGRAPHY

Digimap - © Crown copyright/database right 2004 – Ordnance Survey / Edina Supplied Service to the University of Bristol.

Geological Survey Map - © www.soton.ac.uk – School of Ocean & Earth Science.

Memory-Map Inc – © Crown Copyright Ordnance Survey 2003 Licence No: PU100034184

Prior, S & Rowe, P R (2006) *Project Specification for a programme of Archaeological works at Berkeley Castle, Berkeley, Gloucestershire, 2006 – BC Report Number 4* (Unpublished)

Rowe, P R (2004) *The strategic siting if motte & bailey castles in Gloucestershire* (Unpublished).

Rowe, P R (2005) *Geophysical survey report for Berkeley Castle, Gloucestershire Report No: 05/02* (Unpublished)

Rowe, P R (2006) *Berkeley Castle, Gloucestershire – Archaeological Desk Based Assessment* (Unpublished)

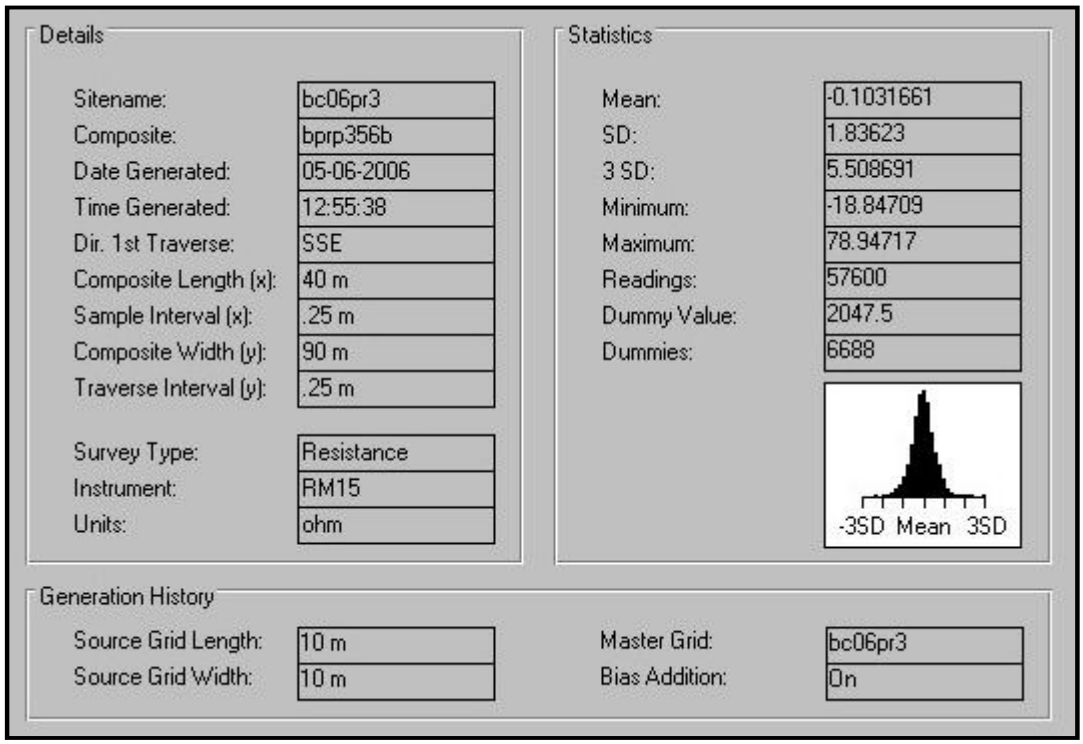
Smisson, RPM (2006) *Geophysical survey report for survey work at Berkeley Castle, 31st May – 9th June 2006* (Unpublished)

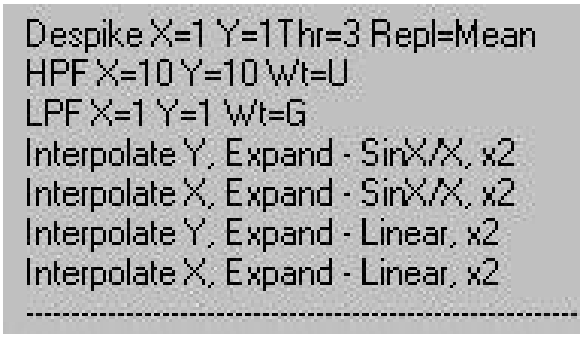
Tandy, D (2003) *Berkeley – A town in the marshes*

