

# **Toy Farm, East Lydford Geophysics Report**

Client: BOON BROWN ARCHITECTS

AB Heritage Project No:10182

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## Toy Farm, East Lydford Geophysics Report

**Client** BOON BROWN ARCHITECTS  
**Project Number** 10182  
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## EXECUTIVE SUMMARY

This report details the results of an archaeo-geophysical magnetometry survey, undertaken by AB Heritage Limited at the site of Toy Farm, East Lydford, Somerset, on Friday the 2<sup>nd</sup> of August 2013.

The proposed development consists of residential housing and associated infrastructure. The survey was undertaken as part of a programme of non intrusive archaeological works, requested by Boon Brown Architects, to define the potential archaeological resource of the site.

A total area of 0.5 hectares was surveyed, to identify any geophysical anomalies of possible archaeological origin within the specified survey areas. The magnetometry survey identified no identifiable features of likely archaeological provenance, with the main feature recorded being that of a linear trench cut and modern day service run.

Based on the results of the geophysical survey and the surrounding archaeological resource it was concluded that there was a low potential for the survival of complex/significant below ground archaeology and that discussion should be held with the Somerset Planning Archaeologist to establish whether the site can be removed from the need for further archaeological works.

## **1. INTRODUCTION**

### **1.1 Project Background**

- 1.1.1 AB Heritage Limited (hereinafter AB Heritage) has been commissioned by Boon Brown Architects (hereinafter Boon Brown) to produce an Geophysical Survey covering the proposed redevelopment of Toy Farm, East Lydford.
- 1.1.2 This report details the results of such work, along with a description of the baseline conditions and an interpretation of the archaeological resource within the application site.

### **1.2 Site Location & Description**

- 1.2.1 The proposed development site is located to the south west of East Lydford, on the B3153, centred at approximately ST 57276 30862 (Figure 1). The site is situated within a rural area with dispersed settlements and modern developments.
- 1.2.2 The site of proposed development is demarcated by the B3153 to the south, Lydford Business Park to the west and Church Lane to the east. To the north of site the field continues and is bounded by a hedgerow.

### **1.3 Geology & Topography**

- 1.3.1 The proposed development site is relatively flat ground, at c.26m AOD.
- 1.3.2 The solid geology underlying the site is Mudstone and Limestone interbedded Langport Member, Blue Lias Formation and Charmouth Mudstone Formation (BGS, 2013). No superficial geology information was identified for the area. This form of geology is not likely to have any issues that would inhibit the geophysical survey.
- 1.3.3 No previous geotechnical works have been undertaken within the proposed development site.

## 2. AIMS & METHODOLOGY

### 2.1 Aims of Works

- 2.1.1 Geophysical survey is a programme of non intrusive archaeological work. The aims of the geophysical survey were to:
- Identify any geophysical anomalies of possible archaeological origin within the specified survey area;
  - Accurately locate these anomalies and present the findings in map form; and
  - Provide recommendations for any further archaeological work(s) necessary to contribute to the mitigation of the impacts of proposed development on these potential features.
- 2.1.2 The results of the geophysical survey are provided in this report, along with an interpretation of findings.

### 2.2 Methodology of Works Summary

#### Site Specific Information

- 2.2.1 A magnetometry survey was undertaken across the site of proposed development on Friday the 2<sup>nd</sup> of August. This was an area of 0.5 hectares to the east of Toy Farm in East Lydford, Somerset (Figure 1).
- 2.2.2 The AB Heritage staff members who undertook the works were Glenn Rose (Archaeologist) and Hannah Simpson (Assistant Archaeological Consultant). The weather conditions for work were good, with light rain in the morning and bright conditions in the afternoon, which would have had no material impact on the survey. The work was undertaken and concluded in the same day, with all data capture downloaded at AB Heritage's Taunton office at the earliest opportunity.

#### Equipment

- 2.2.3 The Magnetic survey equipment used was a Bartington Grad-601 (fluxgate magnetometer). Appendix A contains a detailed methodology for the works undertaken; however, Table 1, below, show site specific information on how the magnetometer was set up:

**Table 1: Setting Parameters of Magnetometer**

<b>Grid Size</b>	<b>30 x 30 metres</b>
Data Capture Distances	0.125
Sensors	2
Sensitivity	0.1nT

- 2.2.4 For GPS the Site was setup and referenced using Trimble R8 GPS and Base Station with a PDL 450 Radio antenna with sub centimetre accuracy.

