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Introduction

Background

12.1 This Chapter of the Environmental Impact Assessment Report (EIAR), commissioned by SLR Consulting Ireland on behalf of Breedon Materials Ltd. trading as Breedon Ireland addresses the impacts on the archaeological, architectural and cultural heritage of the application site and the surrounding area of a proposal for the continued use and extension to the existing sand and gravel pit permitted under Section 261 of the Planning & Development Act 2000, as amended (site ref. QY05/10) within an overall application area of c. 12.2 hectares in the townlands of Mounthall and Cummer, Co. Laois. The proposed development will consist of:

- Continued use and extension to existing permitted sand and gravel pit registered under Section 261 of the Planning & Development Act 2000, as amended (site ref. QY05/10) within an overall application area of c. 12.2 hectares;
- Extraction of sand and gravel (dry working) over an area of c. 8 hectares with processing and washing of material on site (closed loop water recycling system with associated silt storage lagoons 1,952.25m2), and all ancillary works and structures;
- Site facilities consisting of mobile processing plant, portacabin site office (6.25m²), portacabin welfare facility (18.9m²), serviced portaloo toilet, bunded fuel storage and refuelling pad with hydrocarbon interceptor, weighbridge, wheelwash, water supply borehole, perimeter berms, vegetation planting and fencing;
- Access to the site will be via the existing sand & gravel pit entrance;
- Restoration of the site to agricultural lands; and
- The proposed extraction operational period is for 10 years plus 1 year to complete restoration (total duration sought 11 years).

12.2 The site location and study area are indicated in **Figure 12-1**.

12.3 The proposed development is described in detail in EIAR Chapter 2 – Project Description.

Scope of Work / Methodology

12.4 This study which complies with the requirements of Directive EIA 2014/52/EU is an assessment of the known or potential cultural heritage resource within a specified area and includes the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment. It consists of a collation of existing written and graphic information in order to identify the likely context, character, significance and sensitivity of the known or potential cultural heritage, archaeological and structural resource using an appropriate methodology (EPA 2002, 2003 and 2022).

12.5 The criteria and definitions for describing effects set out below in **Table 12-1** is drawn from the 2022 EPA Guidelines.

Table 12-1: 2022 EPA Guidelines

Quality of Effects	**Positive** A change which improves the quality of the environment.
	Neutral No effects or effects that are imperceptible, within normal bounds or variation or within the margin of forecasting error.
	Negative/adverse Effects A change which reduces the quality of the environment.
Significance of effects	**Imperceptible** An effect capable of measurement but without noticeable consequences.
	Not significant An effect which causes noticeable changes in the character of the environment but without noticeable consequences.
	Slight effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.
	Significant effects An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant effects An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.
	Profound effects An effect which obliterates sensitive characteristics
Describing extent and context of effects	**Extent** Describe the size of the area, the number of sites, and the proportion of population affected by an effect.
	Context Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions.
Describing probability of effects	**Likely effects** The effects can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely effects The effects can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing duration & frequency of effects	**Momentary effects** Effects lasting from seconds to minutes.
	Brief effects Effects lasting less than a day.

	Temporary effects Effects lasting less than a year.
	Short-term effects Effects lasting one to seven years.
	Short-term effects Effects lasting seven to fifteen years.
	Long term-term effects Effects lasting fifteen to sixty years.
	Permanent effects Effects lasting over sixty years.
	Reversible effects Effects that can be undone, for example through remediation or restoration.
	Frequency of effects Describe how the effect will occur.
Describing types of effects	**Indirect effects** Impacts on the environment which are directly result of the project.
	Cumulative effects The addition of minor or significant effects, including effects of other projects, to create a larger more significant effect.
	'Do-Nothing Effects' The environment as it would be in the future should the project not go ahead.
	'Worst case' effects The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable effects When full consequences of change in the environment cannot be described.
	Irreversible effects When the character distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
	Residual effects The degree of environmental change that will, occur after the proposed mitigation measures take effect.
	Synergistic effects Where the resultant effect is of greater significance than the sum of its constituents.

12.6 The study involved detailed investigation of the archaeological and historical background of the development site, the landholding and the surrounding area extending 1km from the development boundary (**Figure 12-1**). This area was examined using information from the Record of Monuments and Places of County Laois, the Sites and Monuments Record, the Laois County Development Plan, the National Inventory of Architectural Heritage, lists of excavations and cartographic and documentary sources. The entire application area was the subject of a site inspection and an archaeological geophysical survey.

12.7 An impact assessment and mitigation strategy have been prepared. An impact assessment is undertaken to outline potential adverse impacts that the proposed development may have on the cultural resource, while a mitigation strategy is designed to avoid, reduce or offset such adverse impacts.

12.8 The application site is located in the townlands of Cummer and Mounthall Co. Laois on OS Six Inch sheet No. 11, to the north of the L1031 Road, c. 3km north of Camross, Co. Laois.

12.9 Extracts from the Record of Monuments and Places for County Laois are presented on a map of the local area around the site in **Figure 12-1**. RMP sites included on the Records of Monuments and Places statutory mapping are identified by black circles. The application area is shown in red.

Consultations / Consultees

12.10 In preparing this Environmental Impact Assessment Report an initial pre-planning consultation meeting was held between officials of Laois County Council and the Applicant on the 1st of May 2024.

12.11 In addition, a pre-planning consultation document was issued to statutory consultees. Details of those consulted and feedback obtained is contained in Chapter 1 of this EIAR. Feedback of most relevance to the assessment of cultural heritage was received from the Development Applications Unit at the Department of Culture, Heritage and the Gaeltacht who made a response on archaeology only and noted the requirement for an Archaeological Impact Assessment (AIA) and Archaeological Investigations to be carried out, both of which are provided in this chapter.

Contributors / Author(s)

12.12 The assessment was prepared by Dr. Charles Mount who is a member of the Institute of Archaeologists of Ireland and has more than thirty years of cultural heritage assessment experience. He holds M.A. and Ph.D. degrees in archaeology as well as a professional diploma in EIA and SEA Management.

Limitations / Difficulties Encountered

12.13 No difficulties were encountered during the desktop study, field survey or in the preparation of this report.

Regulatory Background

12.14 The following paragraphs set out the regulatory background with regard to cultural impact assessments in Ireland in general and the site-specific planning background relevant to this cultural impact assessment, in particular.

Legislation

12.15 No specific Irish legislation exists governing cultural heritage assessments.

Planning Policy and Development Control

12.16 The County Laois Development Plan 2021-2027 (CDP) is the statutory plan detailing the development objectives/policies of the local authority. The plan includes objectives and policies, relevant to this assessment, i.e. regarding cultural heritage.

Built and Cultural Heritage

12.17 *Volume 1, Chapter 12 of the Laois County Development Plan sets out the policies on built and cultural heritage within the county. The Plan aims to protect, conserve and manage the archaeological and architectural heritage of County Laois and to encourage sensitive sustainable development so as to ensure its survival and maintenance for future generations..*

The Council's objectives regarding archaeological heritage are to:

***AH 1** Manage development in a manner that protects and conserves the integrity and character of archaeological heritage of the county which avoids adverse impacts on sites, monuments, settings, features or objects of significant historical or archaeological interest and secure the preservation in-situ or by record of all sites and features of historical and archaeological interest.*

***AH 2** Support the preservation or conservation of historically significant street patterns, building lines and plot widths in its towns and villages as well as the preservation of features such as town walls, historic revetments, and public realm features such as granite kerbing, historic drinking fountains, cobbles, vent pipes whether or not they benefit from protection in their own right.*

***AH 3** Protect the intrinsic value, character, integrity and settings of monuments and places in the Record of Monuments and Places (RMPs) and any forthcoming statutory register and protect Zones of Archaeological Potential against inappropriate development.*

***AH 4** In areas of archaeological potential, where groundworks are proposed, ensure that all works are undertaken to the highest standard and the resultant information made publicly available. Developers will be required to have regard to Archaeology and Development: Guidelines for Good Practice for Developers (ICOMOS, 2000) in planning and executing development in sensitive areas. The Council favours the preservation in-situ of archaeological remains, where areas of archaeological potential are located in town centres or villages, preservation of archaeological remains by record will be considered.*

***AH 5** Encourage, where practicable, the provision of public access and signage to sites identified in the Record of Monuments and Places under the direct ownership, guardianship or control of the Council and/or the State.*

***AH 6** Work closely with the relevant State bodies to deliver the conservation objectives of the Rock of Dunamase and redevelopment of Fort Protector to secure funding for the preservation and development of these culturally important sites.*

***AH 7** Require visual impact statements for developments within the area around the Rock of Dunamaise in order to assess the potential impacts of development in the area.*

***AH 8** Work with stakeholders including the OPW, the Heritage Council, the Arts Council, local communities, Bord Failte and businesses to support the development of heritage and cultural tourism in County Laois.*

***AH 9** Maximise the potential of Dunrally Viking Fort, as a heritage/cultural and tourism site.*

***AH 10** Protect where appropriate industrial heritage structures or elements of significance identified in the Laois Industrial Archaeology Survey by adding them to the Record of Protected Structures during the lifetime of the Development Plan.*

Architectural Heritage and Protected Structures

The Council's objectives regarding architectural heritage and Protected Structures are to:

PS 1 *Consult with the Department of Environment, Heritage and Local Government in considering planning applications that may affect Protected Structures or Architectural Conservation Areas (ACA). The Council will have regard to comments made by the Department and relevant guidelines such as the Architectural Heritage Protection: Guidelines for Planning Authorities (DAHG, 2011) and other pertinent guidelines regarding energy ratings for Protected Structures.*

PS 2 *Protect and conserve buildings, structures and sites contained in the Record of Protected Structures in accordance with 'Architectural Heritage Protection Guidelines for Planning Authorities' 2004 and ensure the effective promotion of the Architectural Heritage provisions of Planning and Development Act 2000 (as amended) and therefore the protection of Laois's built heritage, including Architectural Conservation Areas (ACAs) and Protected Structures.*

PS 3 *Any development, modification, alteration, or extension affecting a Protected Structure must be prepared by suitably qualified persons and Accompanied by appropriate documentation as outlined in the Architectural Heritage Protection Guidelines for Planning Authorities [DAHG, 2011] to enable a proper assessment of the proposed works and their impact on the structure or area and be carried out to best practice conservation standards. Its setting will be considered against the following criteria, and whether it is:*

a) Sensitively sited and designed;

b) Compatible with the special character;

c) Views of principal elevations of the protected structures are not obscured or negatively impacted;

d) Of a premium quality of design and appropriate in terms of the proposed scale, mass, height, density, layout, and material so that the integrity of the structure and its curtilage is preserved and enhanced. Where appropriate, the Protected Structure status is used as a stimulus to the imaginative and considered design of new elements.

