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The Medieval Borderland: Geophysical Analysis of a Later Medieval Deserted Settlement and Cultural Landscape from Western Ireland

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THE MEDIEVAL BORDERLAND: GEOPHYSICAL ANALYSIS OF A LATER

MEDIEVAL DESERTED SETTLEMENT AND CULTURAL LANDSCAPE FROM

WESTERN IRELAND

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Abstract

This thesis investigates the archaeological remnants of an early 14th century settlement at Ballintober, Roscommon County, Ireland. An innovative methodology combining ground-penetrating radar, magnetic gradiometry, and archaeological excavations is utilized to reconstruct the medieval built environment, which wa s comprised of a masonry castle, nucleated settlement and wider arable agricultural landscape. By integrating the archaeological and historical records, I pose hypotheses related to the differential statuses of people at the settlement, their domestic and agricultural practices, and a timeline of their occupation and abandonment of the site. The Ballintober settlement offers a unique case study to investigate the colonial dynamics of the Irish later medieval period. My findings suggest that the built environment of this site was constructed and inhabited by its residents as an overt claim to English identity and embodied the complicated and nuanced intersection of power and ethnicity within the Irish colonial period.

Acknowledgements

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Finally, I must thank my family who have endlessly encouraged my intellectual curiosity and love of learning.

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Chapter One: Introduction

Ballintober, Roscommon County, Ireland today is a small rural village located in western Ireland (Figure 1). This is an area that has seen long-term historic and prehistoric occupation, in part thanks to its high rainfall and productive pastoral land (Barry 2002). Although once a diverse farming landscape, over the past fifty years Roscommon County has been transformed to a monoculture of grass pasture for livestock, whose resultant verdant rolling hills define the modern appearance and character of the region (O'Sullivan 2009: 34).
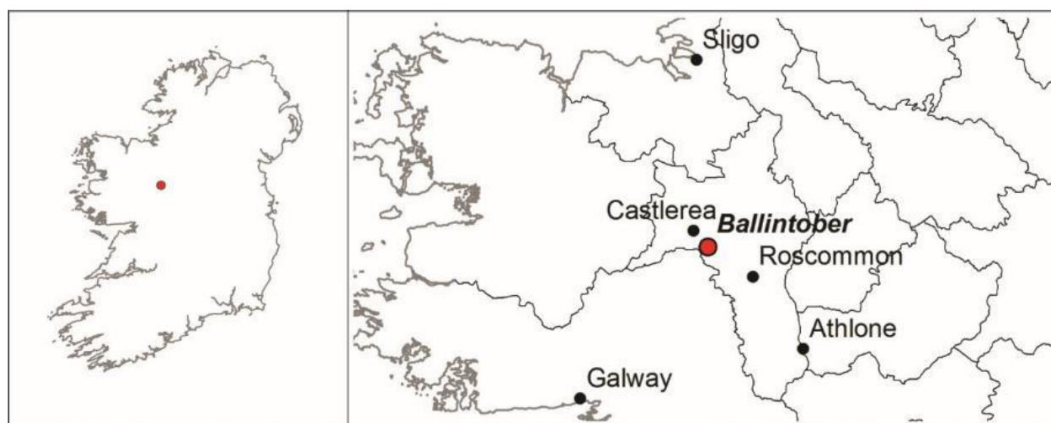
Figure 1: Location of Ballintober, Roscommon County, Ireland (adapted from Brady et al. 2016).

This master's thesis examines Ballintober in the early 14th century when it was inhabited by medieval people. The most apparent archaeological remnant of this period is the large masonry Ballintober Castle, the ruin of which is still standing in the modern village today. However, this thesis primarily focuses on the remnants of a deserted

medieval settlement. This was discovered buried beneath a field near the castle in the summer of 2016 by a survey combining two geophysical archaeological methods, ground-penetrating radar and magnetic gradiometry (Figure 2). Interpretation of the data created by these methods revealed an expansive nucleated settlement, composed of a road or street feature with individually defined plots of land extending along that orientation at right angles. The discovery of a rural medieval nucleated settlement is very rare in Ireland, so the archaeological record at Ballintober provides a unique opportunity to study this time period. A combination of expansive geophysical survey, targeted archaeological excavation, and historic documents is used to address research questions regarding the occupants of the site, their practices, and how pressures of violence and ethnicity endemic to 14th century Ireland are manifested at this settlement.

