

Geophysical Survey Report

Coolfadda, Bandon, Co. Cork

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License No.: 25R0152

RMP/SMR: N/A

ITM (centroid): 548220, 555650



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May 2025

Summary

This report details the results of an archaeo-geophysical survey (Licence No.: 25R0152) of lands at Coolfadda townland, Bandon, Co. Cork. The investigation was conducted as part of a pre-planning archaeological assessment.

The investigation, comprising high resolution magnetometry, was implemented over an area of approximately 2.4 hectares, though only about 2 ha was suitable for survey. No features of clear archaeological potential were recorded by the survey. Several 'pit-type' responses of possible modern/natural origin were detected. Evidence for former land division and cultivation was also revealed.

Survey details

Site Name: Coolfadda
Townland: Coolfadda
County: Cork

Parish: Kilbrogan
Barony: Kinalmeaky

RMP/SMR No.: N/A
ITM (centroid): 548220, 555650

Land use: Pasture
Geology: Mudstone and subordinate sandstone (Kinsale Formation)
Soils: Coarse loamy drift with siliceous stones (Ross Carbury Series)

Detection License No.: 25R0152
Planning Reference No.: N/A

Survey Type & Instrument: Fluxgate Gradiometer – Five-channel magnetometer
Sample/Transverse Interval: 0.10m/0.50m

Area Surveyed: c.2 ha
Survey Date: 20 May 2025

License Holder: Ger Dowling
Report Author: Ger Dowling
Report Date: 24 May 2025

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Abbreviations

CO	Cork
GPS	Global Positioning System
ITM	Irish Transverse Mercator
nT	nanoTesla (unit of magnetic measurement)
OS	Ordnance Survey
QGIS	Quantum Geographical Information Systems
SMR	Sites and Monument Record
RMP	Record of Monument and Places

Coordinate System

All GPS coordinates given in this report are in Irish Transverse Mercator (ITM)

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1 Introduction

This report details the results of an archaeo-geophysical survey (Licence No.: 25R0152) of lands at Coolfadda townland, Bandon, Co. Cork. The survey, comprising high resolution magnetometry, was implemented over an area of approximately 2.4 hectares, though only about 2 ha was suitable for survey. The investigation was carried out as part of a pre-planning archaeological assessment.

The site has not previously been subjected to geophysical survey and the investigation sought to identify and map any subsurface archaeology that may be present.

2 Site Location

The survey is located in the townland of Coolfadda, Co. Cork (Figure 1). The site, which lies on the northwestern side of the town of Bandon, is in the Civil Parish of Kilbrogan and the Barony of Kinalmeaky.¹

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¹ [An Chúil Fhada/Coolfadda | logainm.ie](#): accessed on 27 March 2025.

3 Survey Background

The investigation was undertaken as part of a pre-planning archaeological assessment.

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4 Archaeological Background

4.1 Recorded/Known Archaeology

There are no recorded monuments in the survey area (Figure 2). However, the site lies immediately east of a ringfort-rath (CO110-082) that the Files of the Archaeological Survey describe as:

*'According to Ó Ríordáin (1933, 19) 'in Buckley's the ring in the surface of the field plainly marks the position of the lios', diameter 'about 30 yards'.'*²

There is no surface trace of this putative ringfort, and the site now lies beneath a small housing estate.

Other nearby monuments include the site of Kilbrogan Church (CO110-021001), and two associated holy wells (CO110-021002 & CO110-021003), about 430m to the east of the survey area.³ The core of the historic town of Bandon (CO110-019001) is located to the southeast.

The survey area is shown as farmland on early historical maps (Figures 3 & 4).

4.2 Previous Investigations

No recorded archaeological investigations have previously been conducted at the survey area or within the immediate locality.⁴

² [Historic Environment Viewer \(arcgis.com\)](#): accessed on 27 March 2025.

³ Ibid.

⁴ [Excavations](#): accessed on 27 March 2025.