PS 4 *Where the restoration or refurbishment of a Protected Structure or a key Architectural Conservation Area building that is in poor or fair condition is proposed and is for a purpose compatible with the character of the building, the relaxation of development management standards on unit sizes, amenity space or parking will be considered by the Council.*

PS *5 Refuse planning permission for the demolition of any protected structure unless the Council is satisfied that exceptional circumstances exist. The demolition of a protected structure with the retention of its façade will likewise not generally be permitted.*

PS 6 *Favourably consider the change of use of any structure included on the Record of Protected Structures provided such a change of use does not adversely impact on its intrinsic character. In certain cases, the Planning Authority may relax site zoning restrictions / development standards in order to secure the preservation and restoration of the structure.*

PS 7 *Review and update the Record of Protected Structures on an on-going basis and to make additions and deletions as appropriate*

PS 8 *Integrate climate-change adaptation measures into all heritage works and maintenance plans by demonstrating green ways of working in historic buildings, ensuring that the carbon footprint of adaptation measures is considered*

PS 9 *Promote the repair and reuse of existing building stock, including heritage buildings, as a means of avoiding unnecessary carbon outlays with new build.*

PS 10 *Support proposals to improve the thermal performance of historic buildings with renewable energy technologies. Such proposals shall be sensitive to traditional methods of construction to ensure that the proposed works are appropriate and do not cause damage to the structure, require the removal of historic fabric such as original windows, doors and floors, or have a detrimental visual impact.*

Architectural Conservation Areas

ACA 1 *Ensure that any development, modifications, alterations, or extensions within an ACA are sited and designed appropriately, and are not detrimental to the character of the structure or to its setting or the general character of the ACA and are in keeping with any Architectural Conservation Area Statement of Character Guidance Documents prepared for the relevant ACA.*

ACA 2 *Demolition of buildings or substantial parts of structures in cases where those structures make a positive contribution to the special character of the ACA will not be acceptable in principle. Only in exceptional circumstances, where the redevelopment or replacement structures would produce substantial benefits for the community which would decisively outweigh the loss resulting from demolition, would demolition of this nature be considered.*

ACA 3 *Investigate the designation of further ACAs at appropriate locations throughout and prepare a character statement appraisal and area specific policy for each ACA to include Stradbally, Mountmellick Mountrath and Portarlington, (the latter in collaboration within Offaly County Council).*

Vernacular Buildings

VS 1 *Recognise the importance of the contribution of vernacular architecture which may not be protected to the promote where feasible the protection, retention and appropriate revitalisation and use of the vernacular built heritage, including structures that contribute to landscape and streetscape character and discourage the demolition of these structures;*

VS 2 *Resist the demolition of vernacular architecture, in particular thatched cottages and farmhouses and to encourage their sensitive reuse having regard to the intrinsic character of the structure.*

VS 3 *Ensure that both new build, and extensions to vernacular buildings are of an appropriate design and do not detract from the buildings character.*

VS 4 *Seek the repair and retention of traditional timber and/or rendered shop fronts and pub fronts, including those that may not be protected structures.*

VS 5 *Develop and publish guidelines on the conservation and appropriate reuse of Local Authority Cottages and similar vernacular structures.*

VS 6 *Have regard, where appropriate, to guidance in the DAHG Guidelines and conservation best practice in assessing proposed interventions and planning applications relating to vernacular structures, traditional farmhouses, their curtilage, out buildings and settings.*

Historic Gardens, Country Houses and Demesnes

CH 1 *Ensure that new development will not adversely affect the site, setting or views to and from historic gardens and designed landscapes.*

CH 2 *Require that any proposals for new development in an historic garden or demesne include an appraisal of the landscape, designed views and vistas, and an assessment of significant trees or groups of trees, as appropriate.*

CH 3 *Build on the information compiled as part of the National Survey of Historic Gardens & Designed Landscapes, and to carry out a survey to assess the intactness of these assets, including developing a strategy for their conservation, restoration and development.*

CH 4 *Assess the demesnes and historic designed landscapes within Laois and promote the conservation of their essential character, both built and natural, while allowing for appropriate re-use.*

CH 5 *Work with stakeholders including the OPW, The Heritage Council , the Arts Council, local communities and businesses to support the development of heritage and cultural tourism in County Laois.*

CH6 *To implement the action in relation to the development of a Cultural Quarter within the Town Centre of Portlaoise as envisaged in the "Portlaoise 2040 - A Strategy for a Better Town Centre" which places the celebration of its heritage at its core through the provision or expansion of existing facilities to provide heritage related interpretation and archive.*

Guidelines

12.18 The report format and some of the descriptions of effects are based on the **Guidelines on the Information to be contained in Environmental Impact Assessment Reports**, published by the Environmental Protection Agency (EPA) in 2022.

Significant Risks

12.19 There are no known significant risks to human health or environmental effects, which may occur in relation to this cultural heritage assessment.

Receiving Environment

Study Area

12.20 The overall study area is shown in **Figure 12-1**.

Baseline Study Methodology

12.21 Research has been undertaken in two phases. The first phase comprised a paper survey of all available archaeological, historical and cartographic sources. The second phase involved the archaeological assessment of the proposed development area.

Paper Study

12.22 This is a document search. The following sources were examined and a list of sites and areas of archaeological potential compiled:

- Record of Monuments and Places County Laois;
- The Sites and Monuments Record;
- Available aerial photography;
- Cartographic and written sources relating to the study area;
- Laois County Development Plan 2021-2027;
- The National Inventory of Architectural Heritage.

The Record of Monuments and Places

12.23 This was established under section 12 (1) of the 1994 National Monuments (Amendment) Act and provides that the Minister shall establish and maintain a record of monuments and places where the Minister believes there are monuments, such record to be comprised of a list of monuments and relevant places and a map or maps showing each monument and relevant place in respect of each county in the State. The associated files contain information of documentary sources and field inspections where these have taken place. Note that although the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 was signed into law by the President on October 13, 2023, the Act had not been commenced at the time this assessment was prepared. This assessment uses the National Monuments Acts 1930-2014, which were still in force at the time the assessment was completed. Several Recorded monuments were noted within the study area. All available information on these sites is provided in **Appendix 12-A**.

Cartographic Sources

12.24 This included seventeenth century mapping as well the 1st and 2nd editions of the Ordnance Survey six-inch maps and Documentary sources provide more general historical and archaeological background.

The County Development Plan

12.25 This notes structures listed for preservation.

Field Assessment

12.26 A field inspection was carried out on 14th of March 2024 to determine the location, extent and ascertain the significance of any archaeological sites and to identify any previously unrecorded or suspected sites and portable finds.

12.27 An archaeological geophysical survey was carried out in the application area in April 2024.

Receiving Environment, Historical & Archaeological Landscape

The Landscape

12.28 The application site is located in the townland of Cummer and Mounthall, County Laois on OS Six Inch sheet No. 11, to the north of the L1031 Road, c.3km north of Camross, Co. Laois. The application site is located in agricultural lands. The soil is a Clonegall series consisting of coarse loamy drift with siliceous stones overlying drift with siliceous stones.

Historical and Archaeological Background

12.29 The following is a brief summation of the main types of sites and monuments that are known from the county along with the historical development of the study area. It is intended as a guide to the types of sites and monuments that might be encountered in the study area.

12.30 The site is situated in the townlands of Mounthall and Cummer in the Barony of Upperwoods, and the civil parish of Offerlane.

The Prehistoric Period

12.31 The evidence of prehistoric activity in the study area consists of a flat topped circular barrow (RMP LA011-008----) in Cummer townland.

The Early Medieval Period

12.32 In the Early Medieval period (500 AD-1170 AD)) the study area was part of the Kingdom of Osraige (Ossory) which in the twelfth century included most of modern Kilkenny and part of western Laois. Osraige was a buffer Kingdom between Munster and Leinster. At the time of the Anglo-Norman invasion of Ireland Osraige was ruled by the MacGiollapadraigs and the study area was controlled by the Ui Foirchellain sept whose name was incorporated in the parish name of Offerlane. There is only a single reference to the Ui Foirchellain sept in the Annals of the Fours Masters from 899 which reads: Furbuidhi, son of Cuileannan, lord of Ui Foircheallain, was mortally wounded (MacCotter 2008, 182-3). Classically, settlement at this period is indicated by the presence of enclosed farmsteads known as ringforts, when enclosed with earthen banks, and cashels when enclosed by stone walls. However, there are no ringforts known from the study area. The closest example is in Longford townland (RMPLA016-004----) 2.7km to the south.

The Later Medieval Period

12.33 In 1169 immediately after Diarmait Mac Murchade, deposed King of Leinster, with the support of the Norman Knight Robert Fitz Stephen had taken Wexford they invaded Ossory. Mac Murchade was seeking revenge on Donnell MacGiollapadraig, the King of Ossory, for the blinding of his son. Donnell submitted to Diarmait and gave him hostages (Giraldus Cambrensis, The Conquest of Ireland, Chapter 16). On the death of Diarmait Mac Murchade in 1171 his son-in-law, Richard fitz Gilbert de Clare, claimed the Lordship of Leinster, including Ossory. However, by the time of his death in 1176, when control of Leinster passed to King Henry II, the process of sub-infeudation (the granting of lands by lords to their dependents, to be held by feudal tenure) does not appear to have begun in Ossory. The Annals of the Four Masters record the death of Donnell MacGiollapadraig as Lord of Ossory in 1176 and the death of his son Donnell Mac MacGiollapadraig as Lord of Ossory in 1185. So, the MacGiollapadraigs appear to have retained control of Ossory through the twelfth century.

12.34 In 1189 King Henry II gave Isabel de Clare, daughter and heiress of the deceased Lord of Leinster, to William Marshal in Marriage along with Leinster and other lands. William Marshall first came to Ireland in 1207 and soon after began to grant lands to his supporters (Otway Ruthven 1981, 77). About 1207 Marshall granted Offerlane to his nephew, William le Gras (Brooks 1950). This fief would have approximated the area of the parish of Offerlane, encompassing the whole study area. Le Gras established his manor of Offerlane at the main crossing point where the Dublin to Limerick road crossed the River Nore, on its western side. This is now the town of Castletown. In 1247, when the Marshall lands were partitioned, his son William le Gras was noted as holding ½ a Knight's fee at Offerlane of Richard de Clare, the Earl of Gloucester. In 1249 the Justiciar implemented the partition and committed to William le Gras the castle of Richard de Clare at Asferkerlon (Offerlane) (Sweetman 1875-86, I, No. 3017).

12.35 The process of Anglo-Norman settlement or sub-infeudation was often associated with the construction of timber castles, known as mottes. These earthwork fortifications were used to house and defend the Norman lords and their retinues while they set about the process of pacifying and organizing their new fiefs. There is a motte in the study area in Monelly townland (RMP LA011-007----) which would have been the manorial caput of the area.

12.36 Manorialism describes the organisation of the feudal rural economy and society characterised by the vesting of legal and economic power in a lord supported economically from his own direct landholding and from the obligatory contributions of a legally subject part of the peasant population under his jurisdiction. In Ireland the Lord's manor house was also sometimes enclosed by a rectangular moat and these sites are referred to as moated sites. They are a useful indicator of Anglo-Norman settlement. However, there are no moated sites in the study area. The closest example is in Killeen townland (RMP LA011-012----) just outside the study area to the southeast.

12.37 William le Gras seems to have been succeeded by his son, another William. This William died about 1283 and his son, Edmund le Gras, succeeded to Offerlane. By 1317 Edmund had been succeeded by Hamo le Gras, either his son or brother. However, by this time the manor was no longer in the hands of the le Gras. The MacGiollapadraigs, who had been pushed into the Slieve Bloom Mountains in the thirteenth century, were pressing south and Offerlane was the subject of attacks. An "Extent " of the possessions of Joan, Countess of Gloucester, widow of Earl Gilbert, dating 1307, has the following endorsement:

"And be it known that there is a castle [viz., that of Castletown] in Offerlane, which belonged to the Countess aforesaid, in which are contained, as well in lordship as in demesne, 29 carucates (c. 3,500 acres) 60 acres of land, which formerly were wont to be worth £26 4s. 4d.; but as this castle lies in a strong march, all the lands aforesaid lie waste on account of the war of the Irish, so that nothing can be recovered there-from; but the lord the King spends £40 a year of his own on the custody of the castle." (Sweetman 1875-86, V no. 670). Shortly after this the study area again came under the control of the MacGiollapadraigs and from this period was known as Upper Ossory. The fifteenth century was characterised by the decline of Anglo-Norman power in Ireland which had been ebbing since the early fourteenth century. Part of the response to this was the construction of masonry tower houses which sprang up after King Henry VI introduced a building subsidy of £10 in 1429 (Sweetman 1999, 137). There are no tower houses in the study area and the closest example is just 2.4km to the southwest at Srahanaboy (RMP LA010-006003-).

The Post-Medieval Period

12.38 The application area was unforfeited land and is not recorded in the seventeenth century Down Survey Down Survey. Griffith's primary valuation of 1847-64 records that the entire application site was held by Francis. M. Calcott Esq and let to William Phelan.

Buildings

Protected Structures

12.39 The County Laois Development Plan 2021-2027 and the Record of Protected Structures was examined as part of the baseline study for this chapter of the EIAR. The review established that there are no structures within the application area or the study area listed as Protected Structures.

National Inventory of Architectural Heritage

12.40 The National Inventory of Architectural Heritage (NIAH) which is maintained by the Dept. of Housing, Local Government and Heritage was examined as part of the baseline study for this chapter of the EIAR on the 3rd of February 2024. The review established that there are no structures included in the NIAH located within the application area or the study area.

Field Survey

12.41 A field survey was carried out on the 14th of March 2024. This involved visiting and photographing all additional structures indicated on the 1909 Edition of the six-inch Ordnance Survey mapping within 100m of the proposed application area. The locations of the structures are indicated on **Figure 12-1**. There is one structure located in this area that is not of special architectural significance (see **Table 12-2** below).

