Caltragh Project – Archaeological Geophysical Survey, Caltragh, Co. Sligo.

Archaeological
Management Solutions

Prepared for John Walter Burke

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Disclaimer

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Summary

This report describes the results of an Archaeological Geophysical Survey undertaken, under licence issued to Dr James Bonsall of Archaeological Management Solutions (AMS) by the National Monuments Service (NMS) (Consent No.: 23R0554), at the site of a proposed housing development located in the townland of Caltragh, Co. Sligo.

The investigation comprised a high-resolution magnetometry survey, undertaken in January 2024, spanning a survey area of 3.6ha.

The magnetometry survey of the site successfully characterised the extent of potential archaeological deposits. The responses were generally good, revealing a small number of possible archaeological features. The geophysical survey identified a total of seventeen anomalies, which included a number of possible ditches and four possible field boundaries, one of which is likely to pre-date historical mapping. Several pit-like features and isolated points of burning were also identified within the survey area.

Please note that the National Monuments Service of the Department of Housing, Local Government and Heritage, the National Museum of Ireland and the local planning authority may issue recommendations/conditions.

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Abbreviations and Definitions

Abbreviation	Definition
AMS	Archaeological Management Solutions
DIER	Database of Irish Excavation Reports
GIS	Geographical Information System
GSI	Geological Survey of Ireland
ITM	Irish Transverse Mercator
LMA	Lands made Available
NIAH	National Inventory of Architectural Heritage
NMI	National Museum of Ireland
NMS	National Monuments Service
OS	Ordnance Survey
SMR	Sites and Monuments Record
WMS	Web Map Service

Coordinate System

All grid coordinates in this report use the Irish Transverse Mercator (ITM) coordinate reference system unless otherwise stated.

1 Introduction

1.1 Project Background

This report describes the results of an Archaeological Geophysical Survey carried out in advance of a proposed housing development project located in Caltragh, in the southwest of Sligo town, Co. Sligo (Figure 1 and Figure 2). The survey was carried out as part of an archaeological assessment within Lands Made Available (LMA) for the project (the Study Area). The proposed development spans one survey area, spread across three fields.

The investigation comprised a detailed Magnetometry Survey undertaken by Archaeological Management Solutions (AMS) for John Walter Burke

1.2 The Survey Area

The Caltragh Project is situated in the southwest of Sligo town, immediately adjacent to the N4 road to the west and southwest. The on-site elements of the Caltragh Project consist of one survey area (GS-01) divided into three fields, comprising a total of 3.6ha. The survey area is located in the townland of Caltragh, within the civil parish of Saint John's within the barony of Carbury, Co. Sligo. The survey focused on the location of the proposed housing development.

1.3 Purpose and Scope of this Assessment

The purpose of the geophysical survey was to identify any potential archaeological deposits that might be present in the 3.6ha survey area. The survey comprised high-resolution magnetic gradiometry, undertaken by Jeff O'Neill (Geophysical Supervisor) and Finn Melia (Geophysical Assistant) and supported by Dr James Bonsall (Project Director). The methodology was approved by the Archaeological Licensing Section of the National Monuments Service (NMS) and Consent to use a Detection Device under Section 2 (2) of the National Monuments (Amendment) Act, 1987, was issued to Dr James Bonsall by the Minister for Housing, Local Government and Heritage: Consent No.:23R0554.

1.4 Topography, Soils and Geology

The landscape of the scheme mainly consists of arable land with two-sloping hills that meet at the centre of the survey area and rise to the north and south. The local soils comprise of well-draining, coarse loamy drift with limestones (GSI 2023). The bedrock geology consists of dark, fine-grained, cherty limestone (GSI 2023). The quaternary deposits within the survey consist of till derived from metamorphic rocks (GSI 2023). These soils and geology are suitable for a magnetometry survey, which was chosen as the most appropriate method of assessment.

The ground was dry and hard with short grass at the northern portion of the survey area and mid-length grass with long reeds in the southern section. The southern portion of the survey area contained a large amount of farm machinery and scrap material, a large amount of which had also been deposited in several location along the border of the site.

1.5 Aims and Objectives

The aim of the archaeological geophysical survey was to identify potential archaeological remains. This aim was achieved using the following objectives:

- 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 the above into a report for the Client.
- Preparation and submission of archives of the project data and reports.

2 Archaeological and Historical Background

2.1 Recorded Archaeological Sites

The design proposal for the project will not directly impact any recorded archaeological sites (Figure 3). However, several sites in proximity to the survey area are listed on the Sites and Monuments Record (SMR) (see Table 1 below). These consist of SL014-303---- (Enclosure) located 160m northeast of the survey area, SL014-125---- (Ringfort – rath) located 325m northwest of the survey area and SL014-282---- (Causewayed enclosure) located 420m northwest of the survey area.