Figure 2: Magnetometry map from the Ballintober deserted settlement, with Ballintober Castle to the northwest and the modern village of Ballintober to the southwest.

Historical Background

In the 13th and 14th centuries Ballintober existed within a dynamic borderland between colonizing Anglo-Normans and native Irish people (Brady et al. 2015). Beginning in 1169 CE Anglo-Normans lords, part of a group of international medieval elites residing in England and western France, invaded Ireland (Frame 2012: 17). The Anglo-Normans coveted Ireland for its potentially arable land, which could be used to produce valuable cereal grains that formed the basis of the European economy at this time (Frame 2012: 1-2). The invasion was initially very successful, and much of the east of the island was conquered (Davies 1989: 77-9). However, Irish people were typically not large-scale agriculturalists in the manner that the Anglo-Normans lords were accustomed (Frame

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2012: 1-12). Therefore, to perform the labor to produce cereal grains and the resultant profits, settlers from Britain were imported into Ireland. These people were enticed to emigrate to Ireland due to various privileges offered to them by Anglo-Norman lords, including lower rents on land and elevation to higher status (Frame 2012: 95). When settlers arrived in Ireland, they came with very different ways of life and daily practices from the native Irish people. These differences were used as justification for colonization of the island, as the Irish pastoralists were considered barbarous while the English agriculturalists were considered civilized (Frame 2012: 4-5). Distinctions of practices were used to create ethnic categories of Englishness as opposed to Irishness, which formed the basis for the colonial legal system in Ireland. Being English offered significant rights and privileges, whereas being Irish offered few to none (Muldoon 2003: 39; Murphy & Potterton 2010: 188). However, as the occupation of the island continued, these ethnic categories became significantly blurred as ethnically entangled practices such as agricultural methods, clothing, and language were performed indiscriminately among the English and Irish people living on the island. By the early 14th century, this mixing had become so significant that lawmakers at the Anglo-Norman capital in Dublin began to pass legislation forbidding English and Irish people from participating in each other's practices (Muldoon 2003: 38-40). It is in this historic context of unease over ethnic identity in Ireland that Ballintober was constructed and occupied.

Ballintober is one of the few Anglo-Norman settlement attempts in Roscommon County. This area was a borderland in medieval Ireland and rested within a blurry frontier of control between Anglo-Norman lords and Irish rulers (Figure 3), most notably the

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O'Conor Irish royal family. Ballintober was likely founded around 1300 CE when the masonry Ballintober Castle was constructed by the Anglo-Normans (Brady 2014). Settlers either from Britain or other parts of Ireland came to the area, lived at the nucleated settlement, and exploited the surrounding landscape for arable agriculture. The historic record from the time shows that Ballintober produced agricultural profits for the Anglo-Norman lordship in the early 14th century (Knox 1903). However, due to a variety of political and economic reasons, the historic record suggests that the settlement was at least partially abandoned by 1333 after only thirty years of occupation. Its short occupation window makes it a very interesting site for the study of the early 14th century in Ireland, as its archaeological record is a direct reflection of that brief moment in time.
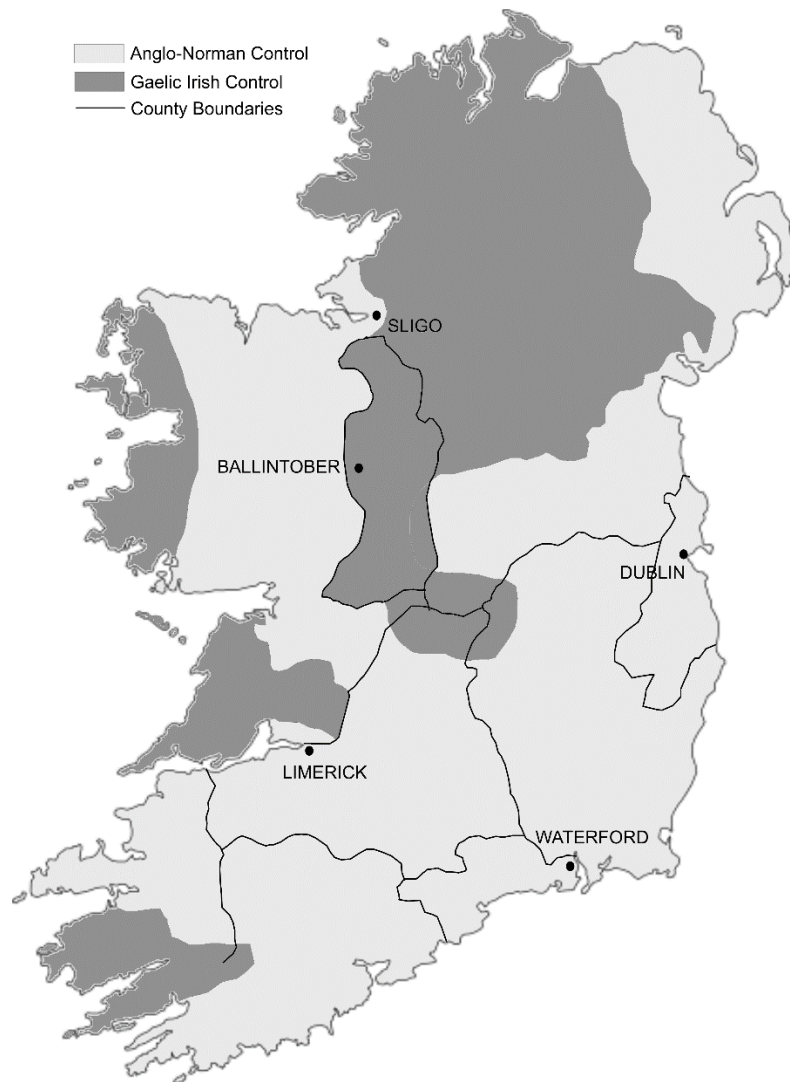
Figure 3: Colonial Ireland, circa 1250 CE, with areas of Anglo-Norman control in light grey and areas of Irish lordship control in dark grey. It is important to note that these boundaries and regions were dynamic, fluid, and changed over time (adapted from Frame 2012: 57).

