

GEOPHYSICAL SURVEY

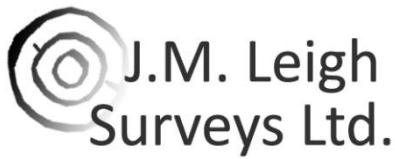
REPORT

Templemartin,
Garranes,
County Cork

Date:
04/02/2022

Licence: 22R0011

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GEOPHYSICAL SURVEY SUMMARY SHEET
TEMPLEMARTIN, GARRANES, COUNTY CORK

Site Name	Templemartin	Ref No.	21073
Townland	Garranes	Licence No.	22R0011
County	Cork	Licence Holder	Joanna Leigh
ITM (centre)	E547193, N562332	Purpose	Pre-planning
Client	Mizen Archaeology Ltd.	Reference No.	N/A

Ground Conditions Survey was conducted within a large open pasture field, to the south of the recorded church and graveyard (RMP CO096-008).

Survey Type Detailed gradiometer survey totalling c. 1.3 hectares.

Summary of Results

The results suggest a probable former field boundary ditch and associated ploughing. These may represent ridge and furrow cultivation and are possibly contemporary with the adjacent church and graveyard site (RMP CO096-008).

Isolated responses were also recorded to the north-east and within the south of the application area. Although it is possible that they represent more deeply buried ferrous debris, it is possible that isolated pit features are recorded here. An archaeological interpretation is tentative but must be considered.

Field Staff Joanna Leigh & Susan Curran

Report Date 04/02/2022

Report Author Joanna Leigh

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Geophysical Survey Report

Templemartin, Garranes, County Cork

1 Introduction

- 1.1 A geophysical survey has been conducted by J. M. Leigh Surveys Ltd. at a site in the townland of Garranes, Templemartin, County Cork. The survey was requested by Mizen Archaeology Ltd. on behalf of Cork County Council for a proposed graveyard extension and associated drainage pipe at Templemartin Graveyard.
- 1.2 The application area is contained within the north-western corner of a pasture field immediately south of Templemartin Graveyard. It is bounded by the L6244 along its western side and by agricultural fields on the south and east. Figure 1 presents the site location at a scale of 1:2,000.
- 1.3 There are no recorded monuments within the application area. However, the site lies within the Zone of Notification for Templemartin Graveyard (CO096-008002) with two associated Churches (CO096-008001 & CO096-008003), 'Cross' (CO096-008004) and 'Font' (CO096-008005).
- 1.4 The detailed survey was extended in the area surrounding the church and graveyard to identify any features related to the church and graveyard site, and to facilitate interpretation of the results. A 10m strip of detailed survey was positioned along the route of a proposed pipe which is to extend from the proposed graveyard towards a field drain to the south. The location of the detailed gradiometer survey is presented in Figure 1 at a scale of 1:2,000.
- 1.5 The main aim of the survey was to identify any responses indicative of archaeological features related to the adjacent church and graveyard site. The detailed gradiometer survey was conducted under licence 22R0011 issued by the Department of Housing, Local Government and Heritage.

2 Survey ground conditions and further information

- 2.1 The survey area was contained within a large pasture field. Ground conditions were good at the time of survey and no obstacles were encountered.

3 Survey Methodology

- 3.1 A detailed gradiometer survey detects subtle variations in the local magnetic field and measurements are recorded in nano-Tesla (nT). Some archaeological features such as ditches, large pits and fired features have an enhanced magnetic signal and can be detected through recorded survey.
- 3.2 Data was collected with a Bartington Grad 601-2 instrument. The gradiometer operates with a dual sensor capacity making survey fast and effective.
- 3.3 The instrument is calibrated in the field to ensure a constant high quality of data. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.01nT, affording diverse application throughout a variety of archaeological, soil morphological and geological conditions.
- 3.4 All data was collected in 'zigzag' traverses. Grid orientation was positioned to best facilitate site work and ground conditions. Data was collected with a sample interval of 0.25m and a traverse interval of 1m. The survey grid was set-out using a GPS VRS unit. Survey tie-in information is available upon request.
- 3.5 The survey methodology, data presentation and report content adhere to the European Archaeological Council (EAC) (2016) 'Guidelines for the use of Geophysics in Archaeology'.