Table 1: SMR Sites located within 450m of the geophysical survey area.

SMR No.	Classification	Townland	ITM Easting	ITM Northing
SL014-125----	Ringfort – rath	Caltragh	568776	834919
SL014-303----	Enclosure	Caltragh	568901	834715
SL014-282----	Causewayed enclosure	Magheraboy	568599	834991

2.2 Previous Archaeological Investigations

2.2.1 Excavations

According to the Database of Irish Excavation Reports (DIER), no previous investigations have occurred within the current site, but a number of areas in the vicinity have been assessed. Seven excavations/surveys have been carried out within the vicinity of the survey area. These consist of 00E0817, 98E0533 ext., 00E0816, 00E0819, 03E0543, 03E0542 and 03E1435.

The excavation 00E0817 was undertaken by Sligo Corporation in 2000 and involved the opening of two trenches in relation to the Inner Relief Road.[1] The trenches were opened manually, beside exposed boulders. Neither of the trenches revealed any archaeological deposits.

The excavation 98E0533 ext. involved monitoring undertaken in 2000 by Sligo Corporation as part of the main Sligo and Caltragh sewerage scheme. The monitoring revealed three *fulachta fiadh* and a large Neolithic site. Two of the *fulachta fiadh* and the Neolithic site were subsequently excavated as they were situated within the corridor of the pipeline.[2]

The excavation 00E0816 was one of three sites excavated within the Caltragh townland as part of the main Sligo and Caltragh sewerage scheme in 2000 by Sligo Corporation. Site 1 consisted of a trench

[1] https://excavations.ie/report/2000/Sligo/0005702/ [Accessed: 03 January 2024]
[2] https://excavations.ie/report/2000/Sligo/0004722/ [Accessed: 03 January 2024]

that revealed a drystone wall, sealed by a peaty material. No artefacts were recovered.[3] The excavation 00E0819 was undertaken as part of the main Sligo and Caltragh sewerage scheme in 2000 by Sligo Corporation.[4] Site 6 consisted of three trenches opened across a newly recorded burnt mound to determine its extent. The first revealed three layers of burnt material, which reached a depth of 1m, under which peat-like material was found. The second trench discovered a modern cut associated with a laneway which truncated the burnt mound at the western edge. The third trench revealed a potential relationship with the wall discovered in Site 1 which appeared to run though the burnt mound. Stratigraphically, the burnt mound overlayed the peat, which overlay the drystone wall. No artefacts were recovered.

The excavation 03E0543 involving testing carried out in 2001, and excavation in 2003, undertaken by Frank Ryan as part of the N4 Sligo Inner Relief Road. The initial testing identified three potential areas of burnt material, two of which were the result of the third being levelled, indicating it was originally much larger.[5]

The excavation 03E0542 involved excavation of archaeological deposits in 2003 (director not mentioned). The site consisted of a heavily disturbed burnt mound, a post-medieval *bóthairín* and two possible hut sites with associated features. The burnt mound consisted of very little material with several pits and a possible trough, beneath a post-medieval wall along the north side of a cobbled boreen. The two hut sites were identified along with a possible third. The first hut consisted of ten-post-holes, arranged in a circular fashion, within the interior of the hut. A total of seven pit were identified, within which the remains of two quern stones, burnt bone, thumbnail scrapers and prehistoric pottery sherds were found. The presence of up to 200 stake-holes suggest extensive rebuilding and repair of the structure over an extended period of time. The second hut, directly west of the first, was likely linked to a porch or annex present on the first hut. A possible cobbled surface was identified just outside the north-facing entrance, with several features such as stake-holes, post-holes and a possible hearth. Prehistoric pottery was found associated with the hut site, along with struck and unstruck chert and three quern stones within pits associated with the hut. Final features of this site include two pits associated with the second hut in which burnt bone, a flint scraper, one sherd of prehistoric pottery, five pieces of quern stone and a grinding stone were found.[6]

[3] https://excavations.ie/report/2000/Sligo/0005701/ [Accessed: 03 January 2024]
[4] https://excavations.ie/report/2000/Sligo/0005706/ [Accessed: 03 January 2024]
[5] https://excavations.ie/report/2003/Sligo/0010655/ [Accessed: 03 January 2024]
[6] https://excavations.ie/report/2003/Sligo/0010654/ [Accessed: 03 January 2024]

The excavation 03E1435 was carried out in 2003 and involved monitoring as part of a development in Cornageeha, Co. Sligo. No archaeological features or deposits were found, and the topsoil yielded a mixture of modern and post-medieval items such as modern ceramics, black earthenware, clay-pipe stems and modern iron fragments.[7]