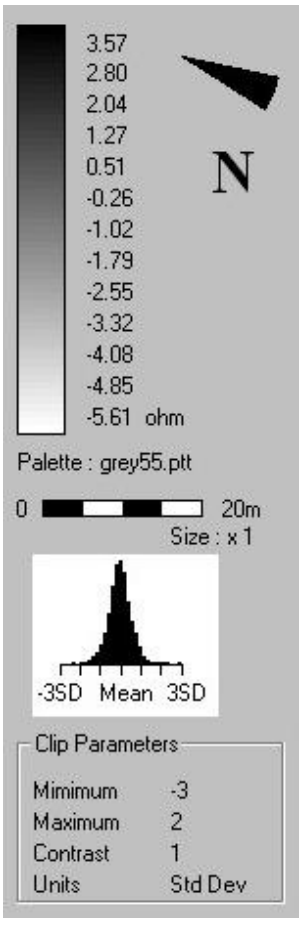
6 – APPENDICES

6.1 Appendix A

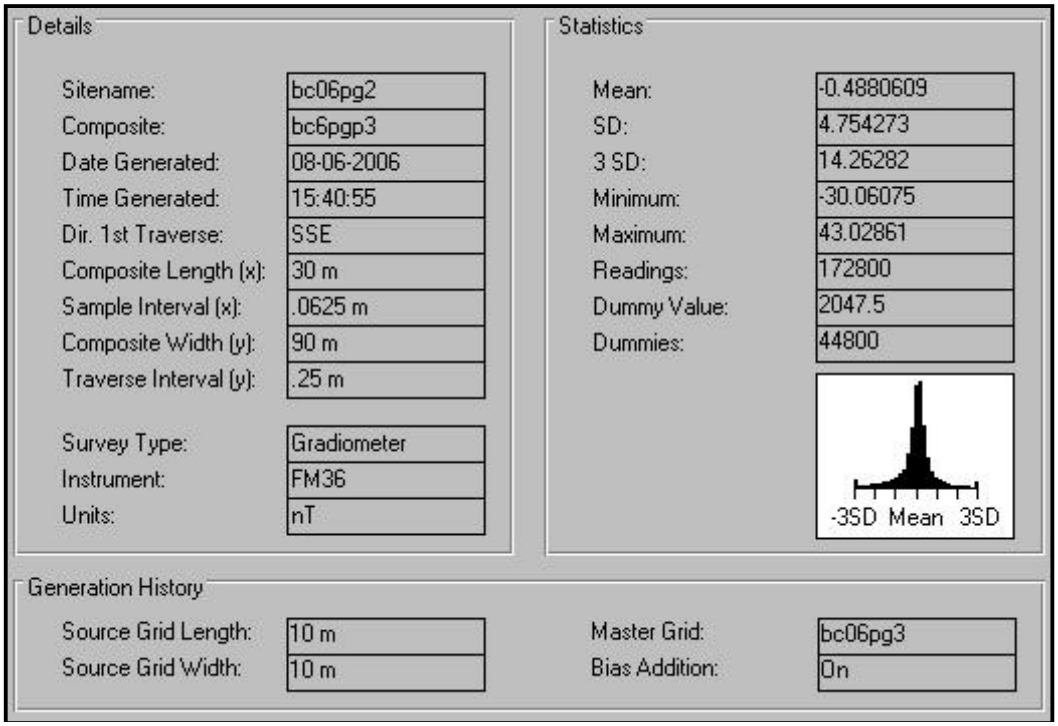
Survey 1 –

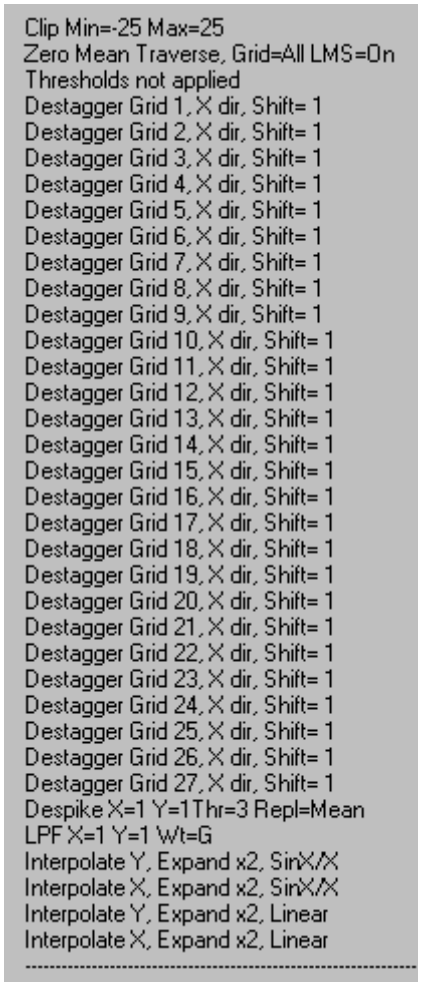


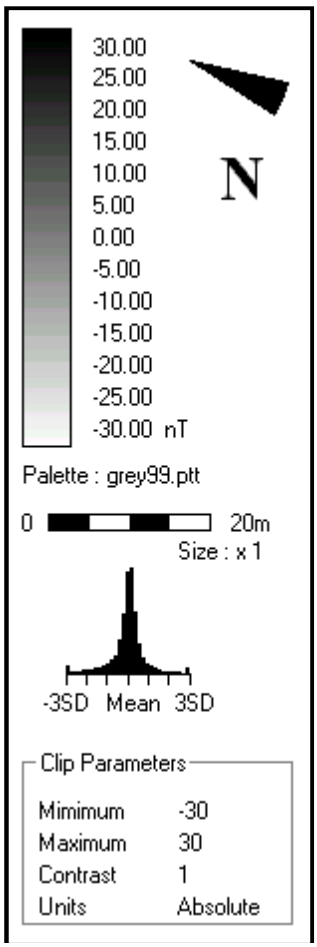


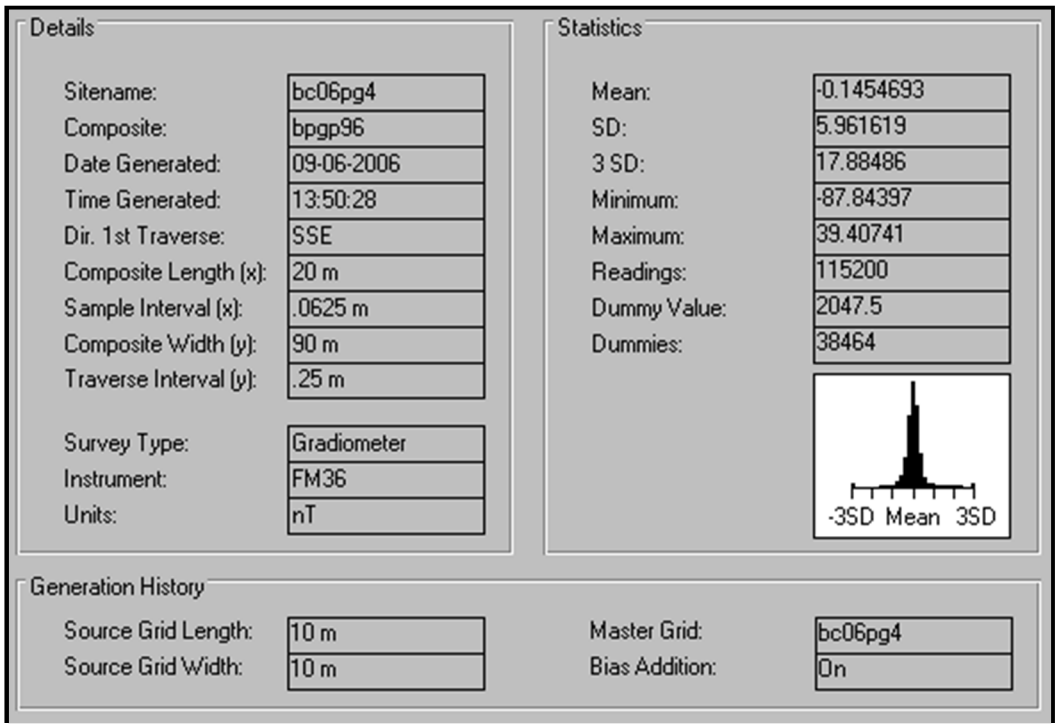


Survey 3 –


Details
Sitename: bc06pg2
Composite: bc6pgp3
Date Generated: 08-06-2006
Time Generated: 15:40:55
Dir. 1st Traverse: SSE
Composite Length (x): 30 m
Sample Interval (x): .0625 m
Composite Width (y): 90 m
Traverse Interval (y): .25 m
Survey Type: Gradiometer
Instrument: FM36
Units: nT
Statistics
Mean: -0.4880609
SD: 4.754273
3 SD: 14.26282
Minimum: -30.06075
Maximum: 43.02861
Readings: 172800
Dummy Value: 2047.5
Dummies: 44800
-3SD Mean 3SD
Generation History
Source Grid Length: 10 m
Source Grid Width: 10 m
Master Grid: bc06pg3
Bias Addition: On


