

Geophysical Survey Report

# WOOLTON ROAD ALLERTON

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For Redrow Homes limited

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L~P:ARCHÆOLOGY

Geophysical Survey Report

# WOOLTON ROAD ALLERTON

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Client: Redrow Homes Limited

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Local Authority: Liverpool City Council

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NGR: 341335,385990

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Planning App ref: Pre determination

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Author(s): Poole, B.

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Date: October 16

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## L~P:ARCHÆOLOGY

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# Abstract

A site at Woolton Road, Allerton, has been proposed for development. In advance of work commencing a Geophysical Survey was carried out to determine the potential for buried archaeological features and inform further investigation of the site.

Historic research indicates that Allerton shows evidence of activity since at least the Neolithic period. However, it is with the Early Medieval period that a small agricultural settlement is thought to have been established. This settlement developed slowly and it was not until the 18<sup>th</sup> century that it began to grow beyond its agricultural character. With the growth of industry and maritime activity in the surrounding area, and the growing urbanisation of Liverpool, wealthy merchants moved out to create suburbs.

The site was first associated with the wider landscape of Allerton Hall and was enclosed as part of the grounds of the first Allerton Priory, which was replaced by the current Priory in 1867-70. The site area remained as gardens for the Priory until it was separated off, following an enabling development around c2000.

The only development within the site area was the construction of a small complex of buildings between 1829 and 1839. These were demolished between 1967 and 1974.

The survey recorded a number of anomalies, some of which are thought to represent archaeological features. These include a circular anomaly which may indicate early occupation, a semi-rectangular grouping of ferrous spikes, which may represent a structure, and a collection of linears, thought to represent ploughing activity.

It is suggested that limited targeted trenching be carried out on the site in order to characterise the potential features and determine their condition and depth.

# 1. Introduction

- 1.1. This report considers land to the north of Woolton Road, Allerton, hereafter referred to as 'the site'. The geophysical survey was commissioned by L – P : Archaeology on behalf of Redrow Homes Limited.
- 1.2. The site is located to the north of Woolton Road, and east of Allerton Road, in Allerton, Liverpool, L18 9UZ, at the southern extent of Allerton at national grid reference (SJ) 341300,386000.
- 1.3. The local planning authority is Liverpool City Council who take archaeological planning advice from the Merseyside Environmental Advisory Service (MEAS).
- 1.4. This report has been carried out in order to identify potential archaeological features on the site to aid in determining the scope of further mitigation and investigation works.
- 1.5. The survey covers a total of 58% of the area to be impacted by development. The survey area has been determined based on the areas of impact from the proposed development. Due to a combination of site conditions, encompassing overgrown vegetation to the north of the site, and the limited potential for archaeological remains in this area, the survey grid was focussed on the southern area of the site.
- 1.6. Previous desk based research had indicated the presence of a farm house in the southern part of the site. As the design proposals do not impact the area of the farm, this was not included in the survey area.

## 2. Geophysical Survey Report



# Report for Archaeological Geophysical Survey

Woolton Road, Allerton, Liverpool

Site Code: All-Liv/MAG16

For: L-P: Archaeology

Christopher Matthews

September 2016

Produced by Archaeological Survey West

## Summary

**Site Name:** Woolton Road, Allerton, Liverpool

**Site Code:** Al-Liv/MAG16

**Grid Reference:** SJ413858

**Dates of Survey:** 12/09/2016 – 16/09/2016

**Survey conducted by:** Christopher Matthews, Phillipa Haworth

**Area Surveyed:** 3.6 hectares (including internal obstacles)

### Summary of results:

The results of the magnetic survey revealed the remnants of structured ploughing within these fields, divided by what appears to be either a service or a metal fence. There were some discernible features within these linear plough marks that may bare some archaeological significance including a small positive circular feature and a larger positive circular feature. The survey of this site was significantly hampered by the overgrown conditions of the fields.

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## **1. Introduction**

This report presents the results of an archaeological geophysics survey of 3.6 hectares of land located adjacent to Allerton Road and Allerton Priory (NGR SJ413858) [fig. 1].

