

GEOPHYSICAL SURVEY

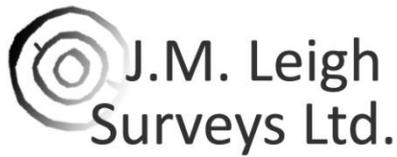
REPORT

Finisklin,
Sligo,
County Sligo

Date:
20/05/2021

Licence: 21R0066

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GEOPHYSICAL SURVEY SUMMARY SHEET
FINISKLIN, COUNTY SLIGO

Site Name	Finisklin	Ref No.	21014
Townland	Finisklin	Licence No.	21-R-0066
County	County Sligo	Licence Holder	Joanna Leigh
ITM (centre)	E567333, N836849	Purpose	Pre-planning investigation
Client	TVAS Ireland Ltd.	Reference No.	N/A

Ground Conditions

Survey was conducted in four areas (Areas A, B, C and D). Area A comprised of Short pasture. Area B was located to the west of the house and contained trees and overgrown areas. Area C is located to the east of the house and comprised of rough, overgrown vegetation. Area D is to the south of the house and comprised of pasture. All areas were wet underfoot with waterlogging in Areas B and D.

Survey Type Detailed gradiometer survey totalling c.3 .hectares.

Summary of Results

The geophysical survey identified rectilinear magnetic disturbance and associated ferrous responses in Areas B and D, near the derelict Rathallen House. These responses are indicative of former structures and features associated with the adjacent house.

Faint curvilinear trends were detected in Area A. However, there is no clear archaeological pattern, and these may represent more recent activity. No clear archaeological interpretation can be provided.

Field Staff Joanna Leigh & Rhonda McGovern

Report Date 20/05/2021 **Report Author** Joanna Leigh

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Geophysical Survey Report Finisklin, Sligo, County Sligo

1 Introduction

- 1.1 A geophysical survey has been conducted by J. M. Leigh Surveys Ltd. at a site in the townland of Finisklin, County Sligo. The survey was requested by TVAS Ireland Ltd. on behalf of the National Development Finance Agency. The survey forms part of a pre-planning application for a proposed social housing development.
- 1.2 The application area is located within the grounds of Rathallen House, to the east of Sea Road and west of Sligo town, County Sligo. Four areas (Areas A, B, C and D) were subject to detailed gradiometer survey. Figure 1 presents the site and survey location at a scale of 1:2,000.
- 1.3 There are no recorded monuments within the application area. The closest recorded monuments are a 'Ringfort – rath' (SL014-055) and a 'Barrow – ring barrow' (SL014-054) which lies c. 300m and 360m to the west, respectively. Two 'Enclosures' (SL014-057 & SL014-058) are situated within 450m to the south-west. Five 'Fulacht fia' (SL014-059, SL014-060, SL014-061, SL014-261 & SL014-264) are located between 350m and 570m to the south.
- 1.4 The main aim of the survey was to identify any responses which may represent previously unknown archaeological remains within the application area. It is the objective of the survey to identify the location, nature and extent of any responses of potential archaeological interest.
- 1.5 The detailed gradiometer survey was conducted under licence 21R0066 issued by the Department of Housing, Local Government and Heritage.

2 Survey ground conditions and further information

- 2.1 Ground conditions varied throughout the site. Area A is contained within a pasture field. Electricity poles and bore holes resulted in some localized magnetic disturbance.
- 2.2 Area B is located to the west of the house. This comprised of long grass, brambles, and several mature trees. Parts of Area B were also notably waterlogged.
- 2.3 Area C is located to the east of the house. This comprised of rough, overgrown vegetation. Survey in Area C was limited due to the poor ground conditions.

- 2.4 Area D, to the south of the house, comprised of pasture. This field was notably waterlogged at the time of survey.