Clip Min=-25 Max=25
Zero Mean Traverse, Grid=All LMS=On
Thresholds not applied
Destagger Grid 1, X dir, Shift= 1
Destagger Grid 2, X dir, Shift= 1
Destagger Grid 3, X dir, Shift= 1
Destagger Grid 4, X dir, Shift= 1
Destagger Grid 5, X dir, Shift= 1
Destagger Grid 6, X dir, Shift= 1
Destagger Grid 7, X dir, Shift= 1
Destagger Grid 8, X dir, Shift= 1
Destagger Grid 9, X dir, Shift= 1
Destagger Grid 10, X dir, Shift= 1
Destagger Grid 11, X dir, Shift= 1
Destagger Grid 12, X dir, Shift= 1
Destagger Grid 13, X dir, Shift= 1
Destagger Grid 14, X dir, Shift= 1
Destagger Grid 15, X dir, Shift= 1
Destagger Grid 16, X dir, Shift= 1
Destagger Grid 17, X dir, Shift= 1
Destagger Grid 18, X dir, Shift= 1
Destagger Grid 19, X dir, Shift= 1
Destagger Grid 20, X dir, Shift= 1
Destagger Grid 21, X dir, Shift= 1
Destagger Grid 22, X dir, Shift= 1
Destagger Grid 23, X dir, Shift= 1
Destagger Grid 24, X dir, Shift= 1
Destagger Grid 25, X dir, Shift= 1
Destagger Grid 26, X dir, Shift= 1
Destagger Grid 27, X dir, Shift= 1
Despike X=1 Y=1 Thr=3 Repl=Mean
LPF X=1 Y=1 Wt=G
Interpolate Y, Expand x2, SinX/X
Interpolate X, Expand x2, SinX/X
Interpolate Y, Expand x2, Linear
Interpolate X, Expand x2, Linear


30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
-25.00
-30.00 nT
N
Palette : grey99.ptt
0
20m
Size : x 1
-3SD Mean 3SD
Clip Parameters
Mimimum -30
Maximum 30
Contrast 1
Units Absolute



Details

Sitename:	bc06pg4
Composite:	bpgp96
Date Generated:	09-06-2006
Time Generated:	13:50:28
Dir. 1st Traverse:	SSE
Composite Length (x):	20 m
Sample Interval (x):	.0625 m
Composite Width (y):	90 m
Traverse Interval (y):	.25 m
Survey Type:	Gradiometer
Instrument:	FM36
Units:	nT

Statistics

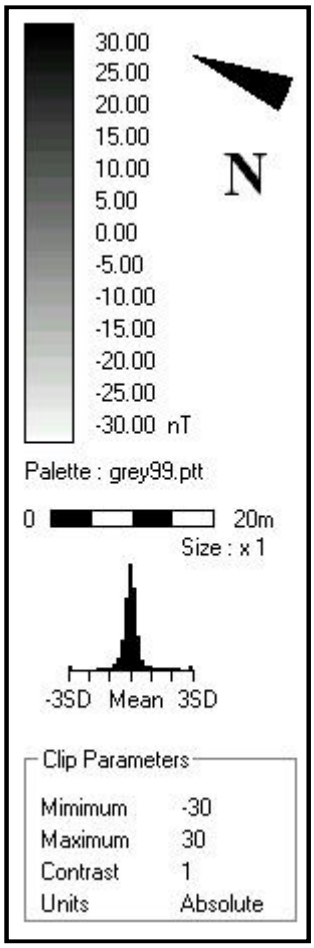
Mean:	-0.1454693
SD:	5.961619
3 SD:	17.88486
Minimum:	-87.84397
Maximum:	39.40741
Readings:	115200
Dummy Value:	2047.5
Dummies:	38464

-3SD Mean 3SD

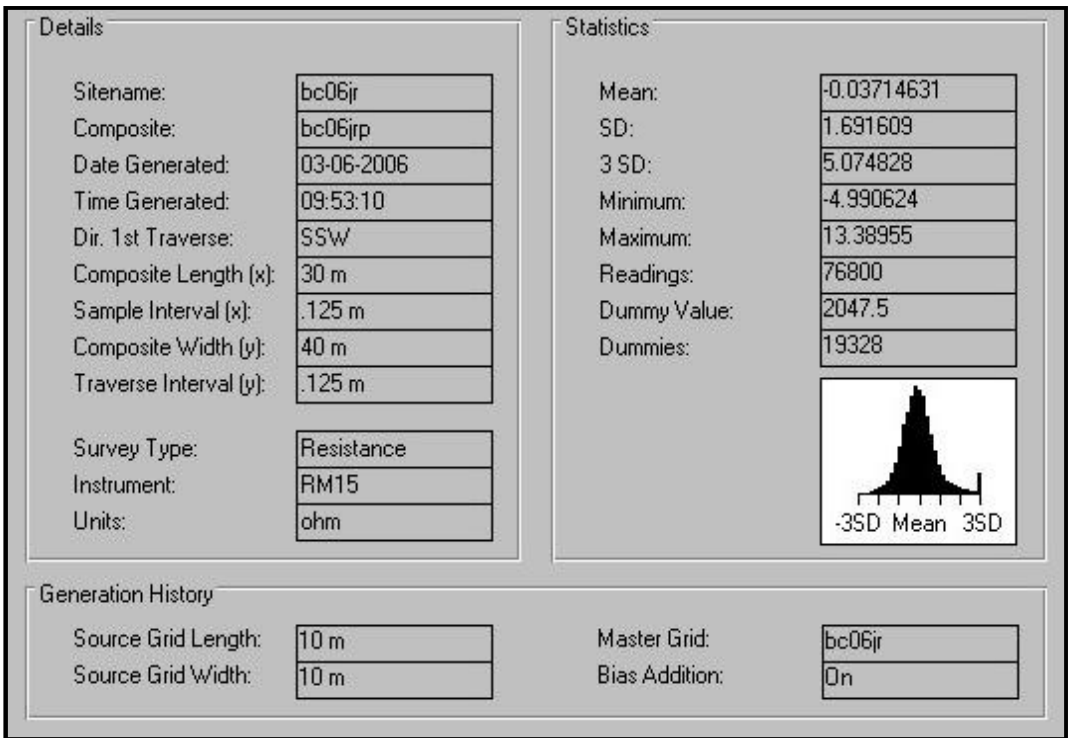
Generation History

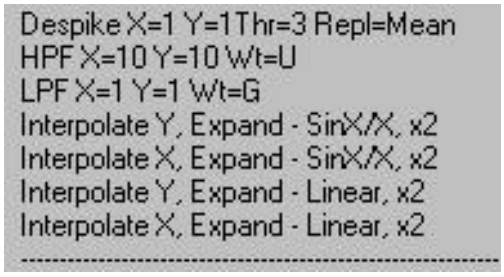
Source Grid Length:	10 m	Master Grid:	bc06pg4
Source Grid Width:	10 m	Bias Addition:	On