The survey was requested by L-P: Archaeology. As a result Archaeological Survey West were commissioned to carry out the fieldwork and produce this report. Its purpose is to determine the archaeological potential of land within an area covered by an application for the construction of new housing.

This was carried out in accordance with the Local Government's National Planning Policy Framework (NPPF 2012) and the county authority's policies on archaeology.

## **2. Location, topography and geology**

The site lies just to the west of the centre of Allerton, a suburb of the city of Liverpool. It is centred on NGR SJ413858 at approximately 52m above ordnance datum. The survey area itself covers only part of the proposed development area, which is located within a disused former playing field. Its geology is chester pebble beds formation with superficial deposits of till, devensian - diamicton (BSG 2016). The site is fully enclosed by well established forestry. To the North is situated Allerton Priory and on the southern section of the site is situated the abandoned remains of the former pavilion associated with the playing grounds. The site itself is largely overgrown meadow with areas of dense brambles and various other flora measuring up to 2m high. Conditions during the survey period were warm with temperatures varying between 19-25° as well as a period of heavy rain and lightning on the 13<sup>th</sup> of September.

### **3. Site history and archaeological background**

A number of prehistoric sites are noted nearby with sites to the North at Calderstones park including the Calderstones, a group of six megaliths which form the remains of a neolithic burial chamber. To the south-east is situated an late Bronze Age to early Iron Age Circular Enclosure, Camp Hill (Historic Liverpool 2008-2016). The field is located immediately to the south of the grade II listed 19<sup>th</sup> century Allerton Priory (List entry Number: 1068415).

For a full assessment on the historic and archaeological background of the site, refer to the Allerton Desk Based Assessment (Matthews, 2016).

### **4. Methodology**

#### **4.1 Survey**

The purpose of geophysical survey is to identify the archaeological potential of an area of land in a non- intrusive, quick and relatively inexpensive way. To achieve all three and still produce the highest standard of data possible that also identifies the widest range of past human activity the survey method of magnetometry was chosen. Magnetometry measures and maps the background magnetic field and any local anomalies. These anomalies can be caused by the presence of features such as ditches and pits which are shown by their infilling soils containing greater organic matter and therefore increased bacteria activity as a positive magnetic response. Buried walls and built-up features, such as banks, appear as negative magnetic anomalies. These can be distinguished from the responses caused by ferrous materials and area of intense burning (thermoremnance). The strength of the magnetic field is measured in nano Tesla (nT), equivalent to  $10^{-9}$  Tesla, The SI unit of magnetic flux density.

All fieldwork carried out and the resulting reports follow the recommendations set out in both the Historic England (2008) and Chartered Institute for Archaeologists (2014) guidelines for geophysical survey in archaeology.

The equipment used for the survey was a dual sensor Bartington Instruments Grad 601-2 fluxgate gradiometer. This instrument consists of two sets of sensors, each mounted with a vertical separation of 1m, one set at each end of a 1m long horizontal bar. This provides two sets of parallel readings and, under normal operating conditions, is capable of surveying to a depth of between 0.5m to 1m. For laying out the survey grids a Trimble R4 GPS run with VRS correction at an accuracy of 0.014m was used.

The survey area was plotted with a temporary grid of 30mx30m mapped out with a R8 Trimble GPS using coordinates set out in QGIS. Each 30mx30m grid was then walked using a zig-zag traverse with a sample interval of 0.125m (8 points per meter) and traverse interval of 1m, providing 7200 sample measurements per 30m grid unit.

## 4.2 Processing

Data collected in the field was then download and processed using TerraSurveyor software version 3.0.25.0 [fig.3]. This allows the survey data to be collated and manipulated to enhance the visibility of anomalies. Full survey and processing metadata can be seen in appendix 1. The processing steps taken are as follows:

### **TerraSurveyor processing steps**

De-stripe: median, all Sensors

De-stagger: all grids, both by: -1 intervals

De-Spike: Threshold 1, Window size 3x3

Interpolate: Y Doubled

Clip: from -1.80 to 2.20 nT

A range of clip values were used during the interrogation of the data and it was found that those detailed above provided the greatest clarity while retaining the most readings.