Previous Work

The archaeological work utilized in this thesis was performed as part of the Castles in Communities archaeological and anthropological field school project (2015-2018). While originally focusing on Ballintober Castle, the project later expanded their archaeological interests to the surrounding landscape. Previously, Ireland's Nation

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Monuments Service had listed a series of relict field remains to the east of Ballintober Castle, and archaeological monitoring of agricultural work in 2005 identified artifacts potentially associated with medieval occupation (Brady et al. 2016). Prompted by these findings, fields east of the castle were surveyed geophysically with magnetic gradiometry and ground-penetrating radar in 2016 (Figure 2), revealing the deserted settlement that is the subject of this thesis.

Methods and Data Analysis

The primary method of investigating this settlement is the interpretation of overlying datasets of ground-penetrating radar (GPR) and magnetic gradiometry (magnetometry) that were collected in 2015-2018. Ground-penetrating radar is a near-surface geophysical technique that transmits and records reflected radar waves from subsurface features and can be utilized to produce a three-dimensional dataset of buried geological and anthropogenic features (Conyers 2013: 42). Magnetometry is a passive geophysical method that measure variations in the earth's magnetic field as a product of remnant magnetism and the magnetic susceptibility of subsurface soils, sediments, bedrock, and buried archaeological materials (Kvamme 2006a). Nearly seven hectares of overlying GPR and magnetometry data were collected at Ballintober from the nucleated settlement and the surrounding landscape.

This thesis utilizes an innovative methodology that combines these two methods (Conyers 2018). Spatially identical GPR and magnetometry data are merged and evaluated first in small areas and individual archaeological features. Once the geophysical appearance of individual features of interest are understood, this information can be

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projected over a wider area to better recreate and understand the entire geophysically surveyed subsurface landscape at Ballintober. This methodology was used to identify and map a variety of subsurface features at the settlement, including hearths, middens, houses, roads, ditches, pits, agricultural features and many others (Figure 4).

Figure 4: Magnetometry map with labeled geophysically identifiable feature typologies at the settlement. Also marked are the locations of two trenches excavated at the site, DS1 and DS2.

Interpretations were enhanced by three archaeological excavations undertaken in 2016-2018 (Figure 4). Anthropogenic, geologic, and pedogenic features previously identified by geophysical analysis were exposed by excavations. The physical and chemical properties of exposed features could be directly correlated to their geophysical appearance, which proved extremely useful to better understand the subsurface nature of unexcavated geophysical features across the broader landscape.