5 Survey Location and Aims

The investigation, comprising high resolution magnetic gradiometry, focused on pasture field that encompasses some 2.4 ha (Plate 1; Figure 5).

Bounded by overgrown tree-lined hedgerows, the target field lies directly north of Convent Road (L2011), with modern housing estates immediately to the north, east and south and scrubland to the east. The topography slopes moderately from south to north and was badly (horse) poached in places at the time of the survey. The land at the northern end of the field also appears to have been disturbed in modern times, being marked by several large earthen mounds and scattered surface debris.

The underlying bedrock of the locality comprises mudstone and subordinate sandstone (Kinsale Formation).⁵ The local soils comprise coarse loamy drift with siliceous stones (Ross Carbury Series).⁶

The geophysical investigation aimed 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
- describe the anomalies and discuss their likely provenance in a written report
- incorporate all of the above in a report to the Client

⁵ Geological Survey of Ireland Spatial Resources, Public Data Viewer Series:

<https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>

[accessed on 27 March 2025].

⁶ Irish National Soils Map, 1:250,000k, V1b (2014): <http://gis.teagasc.ie/soils/map.php> [accessed on 27 March 2025].

6 Survey Methodology and Instrumentation

The survey involved high-resolution magnetic gradiometry survey (Table 1). This technique measures changes in the magnetic properties of the soil and is widely used in modern investigations due to its ability to detect a broad range of sub-surface archaeological remains, including ditches and pits, and industrial features associated with metalworking and pottery production.

The magnetic survey was conducted using a five-channel fluxgate magnetometer system, combining two Foerster Ferex 4.034 dataloggers and Foerster MG-10-550 probes, with cm-precision GPS (Trimble R12 antenna and TSC5 controller) georeferenced to Irish Transverse Mercator and Ordnance Datum. Mounted on a cart and pulled by a quad bike, the system records magnetometer and GPS data simultaneously into a single data file. The data capture strategy involved logging readings every 0.10m intervals along transects spaced 0.5m apart, with a maximum traverse width of 2.5m.

The highly accurate positioning of the survey data provides strong confidence when integrating the geophysical results with other datasets such as aerial imagery in GIS, and also ensures repeatability should further investigation of anomalies (e.g., test excavation) be required.

Table 2. Geophysical survey details

Technique	Instrumentation	Sensor spacing	Sample rate	Survey Area	Number of recorded data
Magnetic Gradiometry	Five-channel fluxgate gradiometer array	0.5m	100 Hz	c.2 ha	470,651

7 Data Management, Processing and Interpretation

Gradiometry data was logged to a laptop computer and archived daily to an external hard drive. The collated data was processed using the following methodology:

- Real-time positioning of magnetometer data based on GPS measurements;
- Track correction (compensation) of collated magnetometer data; and
- Export of georeferenced greyscale images at optimum visual range

The processed data was imported into QGIS for final image production (Figures 6 & 7). Final geophysical datasets have been formatted as raster data models/GeoTiffs (projected to ITM, EPSG:2157) to enable subsequent geospatial analysis. Fieldwork, data processing and reporting adhered to the most up-to-date guidelines for conducting archaeo-geophysical surveys.⁷ All geophysical raster datasets will be digitally archived to best practice.⁸

⁷ Schmidt A., Linford P., Linford N., David, A., Gaffney C., Sarris A., and Fassbinder J. 2016. *EAC Guidelines for the Use of Geophysics in Archaeology: Questions to Ask and Points to Consider*. EAC Guidelines 2. [Online] Available from:

https://f64366e3-8f7d-4b63-9edf5000e2bef85b.filesusr.com/ugd/881a59_fdb1636e95f64813a65178895aea87cf.pdf

⁸ Niven, K. 2012. *Raster Images: A Guide to Good Practice*. Archaeology Data Service/Digital Antiquity, Guides to Good Practice. [Online] Available from: http://guides.archaeologydataservice.ac.uk/g2gp/RasterImg_Toc; & Schmidt, A. and Ernenwein, E. 2012. *Guide to Good Practice: Geophysical Data in Archaeology*. Oxford: Oxbow.