## 5. Results

The survey data shows a number of anomalies, some of which present archaeological potential. The most prominent of these include firstly a discreet positive circular anomaly [fig.4, 1] of 7m in diameter, which may resemble early occupation although this may also form a geological feature. The second is a semi-rectangular grouping of ferrous spikes [fig.4, 2], which may represent a structure although this may also be the result of random metallic deposits. The third is an area of positive negative noise within the smaller survey area which appears to form a large circular feature [fig 4, 5], however, this may be an illusion created by the combination of overlying linears which intersect over this area.

The most noticeable features are in the form of several linears. A strong positive negative anomaly divides the site and likely represents either a service or the remnants of a metal fence [fig 4, 4]. The later is indicated by the ferrous spikes appearing to be broken up rather than forming a continuous positive negative linear (as expected from most ferrous service lines).

A wide positive negative linear appears in the southern area of the survey [fig 4, 6]. The anomaly does not appear to resemble a primary ferrous composition, however, it may indicate the presence of fired material such as brick. The location and direction of this feature suggests that it may be connected to the former pavilion.

The large and small fields appear to be divided by a substantial service as indicated by the strong negative response in the south western portion of the smaller survey area [fig 4, 7].

The site is widely covered by weak positive linears running north south and east west. The north south linears (which run parallel to the possible fence [feature]) appear to be from regular ploughing over a large open area. The wider and less organized east-west positive linears may represent earlier ploughing or low fired ceramic field drains.

## **Conclusions**

The overgrowth of these fields has resulted in a far smaller area being achieved during this survey. The conditions have also resulted in some noise and staggering in the data which although this has been processed, this may have had a detrimental effect on the results.

The site appears to have been subjected to wide spread and intense ploughing with the likelihood of earlier features having been disturbed or destroyed by this activity. Despite this, some possible features are apparent in the data, though their significance as archaeological features is uncertain. The large circular feature in the north eastern small field [fig4. 5] is situated at the highest topographic point and with the presence of a circular Iron Age enclosure at Camp hill (0.8km to the south east), this could present a possibly significant feature.

The site contained a scatter of magnetic material, this may in part be a result of agricultural rubbish (with many ferrous spikes following the plough lines). The sites past use as a playing field has also likely contributed to the high metallic scattering.

## 6. References

- BGS, 2016, British Geological Survey, 1:50,000, Sheet 181, Solid and Drift Edition, Keyworth
- English Heritage, 2008, Geophysical Survey in Archaeological Field Evaluation, English Heritage, Portsmouth (2nd edition)
- Historic Liverpool. 2008-2016. <http://historic-liverpool.co.uk> [accessed 09/2016].
- IFA, 2014, Standard and Guidance: for archaeological geophysical survey, Reading
- Matthews, R. 2016. Woolton Road, Allerton: Desk Based Assessment, LP2043C-DBA-v1.5. Chester: L-P: Archaeology
- NPPF, 2012, National Planning Policy Framework, Department of Communities and Local Government, London

## Appendix 1: Survey and processing metadata

### PROGRAM

Name: TerraSurveyor  
Version: 3.0.25.0

Instrument Type: Bartington (Gradiometer)  
Units: nT  
Direction of 1st Traverse: N/A  
Collection Method: ZigZag  
Sensors: 2 @ 1.00 m spacing.  
Dummy Value: 2047.5

### Raw Data

Dimensions  
Composite Size (readings): 1440 x 1200  
Survey Size (meters): 360 m x 300 m  
Grid Size: 20 m x 20 m  
X Interval: 0.25 m  
Y Interval: 0.25 m (surveyed @ 1 m)

Stats  
Max: 96.65  
Min: -100.00  
Std Dev: 5.36  
Mean: -0.02  
Median: 0.01  
Composite Area: 10.8 ha  
Surveyed Area: 3.2951 ha