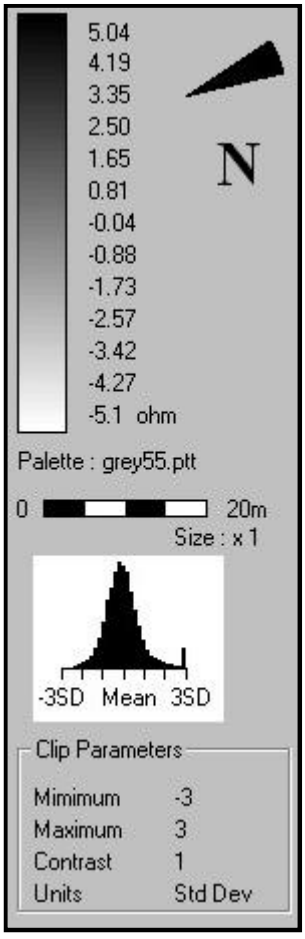
Clip Min=-25 Max=25
Zero Mean Traverse, Grid=All LMS=On
Thresholds not applied
Destagger Grid 1, X dir, Shift= 1
Destagger Grid 2, X dir, Shift= 1
Destagger Grid 3, X dir, Shift= 1
Destagger Grid 4, X dir, Shift= 1
Destagger Grid 5, X dir, Shift= 1
Destagger Grid 6, X dir, Shift= 1
Destagger Grid 7, X dir, Shift= 1
Destagger Grid 8, X dir, Shift= 1
Destagger Grid 9, X dir, Shift= 1
Destagger Grid 10, X dir, Shift= 1
Destagger Grid 11, X dir, Shift= 1
Destagger Grid 12, X dir, Shift= 1
Destagger Grid 13, X dir, Shift= 1
Destagger Grid 14, X dir, Shift= 1
Destagger Grid 15, X dir, Shift= 1
Destagger Grid 16, X dir, Shift= 1
Destagger Grid 17, X dir, Shift= 1
Destagger Grid 18, X dir, Shift= 1
Despike X=1 Y=1Thr=3 Repl=Mean
LPF X=1 Y=1 Wt=G
Interpolate Y, Expand x2, SinX/X
Interpolate X, Expand x2, SinX/X
Interpolate Y, Expand x2, Linear
Interpolate X, Expand x2, Linear



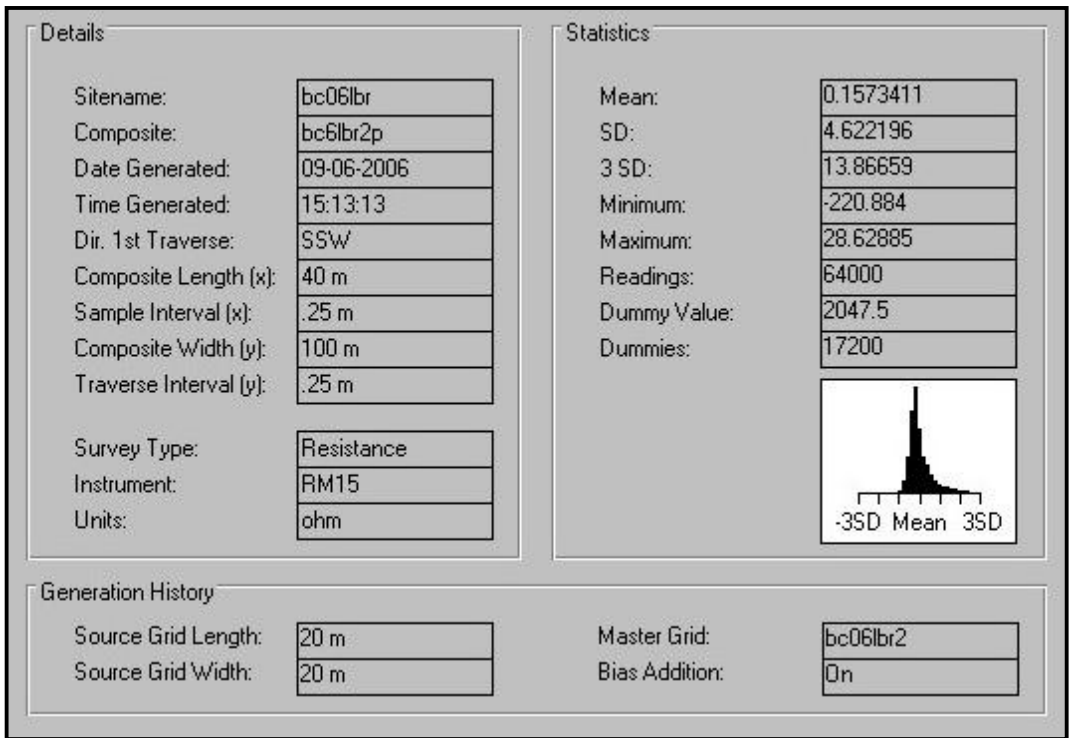
Survey 4 –

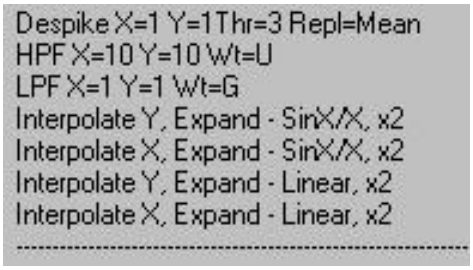

Details
Sitename: bc06jr
Composite: bc06jrp
Date Generated: 03-06-2006
Time Generated: 09:53:10
Dir. 1st Traverse: SSW
Composite Length (x): 30 m
Sample Interval (x): .125 m
Composite Width (y): 40 m
Traverse Interval (y): .125 m
Survey Type: Resistance
Instrument: RM15
Units: ohm
Statistics
Mean: -0.03714631
SD: 1.691609
3 SD: 5.074828
Minimum: -4.990624
Maximum: 13.38955
Readings: 76800
Dummy Value: 2047.5
Dummies: 19328
-3SD Mean 3SD
Generation History
Source Grid Length: 10 m
Source Grid Width: 10 m
Master Grid: bc06jr
Bias Addition: On