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. This is a specifically designed gradiometer for use in archaeological prospection. 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.
- 3.5 Data was collected with a sample interval of 0.25m and a traverse interval of 1m, providing 6400 readings per 40m x 40m grid. The survey grid was set-out using a GPS VRS unit. Survey tie-in information is available upon request.
- 3.6 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 1:1,000.
- 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

Area A

- 5.1 Area A comprises of spreads of magnetic disturbance and numerous ferrous responses. These are interpreted as modern in origin. The magnetic disturbance (1) is caused by an electricity pylon located here.
- 5.2 Linear trends (2) in Area A most likely result from agricultural activity. No clear archaeological interpretation can be provided.
- 5.3 In the west of Area A there are faint curvilinear trends (3). It is possible that these are of interest, perhaps representing ephemeral plough damaged archaeological remains. However, the trends are at the limits of instrument detection and in the vicinity of numerous ferrous responses. These trends are most likely modern in origin.

Area B

- 5.4 Area B is also dominated by ferrous responses and areas of magnetic disturbance. Although much of this is most likely recent in origin, some responses may represent activity associated with the adjacent house. A well-defined area of magnetic disturbance (4) is clearly evident. This is perpendicular in orientation to the house. This may represent an associated landscaping feature or structure.
- 5.5 Another rectangular area of magnetic disturbance (5) is in alignment with the adjacent house. There are also eight aligned ferrous responses within this disturbance suggesting foundation remains of a more recent structure. Nevertheless, this response is indicative of the remains of a structure associated with the house.

Area C

- 5.6 Two data sets were recorded in Area C. Survey was restricted due to the overgrown vegetation. Both datasets are magnetically disturbed. A vague linear trend (6) in the eastern data set is most likely agricultural in origin and not of archaeological interest.
- 5.7 The magnetic disturbance in Area D may mask more subtle responses and it is possible that archaeological features remain undetected.

Area D

- 5.8 In Area D another rectilinear spread of magnetic disturbance and associated ferrous responses (7) was recorded. This is similar in shape and form to (5) and most likely represents a contemporary structure. Again, the ferrous nature of the responses is indicative of a more recent structure associated with the house.
- 5.9 Magnetic disturbance along the perimeter of Area D results from the high metal fencing which surrounds the site.

6 Conclusion

- 6.1 The data is dominated by modern magnetic disturbance and ferrous responses. In Area's B and D there are rectilinear spreads of magnetic disturbance and associated ferrous responses. Although most likely more recent in origin, these responses are indicative of landscaping features and structures associated with Rathallen House.
- 6.2 In the west of Area A there are faint curvilinear trends. These are at the limits of instrument detection and no clear pattern is evident. It is speculated that these trends are more recent in origin.
- 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.

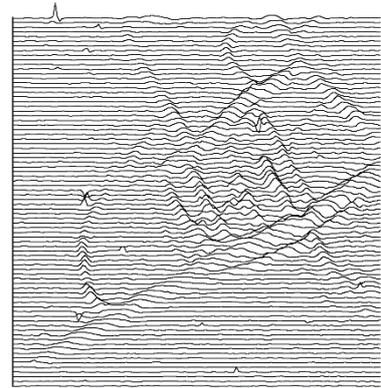


Frequent realignment of the instruments and zero drift correction ensure a constant high quality of data. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.1nT, affording diverse application throughout a variety of archaeological, soil morphological and geological conditions.

Gradiometer Data Display & Presentation

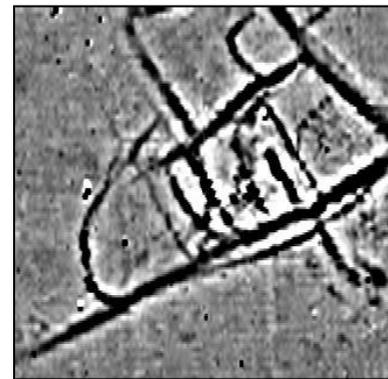
XY Trace

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.



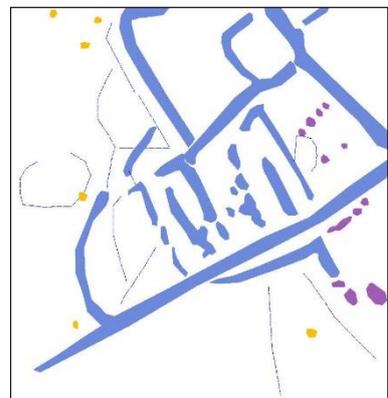
Greyscale*

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

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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.