## 2.3 Constraints & Variations

- 2.3.1 The southern end of the site was bounded by metal fences within overgrown hedges. In addition, the survey site itself was split by a ditch running through north site through the centre of the area. A mental fence enclosed the ditch with overgrown hedges surrounding it (Plate 1). This created a magnetic disturbance that resulted in masked feedback in this area.

**Plate 1: View from the North West facing South East towards the ditch**



- 2.3.2 In addition to the above, vehicles had been left in the western end of the site, which created some magnetic disturbance to the survey results (Plate 2).

**Plate 2: View facing South from the North West corner, looking over the vehicles.**



### **3. ARCHAEOLOGICAL RESOURCE BASELINE**

#### **3.1 Historic Baseline Data**

3.1.1 While there are no known archaeological features recorded on the Somerset Historic Environment Record (HER) or Heritage Gateway within the site of proposed development, the site itself does lie within an area of High Archaeological Potential, which is listed in the Mendip Local Plan. In addition, within the surrounding 1km the following sites are recorded:

- Perry's Court, a Scheduled Monument (English Heritage Scheduled Entry No: 1019031), c. 700m to the south east of the site, which was the site of a medieval settlement; and
- 15 Grade II Listed Buildings, the nearest of which is the Church of St. Mary (English Heritage List Entry No: 1058831; Somerset HER Ref No: 23777), c. 350m to the north of the site.

3.1.2 There are no World Heritage Sites, Conservation Areas, Registered Historic Parks or Registered Battlefields within 1km of the site.

#### **3.2 Previous Archaeological Works in the Study Area**

3.2.1 There are no previous archaeological works recorded within the limits of proposed development or its immediate vicinity on the Somerset (HER).

#### **3.3 Archaeology & History Background**

##### *The Prehistoric & Roman Periods*

3.3.1 There is little evidence dating to these periods within the vicinity of the site, with the nearest known record being that of a Neolithic perforated stone adze-hammer, found c. 500m to west of the proposed development site in Lydford-on-Fosse (Somerset HER Ref No: 23781).

3.3.2 Even with the Romans arrival to Britain in AD 43, and the creation of a formalised transport network and more concentrated settlement activity in the wider area, there is little activity in close proximity to the site. The closest known record to the site is the inferred route of the Fosse Way, which is presently marked by the path of the A37 (Somerset HER Ref No: 55101), c. 500m to the north west of the proposed development site.

##### *The Early Medieval & Later Medieval Periods*

3.3.3 The Scheduled medieval earthworks of Perry Court stand c. 700m to the south east of the proposed development site, within an embanked enclosure (English Heritage Scheduled Entry No: 1019031; Somerset HER Ref No: 53521). The site appears to be that of a manor house, though as yet no confirmed evidence is available to support this conclusion. What is known is that the enclosure area is represented by well-defined earthworks, which mark the locations of houses, including the site of a possible manor house, and associated fields, paddocks and other features. This suggests that the community was devoted primarily to agriculture, possibly acting as a focus for manorial administration.

- 3.3.4 Approximately c. 700m to the north west of the above mentioned Manor site, and c. 850m to the south east of the proposed development site, lies the site of Priory Farm, Wheathill. This is the site of a Shrunken Medieval Village and possible Priory (Somerset HER Ref No: 54195). Priory farm is thought to have been a priory of Glastonbury Abbey, though as yet there is no confirmed documentary evidence for this.
- 3.3.5 In closer proximity to the site is the Church of the Blessed Virgin Mary (English Heritage List Entry No: 1058831; Somerset HER Ref No: 23777), which is a Grade II Listed Building c. 350m to the north of the proposed development site. The history of this site relates to the preceding medieval Church of St. Peter (Somerset HER Ref No: 23769), which now lies abandoned and isolated at the northern end of the village on the banks of the River Brue, c. 850m to the north of the proposed development site. St. Peters flooded badly in the mid 19<sup>th</sup> century and the parishioners decided to rebuild the church on a new site in 1864. It is the present Church of the Blessed Virgin Mary, which was consecrated in 1866, that represents the focus of worship from this time.