2.3 NMI Topographical Finds

There are no stray finds recorded in the National Museum of Ireland's (NMI) online Finds Database, as available on Heritage Maps, within the immediate area of the development, although this dataset is limited.[8]

2.4 Placenames

The proposed development and related programme of geophysical survey took place within the townland of Caltragh. Caltragh translates to *An Chealtrach,* there is no translation available for this townland.[9]

2.5 Cartographic Evidence

The lands within the survey area have seen little change through the historical mapping. On the 1837 first edition ordinance survey map the lands are divided into small parcels with a small structure in the southeast corner of the large northern field, there was also another structure in the southwest corner of the southern field. Through the 1906 25-inch historic map and the 1937 Cassini map this structure has remained and another structure possible a dwelling has been constructed in the south corner of the southernmost field.

[7] https://excavations.ie/report/2003/Sligo/0010677/ [Accessed: 03 January 2024]
[8] https://heritagemaps.ie/WebApps/HeritageMaps/index.html this database only includes finds recorded in the National Museum of Ireland's (NMI) topographical files up to 2010 and is often found to be inaccurate and unreliable. [Accessed: 03 January 2023].

[9] https://www.logainm.ie/en/45511 [Accessed: 03 January 2024]

3 Methodology

3.1 Personnel

The survey comprised a high-resolution Magnetometry Survey, undertaken by Jeff O'Neill (Archaeological Geophysical Supervisor) and Finn Meila (Archaeological Geophysical Assistant) under licence from the NMS. The report has been written by Jeff O'Neill, Marcin Leszczynski and Dr James Bonsall.

3.2 Magnetometry Survey

The survey employed a detailed Magnetometer Survey, recording the vertical magnetic gradient i.e., a fluxgate gradiometer. This technique measures variations in the magnetic properties of the soils. It is widely used in archaeological geophysical prospection due to its ability to detect and map a broad range of subsurface archaeological remains, including ditches and pits and burnt or fired features associated with metalworking and pottery production (Aspinall *et al*. 2008).

3.2.1 Data Capture

The survey recorded the vertical magnetic gradient, i.e., a fluxgate magnetometer. A Sensys MAGNETO MX PDA 5 Channel cart system was towed by a 2023 CFMOTO CFORCE 450 quad bike. Five Sensys FGM650 fluxgate gradiometer probes were mounted on a Sensys MAGNETO MX PDA 5 Channel cart system; each probe was spaced 0.5m apart. The magnetometer data were acquired gridlessly with Sensys MonMX Lite Software, connected to a Carlson BRX7 GNSS Smart Antenna RTK GPS, achieving a spatial resolution of 0.1m accuracy. Data were collected at ten times per second along the lines.

3.2.2 Data Processing

The magnetometry and GPS data were processed through Geoserver followed by DLMGPS 4.01-12 and finalised in Sensys MAGNETO 3.01-14. MAGNETO software was used for trace correction and equalisation.

3.2.3 Data Visualisation

The data were brought in to QGIS as a GeoTIFF for display and interpretation as greyscale images.

3.3 Data Management, Processing, and Interpretation

This project used QGIS (Version 3.22.14) as a Geographical Information System (GIS) to manage the project. QGIS is an open-source GIS which can be used to create, edit, visualise, analyse and publish

geospatial information.[10] This project used the long-term release version of the software (3.22.14) as the basic platform to access, view and analyse the geophysical visualisations produced in Magneto. QGIS also allowed us to compare the visualisations with other relevant geospatial databases, record the analysis through digitising the morphology and magnitude of anomalies identified, and output a table catalogue of this analysis and corresponding maps.

For the purposes of this project, the following datasets were also accessed and/or downloaded:

- Tailte Éireann historical maps and orthographic photographs of the Study Areas, viewed online;[11]
- Sites and Monuments Record (SMR) point and polygon vectors as a Web Map Service (WMS);[12]
- National Inventory of Architectural Heritage (NIAH) point vector (downloaded from www.archaeology.ie);
- Rivers and lakes as a WMS (downloaded from https://gis.epa.ie/GetData);
- National soils database as a vector layer (downloaded from https://gis.epa.ie/GetData/Download);
- Townlands vector layer.[13]

The following vector layers were generated for the project:

- A polygon for the Study Area;
- Polygons for each identified geophysical anomaly.

The dimensions of individual anomalies were calculated in QGIS using the measure tools. All anomalies are defined by polygons.

3.4 Standards

The geophysical survey and report follow the recommendations outlined by relevant best practice guidance documents as a minimum standard (Bonsall *et al*. 2014; David *et al*. 2008; Gaffney *et al*. 2002; Schmidt *et al*. 2015). Geophysical data, shapefiles, figures and the text have been archived following the recommendations of the Archaeology Data Service (Schmidt & Ernenwein 2011). Raw geophysical data and GIS shapefiles are available in the archive.