8 General Considerations and Complicating Factors

8.1 Access and Ground Conditions

The survey area comprises a tract of moderately sloped pasture. Parts of the field on the north and east could not be surveyed due to the presence of earthen mounds and dense overgrowth. There were no other obstacles to the investigation.

8.2 Modern Interference

Several small-scale, 'ferrous-type', dipolar (positive–negative) responses are evident in the results from the gradiometry survey. These are a common occurrence in magnetic data and in most cases represent modern metal debris and other magnetised material (e.g., fired brick) within the topsoil.

Areas of ferrous disturbance deriving from survey in proximity to field boundaries were recorded in places along the edge of the survey area.

8.3 Former Land Use

Ploughing associated with former cultivation is apparent in the dataset a series of slender, closely set, positive linear anomalies. These are at various orientation and also overlap in places, pointing to different phases of tillage farming in the past.

Several former land divisions recorded on the first-edition six-inch Ordnance Survey Map (surveyed 1841–42; published 1845) were mapped by the survey (see Figure 3). A number of probable relict field boundaries were also recorded. These are not depicted on historic mapping but appear to connect to historically-attested examples and likely relate to land division in recent times.

9 Survey Results

Table 3. Area 1: survey results

Area	Coolfadda		
ITM (centroid)	548220, 555650		
Area surveyed	c.2 ha		
Figure Numbers	6 & 7		
Form/nature of anomaly	Possible sources(s) of anomaly	Interpretative discussion	
Several 'pit-type' responses	Possible archaeology/modern/natural	Possible small pits/deposits. Archaeological interpretation is tentative. Modern/natural origin for many responses in this group is conceivable. Some responses may reflect buried modern debris, while others might represent spreads of magnetised (plough)soils.	
Network of positive–negative–positive linears	Agricultural	Relict field boundaries. Recorded on first-edition six-inch Ordnance Survey Map (surveyed 1841–42; published 1845).	
Several slender positive linears and a positive–negative–positive linear	Possible agricultural	Probable relict field boundaries. Not depicted on cartographic sources but many examples appear to connect to historically-attested land divisions.	
Slender positive linear	Possible agricultural	Appears to correspond to land division marked on first-edition six-inch Ordnance Survey Map (surveyed 1838; published 1841).	
Multiple, closely spaced, parallel, positive–negative linears	Agricultural	Former cultivation. Various orientations, some overlapping.	
Multiple 'ferrous-type' responses	Modern	Ferrous debris and other weakly magnetised material.	
Areas of magnetic disturbance	Modern	Disturbance from adjacent field boundaries.	

10 Conclusion

The geophysical investigation at Coolfadda townland did not identify any anomalies of obvious archaeological potential. A number of 'pit-type' responses mapped by the survey may represent small, discrete archaeological features, such as pits/deposits, though this is highly tentative and they may alternatively reflect buried modern debris and plough soil accumulations. Several former field boundaries marked on historic mapping are discernible in the dataset, as are a number of possible former land divisions. Extensive evidence for past cultivation was also revealed.

10.1 Statement of Indemnity

The geophysical properties of sub-surface features must contrast sufficiently with the surrounding soils/background variation to enable them to be detected and mapped using geophysical methods. As such, the clarity and definition of buried features can vary considerably, with some having well-defined signatures while others are only barely visible, or not discernible, in geophysical imagery. A lack of geophysical anomalies cannot be taken to imply the absence of archaeological features.

The interpretations presented here are invariably provisional and further work (e.g. test trenching) is required to fully assess the nature and archaeological potential of the anomalies identified by the present investigation.