Table 12-2: Structures indicated on the 1909 Edition of the six-inch Ordnance Survey mapping within 100m of the proposed application area

No.	1
Structure type	Cottage
Townland	Mounthall
Designation	None
Data source	1909 edition 6 inch Ordnance Survey map
Perceived Significance:	No special architectural significance.
Type of effect:	Neutral
Significance of impact	Imperceptible
Description	Three bay cottage with modern parch entrance, slate roof and single chimney. One bay right angled extension with slate roof and single chimney at west. In line extension at east.
Illustration	**Plate 12-1**

Archaeology

Archaeological Assessment

Recorded Monuments

12.42 Note that in accordance with the Historic and Archaeological Heritage and Miscellaneous Provisions Bill 2023 the RMP will be replaced by the Register of Monuments, but the RMP was still legally in force when this assessment was prepared. Examination of the Record of Monuments and Places for Co. Laois indicated that there are no Recorded Monuments located within the application area.

12.43 The application area extends partly within the zone of notification of a barrow – unclassified in Cummer townland. These is described in the RMP as:

- ***LA011-008***---- *Cummer Barrow – unclassified*

  A flat topped circular mound (diam. c. 22m; H c. 1.75m) with slight dome in the centre.

The barrow is located c.100m east of the extraction area and will not be directly impact by the proposal. The potential of the proposal to negatively affect the setting of the Barrow – unclassified LA011-008---- will be mitigated by the construction of a grassed 2m high screening berm.

12.44 The next closest Recorded Monument to the proposed application area externally is a Castle - motte and bailey RMP LA011-007---- in Monelly townland. This potential monument is described in the RMP as:

- ***LA011-007**---- Monelly Castle - motte and bailey*

  A large flat-topped almost oval-shaped mound (summit diam. c. 27m N-S, base diam. c. 39m N-S; H c. 5.5m-6m) with a berm. A fosse (Wth c. 5.4m; D c. 0.75m) is visible at E and S and an external bank at S. Possible bailey at NNW.

This monument is located c.0.7km to the west of application area and will not be directly or indirectly impacted by the proposal.

12.45 The remaining Recorded Monuments in the study area are situated further from the application area and are considered too far distant to be directly or indirectly impacted by the proposed development.

Sites and Monuments Record

12.46 Examination of the Sites and Monuments Record (SMR) which is maintained by the Dept. of Housing, Local Government and Heritage on 31st of January 2024 indicated that there are no SMRs included within the application site or the study area.

Cartographic Sources

12.47 The Ordnance Survey 1st and 3rd edition six-inch maps and the 1st edition 25-inch maps of the area were examined (**Figures 12-2** and **12-3**). On the Ordnance Survey 1st edition map there is a Lime Kiln indicated that does not appear on later map editions and is not visible at ground level. The analysis did not indicate any other previously unrecorded archaeological sites in the application area or vicinity.

Aerial Photographs

12.48 Assessment of the Ordnance Survey 1995, 1996-2000, 2001-2005, 2006-12, 2011-13 and 2013-18 aerial imagery as well as Google Earth imagery from 2009, 2017, 2019, 2020, 2021 and 2022, Bing imagery was carried out as part of the assessment. There is an arcing bank in area that may have enclosed a potential oval enclosure or field (see **Plate 12-2**). The geophysical survey (see **Appendix 12-B**) has identified several anomalies within the potential enclosure. The assessment did not indicate any other additional archaeological, architectural or cultural heritage sites in the application area or vicinity.

Place Name Evidence

12.49 The place names were extracted from the cartography in order to facilitate the search for structures and monuments and small finds, to help identify any unrecorded monuments or structures, to search for any published papers and documents related to the study area and to assist in the study of the historical development of the area. The English translations of the townland names of the study presented above below are based on Logainm.ie. The placenames mainly refer to topography. There was a church (SMR LA011-021003-) in Killeen townland which is no longer visible at ground level. The palisade referred to in Monelly could have been associated with the motte castle (RMP LA011-007----).

- Ballina approach to the ford
- Cappanarrow tillage-plot of the corn
- Cardtowntown of the artisan

- Cummer meeting of streams
- Glendine deep glen
- Johnsborough literally John's town
- Killeen little church
- Knockannagad hillock of the cats
- Monelly bog(land) of the palisade?
- Mounthall probably originally Killaterry
- Srahanboy yellow little river meadow

Previous assessment and planning permission

12.50 A review of the County Laois Public Planning Application Finder indicated that there have been no previous archaeological assessments of the application area.

Archaeological investigations in the study area

12.51 Examination of the excavations database at excavations.ie indicated that have been no licensed archaeological excavations carried out within the application area or the study area.

Laois County Development Plan

12.52 No sites of archaeological importance, National Monuments, or protected structures listed in the County Laois Development Plan 2021-2027 are located within the proposed development area.

Field Assessment

Site inspection

12.53 A site inspection was carried out on the 14th of March 2024 to identify any previously unknown archaeological or cultural heritage sites within the application area. See **Plate 12-2** for the numbered fieldwork areas.

12.54 **Area 1**

This is part of the existing sand and gravel pit and has already been extracted (see **Plate 12-3**).

12.55 **Area 2**

This is a concave -shaped southeast-sloping area of pasture, enclosed by low banks with hedgerow and some mature trees. There was no visible surface indication of any archaeological or cultural heritage material (see **Plate 12-4**).

12.56 **Area 3**

This is the eastern part of rectilinear-shaped area of a south-sloping depression in pasture, enclosed by low banks with hedgerow and some mature trees. There was no visible surface indication of any archaeological or cultural heritage material (see **Plate 12-5**).

12.57 **Area 4**

This is a wedge-shaped area of south and east sloping pasture, enclosed by low banks with hedgerow and some mature trees. There was no visible surface indication of any archaeological or cultural heritage material (see **Plate 12-6**).

12.58 **Area 5**

This is a wedge-shaped area consisting of a knoll with overgrown hazel, gorse and bramble, enclosed by low banks with mature hazel. There was no visible surface indication of any archaeological or cultural heritage material (see **Plate 12-7**).

12.59 **Area 6**

This is an irregular-shaped area of steeply south-sloping rough pasture partly overgrown with gorse and bramble, enclosed by banks overgrown with gorse and bramble and some mature tree. There was no visible surface indication of any archaeological or cultural heritage material (see **Plate 12-8**).

12.60 **Area 7**

This is the western part of an irregular-shaped area of rough pasture partly overgrown with gorse and bramble, enclosed by banks overgrown with gorse and bramble and some mature trees (see **Plate 12-9**). There is an arcing bank in area 7 that may have enclosed a potential oval enclosure or field. The potential enclosure/field is on a steep south facing slope and has an internal diameter of c.120m southwest-northeast with upstanding bank at west (1.8m wide and c.1m high) and mostly levelled bank at north (see **Plates 12-10** and **12-11**).

Geophysical Survey

12.61 A high resolution magnetometry survey was conducted by AMS in April 2024 (NMS Licence No. 24R0247) on 9.8 Ha[1] (out of c.11 ha[2]). There are 25 anomalies identified and numbered in the report (see **Table 12-3** below). The most significant anomalies identified were*:*

- Anomalies **M3** (Appendix 12-B Figure 9) and **M11** (Appendix 12-B Figure 10): weakly contrasting positive curvilinear areas of enhanced responses that contain within them some stronger potential pit-type anomalies that may represent elements of an enclosing feature, such as a ditch. The pit-type responses may represent palisade post-pits, or elements of a ditch that created a stronger response.
- Anomaly **M5** (Appendix 12-B Figure 9) is a strongly contrasting positive magnetic anomaly which has produced a signal suggesting an area of burning. This anomaly is located within 7m of a lime kiln marked on the first-edition six-inch Ordnance Survey (OS) map. While this response could indicate any combustion-related event, including a hearth, a fulacht fiadh, a furnace, a burnt spread, a charcoal spread and modern or recent bonfires, it is almost certainly indicative of the known lime kiln.
- **M13** (Appendix 12-B Figure 10) is a weakly contrasting area of magnetic enhancement containing several pit-type anomalies in a possible circular alignment. This may be of

[1] Agricultural lands accessible for survey
[2] Lands still under agriculture

archaeological significance and could represent an enclosing element or may be of natural origin.

12.62 The remaining anomalies consist of a Lime Kiln marked on the first edition six-inch OS map, serval areas of burning or dumping, Linear/curvilinear anomalies representing possible relict field boundary and various Curvilinear, Sub-circular, rectilinear and irregularly-shaped anomalies that could have an archaeological or natural cause.

Table 12-3: Magnetometry survey results: 25 anomalies identified

No.	Description/ Interpretation	Significance	Impact	Recommendation
M1	A strongly magnetic isolated dipolar anomaly c. 8m x 7m. This area of positive magnetic enhancement may have an archaeological or natural cause. This anomaly has produced a signal suggesting a possible area of burning. This could include a hearth, a fulacht fiadh, a furnace, a kiln or any other combustion-related event, including modern or recent bonfires.	Potential	High	Test
M2	A strong positive linear anomaly c. 30m in length. This anomaly may represent a pre-OS map field system or may be natural in origin.	Potential	High	Test
M3	A weakly magnetic curvilinear area of enhancement containing a spread of strong positive anomalies, c. 22m in length. The stronger, potential pit-type anomalies suggest this may represent an enclosing element. This area of enhancement may have an archaeological or natural cause.	Potential	High	Test
M4	A weak irregularly shaped area of magnetic enhancement containing several strong positive anomalies in a subcircular pattern, c. 4m in diameter. The stronger, potential pit-type anomalies may suggest this could represent an enclosing element. This area of enhancement may have an archaeological or natural cause.	Potential	High	Test
M5	This is an irregularly shaped strong magnetic anomaly, c. 13m x 8m. This strongly magnetic anomaly has produced a signal indicative of an area of burning. This could suggest any combustion-related event, though is almost certainly associated with a lime kiln present in this area depicted on the first-edition six-inch OS map.	High	High	Test
M6	A strongly magnetic isolated dipolar anomaly c. 6m x 4m. This area of positive magnetic enhancement may have an archaeological or natural cause. This anomaly has produced a signal suggesting a possible area of burning. This could include a hearth, a fulacht fiadh, a furnace, a kiln or any other combustion-related event, including modern or recent bonfires.	Potential	High	Test

M7	A strong positive magnetic response with an irregular shape c. 9m x 3m. This anomaly may represent an infilled ditch or may indicate an area of burning. This strong positive anomaly may have an archaeological or natural cause. Given the location of a known lime kiln associated with M5 to the north, anomaly M7 may also be related to industrial burning.	Potential	High	Test
M8	A strong positive magnetic response c. 6m x 2m. This anomaly has produced a signal suggesting a possible area of burning or dumping. This anomaly may have an archaeological or natural cause, that could include occupational disturbance, imported soil or ploughed out archaeological remains. Given the location of a known lime kiln associated with M5 to the east-northeast, anomaly M8 may also be related to industrial burning.	Potential	High	Test
M9	A strong positive magnetic linear anomaly c. 10m in length. This anomaly may represent a pre-OS map field system or may be natural in origin.	Potential	High	Test
M10	A spread of strongly magnetic anomalies, c. 14m length x 10m width, which have produced a signal suggesting an area of burning or dumping. This area of enhancement may signify an occupationally enhanced soil or a natural feature.	Potential	High	Test
M11	A weak curvilinear area of magnetic enhancement containing a spread of strong positive anomalies, c. 27m in length. The stronger, potential pit-type, anomalies suggest this may represent an enclosing element. This area of enhancement may have an archaeological or natural cause.	Potential	High	Test
M12	A weak curvilinear anomaly c. 22m in length. This area of enhanced magnetic response may represent an enclosing element, a modern feature or near-surface geology. This area of magnetic enhancement may have an archaeological or natural cause.	Potential	High	Test
M13	A subcircular area of magnetic enhancement containing several strong magnetic pit-like responses in a circular trend, c. 17m in diameter. The stronger positive anomalies may represent post holes of an enclosing element. This area of magnetic enhancement may have an archaeological or natural cause.	Potential	High	Test
M14	A weak curvilinear anomaly c. 15m in length. This area of enhanced magnetic response may represent an enclosing element, a modern feature or near-surface geology. This area of magnetic enhancement may have an archaeological or natural cause.	Potential	High	Test