Results and Conclusions

The data acquired through geophysical survey and excavation allowed for the reconstruction of the built environment at Ballintober. Overall, this process revealed a densely nucleated settlement surrounded by expansive agricultural drainage features. The creation of intensive drainage field systems at this site suggests the growing of wheat, a crop that is not well suited for the wet climate regime of western Ireland but was the highest prestige and most valuable crop for the Anglo-Normans (Frame 2012: 94; Murphy & Potterton 2010: 36). This suggests that the inhabitants of the settlement were involved in larger networks of trade in Ireland to sell this crop. Although not identifiable on the landscape, the discovery of sheep and cow faunal remains during excavation implies the presence and utilization of pasture land for animal husbandry.

Within the nucleated settlement, the most significant discovery was the presence of two distinct varieties of house structure. The first variety, defined by other authors as longhouses (O'Conor 1998; Schweitzer 2009), were large and architecturally substantial structures with walls and floors potentially constructed of limestone cobbles. These structures were comprised of a living space with a central hearth and an attached byre for penning livestock. The longhouse dwellings sat within large plots of land, as delimited by property boundary ditches, which were likely exploited for animal pasture or arable agriculture. The second variety of houses were smaller and less substantial structures likely built of compacted mud with central hearths. These houses were closely nucleated within small land plots as defined by boundary ditches.

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In comparison with the historical record from Ballintober and other medieval sites in Ireland, I propose that these two types of dwelling represent two different status groups of manorial tenants coexisting at the settlement. Although difficult to definitively state these peoples' specific legal classification, I suggest the longhouses belonged to high status burghers who also controlled large plots of land to agriculturally exploit for their own profit (Murphy & Potterton 2010: 192-202). The smaller and less substantially constructed houses were occupied by lower status tenants, perhaps of the cottar class, who would have primarily labored on land controlled directly by Anglo-Norman lords. This is significant, as to my knowledge, there has been little medieval archaeological evidence in Ireland showing the cohabitation of different status individuals in the same built environment.

The Ballintober settlement offers a unique dataset to examine the Irish medieval period, as it was likely only occupied for a brief time in the early fourteenth century. I propose that this settlement, as a remnant of Anglo-Norman colonialism in Ireland, embodies Irish medieval colonial dynamics very analogous to those observed in other colonial contexts around the globe. Specifically, the archaeological record provides evidence for the complexity of the intersection of power and ethnicity in this time, where occupants of likely diverse ethnic backgrounds constructed, occupied, and performed practices within their built environment to offer an overtly English and thus power laden identity to the world.

Chapter Two: Historical Background

Ballintober is located in the modern County Roscommon, which is part of the larger province of Connacht (Figure 5). Although a modern province of Ireland, Connacht has existed as a region of Ireland since the ninth century (Simms 2000:32).

Figure 5: Ballintober as located within Roscommon County (dark green) and the larger region of Connacht (light green).

The bedrock geology is dominated by 330-million-year-old limestone from the Carboniferous Period, which lies in uniform horizontal layers. The most significant force in determining the modern landscape were Pleistocene glaciers that covered the area and melted about 10,000 years ago (Parkes et al. 2013: 16). As the ice melted and the glaciers receded to the north, outwash sediment was deposited to form large landforms such as eskers and drumlins, which are preserved today as rolling hills. Glacial retreat and subsequent sedimentation produced a layer of unconsolidated glacial till (colloquially known as "boulder clay"), which forms the parent material upon which much of the soil was formed in this area (Birkeland 1984).

Melt water from the retreating ice sheets also left the region strewn with shallow lakes that were dammed by a variety of glacial till landforms. Many of these lakes have been filled in with sediment over the last 10,000 years, but still form seasonal lakes and marshes, locally called turloughs. They typically fill with groundwater in the summer and dry out in the winter with many variations due to the fluctuating water table (Parkes et al. 2013:16). A turlough once existed next to the deserted settlement in Ballintober but was recently drained for pastoral purposes and no longer floods (Brady et al. 2015). Some of the glacial lakes were filled with sedges and other vegetation and eventually developed into expansive bogs of peat moss, which have long been a resource for fuel through the cutting, drying and burning of this organic-rich peat (Parkes et al. 2013: 16-17).