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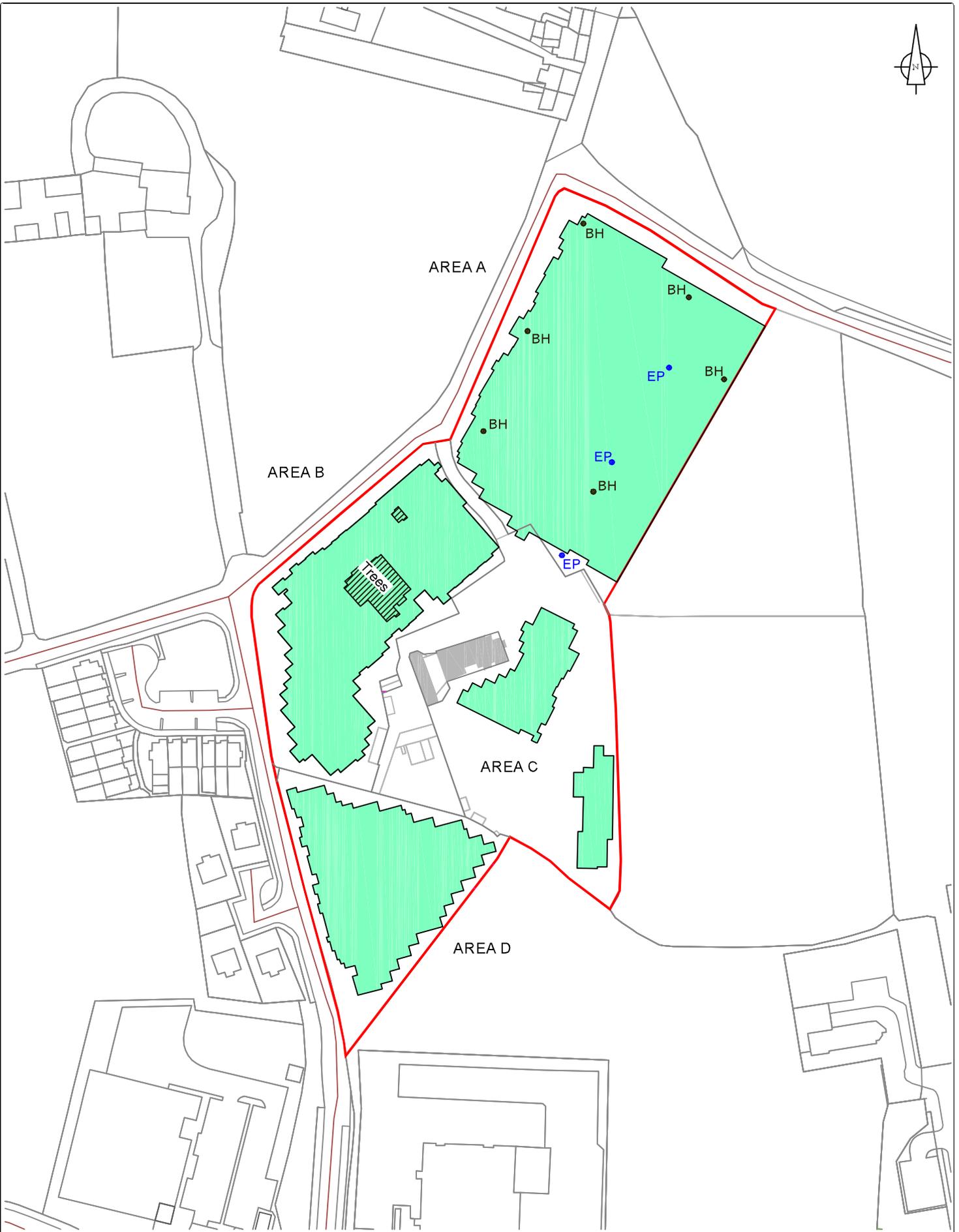
National Soil Survey of Ireland (1980) *General soil map second edition (1:575,000)*. An Foras Taluntais.

List of Figures

Figure	Description	Paper Size	Scale
Figure 1	Site & survey location diagram	A4	1:2,000
Figure 2	Summary greyscale image	A3	1:1,000
Figure 3	Summary interpretation diagram	A3	1:1,000

Archive Data Supplied as a PDF Upon Request

A1.01	Raw data XY-Trace plot	A2	1:500
A1.02	Raw data greyscale image	A2	1:500



Application Area



Detailed Gradiometer Survey

0 metres 80

Client:

TVAS Ltd.