*The Post Medieval & Modern Periods*

- 3.3.6 The pattern of post-medieval activity, as shown on maps dating from the 18<sup>th</sup> century onwards, suggests that suburban development was concentrated to the south and east of the proposed development site, leaving Toy Farm and the village of East Lydford largely unchanged and rural in character.
- 3.3.7 During the 18<sup>th</sup> century, expansion associated with the development of Turnpike roads occurred. In the surrounding area this included Langport to Castle Cary (Somerset HER Ref No: 24695), now known as the B3158; and Cary Fitzpaine Cottages to west of Podimore roundabout, Charlton Mackrell (Somerset HER Ref No: 24627), now known as the A37.
- 3.3.8 With the arrival of the railways to the area the rural character also changed somewhat in a visual perspective. Between 1905-6 a direct railway line was constructed from Taunton to London that avoided Bristol. This ran c. 140m to the south of the proposed development site (Somerset HER Ref No: 56989).

## 4. RESULTS

- 4.1.1 A range of illustrations have been produced to record the results of the magnetometer survey (Figure 2 – 5). The raw data (Figure 2) and the associated processed data (Figure 3) show that the geophysical survey identified no features likely to be of archaeological provenance.
- 4.1.2 Interpretation plots (Figure 4 & 5) defining the conclusion of what such anomalies are likely to be show that the main identifiable feature was a positive linear anomaly with an associated negative response. This feature runs in a south west to the north east direction through the site and was concluded to be associated with the line of modern services.
- 4.1.3 Other anomalies scattered throughout the site show dipolar anomalies associated with ferrous debris, most likely due to probable modern day impacts on the site.

## 5. INTERPRETATIONS & RECOMENDATIONS

### 5.1 Interpretation

- 5.1.1 Interpretation of the results of geophysical survey are based on professional judgement as to the likely/probable cause of an anomaly or reading. For example, strong dipolar discrete anomalies of small size are often associated with ferrous debris or similarly magnetic debris. In addition, where a positive linear anomaly is recorded, which has a negative anomaly associated alongside either side of it, is often likely to relate to the line of a modern service.

**Table 2: Interpretation of Geophysical Anomalies**

Appearance	Likely Cause	Archaeological
Service Pipe - Positive Linear anomaly with associated negative response	Line of a modern service run, e.g. length of wire/cable	No
Magnetic Spike – Strong dipolar Anomaly	Ferrous debris	No
Magnetic Disturbance - General Magnetic disturbance	Modern day ferrous structures, i.e. metal fences	No

### 5.2 Potential Future Archaeology Strategy

- 5.2.1 Based on the results of this geophysical survey it is concluded that archaeology is not a significant material risk on this site. Based on a full review of this report by the Somerset Planning Archaeologist it is proposed that discussion be undertaken to confirm that no further archaeological works be undertaken.

## 6. CONCLUSION

- 6.1.1 Due to the site location within an Area of High Archaeological Importance a geophysical survey was undertaken by AB Heritage at Toy Farm, East Lydford, Somerset, on Friday the 2<sup>nd</sup> August. The purpose of this was to understand the potential for any archaeological remains to survive undisturbed and, where possible, identify the form, function and extent of any potential remains.
- 6.1.2 Results of the magnetometer survey undertaken did not identify any features within the site boundaries that were concluded to be of archaeological provenance. The only strong feature recorded was that of a linear magnetic anomaly, which was concluded to be the line of a modern day service pipe, while scatters of magnetic disturbance/debris across the site are likely to reflect modern day impacts.
- 6.1.3 The results do not completely rule out the presence of below ground archaeology; however, given the results, it does suggest that the potential for recovery of significant examples of below ground remains is low.
- 6.1.4 Based on the results of this survey it is concluded that archaeology is not a significant material risk on this site and that no further archaeological works be undertaken, based on the confirmation of the Somerset Planning Archaeologist.