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[10] QGIS. Quantum GIS v3.22.14. https://www.qgis.org/en/site/

[11] Accessed from: https://maps.archaeology.ie/HistoricEnvironment/

[12] SMR data accessed from:

https://data.gov.ie/dataset/national-monuments-service-archaeological-survey-of-ireland

[13] Vector layer downloaded from: www.townlands.ie; townland names confirmed against the OS townlands list from https://data.gov.ie/dataset/townland.

4 Results and Interpretation

4.1 Magnetometry Interpretation

The magnetometry data and magnetometry interpretation (Figure 5 and Figure 6) should be cross referenced with the descriptions (below) for a discussion of the anomalies. The magnetometry survey of the site successfully characterised the extent of potential archaeological deposits. The responses across the survey area were generally good revealing a small amount of possible archaeological features.

Large areas of interferences in the southern field were encountered and are visible in the data. This has been mitigated as much as possible. This interference is due to the proximity of an active roadway directly along the eastern boundary of the site, as well as active metal electric fences. The southern portion of the survey area also contained a large amount of interference associated with farm machinery. This was due to a high frequency of scrap metal and old farm equipment present on the site.

Overall, seventeen anomalies of archaeological potential were identified (labelled [01-01 – 01-17]) and are broken down as follows:

Anomaly [01-01] showed a strong magnetic response in a linear north–south direction along the centre of the northern field. This anomaly could be a possible ditch or drainage ditch to divide the land, or for the structures present on the brow of the hill directly north of the survey area.

Anomalies [01-02 to 01-05] and [01-07 to 01-09] represent clear linear features. [01-02 to 01-05] intersect and continue through anomaly [01-01] along an east–west axis. These features are all roughly the same size and shape and are running in directions with respect to each other. The largest of these is [01-03]. These features may also have served a drainage function.

Anomaly [01-06] represents a linear feature running northwest to southeast, towards the entrance to the northern field and the southeast corner of the field.

Anomaly [01-10] represents a historical boundary running northeast to southwest. This feature appears on the historical maps.

Anomalies [01-11 to 1-12] represent another historical boundary that runs from east to west in the southern portion of the survey area.

Anomaly [01-13] is a linear anomaly south of anomaly [01-11]. It may represent a ditch and runs in the same direction as both anomalies above.

Anomaly [01-14] is a weakly magnetic curvilinear feature located in the centre of the southern field of the survey area. This may represent a small enclosing feature.

Anomaly [01-15] is a large historical field boundary located at the South of the survey area. This is a linear feature and gives off a strong magnetic response that runs east to west across the survey area.

Several pit-like features and isolated points of burning were also identified across the survey area [01-16 to 01-17].

Overall, the majority of the labelled anomalies could be linked to drainage and historical boundaries.

5 Conclusions

The magnetometry survey of the site successfully characterised the extent of potential archaeological deposits. The responses were generally good, revealing a small number of possible archaeological features. The geophysical survey identified a total of seventeen anomalies, which included a number of possible ditches and four possible field boundaries, one of which is likely to pre-date historical mapping. Several pit-like features and isolated points of burning were also identified within survey area.

5.1 Statement of Indemnity

The geophysical properties of subsurface features must contrast sufficiently with the surrounding soils/background variation and 'noise' 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, lying on the threshold of background noise, are only barely visible or not visible at all, in geophysical imagery. A lack of geophysical anomalies cannot be taken to imply a lack of archaeological features.