### Processed Data

Processes: 6  
1 Base Layer  
2 DeStripe Median Sensors: Grids: All  
3 Despike Threshold: 1 Window size: 3x3  
4 Interpolate: Match X & Y Doubled.  
5 Clip from -4.80 to 3.00 nT  
6 Compression: Log Scale: 1 Contrast 1 Offset 1

Stats  
Max: 1.39  
Min: -1.76  
Std Dev: 0.65  
Mean: 0.00  
Median: 0.01  
Composite Area: 10.8 ha  
Surveyed Area: 3.2951 ha

### Source Grids: 98

1 Col:1 Row:8 ASSEMBLED\60.xgd  
2 Col:1 Row:9 ASSEMBLED\57.xgd  
3 Col:1 Row:10 ASSEMBLED\58.xgd  
4 Col:1 Row:11 ASSEMBLED\59.xgd  
5 Col:2 Row:9 ASSEMBLED\54.xgd  
6 Col:2 Row:10 ASSEMBLED\55.xgd  
7 Col:2 Row:11 ASSEMBLED\56.xgd  
8 Col:3 Row:9 ASSEMBLED\53.xgd  
9 Col:3 Row:10 ASSEMBLED\51.xgd  
10 Col:3 Row:11 ASSEMBLED\52.xgd  
11 Col:4 Row:10 ASSEMBLED\48.xgd  
12 Col:4 Row:11 ASSEMBLED\49.xgd  
13 Col:4 Row:12 ASSEMBLED\50.xgd  
14 Col:5 Row:10 ASSEMBLED\43.xgd  
15 Col:5 Row:11 ASSEMBLED\44.xgd  
16 Col:5 Row:12 ASSEMBLED\45.xgd  
17 Col:5 Row:13 ASSEMBLED\46.xgd  
18 Col:5 Row:14 ASSEMBLED\47.xgd

48 Col:10 Row:6 ASSEMBLED\71.xgd  
49 Col:10 Row:10 ASSEMBLED\23-a.xgd  
50 Col:10 Row:11 ASSEMBLED\22-a.xgd  
51 Col:10 Row:12 ASSEMBLED\21-a.xgd  
52 Col:10 Row:13 ASSEMBLED\20-a.xgd  
53 Col:10 Row:14 ASSEMBLED\19-a.xgd  
54 Col:11 Row:1 ASSEMBLED\72.xgd  
55 Col:11 Row:2 ASSEMBLED\73.xgd  
56 Col:11 Row:3 ASSEMBLED\74.xgd  
57 Col:11 Row:4 ASSEMBLED\75.xgd  
58 Col:11 Row:5 ASSEMBLED\76.xgd  
59 Col:11 Row:10 ASSEMBLED\18-a-a.xgd  
60 Col:11 Row:11 ASSEMBLED\17-a-a.xgd  
61 Col:11 Row:12 ASSEMBLED\16-a-a.xgd  
62 Col:11 Row:13 ASSEMBLED\15-a-a.xgd  
63 Col:11 Row:14 ASSEMBLED\14-a-a.xgd

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19	Col:6	Row:10	ASSEMBLED\38.xgd	64	Col:12	Row:0	ASSEMBLED\77.xgd
20	Col:6	Row:11	ASSEMBLED\39.xgd	65	Col:12	Row:1	ASSEMBLED\78.xgd
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22	Col:6	Row:13	ASSEMBLED\41.xgd	67	Col:12	Row:3	ASSEMBLED\80.xgd
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27	Col:7	Row:14	ASSEMBLED\34-a.xgd	72	Col:12	Row:13	ASSEMBLED\10-a-a.xgd
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				96	Col:16	Row:1	ASSEMBLED\96.xgd
				97	Col:16	Row:2	ASSEMBLED\97.xgd
				98	Col:16	Row:3	ASSEMBLED\98.xgd