M15	A weak rectilinear anomaly, c. 14m in length. This anomaly may represent a pre-OS map field system, part of an enclosing element or near surface geology. This area of magnetic enhancement may have an archaeological or natural cause.	Potential	High	Test
M16	This area of magnetic enhancement is an irregularly shaped positive anomaly, c. 5m x 3m. This strongly magnetic anomaly may represent in-situ burning. This area of enhancement may signify an occupationally enhanced soil or a natural feature.	Potential	High	Test
M17	This is an area of magnetic enhancement, c. 5m x 4m. This anomaly may indicate an area of burning, such as a hearth, furnace, or modern bonfire. May have an archaeological or natural cause, that could include occupational disturbance or ploughed out archaeological remains.	Potential	High	Test
M18	A weakly contrasting positive rectilinear anomaly c. 16m x 14m. This area of enhancement may signify a pre-OS map field system, part of an enclosing element, an occupationally enhanced soil or a natural feature.	Potential	High	Test
M19	A weakly contrasting positive rectilinear anomaly c. 13m in length. This area of enhancement may signify a pre-OS map field system, part of an enclosing element, an occupationally enhanced soil or a natural feature.	Potential	High	Test
M20	A rectilinear positive magnetic anomaly, c. 5m in length. This anomaly may represent a pre-OS map field system, natural feature, or an area of in-situ burning. This area of positive magnetic enhancement may have an archaeological or natural cause, that could include occupational disturbance, imported soil or ploughed out archaeological remains.	Potential	High	Test
M21	A weakly contrasting positive curvilinear anomaly c. 12m in length. This anomaly may represent a possible ditch that could indicate part of an enclosing element. This anomaly may continue to the south outside of the surveyable portion of the study area. This may have an archaeological, modern or natural cause.	Potential	High	Test
M22	A strongly magnetic irregularly shaped positive anomaly, c. 4m x 3m. This area of magnetic enhancement may represent an area of in-situ burning. This area of positive magnetic enhancement may have an archaeological or natural cause, that could include occupational disturbance or ploughed out archaeological remains.	Potential	High	Test

M23	This is an irregularly shaped positive anomaly c. 8m x 2m. This is an area of enhancement contains strong magnetic responses. This may have an archaeological, modern or natural cause, that could include occupational disturbance, imported soil or ploughed out archaeological remains.	Potential	High	Test
M24	A weak negative linear anomaly is c. 47m in length. This anomaly may represent a possible ditch, that could indicate a pre-OS map filed system or may be natural in origin.	Potential	High	Test
M25	A weak positive curvilinear anomaly c. 50m in length. This anomaly may represent a pre-OS map field system or may indicate near surface geology. This area of enhancement may have an archaeological or natural cause.	Potential	High	Test

Assessment Of Potential Impacts

Direct Impacts

12.63 Twenty-five sub-surface anomalies that represent potential archaeological material have been identified through geophysical survey.

12.64 A Barrow – unclassified RMP LA011-008---- is located c.100m east of the proposed extraction area. The proposal has the potential to negatively affect the setting of the monument. There will be no direct effects on any known items of archaeological, architectural or cultural heritage in the application area or the vicinity.

Indirect Impacts

12.65 There will be no indirect effects on any known items of archaeological, architectural or cultural heritage in the application area or the vicinity.

Interactions with Other Impacts

12.66 No interaction with other impacts has been identified.

Do Nothing Impacts

12.67 In a “do nothing scenario”, the proposed extraction and land restoration activities would not proceed at the application site. The existing permitted sand and gravel pit would remain in its current state and the proposed extension area would not progress leaving the mineral resource unused and remaining in-situ at the site. The local supply of quality aggregates would not be augmented and would become increasingly restricted. The agricultural pastural use would continue in the rest of the application site. This would result in no impact on archaeological, architectural or cultural heritage.

12.68 The site would not be used to maximum advantage and the opportunity would be missed to obtain high quality and desirable sand and gravel from a proven resource.

Worst Case Impact

12.69 In the worst case, the development might potentially have a significant and permanent negative/adverse effect previously unknown archaeological deposits or artefacts without preservation by record taking place.

Unplanned Events

12.70 No unplanned events arising from the proposal capable of impacting known archaeological, architectural or cultural heritage within the application area has been identified by the assessment.

Cumulative Impacts

12.71 There will be no cumulative impact upon any archaeological, architectural or cultural heritage sites in combination with other plans or projects.

Recommendations / Proposed Mitigation Measures

Direct Impacts

12.72 Twenty-five sub-surface anomalies that represent potential archaeological material have been identified through geophysical survey. A test excavation will be commissioned to investigate the nature of these anomalies. Any of these anomalies that are confirmed to be of archaeological significance will be preserved by record under licence from the National Monuments Service in advance of development.

12.73 The potential of the proposal to negatively affect the setting of the Barrow – unclassified LA011-008---- will be mitigated by the construction of a grassed 2m high screening berm.

Indirect Impacts

12.74 No indirect effects on any items of archaeological, architectural or cultural heritage warranting specific mitigation were identified during the course of the cultural heritage assessment.

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Plates

Plate 12-1 Structure 1 looking northeast.

Plate 12-2 Google earth image taken in 2022.

The application area is indicated with the red line, the proposed extraction area with the dashed black line and the fieldwork. areas are numbered. The area of arcing bank that may indicate a potential enclosure/field in area 7 is indicated by the yellow dashed line.

Plate 12-3 Panoramic view of area 1 looking northeast.

Plate 12-4 Panoramic view of area 2 looking northwest.

Plate 12-5 Panoramic view of area 3 looking southeast.

Plate 12-6 Panoramic view of area 4 looking northeast.

Plate 12-7 View of area 5 looking southeast.

Plate 12-8 Panoramic view of area 6 looking northwest.

Plate 12-9 Panoramic view of area 7 looking north.

Plate 12-10 View of the western section bank enclosing the oval enclosure in area 7 looking north.

Plate 12-11 View of northern section bank enclosing the oval enclosure in area 7 looking south.

Figures

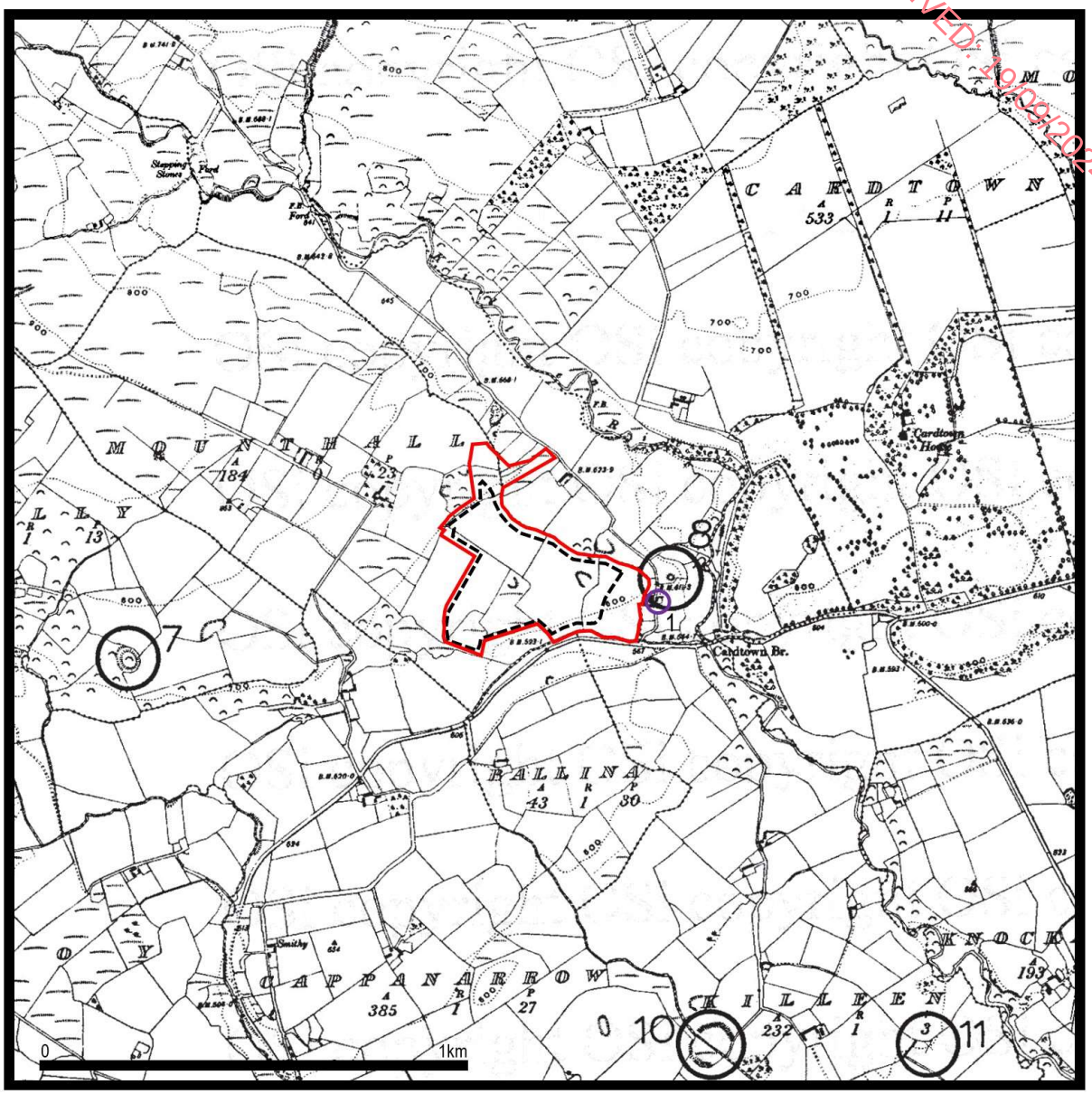

Figure 12-1 The study area.

The red line is the application area, the dashed black line is the proposed extraction area. RMPs are indicated with black circles, and structures within 100m of the application area with purple circles.

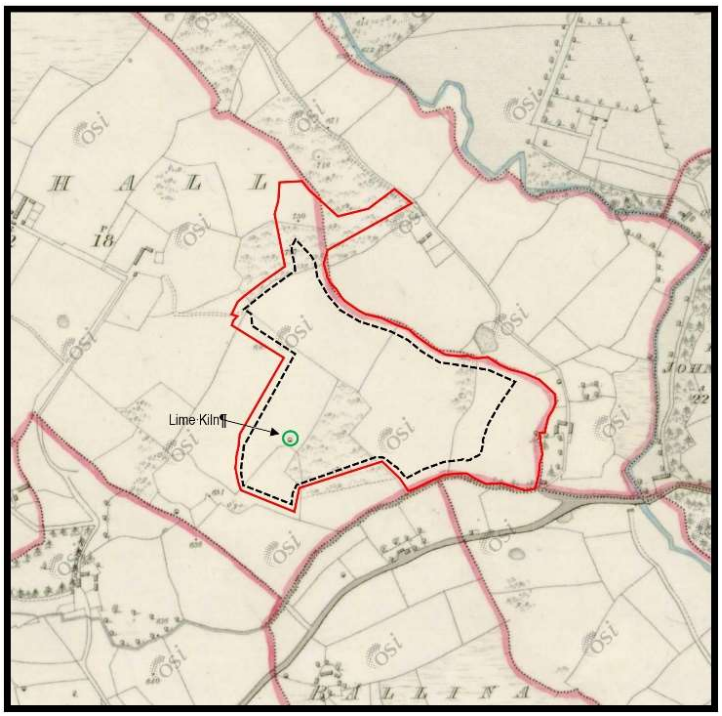

Figure 12-2 The OS 1st edition map indicating the application area (red line).