Connacht has seen long-term human occupation, with the earliest evidence coming from settlements dated to the Mesolithic (8000 BCE – 4000 BCE) (Driscoll 2006). The

Mesolithic Irish were hunters and gatherers, and derived much of their subsistence from seafood, birds, nuts, fruit, and berries (Driscoll 2006).

Around 4000 BCE, there was a transition from the Mesolithic to the Neolithic, heralded by the cultivation of cereal crops, primarily barley, the introduction of domesticated cattle, sheep, and goats imported from continental Europe, and the development of distinctive housing and burial culture. Likely due to the import of plant agriculture and domesticated animals, Ireland had a population boom in the Neolithic (Ó'Cróinín 2016), which also led to deforestation on the island, a trend that has continued into modern Ireland (O'Kelly 1989:33-6).

The Neolithic has long captured the scholarly imagination in Ireland due to the dramatic proliferation of megalithic monuments, with well-known sites in the east like Newgrange and Knowth, which built during this time (Ó'Cróinín 2016). These are tombs comprised of large aboveground earthworks, often with standing stones and inner passageways. In the Ballintober area, Neolithic monumental architecture can be seen at Rathcroghan (Figure 6), a highly significant sacred complex of earthwork monuments (Waddell 1983). Rathcroghan is one of the four major royal sites of ancient Ireland, described in medieval literature and prehistoric oral tradition as a place of assembly and an important burial ground where many kings are said to have been buried (Waddell 2009:3). It also played a major role in the Irish epic poem, *Táin Bó Cúailnge* (The Cattle Raid of Cooley), where it was the home of the heroine of the poem, Queen Maedb of Connacht, although the Tain likely did not originate until the Irish Iron Age millennia after the

monuments were originally built (Waddell 2009:3). This speaks to the endurance of the

Neolithic built environment in the Irish consciousness.

Figure 6: Aerial photographs of a selection from the over 60 earthwork and stone
monuments at Rathcroghan (Waddell 2009).

Metallurgy appears in Ireland at around 2500 BCE with the smelting of copper,

which marked the beginning of the Irish Copper and Bronze Ages (O'Kelly 1989:150-1).

Although there is no precise knowledge of metal's introduction on the island, it is typically

attributed to the Indo-European language speaking Bell Beaker people, who arrived on the

island at roughly the same time (O'Kelly 1989:151).

In the Irish Bronze Age, there was production of great amounts of utilitarian and

decorative copper, bronze, and gold artifacts (O'Kelly 1989:147-189). Ireland was rich in

ore, and archaeological evidence suggests that the Irish people exported large amounts of

metals to continental Europe. The Bronze Age also saw the construction of many of Ireland's crannogs, a habitation site typology of artificial islands built in shallow lakes for defensive purposes. Although many were first built in this period, crannogs continued to be utilized through medieval times.

Production of iron artifacts distinguished the beginning of the Irish Iron Age (500 BCE – 400 CE), but it is overall a poorly defined period in cultural and chronological terms in Ireland (Ó'Cróinín 2016:180). During this time, it seems that the Celtic people arrived in Ireland from continental Europe and the Celtic language was introduced to the island, eventually evolving into Gaelic, the native tongue of Ireland (Ó'Cróinín 2016:180).

Medieval Ireland

In the early medieval period (fifth to ninth centuries) before the arrival of the Anglo-Normans, the Irish of Connacht lived almost entirely in dispersed rural settlements, either in isolated farmsteads or small house clusters (Edwards 1990:2; O'Conor 1998:74). They subsisted primarily by a mixed farming regime of arable and pastoral agriculture (Frame 2012:1-12). More intensive cultivation of cereals was practiced in the south and east of the island where agricultural land was more productive due to rich soils and temperate climate. To the north and west, including the Ballintober area, the climate and soils were more marginal for arable agriculture and pastoralism was emphasized (Edwards 1990:50-1).

Irish politics and social organization were traditionally defined by competing tribes that never coalesced into a single political unit (Muldoon 2003:38). Local kings and rulers controlled their own small political areas, called tuaths, which could be occasionally

loosely unified into larger kingdoms, but the amount of control any one king could wield was limited (Simms 2000:10). Irish customs of marriage and inheritance would often produce a multitude of potential heirs, making it difficult to centralize and transfer political power from one generation to the next (Frame 2012:7). These conditions combined to make a constantly evolving political landscape of broken and re-formed alliances between different Irish rulers and others in society. Each Irish kingdom is perhaps best thought of as an intricate network of relationships comprised of a king, his potentially jealous relatives, highly competitive "under-chiefs" and their own jealous relatives, and so on (Frame 2012:55). Below the nobles were various client classes, who owed different levels of service and food-renders based on their status to their patron nobles (Edwards 1990:8, Frame 2012:99).