4 Data display

- 4.1 A summary greyscale image and accompanying interpretation diagram are presented in Figures 2 and 3, at a scale of 1:1,250.
- 4.2 Numbers in parenthesis in the text refer to specific responses highlighted in the interpretation diagram (Figure 3).
- 4.3 Isolated ferrous responses highlighted in the interpretation diagram most likely represent modern ferrous litter and debris and are not of archaeological interest. These are not discussed in the text unless considered relevant.
- 4.4 The raw gradiometer data is presented in archive format in Appendix A1.01. The raw data is displayed as a greyscale image and xy-trace plot, both at a scale of 1:500. The archive plots are used to aid interpretation of the results and are used for reference only. The archive plots are available as PDF images upon request.
- 4.5 The display formats referred to above and the interpretation categories are discussed in the summary technical information section at the end of this report.

5 Survey Results and Conclusion

- 5.1 There is a broad natural background magnetic response ($\pm 3nT$) in the recorded data set. Although this can sometimes obscure subtle features which have a low background signature, the results have identified some responses of potential archaeological interest.
- 5.2 Isolated responses along an associated linear trend (1) are indicative of the remains of a possible linear ditched feature. Numerous parallel plough trends are evident to the south of this. The orientation of the possible ditched feature and the ploughing trends suggests they are associated. It is likely that (1) represents a former field division and is of agricultural origin. It is possible that the plough trends represent ridge and furrow cultivation, although this is speculative.
- 5.3 Two faint linear trends (2) appear to the north of (1) This has a different orientation to (1) and may represent another former field division. Archaeological interpretation is cautious as this is at the limits of instrument detection.
- 5.4 To the north of (2) there are isolated responses (3). Although they may represent more deeply buried ferrous debris, an archaeological interpretation must be considered. These have a magnetic signature indicative of archaeology and pit-type features may be represented here. It is noted that these are located outside the application area.
- 5.5 Further isolated responses (4), within the application area, have a similar magnetic signature to (3). It is possible that they represent isolated pit-type features.
- 5.6 A linear response (5) is orientated with the ploughing trends. This may represent a more deeply ploughed furrow or another field division. This is most likely agricultural in origin.
- 5.7 Faint curvilinear trends (5) and an isolated response are in the south-east of the data. It is possible that they represent plough damaged remains. However, interpretation is cautious as the trends are at the limits of instrument detection. These may equally result from the ploughing activity. No clear interpretation can be provided.
- 5.8 No responses of interest were recorded in the section of survey along the proposed pipe. Linear trends suggest a continuation of the ploughing activity identified to the north.

6 Conclusion

- 6.1 Although no clear responses were detected, the results suggest a probable former field boundary ditch and associated ploughing. These may represent ridge and furrow cultivation and are possibly contemporary with the adjacent church and graveyard site (RMP CO096-008).
- 6.2 Isolated responses were recorded to the north-east and within the south of the application area. Although it is possible that they represent more deeply buried ferrous debris, it is equally possible that isolated pit features are recorded here. An archaeological interpretation is tentative but must be considered.
- 6.3 Consultation with a licensed archaeologist and with the Department of Housing, Local Government and Heritage is recommended to establish if any additional archaeological works are required.

7 Technical Information Section

Instrumentation & Methodology

Detailed Gradiometer Survey

Detailed gradiometer survey can either be targeted across a specific area of interest or conducted as a blanket survey across an entire application area, often as a standalone methodology.

Sampling methodologies can vary but a typical survey is conducted with a sample interval of 0.25m and a traverse interval of 1m. This allows detection of potential archaeological responses. Data is often collected in grids measuring 40m x 40m, with the data displayed accordingly. A more detailed survey methodology may be applied where archaeological remains are thought likely. This can sometimes produce results with a more detailed resolution. A survey with a grid size of 20m x 20m and a traverse interval of 0.5m will provide a data set with high resolution.