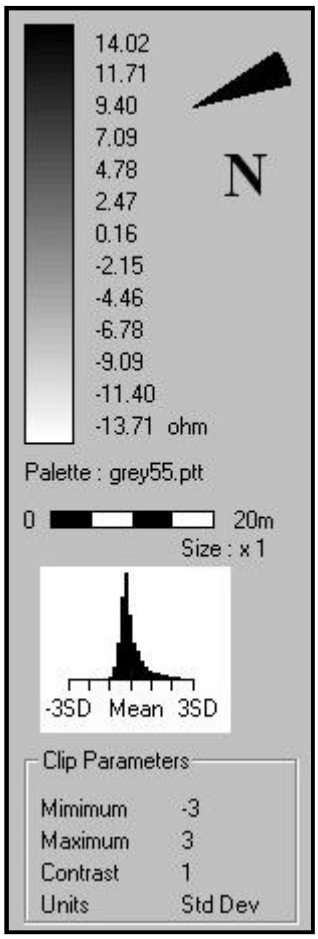

Despike X=1 Y=1Thr=3 Repl=Mean
HPF X=10 Y=10 Wt=U
LPF X=1 Y=1 Wt=G
Interpolate Y, Expand - SinX/X, x2
Interpolate X, Expand - SinX/X, x2
Interpolate Y, Expand - Linear, x2
Interpolate X, Expand - Linear, x2


5.04
4.19
3.35
2.50
1.65
0.81
-0.04
-0.88
-1.73
-2.57
-3.42
-4.27
-5.1 ohm
N
Palette : grey55.ptt
0
20m
Size : x 1
-3SD Mean 3SD
Clip Parameters
Mimimum -3
Maximum 3
Contrast 1
Units Std Dev