Irish political, economic, and social structure became very important in the progression of Anglo-Norman invasion and colonization of the island, as these aspects formed the dispositions and habits of the native Irish population. When Anglo-Normans arrived in Ireland, the course of their conquest was shaped by the ways in which they negotiated interactions with Irish ways of life.

In the medieval period, Ireland was in many ways considered the edge of the known world by the rest of continental Europe (Muldoon 2003:35). Even with that reputation, the historic and archaeological records show that Ireland was highly involved economically and religiously within the greater European world for millennia. In this time period, this connection could be seen especially through the Christian Church (Frame 2012:1-12).

The Irish were converted to Christianity by St. Patrick's missionary effort in the fifth century. This led to an increase in the trade of goods and ideas with England and Europe to the east, as the Irish people became part of the larger European Christian network (Muldoon 2003:35-6). While Ireland became Christian and had a reputation for monastic activity, with Irish missionaries abroad on the European continent, it still largely retained its tribal and pastoral ways (Muldoon 2003:18). Christianity in Ireland appears to have adapted to Irish society rather than forcing a transformation into settled agriculturalism, as it did elsewhere (Muldoon 2003:69). Select pre-Christian traditions continued in medieval Ireland, most visibly in the pagan-inspired ritual inauguration of kings at sacred open-air sites that had been utilized for hundreds of years (Simms 2000:21-40). In Connacht, the royal inaugural earthwork of Carnfree still stands today, and lies less than four kilometers from Ballintober (Figure 7).

Figure 7: Carnfree royal inaugural site, surrounded by contemporary livestock enclosure (courtesy of the West Lothian Archaeological Trust).

Viking raids terrorized Ireland starting in the late eighth century, plundering and looting across the island (Frame 2012:6). However, the Vikings also establish coastal cities such as Dublin and Waterford, which later played host to a thriving metropolitan Irish population and served as the seat of powerful Irish rulers. Irish urban centers strengthened ecclesiastical and commercial ties with western England and the European mainland at this time (Frame 2012:6).

By the mid-12th century, on the eve of Anglo-Norman invasion, people on the island were starting to move from local kingship to rule by a more centralized political power (Simms 2000:11-13). This was likely brought about by a combination of factors, predominantly increased contact with continental Europe, where this was a prevalent form

of rule, and Viking raiding, which encouraged centralized power to combat the Scandinavian threat (Simms 2000:11-13). Starting at this time, the country was becoming dominated by a handful of provincial "high kings" who competed for wealth, power, and the prestige of becoming the king of all Ireland (Frame 2012:8). Whereas earlier Irish rulers had only demanded personal submission and tribute (primarily via cattle) from their neighbors, the high kings in the 12th century gained power by lessening the territorial power of their opponents, stripping them of their lands and therefore gaining more people and land to control. This is notable as it represents a break in Irish ruling tradition and movement towards national unity.

In the mid-12th century the most preeminent ruler in Ireland was Rory O'Conor (Anglicized phonetic version of the Gaelic Ruaidhri O' Conchobhair), the high king of Connacht. Rory O'Conor took steps to consolidate power much as others were doing at this time. This included the coercing of fealty from other powerful rulers, taking a direct role in the legislating and enforcing of justice, and close interaction with the church in Ireland. These are actions that are all highly reflective of continental European rulers and concentrate political, social, and jurisdictional authority within the office of king (Simms 2000:10-11). It seems quite clear that he was moving towards an effective monarchy over the entire island (Simms 2000:12).

By 1166, Rory O'Conor furthered his climb to power by annexing the city of Dublin from his rival high king Diarmait Mac Murchadha of Leinster. It seems that Rory intended to develop the influential urban center at Dublin into his capital for a united Ireland (Simms 2000:13). This was never to come to pass, as Rory's actions forced his disgruntled rival,

Diarmait Mac Murchadha, to seek foreign military aid in the reclamation of his city and his kingdom. In 1167, Diarmait traveled to the court of the Anglo-Norman king of England, Henry II, who gave Diarmait his blessing to recruit assistance amongst his Anglo-Norman subjects (Frame 2012:11). The Anglo-Norman mercenaries hired by Diarmait Mac Murchadha were the trickle that began a flood, culminating in Anglo-Norman invasion and colonization of Ireland.