11 Figures

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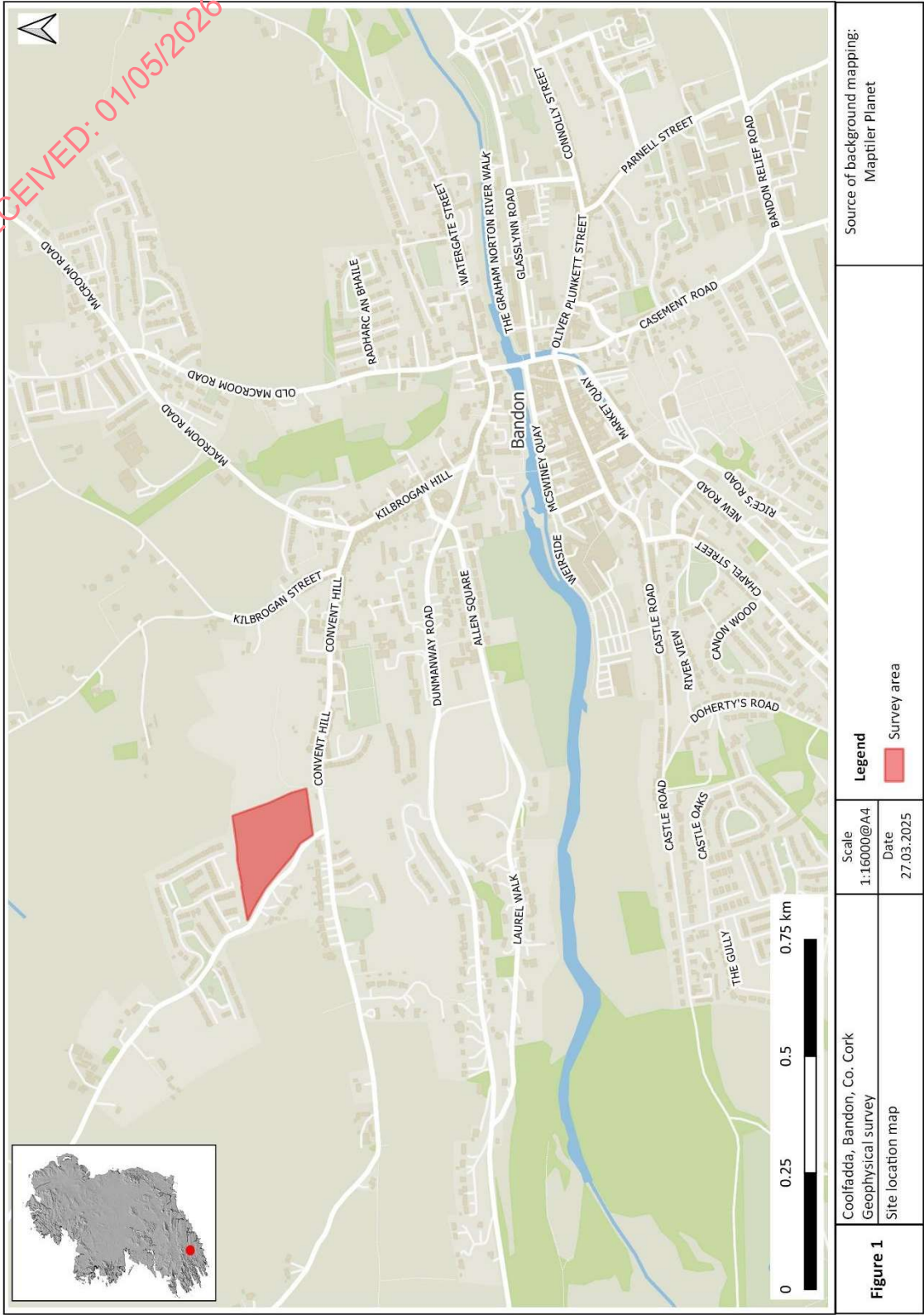


Figure 1. Site location map, showing survey area highlighted in red.