Bartington GRAD 601-2

The Bartington Grad 601-2 instrument is a specifically designed gradiometer for use in archaeological prospection. The gradiometer operates with a dual sensor capacity making survey very fast and effective. The sensors have a separation of 1m allowing greater sensitivity.

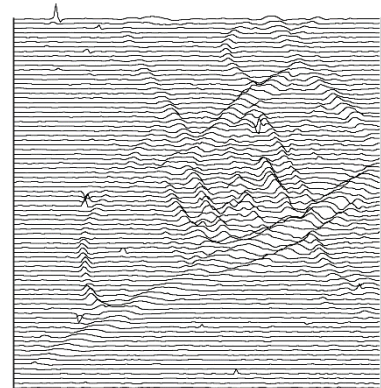


Frequent realignment of the instruments and zero drift correction ensure a constant high quality of data. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.1nT, affording diverse application throughout a variety of archaeological, soil morphological and geological conditions.

Gradiometer Data Display & Presentation

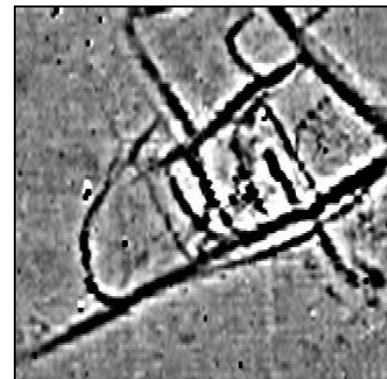
XY Trace

The data are presented as a series of linear traces, enabling a semi-profile display of the respective anomalies along the X and Y-axes. This display option is essential for distinguishing between modern ferrous materials (buried metal debris) and potential archaeological responses. The XY trace plot provides a linear display of the magnitude of the response within a given data set.



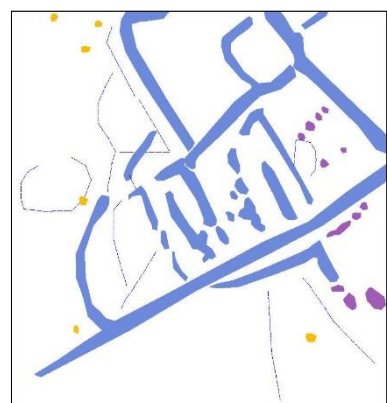
Greyscale*

As with dot density plots, the greyscale format assigns a cell to each datum according to its location on the grid. The display of each data point is conducted at very fine increments, allowing the full range of values to be displayed within the given data set. This display method also enables the identification of discrete responses that may be at the limits of instrument detection. In the summary diagrams processed, interpolated data is presented. Raw un-interpolated data is presented in the archive drawings along with the xy-trace plots.



Interpretation

An interpretation of the data is made using many of the plots presented in the final report, in addition to examination of the raw and processed data. The project managers' knowledge and experience allows a detailed interpretation of the survey results with respect to archaeological potential.



**XY Trace and raw greyscale plots are presented in archive form for display of the raw survey data. Summary greyscale images of the interpolated data are included for presentation purposes and to assist interpretation. The archive plots are provided as PDF images upon request.*

Glossary of Interpretation Terms

Categories of responses may vary for different data sets. The list below are the most commonly used categories for describing geophysical responses, as presented in the summary interpretation diagrams.

Archaeology

This category refers to responses which are interpreted as of clear archaeological potential and are supported by further archaeological evidence such as aerial photography or excavation. The term is generally associated with significant concentrations of former settlement, such as ditched enclosures, pits and associated features.

?Archaeology

This term corresponds to anomalies that display typical archaeological patterns where no record of comparative archaeological evidence is available. In some cases, it may prove difficult to distinguish between these and evidence of more recent activity also visible in the data.

Area of Increased Magnetic Response

These responses often lack any distinctive archaeological form, and it is therefore difficult to assign any specific interpretation. The resulting responses are site specific, possibly associated with concentrations of archaeological debris or more recent disturbance to underlying archaeological features.