The Anglo-Normans

The Anglo-Normans were a medieval international class of elites comprised of a combination of English Anglo-Saxons and French Normans (Muldoon 2003:16). Their origin can be traced to Scandinavia in the early 10th century, when a group of Scandinavian Vikings raided and settled along the western coast of France in Normandy. These Vikings intermingled with the native French and adopted the lifestyle they encountered there, becoming Christians, French speakers, agriculturalists, and vassals of the King of France in 911 CE (Muldoon 2003:16). By the end of the 10th century, the Normans, now French in many respects, had been integrated into European society.

However, despite their French lifestyle the Normans were culturally distinct from the French aristocracy. As they had only recently entered the French political and economic system, most were poor and land-hungry (Muldoon 2003:15-6). To remedy this, in 1066 the Normans, led by their duke William the Conqueror, invaded England and seized control of the Anglo-Saxon crown in London, which ruled over central, southern, and eastern England (Muldoon 2003:31). Upon their arrival, the Normans usurped an already well-organized Anglo-Saxon hierarchy with strong administrative structures. This

was done by removing the leaders of that hierarchy and replacing them with Norman lords, with William the Conqueror himself as the new king of England. The Anglo-Saxons were agriculturalists like the Normans so the food producing class of indigenous English were quickly integrated into the new Norman system of rule. Although the Normans retained their ties to France, those in England soon mingled and intermarried with the Anglo-Saxons and eventually became known as the Anglo-Normans (Muldoon 2003:32).

Over the next century and a half, the descendants of those who followed William the Conqueror to England expanded their control of the British Isles to the north into southern Scotland, the south into Wales, and the west into easternmost Ireland. In Scotland, the Anglo-Normans were easily and nearly bloodlessly assimilated. They were brought in under the wing of a faction of southern Scottish rulers who had previously been heavily affected by French and English influences and were eager to become a part of a powerful continental empire (Frame 2012:1). Ireland, and to a lesser extent Wales, proved to be far more difficult territories (Muldoon 2003:32-33).

Irish Invasion: 1169-1185

The first steps of Anglo-Norman invasion of Ireland began in 1169 CE, when mercenaries arrived on the island, recruited by Diarmait Mac Murchadha to help regain his throne from Rory O'Conor. The use of foreign soldiers in Irish conflicts was not unusual as mercenaries from Scotland and England had been utilized in the past by Irish rulers for local disputes (Mudloon 2003:36). What was unusual at the time was the high price that Diarmait was willing to pay for their services. Beyond payment and plunder for all Anglo-Norman soldiers involved, Diarmait offered the leader of the Anglo-Norman mercenaries,

Richard fitz Gilbert de Clare (more famously known as Strongbow), both his daughter's hand in marriage and succession to his throne in return for the reinstatement of his kingdom (Muldoon 2003:36). As succession in Ireland was typically a highly contest affair and kin-based, naming a direct heir from outside of the family was unprecedented (Edwards 1990:8). Diarmait's offer has made him a loathed figure in Irish history, and also provided an opportunity too good for Strongbow to turn down.