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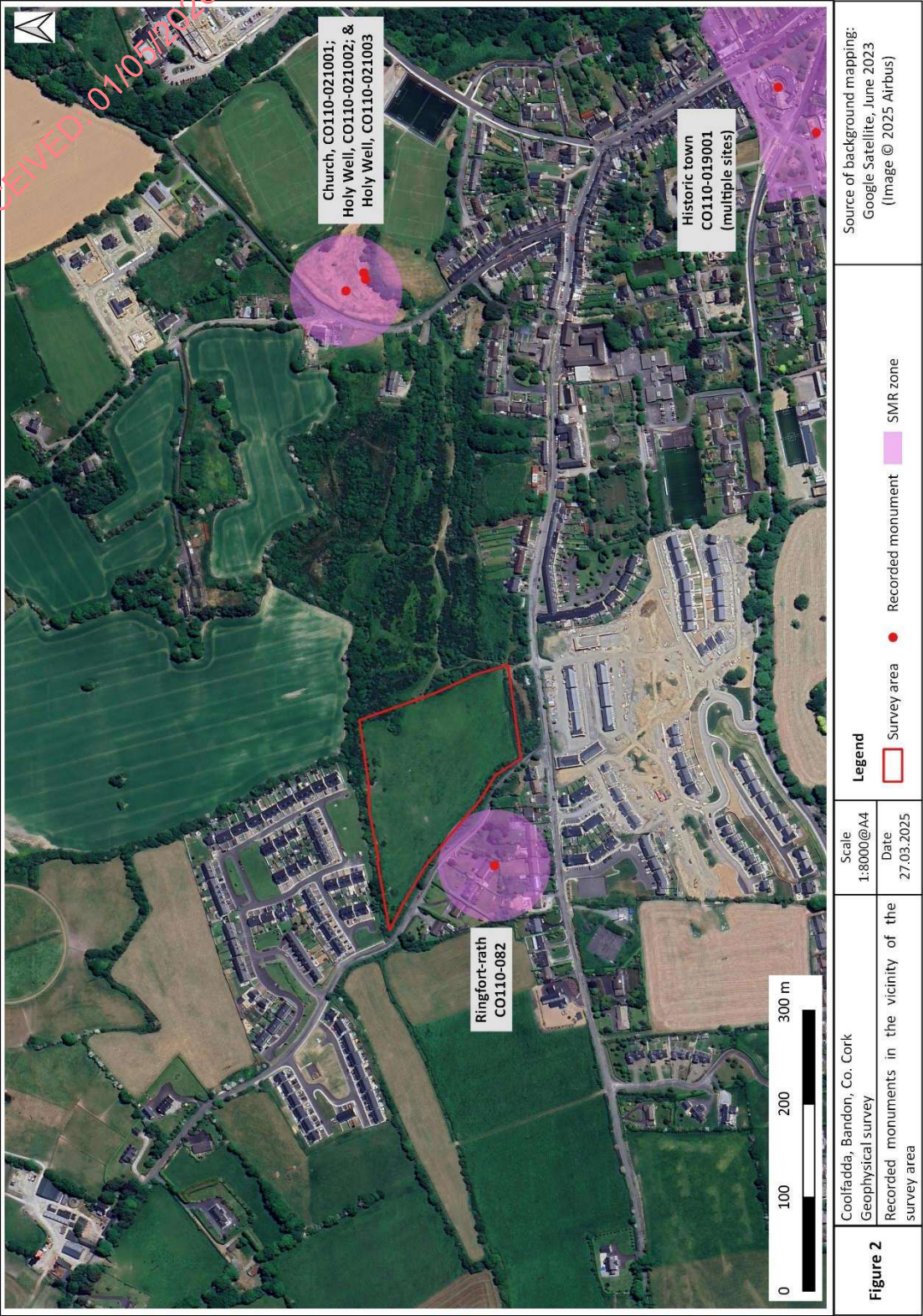


Figure 2. Location of recorded archaeological sites in the vicinity of the survey area.