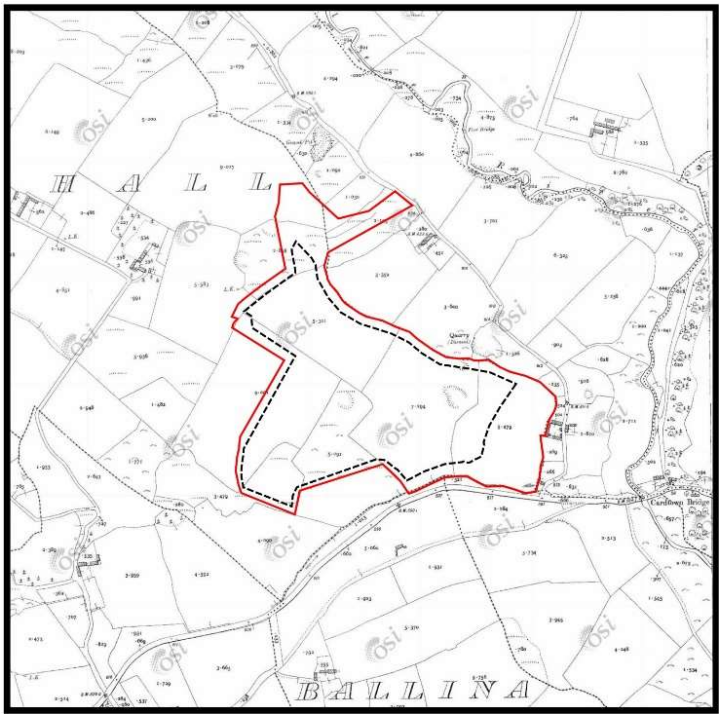

Figure 12-3 The OS 1st edition twenty-five map indicating the application area (red line).

Appendices

Appendix 12-A Sites in the Record of Monuments and Places in the study area

LA011-007---- Monelly Castle - motte and bailey

A large flat-topped almost oval-shaped mound (summit diam. c. 27m N-S, base diam. c. 39m N-S; H c. 5.5m-6m) with a berm. A fosse (Wth c. 5.4m; D c. 0.75m) is visible at E and S and an external bank at S. Possible bailey at NNW.

LA011-008---- Cummer Barrow – unclassified

A flat topped circular mound (diam. c. 22m; H c. 1.75m) with slight dome in the centre.

LA011-010---- Cappanarrow, Killeen Enclosure

Marked on the 1841 and 1909 editions of the OS 6-inch maps; a subcircular enclosure (max. diam. c. 110m NE-SW). No visible surface remains.

LA011-011---- Killeen Font

Rough stone with hollow (Wth 0.22m, D 0.7m) originally from Killeen church (LA011-021003-) (Carrigan 1905, vol. 2, 151) located in a field to the N of a graveyard known as the 'Burying Meadow' which was the burial place of unbaptised children (LA011-021001/0022). In the field to the N of the graveyard there was a font located beside the 'Mass Pit'. No visible surface remains. Situated on wet marshy land. According to the History of the Queen's County 'The "Mass Pit" in Killeen is one field north of Killeen "Burying Meadow" (LA011-021001/002-), in which stood many centuries ago the ancient church of Killeen (LA011-021003-). Beside the Mass Pit is the holy water font of the church, a piece of rough freestone with round artificial hollow 9in. Wide and 3 in. deep.

LA011-021001/002- Killeen graveyard

Graveyard known as the 'Burying Meadow' which was the burial place of unbaptised children (LA011-021001/0022). No visible surface remains. No exact location provided in the RMP.

LA011-021003- Killeen church

The ancient church of Killeen. No visible surface remains. No exact location provided in the RMP.

Appendix 12-B Geophysical Survey

Proposed quarry extension at Mounthall townland, Co. Laois, Archaeological Geophysical Report

Prepared for Breedon Ireland

By Finn Melia

June 2024

TITLE PAGE

AMS Job No.:	J3513
Project Name:	Proposed quarry extension at Mounthall townland, Co. Laois, Archaeological Geophysical Report
Client Name:	Breedon Ireland
Townland Name(s):	Mounthall
Grid Reference (ITM):	626731, 698139 (Project Centre Point)
Date of Survey:	29–30 April 2024
Consent Number:	24R0247
Consent Holder:	Finn Melia
Geophysical Surveyors:	Finn Melia and Jeff O'Neill
Data Processing:	Finn Melia
Graphics/Illustrations:	Finn Melia
Report Status/Revision:	1.4/Final
Revision Date:	19 June 2024
Report Author:	Finn Melia
Technical Reviewer:	Dr James Bonsall
Report Editor:	Anne-Marie Hardy
Approved By:	Dr James Bonsall
File Name:	J3513_Mounthall_Quarry_Project_Geophysical_Report_2024_v1.4Final

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Disclaimer

The results, conclusions and recommendations contained within this report are based on information available at the time of its preparation. Whilst every effort has been made to ensure that all relevant data have been collated, the author and AMS accept no responsibility for omissions and/or inconsistencies that may result from information becoming available subsequent to the report's completion.

Summary

This report describes the results of an Archaeological Geophysical Survey under detection device consent No. 24R0247, issued to Finn Melia of Archaeological Management Solutions (AMS). Surveys were carried out at a proposed quarry extension located in the townland of Mounthall, Co. Laois.

The survey area comprised 9.8ha across one site divided into six fields; however, it is worth noting that parts of the upper fields were not surveyed due to densely overgrowth (the total Mounthall quarry extension covers an area of approximately 11ha). The investigation comprised a high-resolution magnetometry survey undertaken in April 2024.

The magnetometry survey of the site successfully characterised the extent of potential archaeological deposits. The responses across the survey area were generally good, revealing some possible archaeological features. Several potentially archaeological significant anomalies were identified, such as linear anomalies, curvilinear anomalies, pit-type anomalies and several areas of strong magnetic responses that suggest potential areas of burning.

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

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Abbreviations and Definitions

Abbreviation	Definition
AMS	Archaeological Management Solutions
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
ZoN	Zone of Notification
LCC	Laois County Council

Coordinate System

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

Introduction

1.1 Project Background

This report describes the results of an Archaeological Geophysical Survey undertaken by Archaeological Management Solutions (AMS) for Breedon Ireland between 29–30 April 2024 for a proposed quarry extension (Consent No.: 24R0247). Surveys were undertaken within the townland of Mounthall, Co. Laois (Figure 1). The surveys were carried out within the Lands Made Available (LMA) for the project.

The on-site elements of the proposed Mounthall quarry extension covers an area of approximately 11ha over six fields in the townland of Mounthall, within the civil parish of Offerlane, in the barony of Upperwoods. Of these fields, the archaeological geophysical study area covered approximately 9.8ha with the rest being considered un-surveyable due to dense overgrowth (Figure 2). The archaeological geophysical assessment undertaken on behalf of Breedon Ireland comprised magnetometer survey in areas adjacent to the existing quarry.

1.2 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 9.8ha of survey area. The surveys were carried out under consent No. 24R0247, issued to Finn Melia of AMS by the National Monuments Service (NMS) to record potential archaeological activities.

1.3 Topography, Soils and Geology

The survey area comprises steeply undulating, grazed pasture that is overgrown in places with gorse and brambles. The local soils primarily consist of moderately-draining coarse loamy drift with siliceous stones (GSI 2024). The study area comprises a quaternary primarily consisting of till derived from Devonian sandstones (GSI 2024) to the northwest and southeasterly portions of the study area. The quaternary of the central portion of the survey area comprises gravels derived from Devonian sandstones (GSI 2024). The bedrock geology consists of Pale and red sandstone, grit & claystone (Cadamstown Formation; GSI 2024). These soils and geology are suitable for a magnetometry survey, which was chosen as the most appropriate method of assessment.

1.4 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 Monuments and Recorded Archaeological Sites

The design proposal for the project will not directly impact any recorded archaeological sites in either of the survey areas; however, areas of high archaeological potential do exist within 800m of the survey areas. These comprise two sites listed on the Sites and Monuments Record (SMR) in the vicinity (see Figure 3 & Table 1): LA011-007----, a Castle - motte and bailey, located approximately 750m west of the study area, and LA011-008----, Barrow – unclassified, located approximately 60m east of the study area.

Table 1: Recorded archaeological sites within 800m of the site.

SMR No.	Classification	Townland	ITM Easting	ITM Northing
LA011-007----	Castle - motte and bailey	Monelly	625756	697975
LA011-008----	Barrow – unclassified	Cummer	627033	698155

2.2 Previous Archaeological Investigations

There are no previous excavations or investigations recorded on excavations.ie within or surrounding the proposed survey areas.

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.[1]

2.4 Placenames

The proposed development and related programme of geophysical survey took place within the townland of Mounthall in Co. Laios, it is an anglicised name with no available translations.[2]

[1] 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: 28 February 2024].

[2] https://www.logainm.ie/28284.aspx [Accessed: 28 May 2024]

2.5 Cartographic Evidence (Historical OS Maps)

The Ordnance Survey (OS) maps for the Mounthall study area indicates that little change has occurred since the first edition was produced in 1837, with the land divisions remaining the same today as they were on all the historical OS maps. The most significant indications from the historical OS mapping are the presence of a lime kiln within the survey area, visible on the first-edition six-inch OS map produced in 1837, and the presence of three clay pits within the survey area. These are visible on the 25-inch map (1897) and the six-inch Cassini (1940) maps; however, they are located within portions of the study area that are densely overgrown with gorse and brambles, consequently these areas were not surveyable. Alongside this, the OS maps also indicate the presence of a disused quarry outside the survey area, to the north of the most eastern field. This quarry is present on all the historical OS maps.

3 Methodology

3.1 Personnel

The Geophysical Survey was directed by Finn Melia under Consent No.: 24R0247. The survey comprised high-resolution magnetometry undertaken by Finn Melia and Jeff O'Neill. The report has been written by Finn Melia. The investigation focused on a Study Area of 9.8ha.

3.2 Magnetometry Survey

The survey employed a detailed magnetometer survey, recording the vertical magnetic gradient i.e. a fluxgate magnetometer. 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. 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 into 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.[3] This project used the long-term release version of the software (3.18.1) as the basic platform to access, view and analyse the geophysical visualisations produced in Snuffler.

[3] QGIS. Quantum GIS v3.18.1. https://www.qgis.org/en/site/

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;[4]
- Sites and Monuments Record (SMR) point and polygon vectors as a Web Map Service (WMS);[5]
- 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.[6]

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. The geophysical visualisations for the Study Area are included in Figure 4 (overview), Figure 5 (northwest areas), Figure 6 (southwest areas) and Figure 7 (eastern areas). The respective interpretations can be seen in Figure 8, Figure 9 and Figure 10.

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.

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

[5] SMR data accessed from https://data.gov.ie/dataset/national-monuments-service-archaeological-survey-of-ireland

[6] 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 (Figure 4–7) and the magnetometry interpretation (Figures 8–10) should be cross-referenced with the descriptions (below) for a discussion of the anomalies.

The magnetometry survey of the sites successfully characterised the extent of potential archaeological deposits. The responses across the survey areas were generally good, revealing some possible archaeological features. Large areas could not be assessed due to the presence of frequent gorse vegetation – the survey was carried out in all areas that were accessible. Of the area assessed, most of the potentially archaeological anomalies revealed were located within the southwestern portion of the survey area; however, there are a number of areas of magnetic enhancement present elsewhere. The majority of identified anomalies in the survey area were common dipolar responses and potential pit-type anomalies. Other than commonly identified dipolar or ferrous responses, the most significant archaeological features identified were:

- Anomalies M3 (Figure 9) and M11 (Figure 10): weakly contrasting positive curvilinear areas of enhanced responses that contain within them some stronger potential pit-type anomalies that may represent elements of an enclosing feature, such as a ditch. The pit-type responses may represent palisade post-pits, or elements of a ditch that created a stronger response.
- Anomaly M5 (Figure 9) is a strongly contrasting positive magnetic anomaly which has produced a signal suggesting an area of burning. This anomaly is located within 7m of a lime kiln marked on the first-edition six-inch Ordnance Survey (OS) map. While this response could indicate any combustion-related event, including a hearth, a *fulacht fiadh*, a furnace, a burnt spread, a charcoal spread and modern or recent bonfires, it is almost certainly indicative of the known lime kiln.
- M13 (Figure 10) is a weakly contrasting area of magnetic enhancement containing several pit-type anomalies in a possible circular alignment. This may be of archaeological significance and could represent an enclosing element or may be of natural origin.

4.1.1 Magnetometry anomalies

M1 – This is a strongly magnetic isolated dipolar anomaly approximately 8m x 7m. (Figure 8) This area of positive magnetic enhancement may have an archaeological or natural cause. This anomaly has produced a signal suggesting a possible area of burning. This could include a hearth, a *fulacht fiadh*, a furnace, a kiln or any other combustion-related event, including modern or recent bonfires.