6 References

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7 Figures

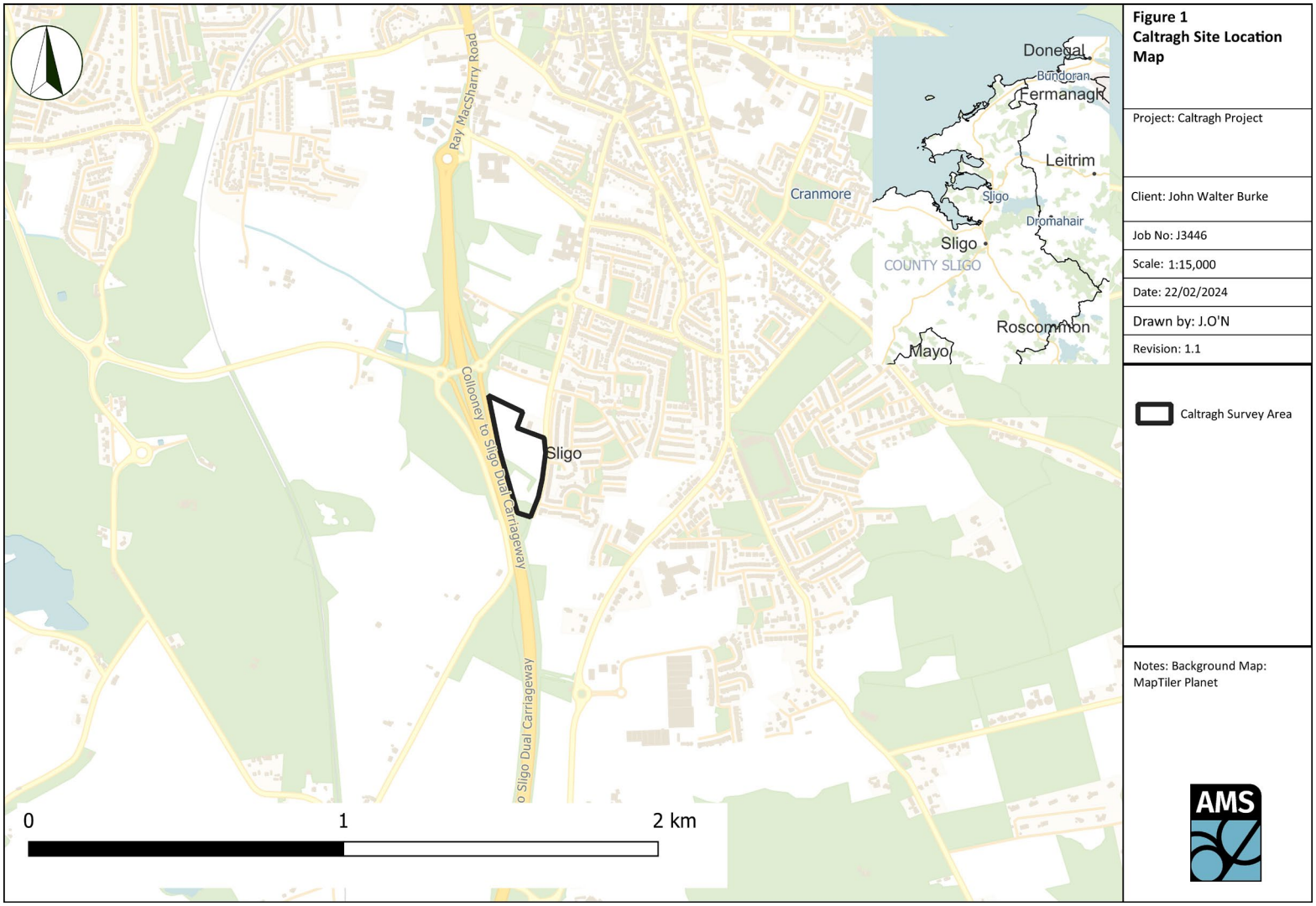

