



Chichester and District Archaeology Society

Geophysical Survey

Petworth North Garden – October 2018



Figure 1. The Doric Temple

1. Summary

At the request of The National Trust, the Chichester and District Archaeology Society (CDAS) carried out magnetometry and resistivity surveys in the area in front of the Doric Temple (figure 1). The surveys identified paths shown on the 1897 Ordnance Survey map. The surveys also identified a horseshoe-shaped area placed symmetrically in front of the Doric Temple. CDAS has speculated that this area could be an open-air theatre.

2. Background

The Landscape Manager at Petworth is planning to re-instate the layout of the paths around the Doric Temple. He commissioned CDAS to undertake a geophysical survey of an area 120 metres by 90 metres around the temple.

3. Site Access/ Health and Safety

The Health and Safety Risk Assessment (Appendix 1) was prepared prior to undertaking the survey.

4. Method

These surveys utilised the following equipment:

1. Geoscan RM15 D Resistivity meter that CDAS was able to purchase for the Medmerry project as a result of generous donations for this purpose from the Chichester District Council Coastal Pathfinder Project and the Chichester City Council.
2. Geoscan FM256 magnetometer. Previously purchased by CDAS as the result of a generous grant from the Chichester Harbour Conservancy.
3. Electronic Theodolite. Previously purchased by CDAS as the result of a generous grant from the Chichester Harbour Conservancy.

The grid was established so that it ran through the west side of the Tijou gate and parallel to the west face of Petworth House, 12.72 metres from the west facing elevation, measured at right angles. The face used was that of the majority of the stone work ignoring the various pediments.

The grid squares were measured from the point in the line of the Tijou gate and the fence. The electronic theodolite was set up 150 metres north of the Tijou gate. From this point the grid was established using tapes to measure the distances and the theodolite to measure the angles. There is a gap of 30 metres between the south of this survey grid and the north of last year's survey grid. One of the east/west gridlines runs 200mm south of the south wall of the Doric temple and parallel to it. This means that the Doric Temple is on the same orientation as the main house.

5. Volunteer Participation

CDAS members worked on the survey during 8th, 9th and 10th of October 2018. 12 CDAS members participated in the survey and provided a total of 21 man days of effort.