M2 – This is a strong positive linear anomaly approximately 30m in length (Figure 9). This anomaly may represent a pre-OS map field system or may be natural in origin.

M3 – This is a weakly magnetic curvilinear area of enhancement containing a spread of strong positive anomalies, approximately 22m in length. (Figure 9). The stronger, potential pit-type, anomalies

suggest this may represent an enclosing element. This area of enhancement may have an archaeological or natural cause.

M4 – This is a weak irregularly shaped area of magnetic enhancement containing several strong positive anomalies in a subcircular pattern, approximately 4m in diameter (Figure 9). The stronger, potential pit-type anomalies may suggest this could represent an enclosing element. This area of enhancement may have an archaeological or natural cause.

M5 – This is an irregularly shaped strong magnetic anomaly, approximately 13m x 8m (Figure 9). This strongly magnetic anomaly has produced a signal indicative of an area of burning. This could suggest any combustion-related event, though is almost certainly associated with a lime kiln present in this area depicted on the first-edition six-inch OS map.

M6 – This is a strongly magnetic isolated dipolar anomaly approximately 6m x 4m (Figure 9). This area of positive magnetic enhancement may have an archaeological or natural cause. This anomaly has produced a signal suggesting a possible area of burning. This could include a hearth, a *fulacht fiadh*, a furnace, a kiln or any other combustion-related event, including modern or recent bonfires.

M7 – This is a strong positive magnetic response with an irregular shape approximately 9m x 3m in size (Figure 9). This anomaly may represent an infilled ditch or may indicate an area of burning. This strong positive anomaly may have an archaeological or natural cause. Given the location of a known lime kiln associated with M5 to the north, anomaly M7 may also be related to industrial burning.

M8 – This is a strong positive magnetic response approximately 6m x 2m in size (Figure 9). This anomaly has produced a signal suggesting a possible area of burning or dumping. This anomaly may have an archaeological or natural cause, that could include occupational disturbance, imported soil or ploughed out archaeological remains. Given the location of a known lime kiln associated with M5 to the east-northeast, anomaly M8 may also be related to industrial burning.

M9 – This is a strong positive magnetic linear anomaly approximately 10m in length (Figure 9). This anomaly may represent a pre-OS map field system or may be natural in origin.

M10 – This is a spread of strongly magnetic anomalies, approximately 14m length x 10m width, which have produced a signal suggesting an area of burning or dumping (Figure 9). This area of enhancement may signify an occupationally enhanced soil or a natural feature.

M11 – This is a weak curvilinear area of magnetic enhancement containing a spread of strong positive anomalies, approximately 27m in length (Figure 9). The stronger, potential pit-type, anomalies suggest this may represent an enclosing element. This area of enhancement may have an archaeological or natural cause.

M12 – This is a weak curvilinear anomaly approximately 22m in length (Figure 10). This area of enhanced magnetic response may represent an enclosing element, a modern feature or near-surface geology. This area of magnetic enhancement may have an archaeological or natural cause.

M13 – This is a subcircular area of magnetic enhancement containing several strong magnetic pit-like responses in a circular trend, approximately 17m in diameter (Figure 10). The stronger positive anomalies may represent post holes of an enclosing element. This area of magnetic enhancement may have an archaeological or natural cause.

M14 – This is a weak curvilinear anomaly approximately 15m in length (Figure 10). This area of enhanced magnetic response may represent an enclosing element, a modern feature or near-surface geology. This area of magnetic enhancement may have an archaeological or natural cause.

M15 – This is a weak rectilinear anomaly, approximately 14m in length (Figure 10). This anomaly may represent a pre-OS map field system, part of an enclosing element or near surface geology. This area of magnetic enhancement may have an archaeological or natural cause.

M16 – This area of magnetic enhancement is an irregularly shaped positive anomaly, approximately 5m x 3m (Figure 8). This strongly magnetic anomaly may represent *in-situ* burning. This area of enhancement may signify an occupationally enhanced soil or a natural feature.

M17 – This is an area of magnetic enhancement, approximately 5m x 4m (Figure 9). This anomaly may indicate an area of burning, such as a hearth, furnace, or modern bonfire. may have an archaeological or natural cause, that could include occupational disturbance or ploughed out archaeological remains.

M18 – This is a weakly contrasting positive rectilinear anomaly approximately 16m x 14m (Figure 9). This area of enhancement may signify a pre-OS map field system, part of an enclosing element, an occupationally enhanced soil or a natural feature.

M19 – This is a weakly contrasting positive rectilinear anomaly approximately 13m in length (Figure 9). This area of enhancement may signify a pre-OS map field system, part of an enclosing element, an occupationally enhanced soil or a natural feature.

M20 – This is a rectilinear positive magnetic anomaly, approximately 5m in length (Figure 9). This anomaly may represent a pre-OS map field system, natural feature, or an area of *in-situ* burning. This area of positive magnetic enhancement may have an archaeological or natural cause, that could include occupational disturbance, imported soil or ploughed out archaeological remains.

M21 – This is a weakly contrasting positive curvilinear anomaly approximately 12m in length (Figure 10). This anomaly may represent a possible ditch that could indicate part of an enclosing element. This

anomaly may continue to the south outside of the surveyable portion of the study area. This may have an archaeological, modern or natural cause.

M22 – This is a strongly magnetic irregularly shaped positive anomaly, approximately 4m x 3m (Figure 10). This area of magnetic enhancement may represent an area of *in-situ* burning. This area of positive magnetic enhancement may have an archaeological or natural cause, that could include occupational disturbance or ploughed out archaeological remains.

M23 – This is an irregularly shaped positive anomaly approximately 8m x 2m in size (Figure 10). This is an area of enhancement contains strong magnetic responses. This may have an archaeological, modern or natural cause, that could include occupational disturbance, imported soil or ploughed out archaeological remains.

M24 – This is a weak negative linear anomaly approximately 47m in length (Figure 8). This anomaly may represent a possible ditch, that could indicate a pre-OS map filed system or may be natural in origin.

M25 – This is a weak positive curvilinear anomaly approximately 50m in length (Figure 10). This anomaly may represent a pre-OS map field system or may indicate near surface geology. This area of enhancement may have an archaeological or natural cause.

5 Conclusions

The magnetometry survey of the site successfully characterised the extent of potential archaeological deposits. The responses across the survey area were generally good, revealing some possible archaeological features. Other than commonly found dipolar and possible pit-like responses, the most significant archaeological features identified were:

- Anomalies M3 and M11 are weak positive curvilinear areas of enhanced responses that contain stronger potential pit like anomalies that may represent elements of an enclosing feature, such as a ditch.
- Anomaly M5 is strongly positive anomalies which have produced a signal suggesting an area of burning. This could include a hearth, a *fulacht fiadh*, a furnace, a kiln, a burnt spread, a charcoal spread or any other combustion-related event, including modern or recent bonfires. This anomaly is located close to a lime kiln present on the first-edition OS map.
- A weak area of enhancement containing several pit-like anomalies in a possible circular alignment (M13) may be of archaeological significance such as an enclosing element or may be of natural origins.

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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Schmidt, A.R., Linford, P., Linford, N., David, A., Gaffney, C.F., Sarris, A. & Fassbinder, J. 2015. *EAC Guidelines for the use of Geophysics in Archaeology: Questions to Ask and Points to Consider*. EAC Guidelines 2. Namur, Belgium: Europae Archaeologia Consilium (EAC), Association Internationale sans But Lucratif (AISBL).

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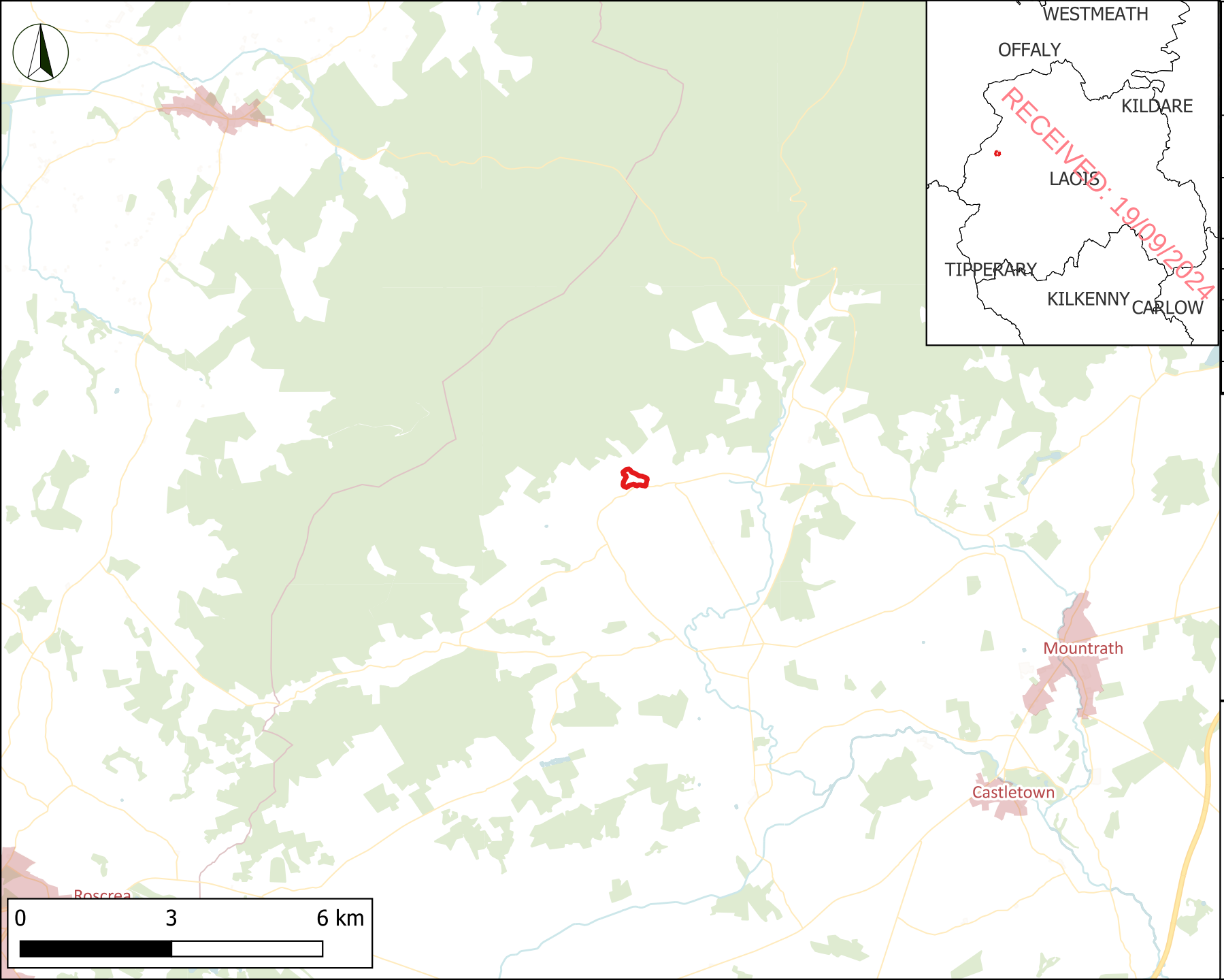


Figure 1
Loacation Map

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:100,000

Date: 27/05/2024

Drawn by: Finn M.