## **FIGURES**

F1: Location of survey area

F2: Magnetometry plot

F3: Feature interpretation plot

F4: Feature listing



Figure 1

**Site:**  
Allerton, Liverpool

Location of survey

Produced By: C Matthews

### Legend

-  Site Area
-  survey-area



## Figure 2


**Site:**  
Allerton, Liverpool


Magnetometry Survey Plot  
data  
Scale 1:1500

Produced By: C Matthews

 Site Area

Plot Range

 1.3 nT

 -1.8 nT









## Figure 3

**Site:**  
Allerton, Liverpool

Magnetometry Survey  
feature mapping

Scale 1:1500

Produced By: C Matthews

-  Site Area
- Features**
-  Positive Feature
  -  Weak Positive Linear
  -  Weak Positive Linear
  -  Strong Possative Negative
  -  Weak Positive Negative

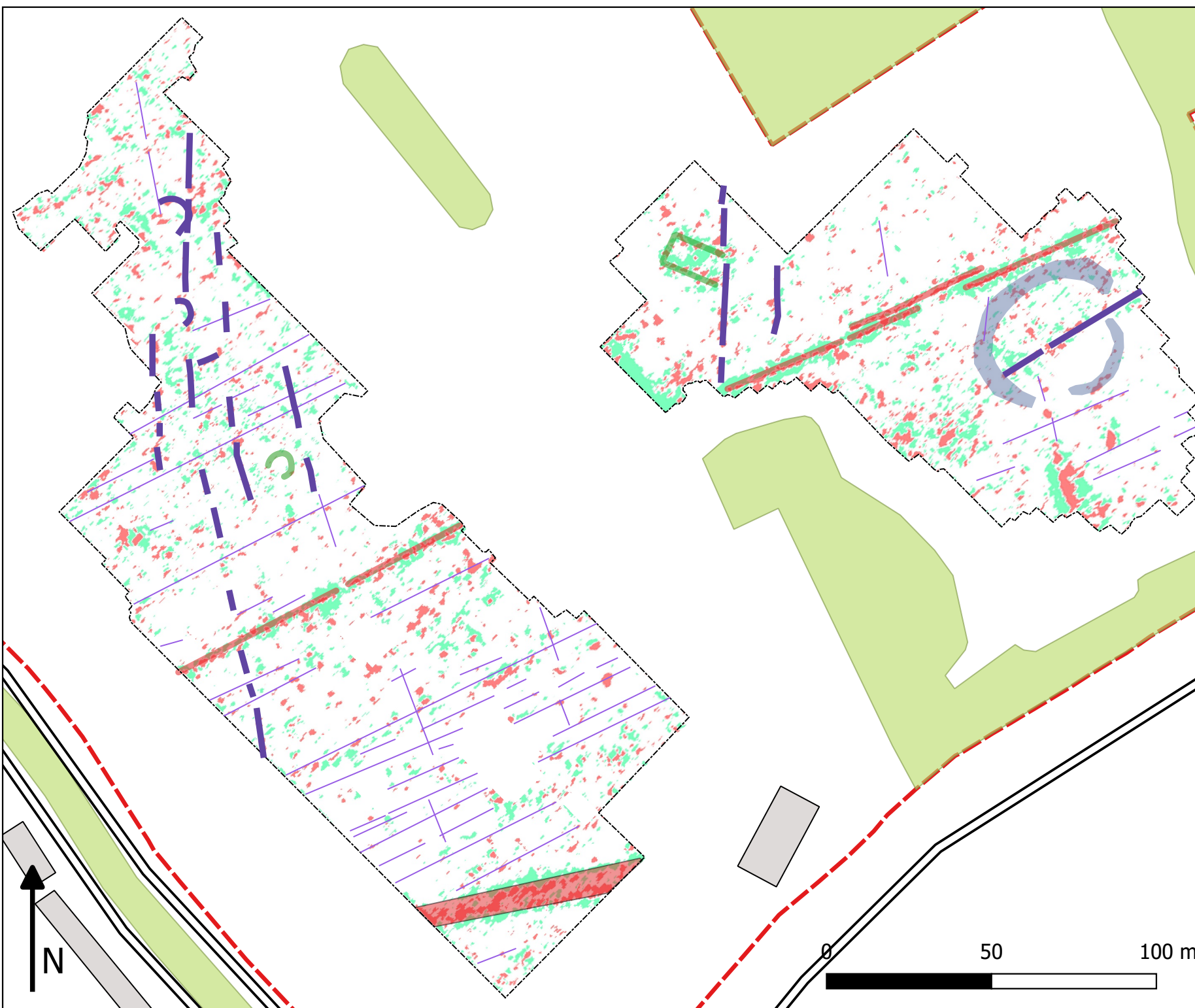





Figure 4

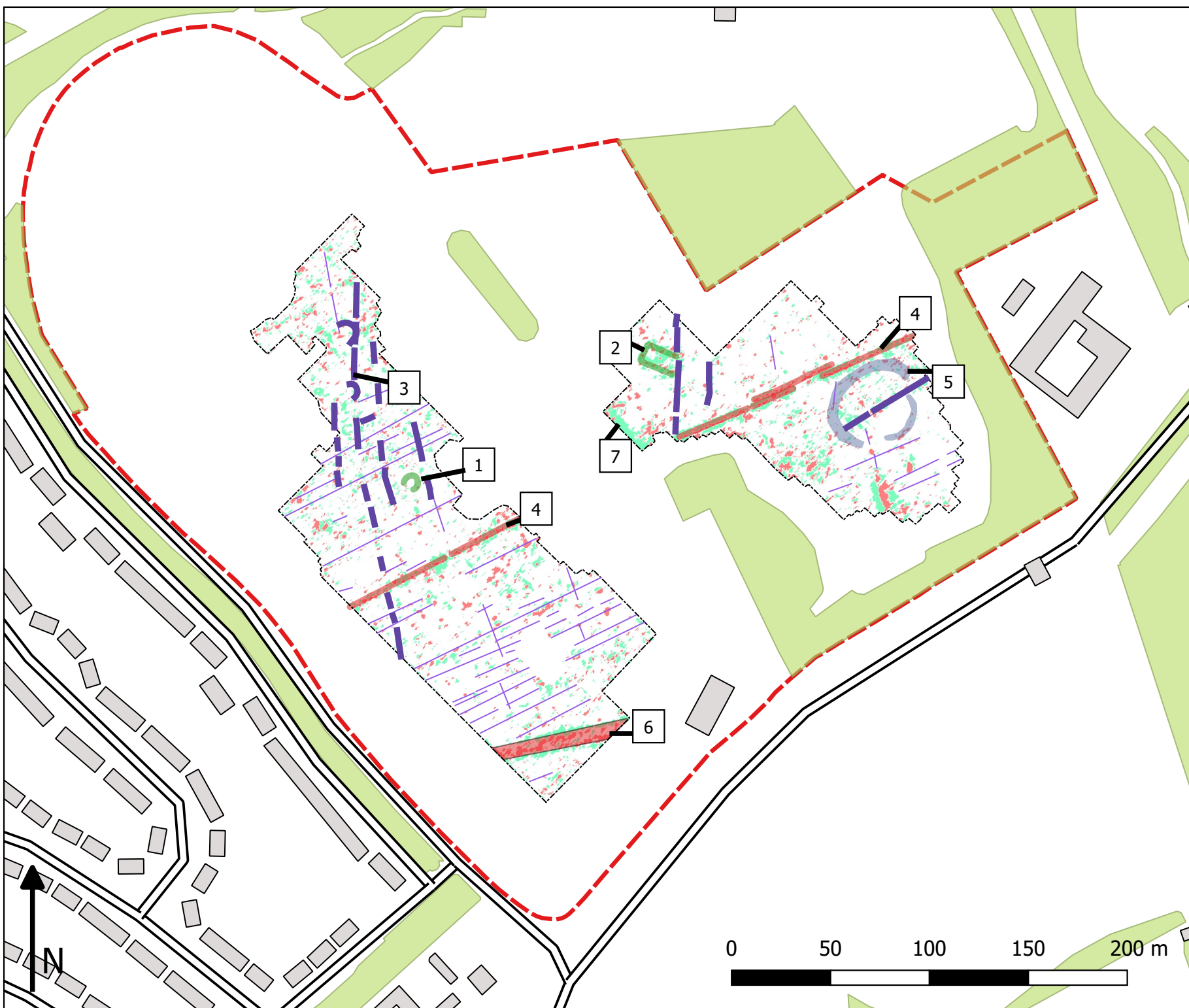
**Site:**  
Allerton, Liverpool

Magnetometry Survey  
feature mapping

Scale 1:2500

Produced By: C Matthews

-  Site Area
- Features**
-  Positive Feature
  -  Weak Positive Linear
  -  Weak Positive Linear
  -  Strong Positive Negative
  -  Weak Positive Negative



### 3. Summary and Conclusions

3.1. It is clear that the site has revealed a number of potential features as anomalies, some of which may require further investigation. The anomalies can be divided into three categories for the purposes of determining further work: modern or natural features; agricultural activity; potential settlement activity.

#### **MODERN OR NATURAL FEATURES**

3.2. Crossing the site in a northeast-southwest alignment is a strong anomaly (No4), which may represent the remnants of a metal fence line. However, it is more likely that this actually represents a modern buried cable.