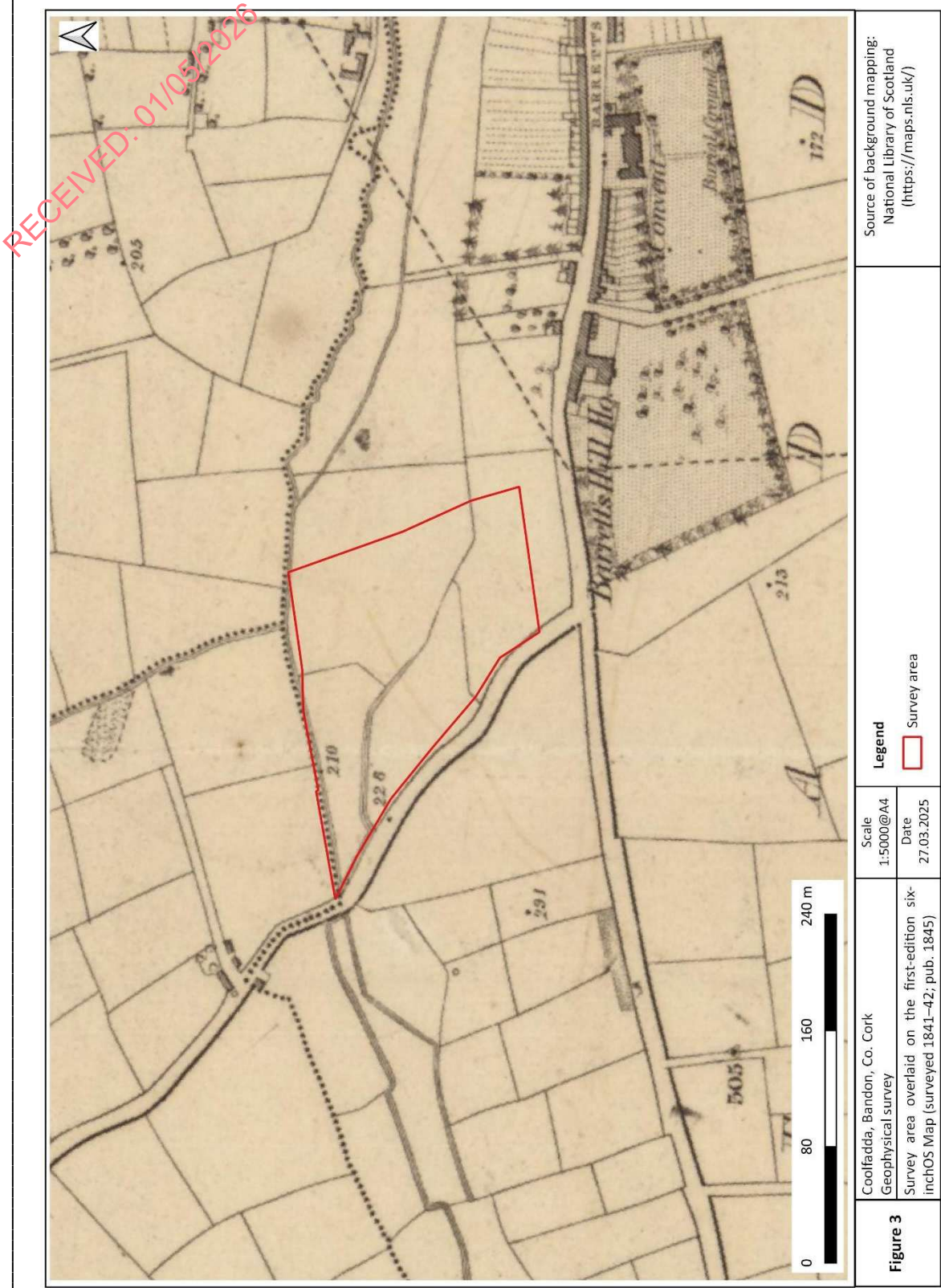


Figure 3. The survey area overlaid on the first-edition six-inch Ordnance Survey Map (surveyed 1841–42; published 1845).