Figure 1. Caltragh Site Location Map

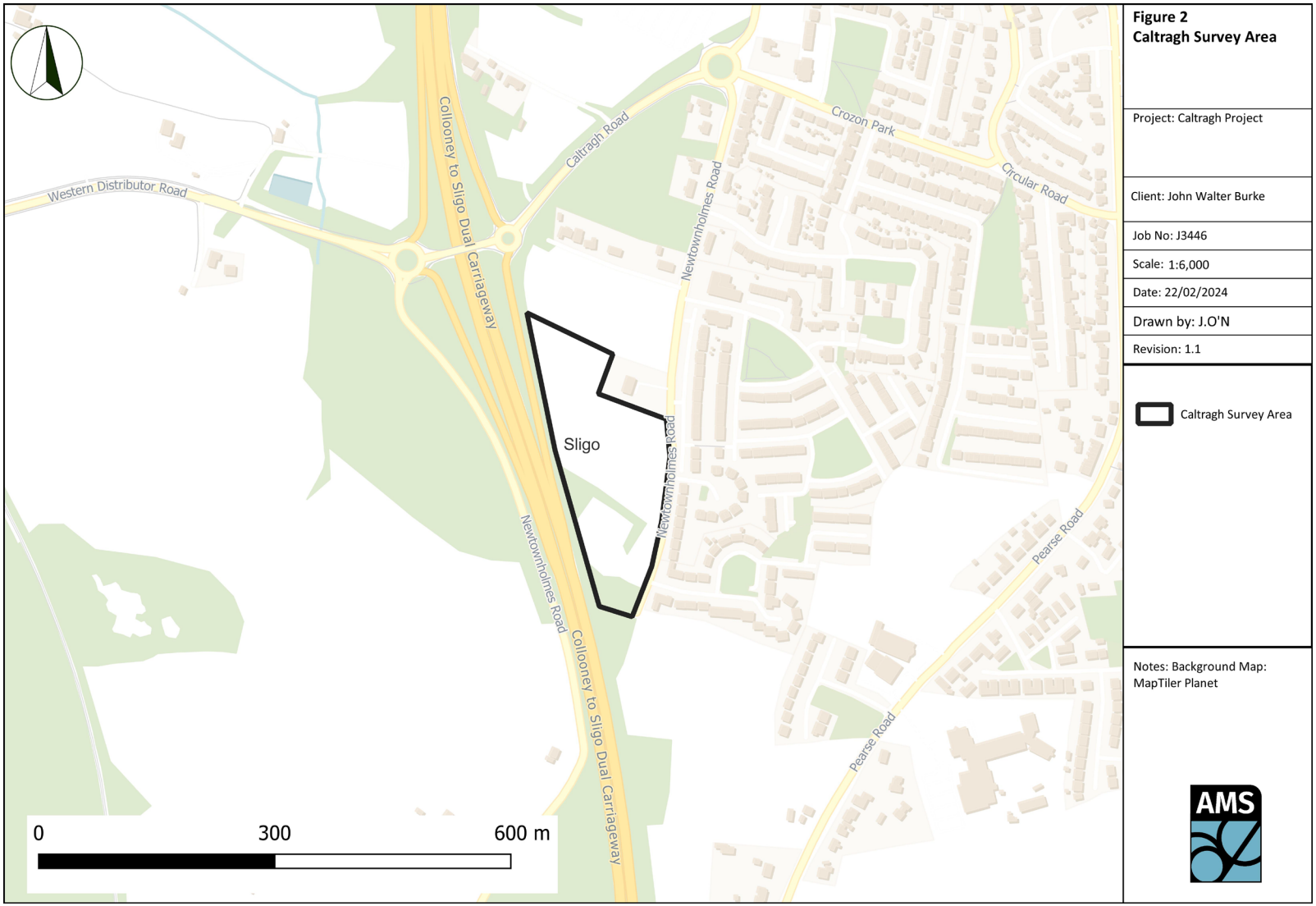

Figure 2. Caltragh Survey Area

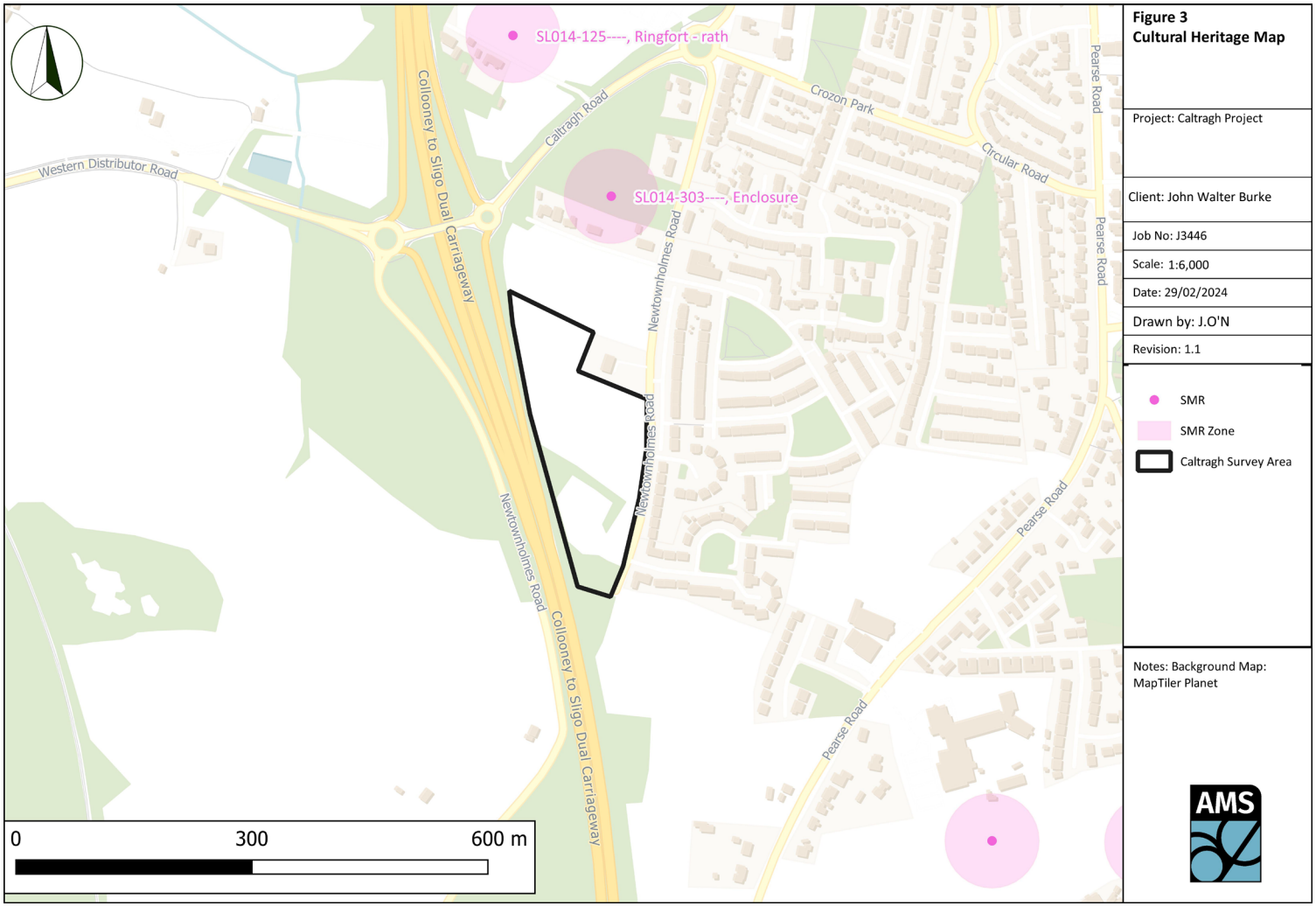