3.3. A wide linear (No6) appears in the southern portion of the survey area, thought to be of fired material such as brick. It is likely that this represents a buried service, such as a culvert or drain dating to the Post Medieval or Modern period.

3.4. Running north-south in the centre of the study area is a linear (No7) which is thought to be a modern buried service.

#### **AGRICULTURAL ACTIVITY**

3.5. The site is widely covered by weak positive linears running north-south and east-west. These are thought to represent ploughing activity, which includes anomaly no 3.

#### **POTENTIAL SETTLEMENT ACTIVITY**

3.6. A small circular anomaly (No1) may represent evidence of early settlement, however it is more likely that this is a geological feature. This anomaly lies outside of the areas of impact.

3.7. A grouping of ferrous spikes (No2) has been suggested as possibly representing a structure. However, the nature of the spikes is more suggestive of a random spread of metallic points, probably waste from modern activity. This anomaly lies outside the areas of impact.

3.8. A large circular feature (No5) can be seen in the east of the study area. This has been suggested as representing an enclosure, however on closer examination it appears that these are overlying linears which intersect in this area and could relate to later

agricultural activity.

## RECOMMENDATIONS

- 3.9. A number of potential features have been identified by the geophysical survey. The data does not lend itself to clear interpretations. However, it is unlikely that the majority of the anomalies identified represent *in situ* archaeological features. As such it is recommended that only some of these are investigated by target trenches.
- 3.10. It is suggested that anomalies 4, 6 and 7 are not investigated as they appear to be modern intrusions, likely Post Medieval to Modern services. It is also suggested that the agricultural linears, including anomaly 3, are not targeted as these are thought to represent Post Medieval ploughing activity. Anomalies 1 and 2 lie outside the areas of impact and as such will not be disturbed by groundworks and have been excluded from further investigation.
- 3.11. Target trenches are suggested on anomaly 5. This is based on the potential that this may relate to earlier settlement activity. It should be noted that although the geophysics surveyor has indicated a potential early origin for the features, the data is not wholly convincing and this could represent geological or modern activity.
- 3.12. An area of interest for the site relates to the presence of a farm on the first edition Ordnance Survey map. The location of the farm is outside any area of development and as such will not be impacted by the proposals.
- 3.13. The northern extent of the site is unsuitable for geophysics survey and historic research does not show this area as having been developed in the past. As such it is not thought that this area requires any further pre-determination investigation.
- 3.14. It is suggested that any further works may be undertaken as conditions of planning approval.



# WOOLTON PRIORY, LIVERPOOL PLAN



0 100 m



PROJECT // 2292C - Woolton Road, Liverpool

DESCRIPTION // Geophysics Overlay

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