Survey 6 –

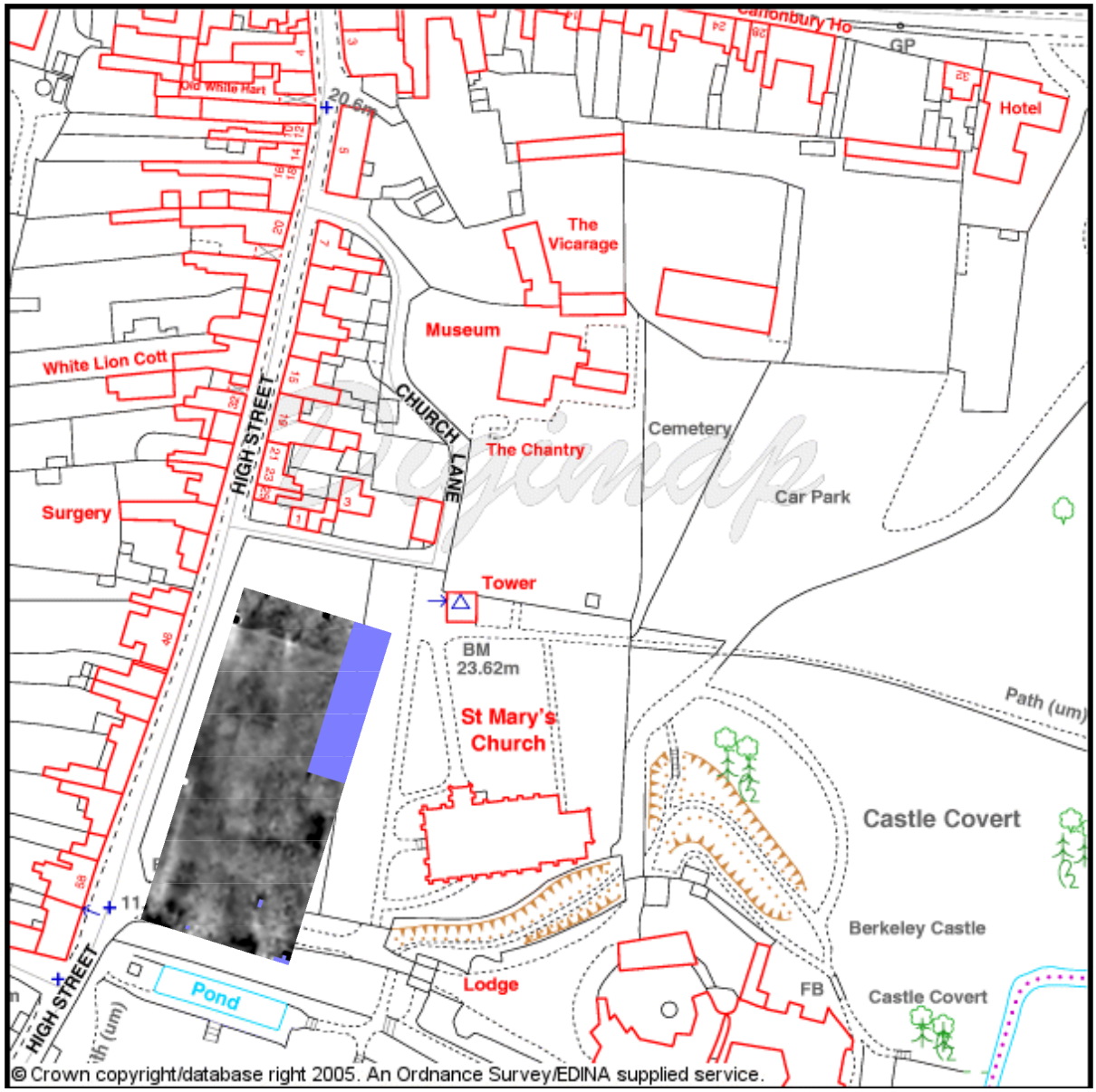




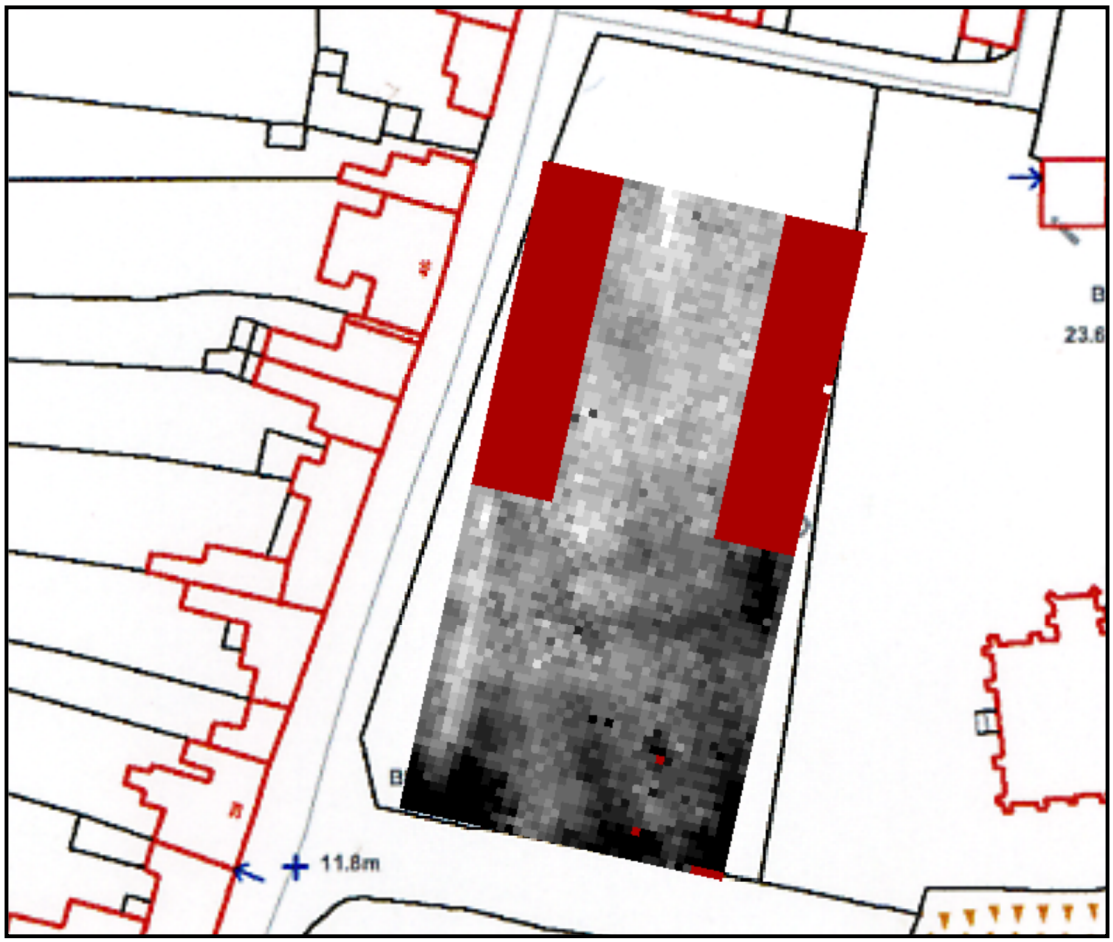


6.2 **Appendix B**

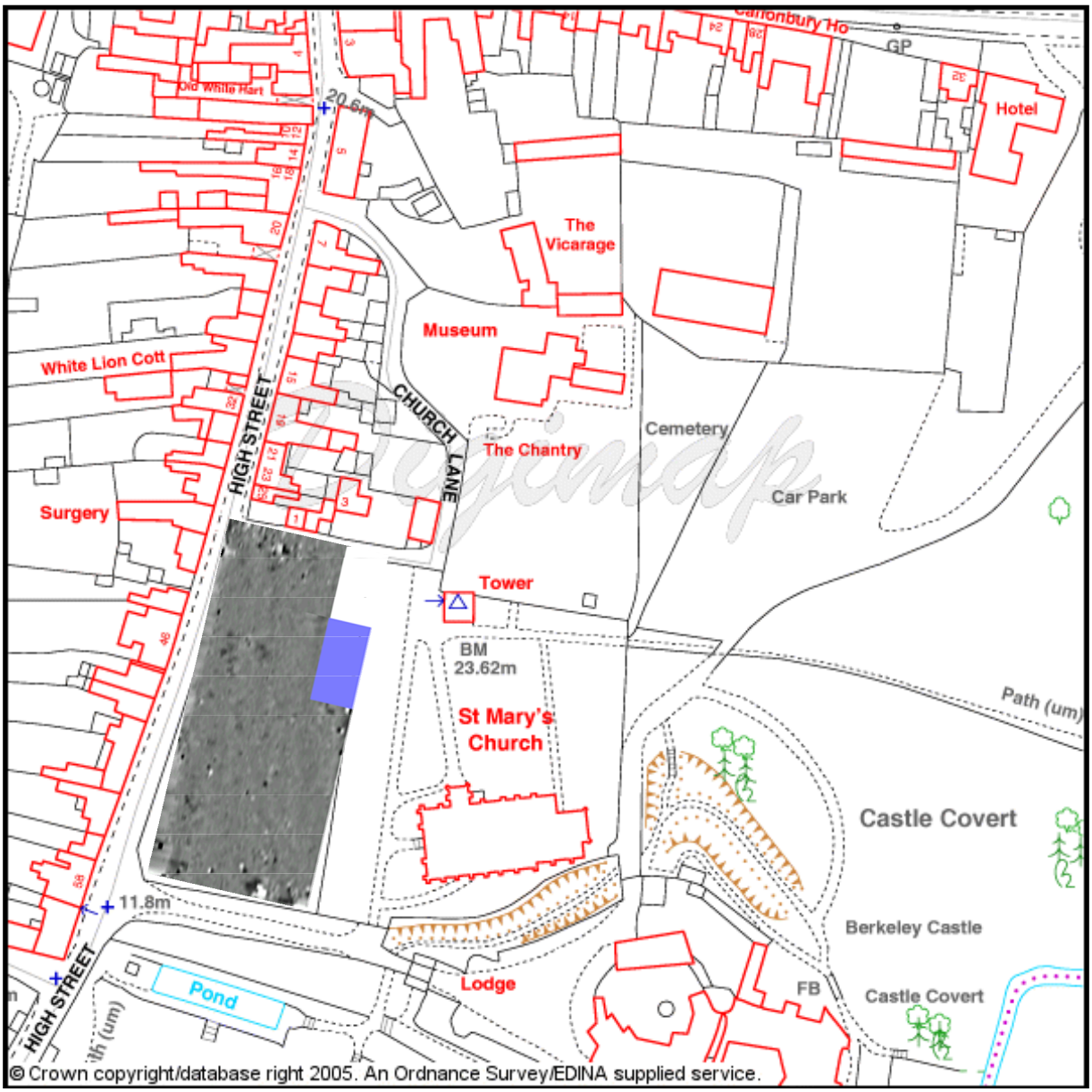
Survey 1 –



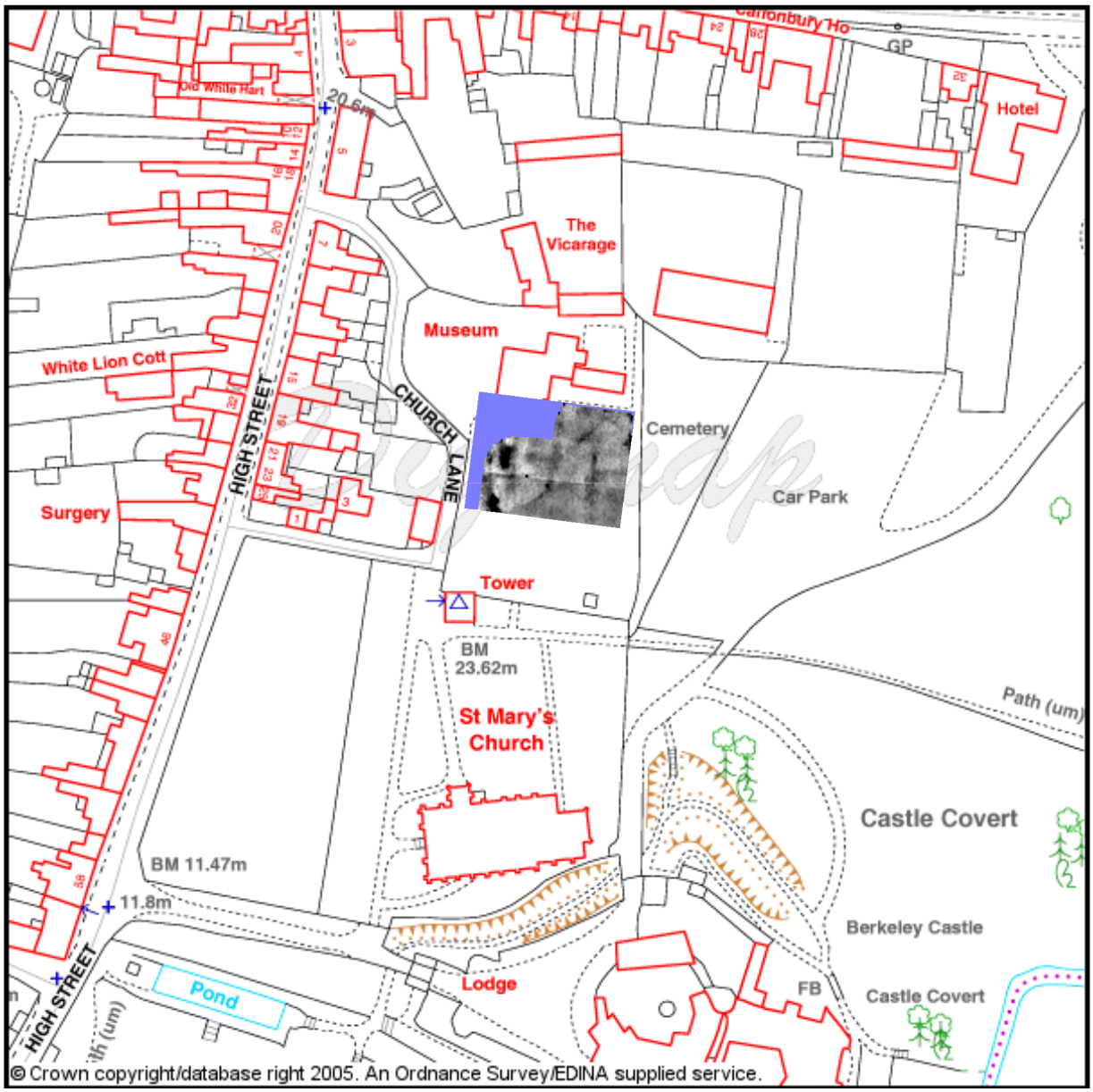
Survey 2 –



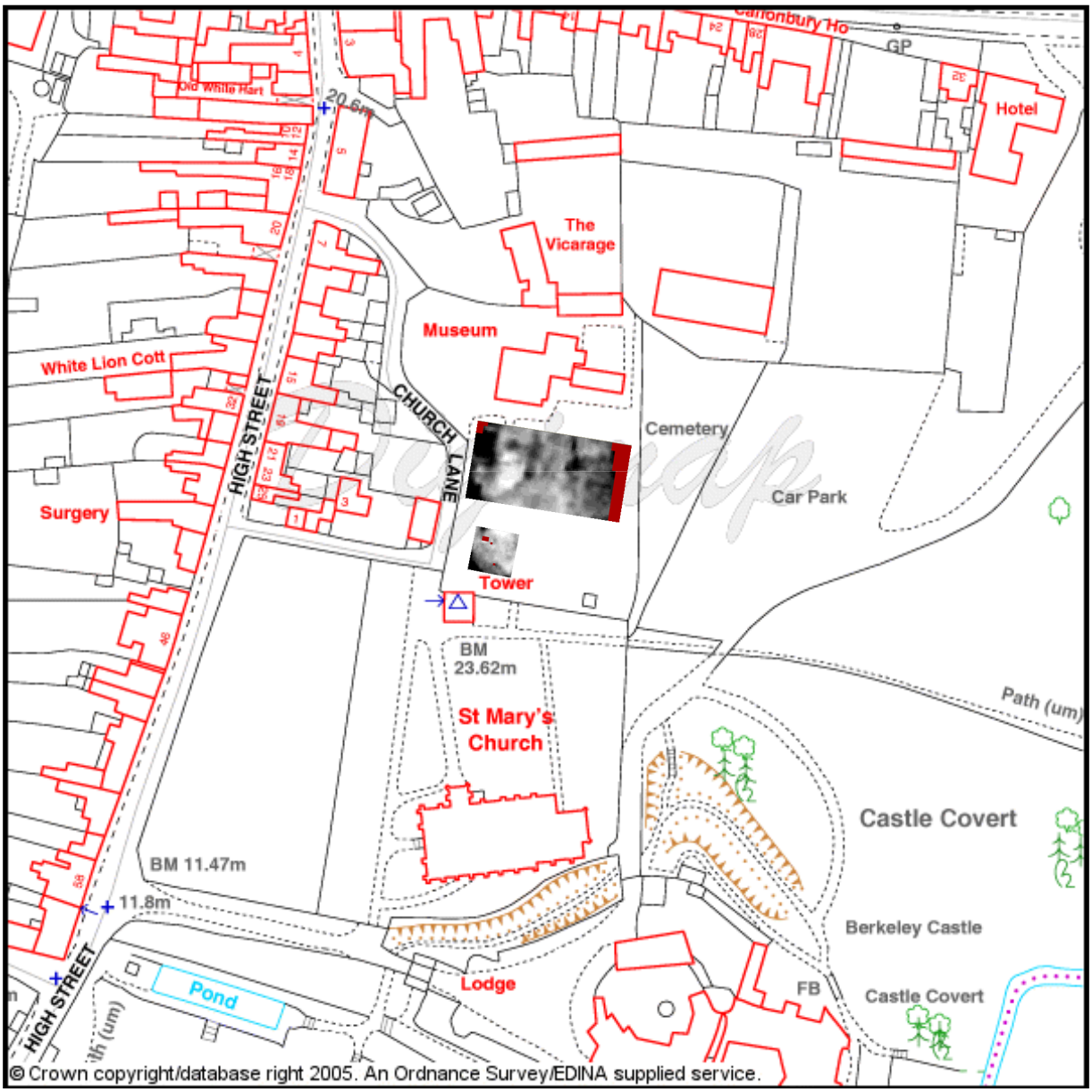
Survey 3 –


Carfonbury Ho
GP
Hotel
Old White Hart
20.6m
The Vicarage
Museum
White Lion Cott
HIGH STREET
CHURCH LANE
The Chantry
Cemetery
Car Park
Surgery
Tower
BM
23.62m
St Mary's Church
Path (um)
Castle Covert
11.8m
Berkeley Castle
Lodge
FB
Castle Covert
Pond
HIGH STREET