## 7. ARCHIVE

7.1.1 The Site Archive will contain the following, as a minimum:

**Table 3: Site Archive Data**

<b>Archive</b>	<b>Format</b>
Raw Geophysical Data files	XYZ and Text
Processed geophysical data files	JPEG
Archaeological Interpretation	Shape Files ARC GIS
Final Report	PDF
Final Images	PDF

7.1.2 A physical and digital archive will be stored in a suitable format at AB Heritage offices in Taunton, Somerset.

## 8. REFERENCES

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## **Appendices**

## Appendix 1 Technical Information on Geophysical Survey

### FLUXGATE MAGNETOMETRY SURVEY

The magnetic survey is carried out using a fluxgate gradiometer, which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field, whilst the lower sensor measures the same field but is also more affected by any localised buried field. The difference between the two sensors will relate to the strength of a magnetic field created by a buried feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity, disturbance from modern services etc.

#### Survey equipment

The Bartington Grad 601-2 dual magnetic gradiometer is capable of surveying to an accuracy of 0.1 nanotesla (nT).

#### Sample interval and depth of scan

The magnetometer data is collected in 30m x 30m grids at a resolution of 1m x 0.125m. This sample density is recommended for site evaluation (English Heritage, 2008). This equates to 3600 points per 30m x 30m grid. The magnetometer has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects are buried within the site.

#### Data capture and processing

The readings are logged continually by the data logger during the survey, which is then downloaded on site to a site laptop. At the end of each job, data is transferred to the office PC's for processing and presentation.

This 'regular xy' data is then downloaded into specialist data processing software, at user defined sample intervals (in this case 1 m by 0.125 m). This is processed as standard magnetometer data.

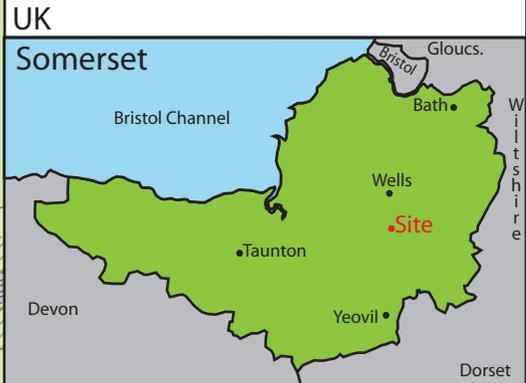
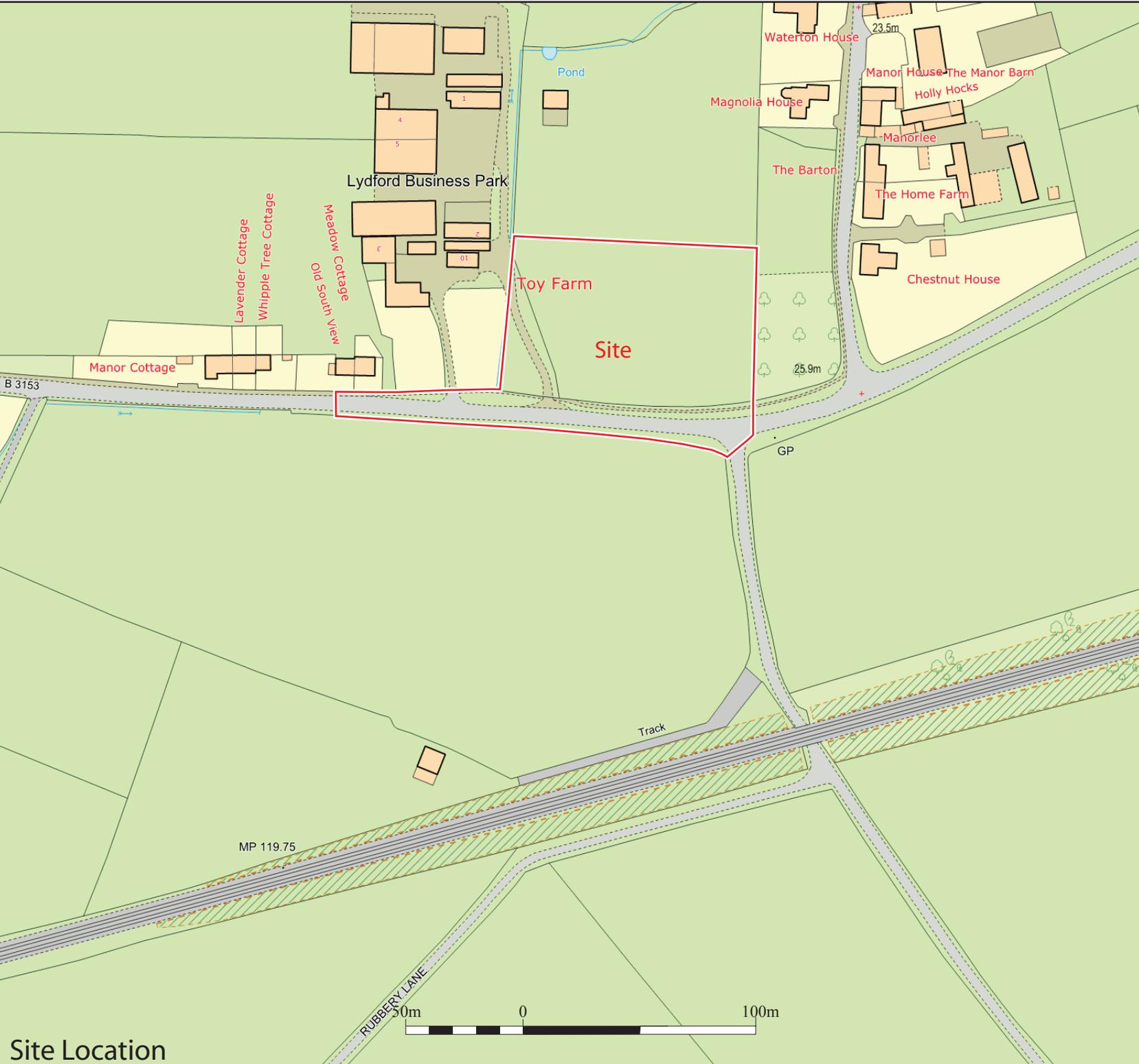
### GPS METHODOLOGY