6. Survey results

Figure 2. *Results of Magnetometry Survey*

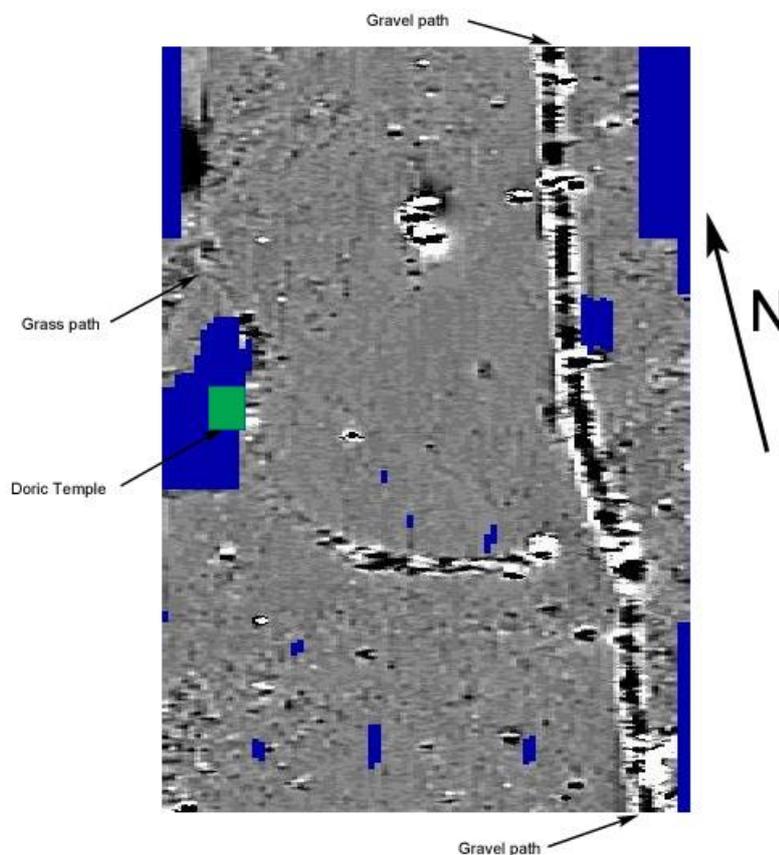


Figure 2 shows the results from the magnetometry survey. The Doric temple is shown in green. The key features are:

- There is a strong curving response south of the Doric temple. This response does not appear to extend as far as the gravel path.
- There is a weaker curving response further south from the Doric temple
- There is no visible response on the north side of the Doric temple that could be interpreted as a path.
- The response from the gravel path between the house and the carpark is clear on the right hand side of figure 2.
- The grass path that curves round to the north of the Doric Temple shows as a weak response.

Figure 3. Section of 1897 25 inch to the mile Ordnance Survey Map

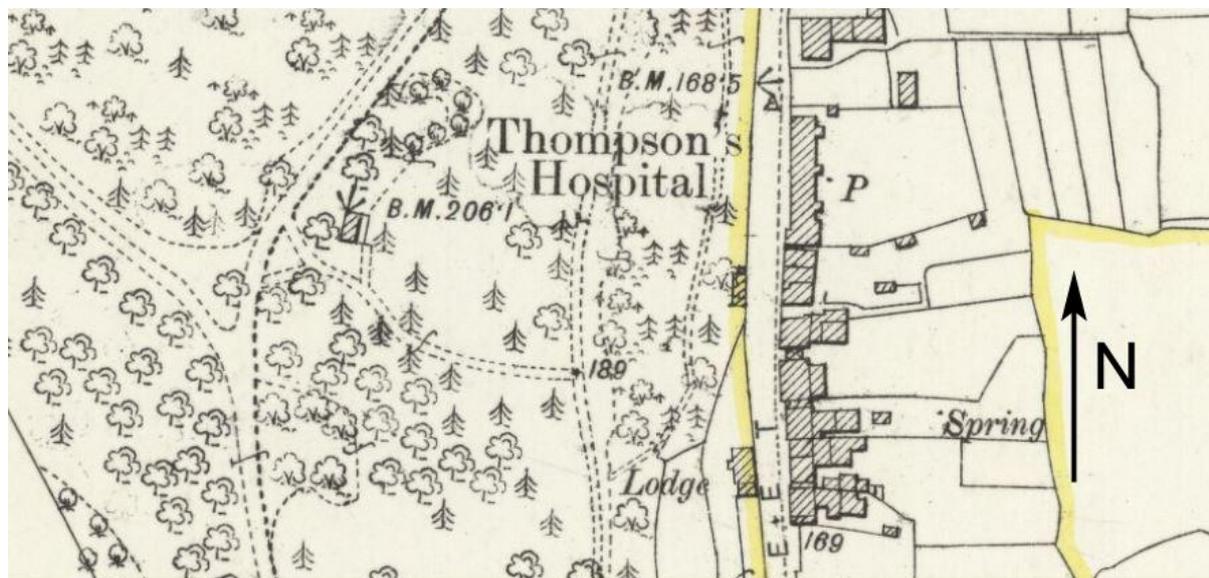
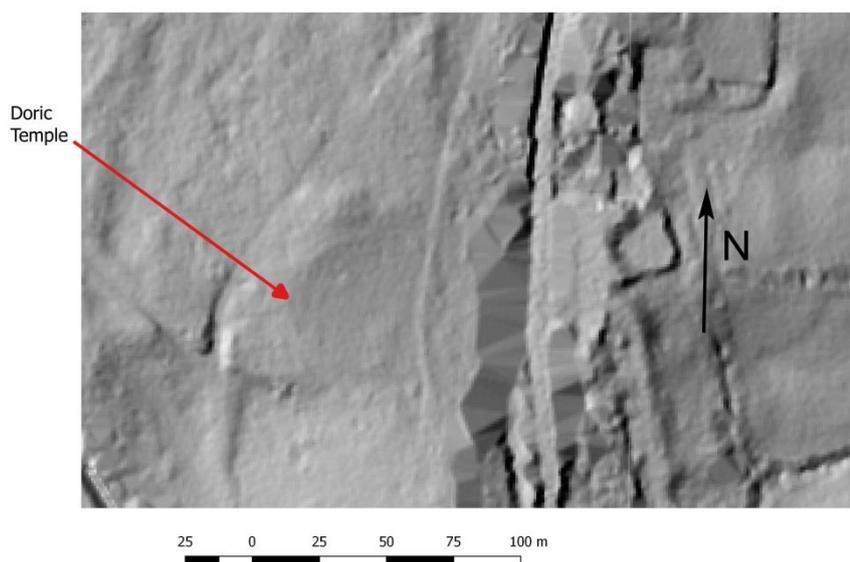