Figure 3. Caltragh Cultural Heritage Map

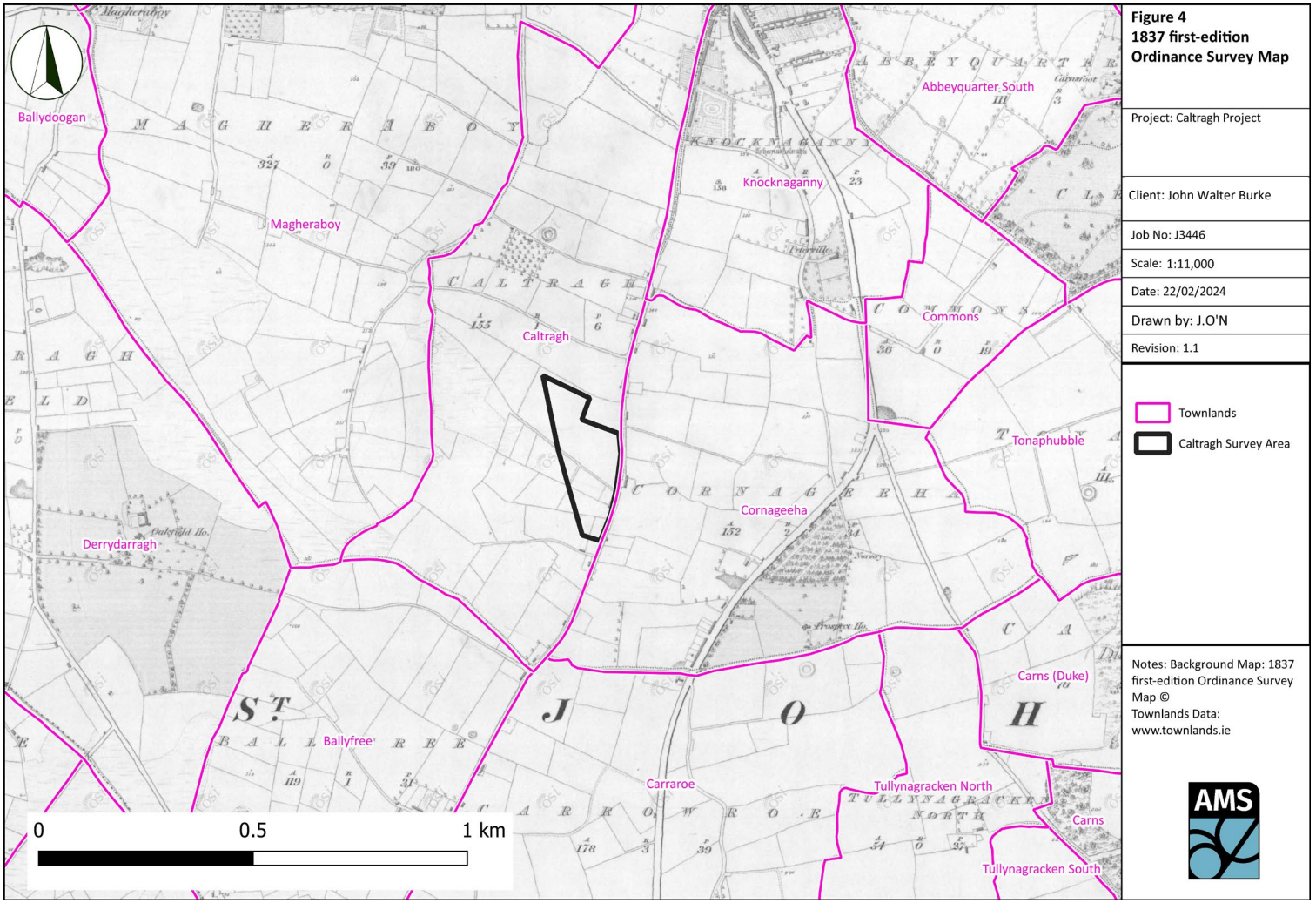

Figure 4. 