Trend

This category refers to low-level magnetic responses barely visible above the magnetic background of the soil. Interpretation is tentative, as these anomalies are often at the limits of instrument detection.

Ploughing/Ridge & Furrow

Visible as a series of linear responses, these anomalies equate with recent or archaeological cultivation activity.

?Natural

A broad response resulting from localised natural variations in the magnetic background of the subsoil; presenting as broad amorphous responses most likely resulting from geological features.

Ferrous Response

These anomalies exhibit a typically strong magnetic response, often referred to as 'iron spikes,' and are the result of modern metal debris located within the topsoil.

Area of Magnetic Disturbance

This term refers to large-scale magnetic interference from existing services or structures. The extent of this interference may in some cases obscure anomalies of potential archaeological interest.

Bibliography

European Archaeological Council (EAC) (2016) '*Guidelines for the use of Geophysics in Archaeology*' by Armin Schmidt, Paul Linford, Neil Linford, Andrew David, Chris Gaffney, Apostolos Sarris and Jörg Fassbinder.

English Heritage (2008) '*Geophysical guidelines: Geophysical Survey in Archaeological Field Evaluation.*' Second Edition.

Gaffney, C. Gater, J. & Ovenden, S. (2006) '*The use of Geophysical Techniques in Archaeological Evaluations.*' IFA Paper No. 6.

Gaffney, C & Gater, J (2003). '*Revealing the buried past: Geophysics for Archaeologists.*' Tempus Publishing Limited.

National Soil Survey of Ireland (1980) *General soil map second edition (1:575,000)*. An Foras Taluntais.


List of Figures


Figure	Description	Scale
Figure 1	Site & survey location diagram	1:2,000
Figure 2	Summary greyscale image	1:1,250
Figure 3	Summary interpretation diagram	1:1,250

Archive Data Supplied as a PDF Upon Request

A1.01	Raw data greyscale image	1:625
A1.02	Raw data XY-Trace plot	1:625



 Proposed graveyard Extension and drain

 Detailed Gradiometer Survey

0 metres 80

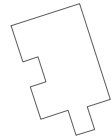
Client:
Mizen Archaeology

Project:
Geophysical Survey
Templemartin Graveyard
Extension, County Cork

Title:
Site & Survey Location

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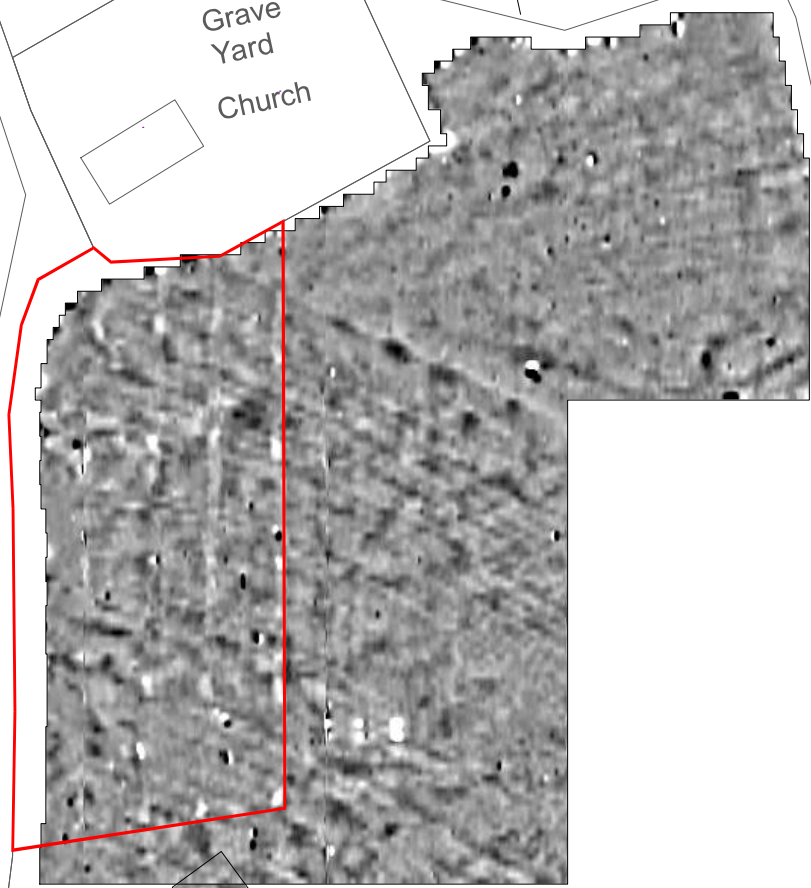
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Licence No.: 22R0011
Issue Date: 04.02.2022