Figure 3 shows the way the path system was recorded in the 1897. Although comparisons are difficult, it is likely that the response from the magnetometry survey shows the path from the Doric Temple to the gravel path. However in the 1897 map, this path clearly joins the gravel path at the point marked 189.

Figure 4. LiDAR plot for the Petworth pleasure gardens

OGIS Petwrth Pleasure Gardens EA LiDAR



In Figure 4, the Environmental Agency LiDAR plot shows a very regular horseshoe-shaped path in front of (that is on the eastern side of) the Doric temple running down to the gravel path.

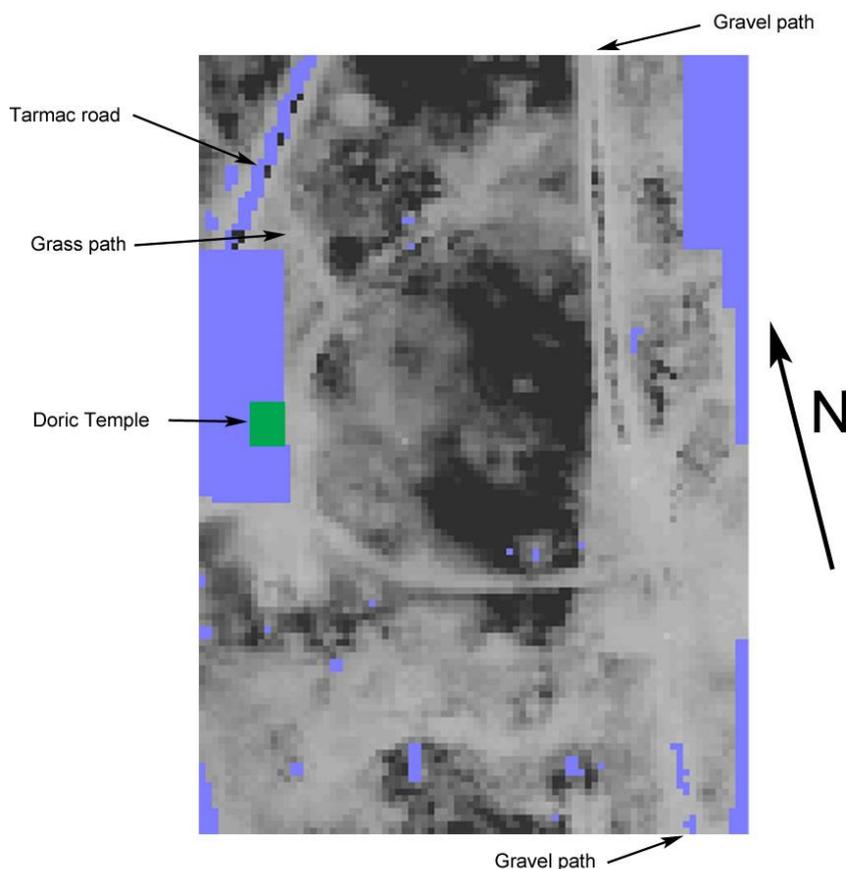
Figure 5. *Results of Resistivity survey*