© Crown copyright/database right 2005. An Ordnance Survey/EDINA supplied service.

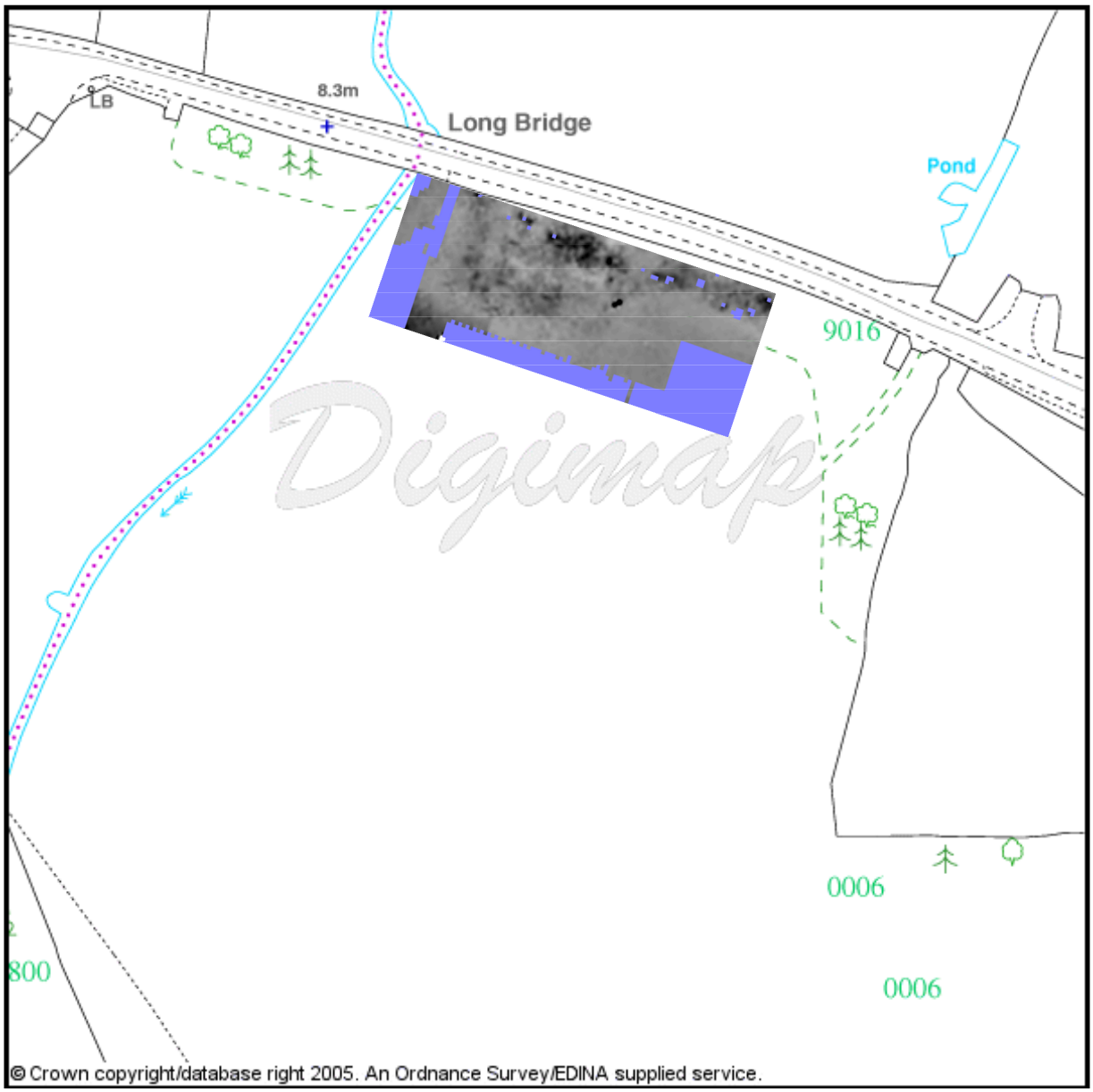
Survey 4 –


Old White Hart
20.6m
Carfonbury Ho
GP
Hotel
The Vicarage
Museum
White Lion Cott
HIGH STREET
CHURCH LANE
Cemetery
Car Park
Surgery
Tower
BM 23.62m
St Mary's Church
Path (um)
Castle Covert
BM 11.47m
11.8m
Berkeley Castle
Lodge
FB
Castle Covert
Pond
HIGH STREET
© Crown copyright/database right 2005. An Ordnance Survey/EDINA supplied service.

Survey 5 –


Old White Hart
20.6m
Callonbury Ho
GP
Hotel
The Vicarage
Museum
White Lion Cott
HIGH STREET
CHURCH LANE
Cemetery
Car Park
Surgery
Tower
BM 23.62m
St Mary's Church
Path (um)
Castle Covert
BM 11.47m
11.8m
Berkeley Castle
Lodge
FB
Castle Covert
Pond
HIGH STREET
© Crown copyright/database right 2005. An Ordnance Survey/EDINA supplied service.

Survey 6 –


8.3m
LB
Long Bridge
Pond
9016
0006
0006
800
© Crown copyright/database right 2005. An Ordnance Survey/EDINA supplied service.

Survey 7 –


8.3m
LB
Long Bridge
Pond
9016
0006
0006
800
© Crown copyright/database right 2005. An Ordnance Survey/EDINA supplied service.