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to sub-cm accuracy, a far greater accuracy than a standard GPS unit. An RTK system uses a base station receiver and a number of mobile units (rovers). The base station takes measurements from satellites in view and then broadcasts them along with its known position to the rover receivers. The rover receiver also collects measurements from the satellites in view and processes them with the base station data. The rover then computes its location relative to the base.

During such a survey a Trimble R8 Differential Global Positioning System (dGPS), capable of Real Time Kinematic (RTK) is used to set out a nominal grid prior to the survey. This increases the accuracy and efficiency of the survey. The data is then downloaded from the unit on the day, using a USB stick.



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**Figure 1: Site Location Plan**

**Project:** Toy Farm  
**Scale:** See Scale Bar **Date:** August 2013  
 Ordnance Survey Crown Copyright 2013.  
 All rights reserved. Licence Number: WL100050237

**Drawn By:** J.Moller **Approved By:** A.Buckley



Site Location



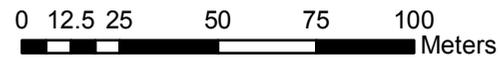


FIGURE 3: PROCESSED DATA

Project:	Toy Farm
Scale:	See Scale Bar
Date:	August 2013
Based on Ordnance Survey Map Data	
Drawn By:	Glenn Rose
Approved By:	A.Buckley

**Legend**

 Survey Outline

Magnetic Data/nT

-10

+10



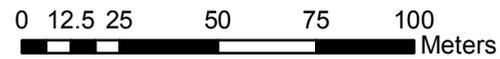


FIGURE 4: INTERPRETATION PLOT

<b>Project:</b> Toy Farm	
<b>Scale:</b> See Scale Bar	<b>Date:</b> August 2013
Based on Ordnance Survey Map Data	
<b>Drawn By:</b> Glenn Rose	<b>Approved By:</b> A.Buckley

**Legend**

-  Survey Outline
-  Service Pipe
-  Magnetic Disturbance
-  Overgrown
-  Magnetic Spike



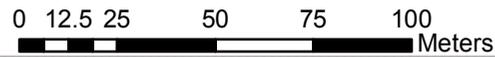


Figure 5 Interpretstion Plot 2

<b>Project:</b> Toy Farm	
<b>Scale:</b> See Scale Bar	<b>Date:</b> August 2013
Based on Ordnance Survey Map Data	
<b>Drawn By:</b> Glenn Rose	<b>Approved By:</b> A.Buckley

**Legend**

-  Service Pipe
-  Magnetic Spike