Figure 5 shows the responses obtained from the resistivity survey. The Doric Temple is marked in green. The key points to note are:

- There is a strong curving response south of the Doric temple. It is likely that this is the same feature as seen in both the magnetometry survey and in the Ordnance Survey map.
- There is a strong curving response to the north of the Doric temple. Straight paths lead from this response to both the northwest and the northeast.
- The dark areas close to the gravel path were a series of very high over range readings. Even allowing for the dry summer and early autumn, this is very unusual. It might indicate that there is a hard, draining surface immediately below the grass. These effects were observed with two different teams on different days, on different grid squares. So the results are consistent.
- Although the results are not clear, the paths do not appear to go to the east of the gravel path. There are some dry (dark) responses in this area, but it is more likely that these are the remains of structures. There is no evidence of the hard, dry surface observed to the west of the gravel path.

Figure 6. Magnetometry results over the 1897 map, over the Environmental Agency LiDAR

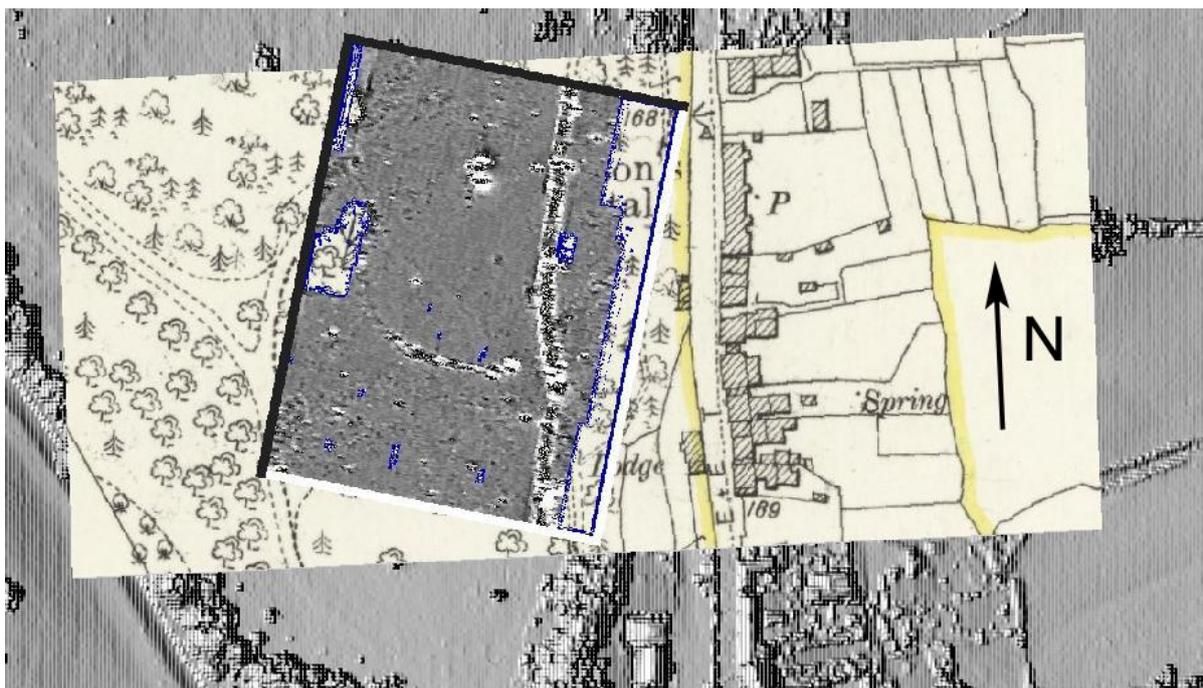
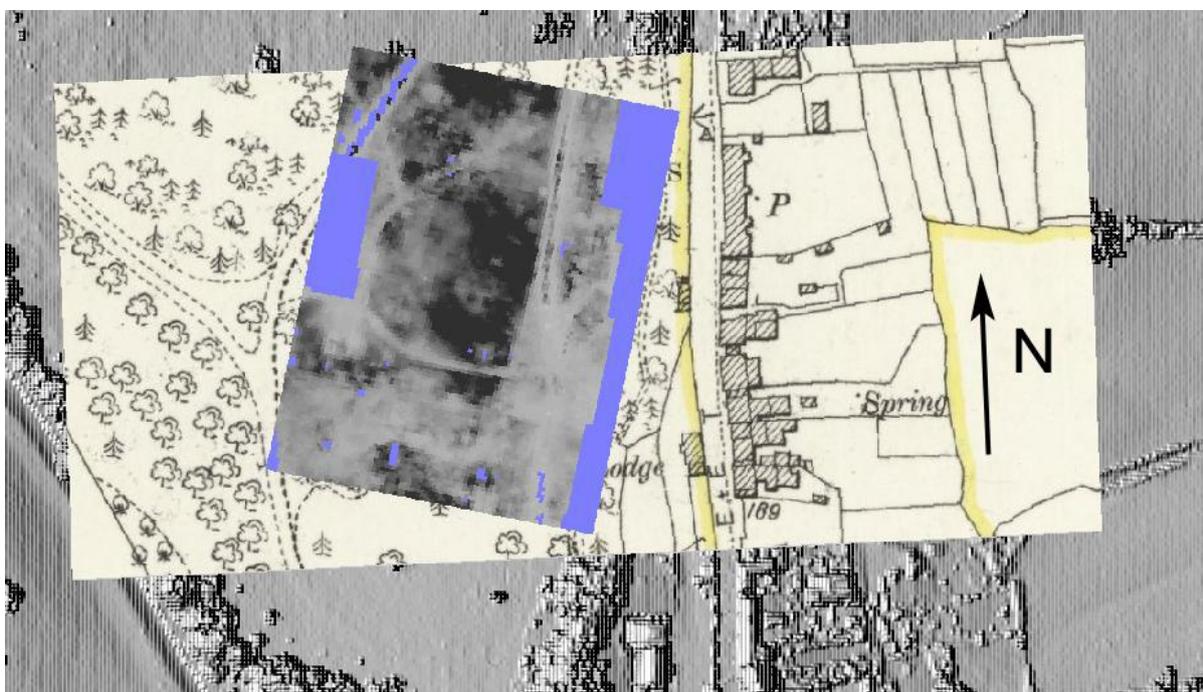


Figure 6 shows how the magnetometry results differ from the 1897 map. In particular, at the southern end of the plot the gravel path shows a clear kink, at which point the current path deviates from the 1897 path, which ran further to the east as it ran to the south.

Figure 7. Resistivity results over the 1897 map, over the Environmental Agency LiDAR



Similarly in figure 7, the resistivity results show a deviation between the plot and the 1897 map. However, in this case the response south of the Doric temple runs right up to the gravel path. In addition, there is a curving path to the north of the Doric temple, with a number of straight paths intersecting with it. The grass path running round the north side of the Doric temple continues the other side of the tarmac road that runs to the west of the Doric temple.

7. Discussion of results

There appear to be two curving paths in front of the Doric temple. The southern one appears in the 1897 map, the magnetometry and the resistivity. It appears to be located consistently in all three images.

The northern curved path appears only in the resistivity and in the LiDAR images.