Revision: 1.0

Survey Area

Settlement

Notes:
Background: Map Tiler Planet

AMS

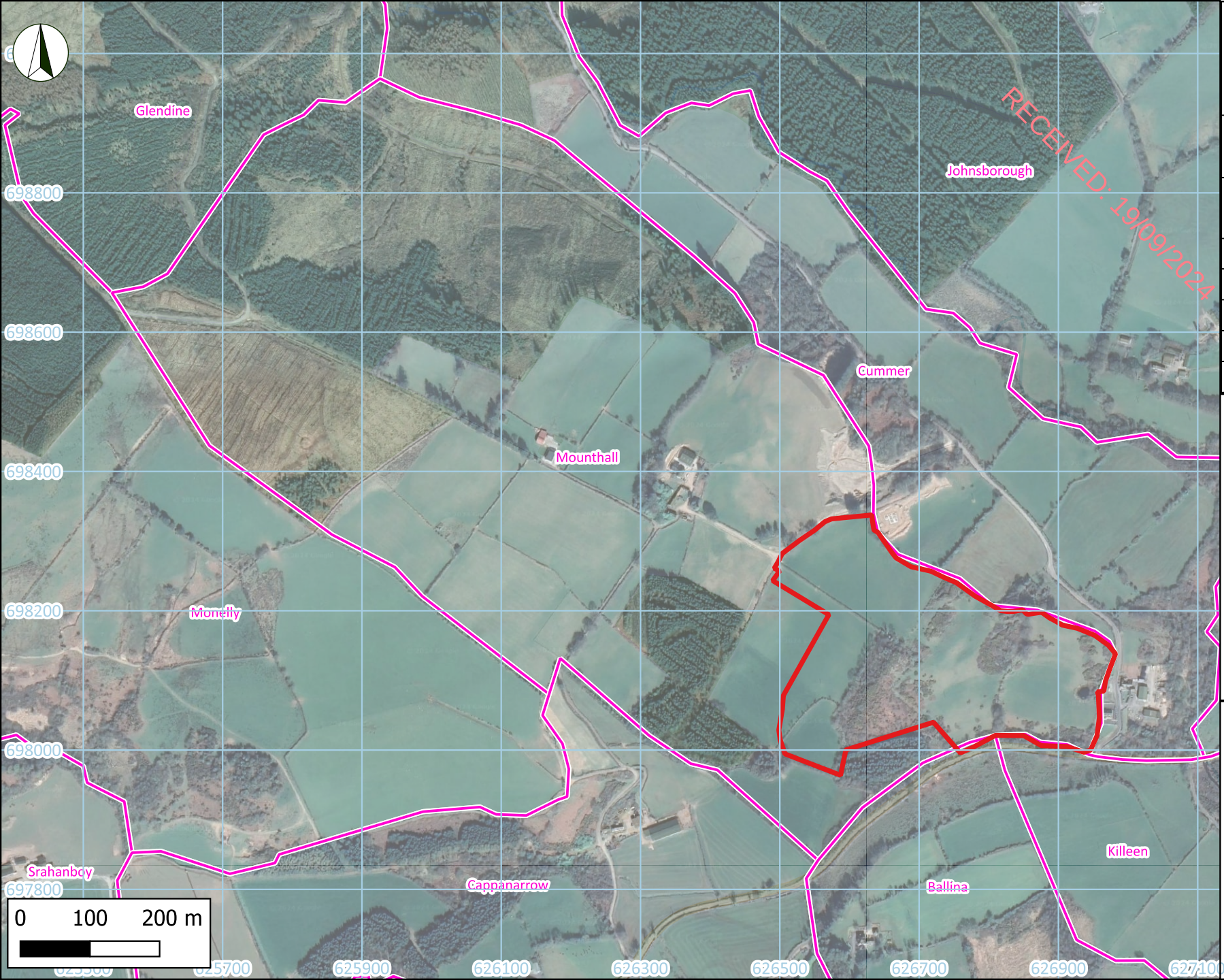


Figure 2
Detailed Location Map

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:7,400

Date: 27/05/2024

Drawn by: Finn M.

Revision: 1.0

Survey Area
Townland

Notes:
Background: Google Satellite

Townlands data:
www.townlands.ie

AMS

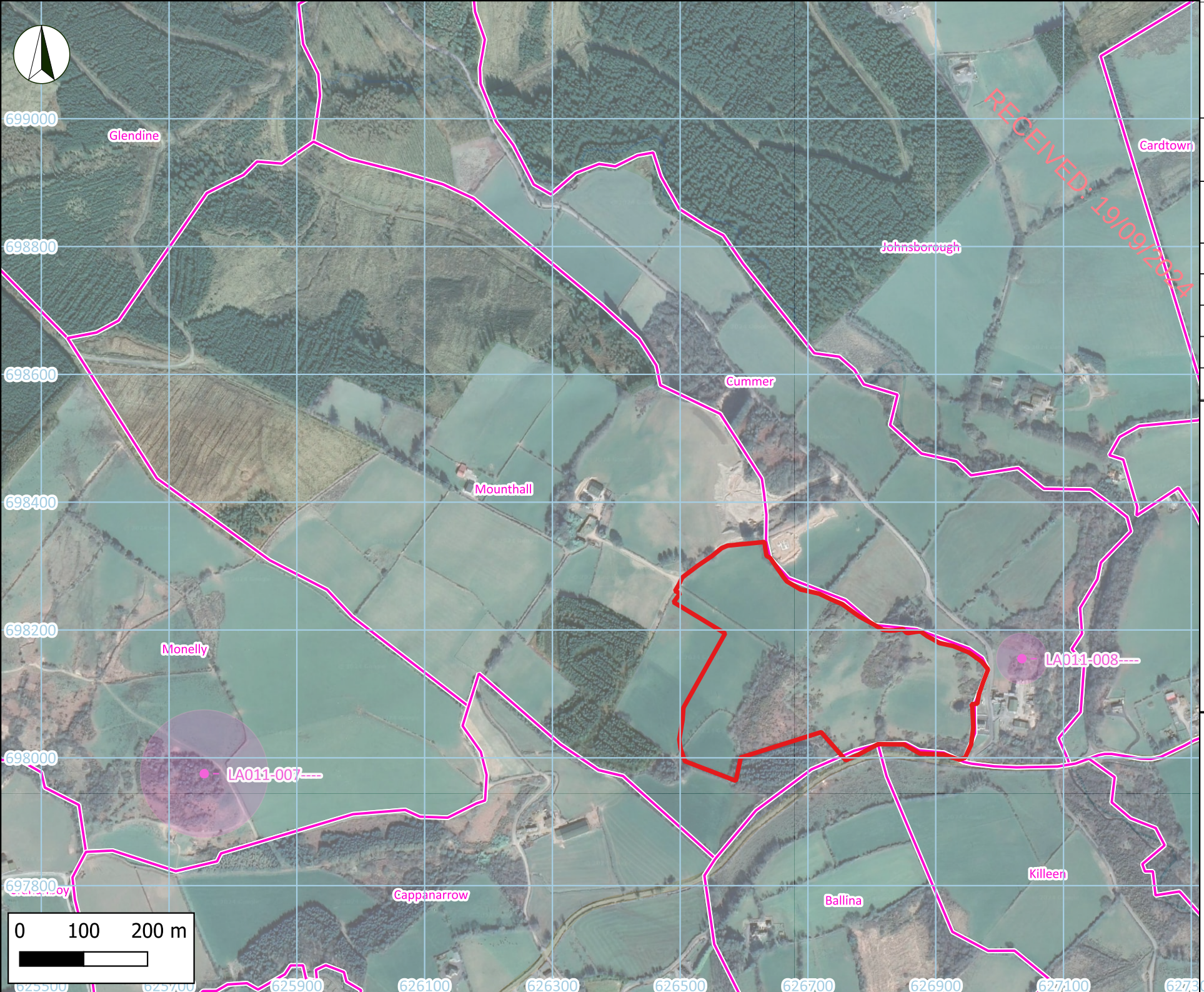


Figure 3
Cultural Heritage Map

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:7,400

Date: 27/05/2024

Drawn by: Finn M.

Revision: 1.0

Survey Area
Townland
SMR Site
SMR ZoN

Notes:
Background: Google Satellite
SMR Data: www.archaeology.ie
Townlands data: www.townlands.ie

AMS

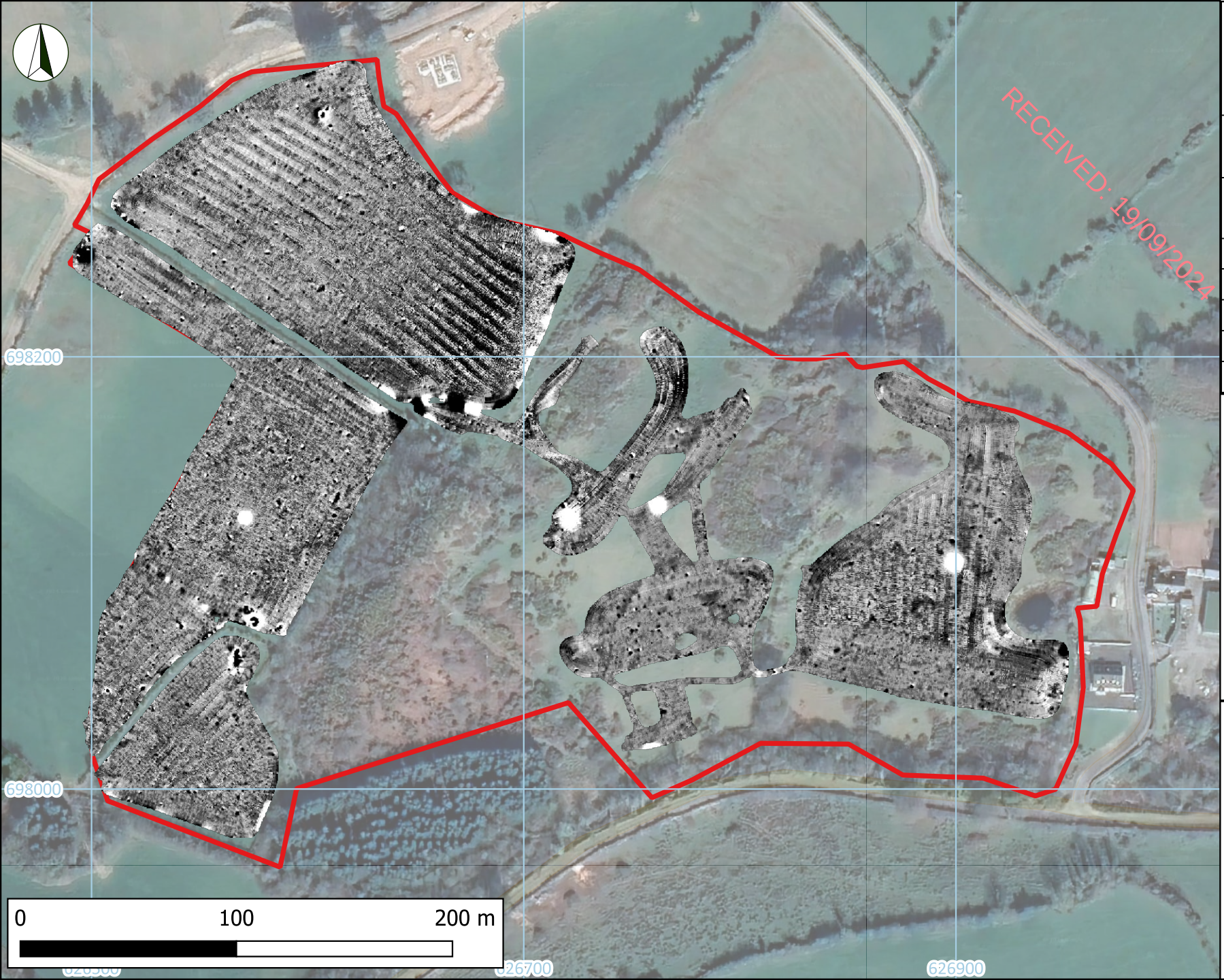


Figure 4
Magnetometry Data Overview

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:2,400

Date: 27/05/2024

Drawn by: Finn M.

Revision: 1.0

Survey Area

Notes:
Background: Google Satellite

Dynamic Range: ±3nT (White = Low, Black = Hight)

AMS

Figure 5
Magnetometry Data (Northwest)

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:1,100

Date: 29/05/2024

Drawn by: Finn M.

Revision: 1.0

Survey Area

Notes:
Background: Google Satellite

AMS

Figure 6
Magnetometry Data (Southwest)

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:1,100

Date: 29/05/2024

Drawn by: Finn M.