1837 first-edition Ordnance Survey Map

Figure 5. Magnetometry Data

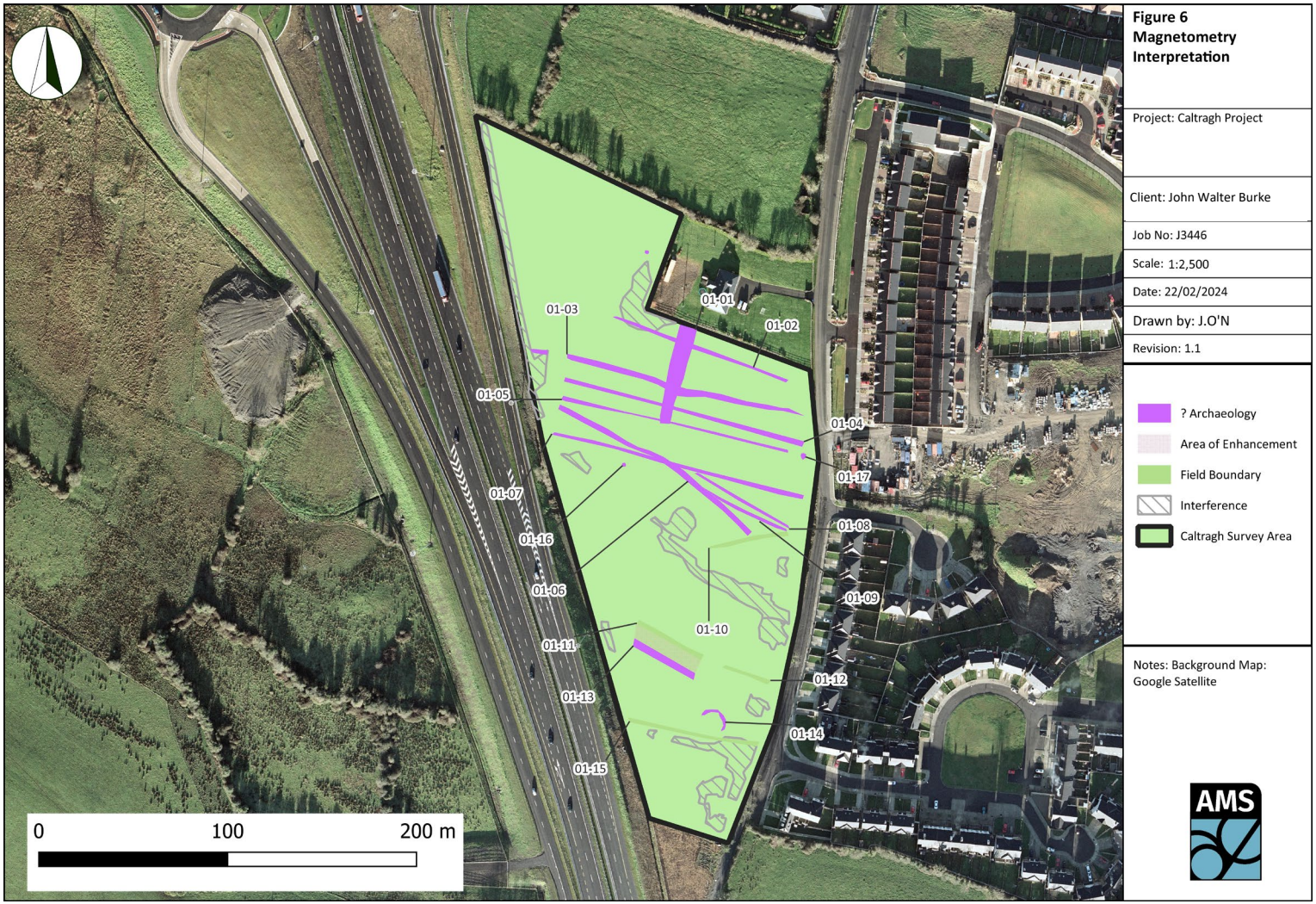

Figure 6. Magnetometry Interpretation