The location of the Doric temple in relationship to these paths would seem to suggest that they were part of the same scheme, and that the date of the Doric temple's move to this location in 1876 is an indication of the date of the project. If so, within 20 years, the northern path had fallen out of use, and was not recorded on the Ordnance Survey map.

The southern path continued in use and was surfaced with a material that had a significant magnetic signature. Eventually that path too fell out of regular use, and was replaced with a less formal grass path a little further south.

One might speculate that the two curving paths with the Doric temple centrally placed at the top of the slope behind them formed an open air Greek-style theatre. The area between the paths might well have been flattened with a draining surface. This would explain the very high readings we noted in this area.

8. Next Steps

The survey has identified a number of potentially interesting features. However, remote geophysical surveying cannot fully identify or date features. What has been discovered merits further research in the Petworth archive. In addition some further investigation of the site itself might be profitable when it fits in with the activities of the other users of the park.

Trevor Davies

CDAS Survey Team Leader

November 2018

APPENDIX 1

CHICHESTER AND DISTRICT ARCHAEOLOGY SOCIETY RISK ASSESSMENT FORM

SITE NAME: Petworth		SITE CODE: Petworth		ASSESSMENT BY: Trevor Davies		PAGE 1 OF 2	
ACTIVITY: Surveying (Week commencing 8th October 2018)				No. of people present: (Min 8 / Max 10 at any one time)			
HAZARD IDENTIFICATION							
HAZARDS IDENTIFIED	People at risk (tick)		Likelihood of injury (tick)			NOTES	ASSESSED BY
	Volunteers*	Public	Probable	Possible	Remote		
1. Beware ticks	✓			✓		From deer – can cause Lymes disease	
2. Avoid leptospirosis	✓			✓		An infectious disease that affects humans & animals	
3. Exposure to sun, wind and rain	✓			✓		No shelter available on site	
4. Rough and wet ground	✓			✓		Potholes dug by animals and nighthawks	
5. Insect bites	✓			✓			

* Includes CDAS members and non-members.

ACTION PLAN			
Hazard No.	MEASURES REQUIRED TO REDUCE RISK TO ACCEPTABLE LEVEL	NOTES	All measures in place. Signed/dated by Site Supervisor
1	Check for skin for ticks		
2.	Wash hands before eating		
3.	Volunteers advised to bring and use suntan cream and drink plenty of fluid. Use of hats and windproof jackets advised		
4.	Boots or wellingtons to be worn where possible	Not possible when using magnetometer	
5.	First Aid kit available		

CHICHESTER AND DISTRICT ARCHAEOLOGY SOCIETY RISK ASSESSMENT FORM

SITE NAME: Petworth	SITE CODE: Petworth	ASSESSMENT BY: Trevor Davies DATE: 25/09/2018	PAGE 2 OF 2				
ACTIVITY: Surveying (Week commencing 8th October 2017)		No. of people present: (Min 8 / Max 10 at any one time)					
HAZARD IDENTIFICATION							
HAZARDS IDENTIFIED	People at risk (tick)		Likelihood of injury (tick)			NOTES	ASSESSED BY
	Volunteers*	Public	Probable	Possible	Remote		
1. Spikes on resistivity machines	✓			✓		Care in use	
2 Sharp flints in the ground	✓			✓			
3. Manual handling	✓			✓			
4. Beware Brown tailed moths	✓			✓		Can cause rash/asthma/eye irritation	
5. Falling chestnuts	✓			✓			

ACTION PLAN			
Hazard No.	MEASURES REQUIRED TO REDUCE RISK TO ACCEPTABLE LEVEL	NOTES	All measures in place. Signed/dated by Site Supervisor
1.	Volunteers advised. First Aid kit, available		
2.	Volunteers advised. First Aid kit available		
3.	Volunteers reminded of correct lifting procedure. Warning against becoming tired.	Ensure those carrying the equipment are rotated regularly.	
4.	Don't touch the moths		
5.	Wear a hat		

* Includes CDAS members and non-members.