Revision: 1.0

Survey Area

Notes:
Background: Google Satellite

AMS

Figure 7
Magnetometry Data (East)

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:1,100

Date: 29/05/2024

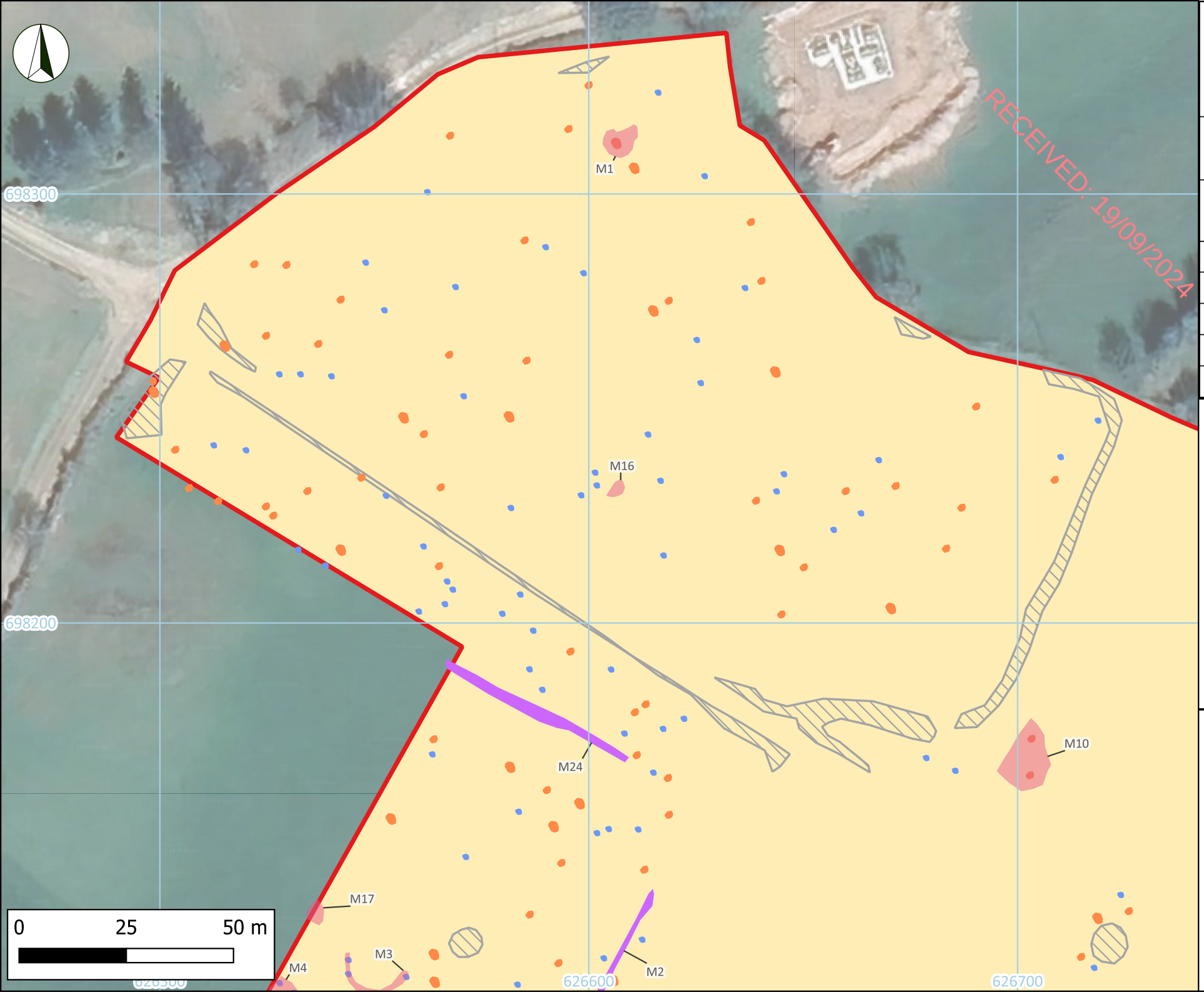
Drawn by: Finn M.

Revision: 1.0

Survey Area

Notes:
Background: Google Satellite

AMS



RECEIVED: 19/09/2024

Figure 8
Magnetometry Interpretation (Northwest)

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:1,100

Date: 29/05/2024

Drawn by: Finn M.

Revision: 1.0

- Survey Area
- ? Archaeology
- Area of Enhancement
- Ferrous
- Pit?
- Interference

Notes:
Background: Google Satellite

AMS

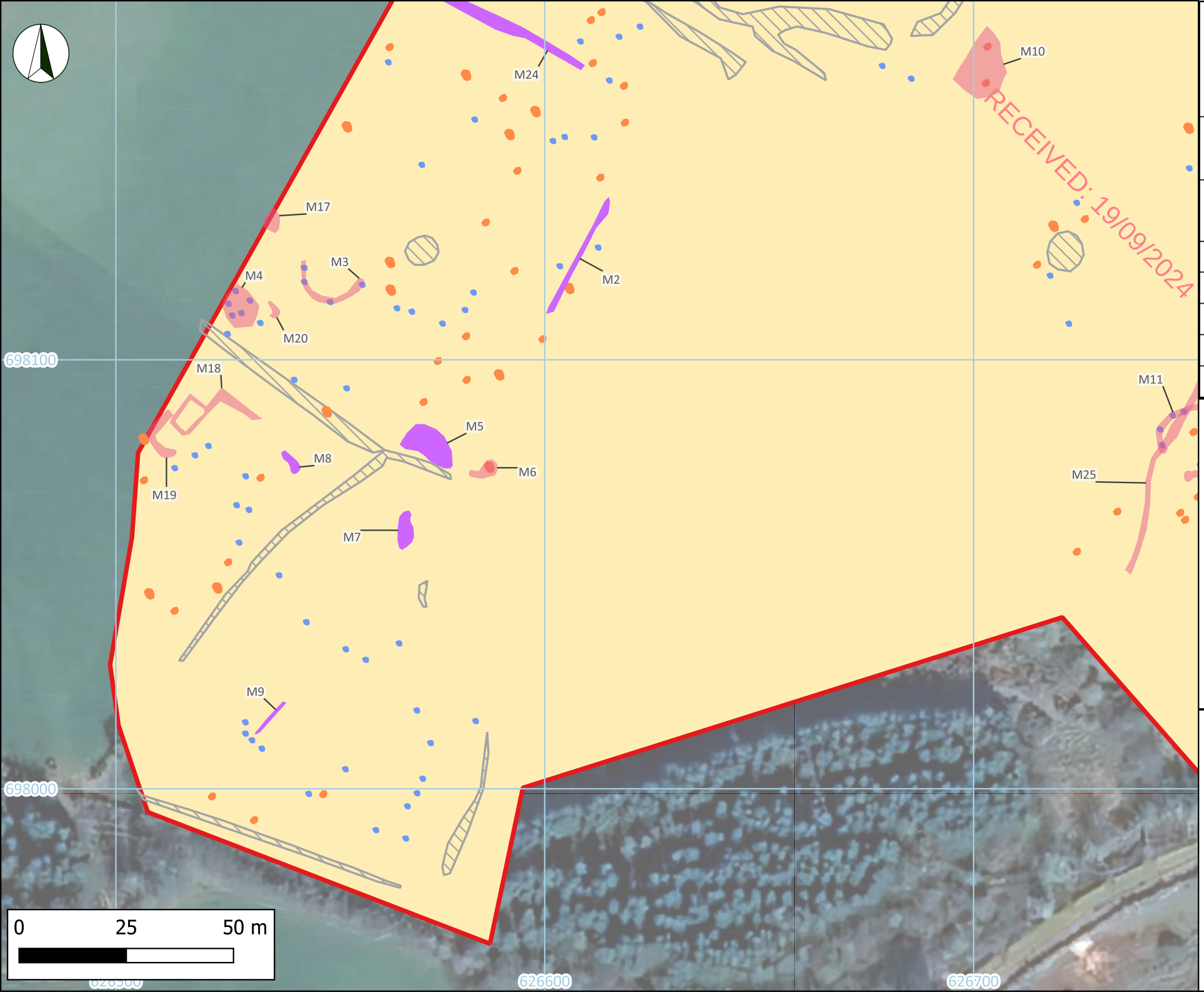


Figure 9
Magnetometry Interpretation (Southwest)

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:1,100

Date: 29/05/2024

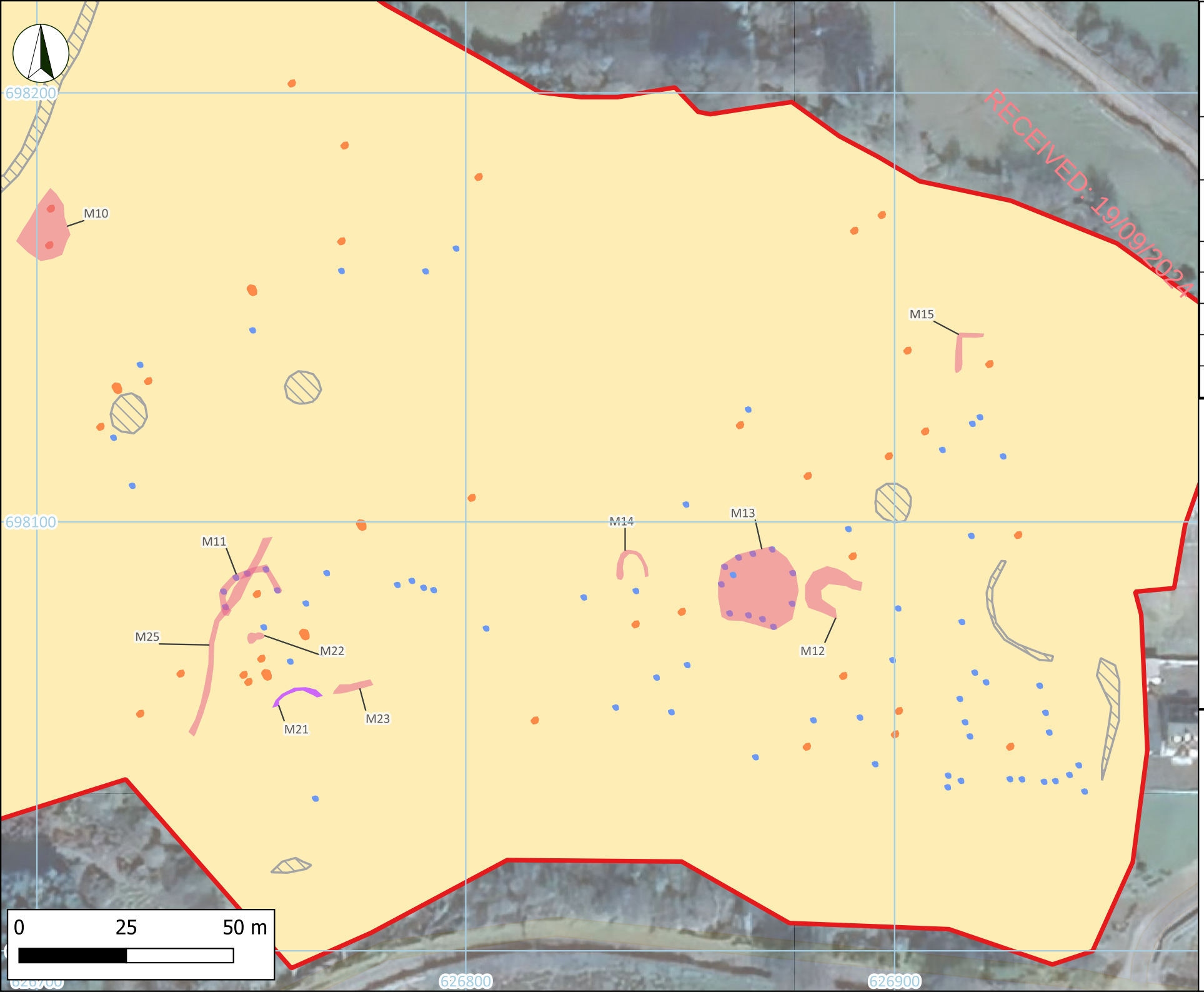
Drawn by: Finn M.

Revision: 1.0

- Survey Area
- ? Archaeology
- Area of Enhancement
- Ferrous
- Pit?
- Interference

Notes:
Background: Google Satellite

AMS



RECEIVED: 19/09/2024

Figure 10
Magnetometry Interpretation (East)

Project: Mounthall Quarry Project

Client: Breedon Ireland

Job No: J3513

Scale: 1:1,100

Date: 29/05/2024

Drawn by: Finn M.

Revision: 1.0

- Survey Area
- ? Archaeology
- Area of Enhancement
- Ferrous
- Pit?
- Interference

Notes:
Background: Google Satellite

AMS