Project:

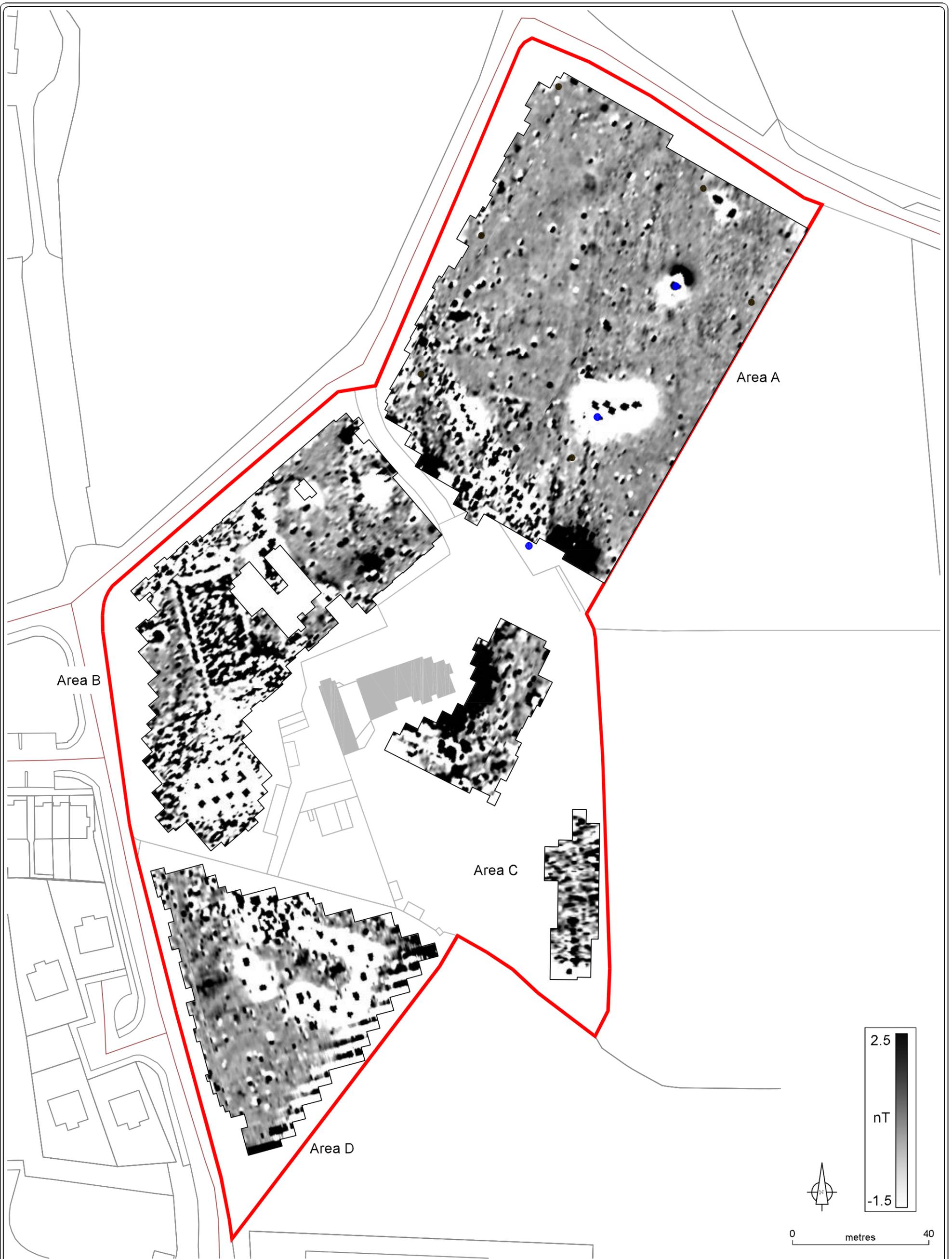
Geophysical Survey
Finisklin, County Sligo

Title:

Site & Survey Location

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Scale @A4: 1:2,000
Figure: 1
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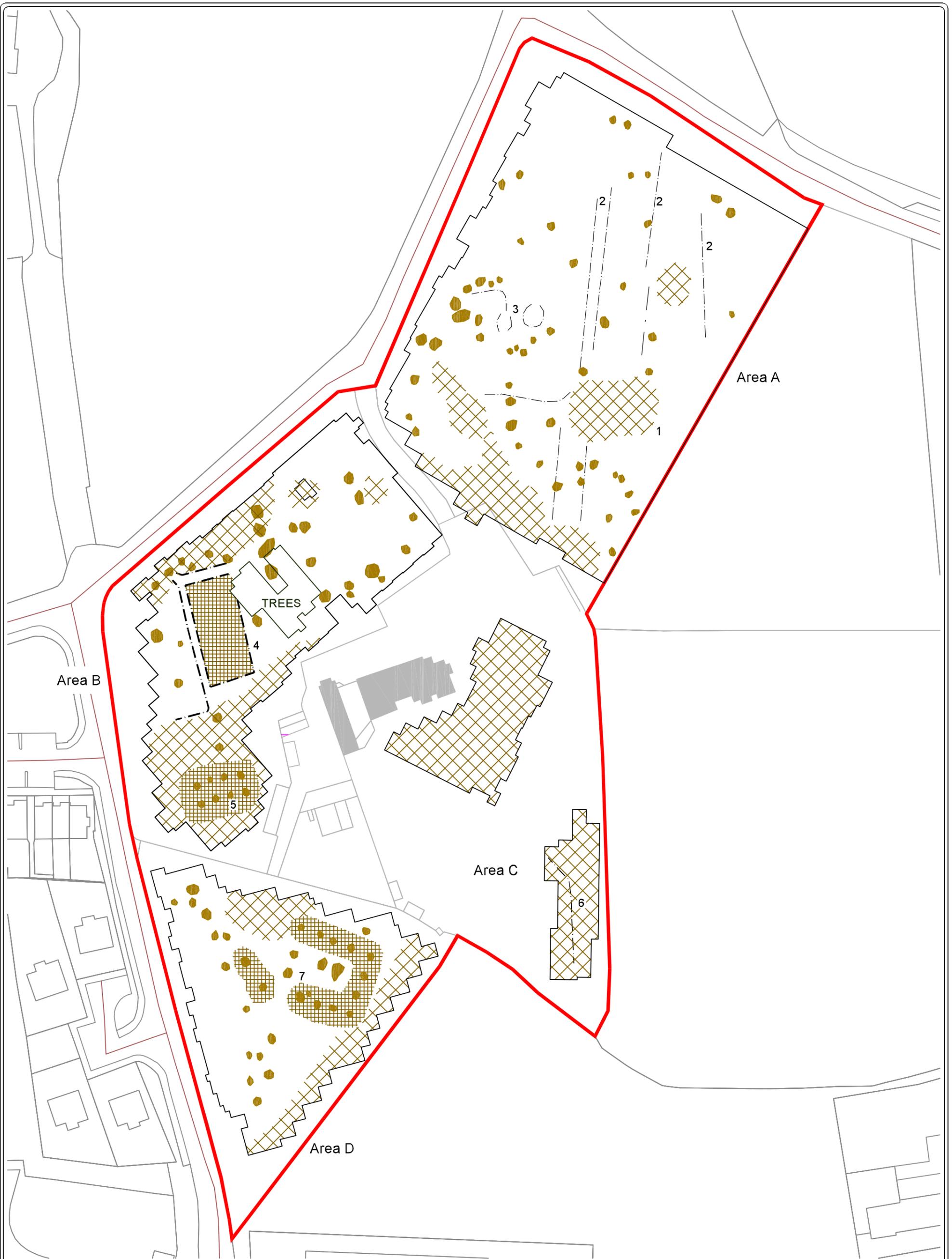
Client:
TVAS Ltd.

Project:
Geophysical Survey
Finisklin, County Sligo

Title:
Summary Greyscale Image

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Figure: 2
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Project:
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Title:
Summary Interpretation Diagram

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Scale @ A3: 1:1,000
Figure: 3
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Issue Date: 20.05.2021