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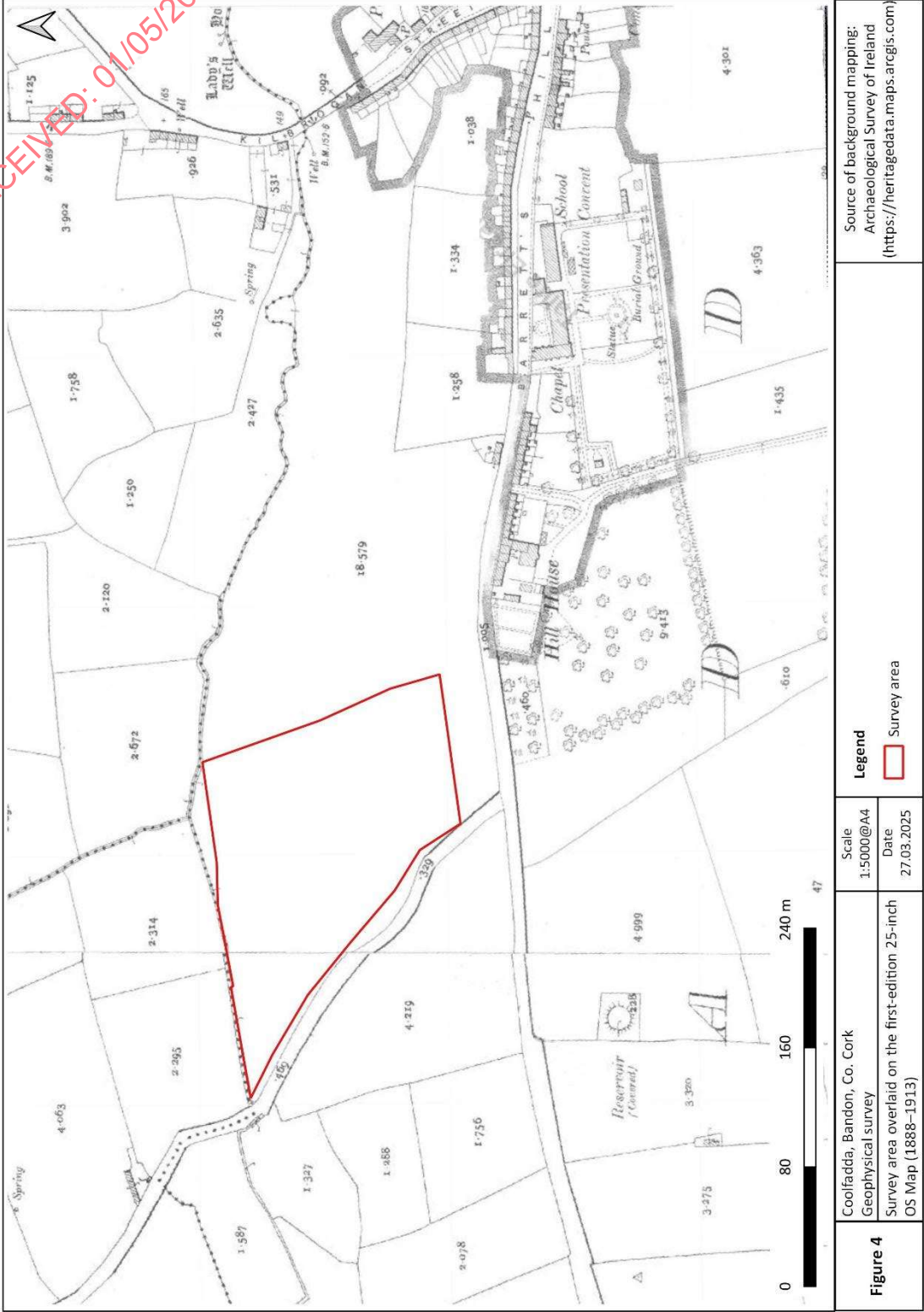


Figure 4. The survey area overlaid on the first-edition 25-inch Ordnance Survey Map (1888–1913).

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Figure 5. Survey area.

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Figure 6. Greyscale image of gradiometry results.

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Figure 7. Interpretative plan showing principal geophysical anomalies.

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Plate 1. Survey area, looking northwest.