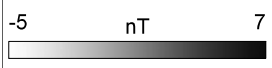
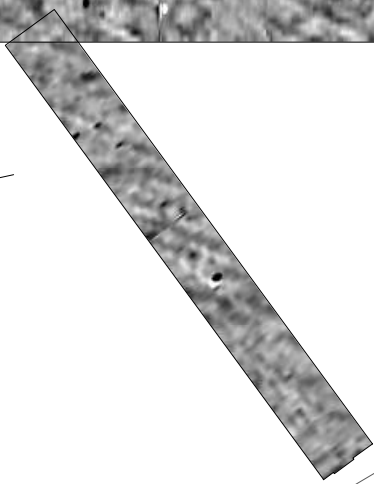
Grave
Yard
Church

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Y = 562330

X = 547260
Y = 562350



X = 547160
Y = 562190



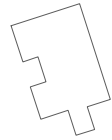
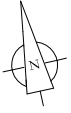
Client:
Mizen Archaeology

Project:
Geophysical Survey
Templemartin Graveyard
Extension, County Cork

Title:
Summary Grayscale Image



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Licence No.: 22R0011
Issue Date: 04.02.2022

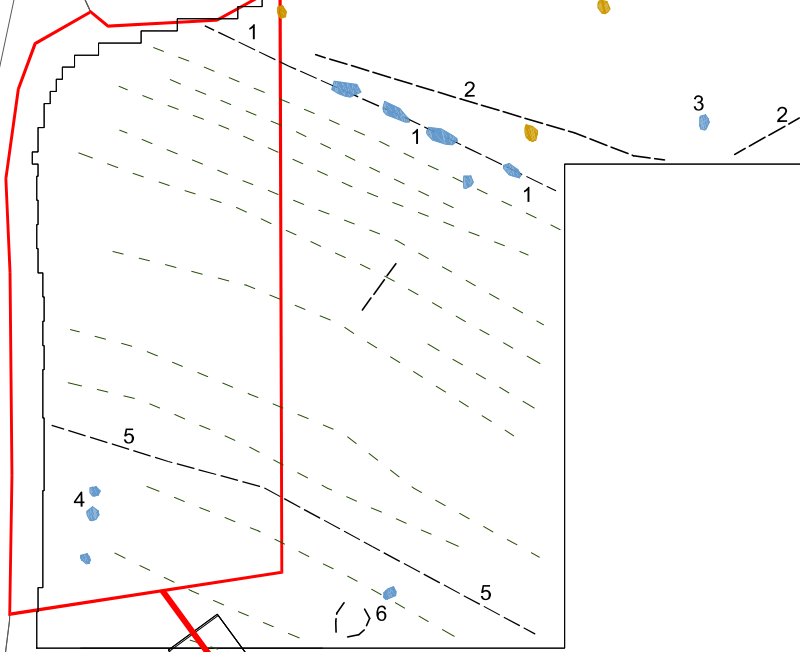


Grave
Yard
Church

X = 547150
Y = 562330

X = 547260
Y = 562350

X = 547160
Y = 562190



?Archaeology



Trend



Ploughing



Modern ferrous



Client:
Mizen Archaeology

Project:
Geophysical Survey
Templemartin Graveyard
Extension, County Cork

Title:
Summary Interpretation



Scale @ A4: 1:1,250
Figure: 3
Licence No.: 22R0011
Issue Date: 04.02.2022