In 1169 and again in 1170, two waves of Anglo-Norman soldiers landed in Leinster along the southwestern coast of Ireland and fought under the direction of Strongbow and his associates   to capture key coastal cities on the eastern shore and reinstate Diarmait as the king of Leinster. The first invasion was an easy military success with a corresponding large material reward, as Strongbow and his associates quickly recaptured the cities of Wexford, Waterford, and Dublin (Figure 8).   However, Diarmait was only able to enjoy his kingship for a short time, when in the spring of 1171 he died, elevating Strongbow to the King of Leinster, which provided a territorial foothold for Anglo-Norman lords in Ireland (Frame 2012:14).
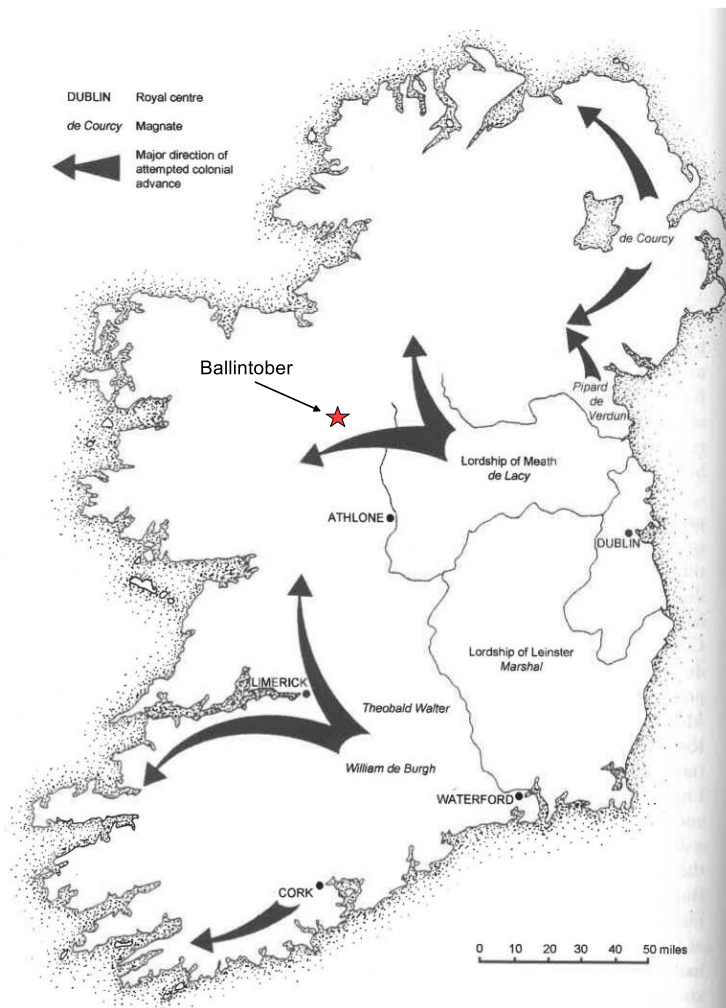
Figure 8: Ireland 1200 CE, early stages of Anglo-Norman expansion. Areas of Anglo-Norman control labeled (adapted from Frame 2012: 32).

Inspired by this success, other Anglo-Normans eagerly came to Irish shores in hopes of land and power, prompting King Henry II to journey to Ireland in the autumn of 1171 to claim overlordship of the island (Muldoon 2003:36). In just two years, part of Ireland had become a territorial holding of the Anglo-Norman empire.

Anglo-Norman enthusiasm for the Irish invasion and expansion westward can be seen as the product of two larger European trends. First, aristocratic families in England and Europe had an enduring problem of finding room for the ambitions of their members,

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especially younger noble sons who had little hope of inheriting land or power from their families. These younger sons provided a motivated cohort who were keen to gain their own land and power (Frame 2012:14). The literature from the time period, with its emphasis on chivalry, noble quests, and courtly love, spoke to the desire for fame, prestige, and most importantly the hands of wealthy heiresses in marriage (Frame 2012:14). This can be translated directly into Anglo-Norman activity in Ireland, and also other areas of Europe, where militaristic and territorial conquest abroad provided an outlet for landless sons to achieve power away from home.

The second trend was related to what is now called the Medieval Climactic Optimum, a period from approximately 900-1300 CE when northern Europe was warmer and wetter than previous times (Mann 2002:514). This led to especially bountiful agricultural harvests across Europe and resulted in a generally rising European population in the 12th and 13th centuries due to food surplus (Frame 2012:94; Mann 2002:514). Additionally, in the 12th century the northern European economy was booming, with grains, especially wheat, fetching record high prices (Frame 2012:94). The combination of rising populations, warm climate, and highly profitable cereal grains formed a context where feudal elites could find easy profits by scaling up their agricultural efforts through the exploitation of their peasantry, producing more grains to be sold on the open markets (Frame 2012:1). During this time of agricultural bounty, elites across Europe were motivated to obtain additional fruitful land to produce valuable cash crops that could be sold or bartered, as this was the basis for wealth creation. The Anglo-Normans were particularly adept at acquiring land through force, and attempted conquests elsewhere

including Wales, Sicily, Malta, Antioch, and Palestine (Frame 2012:1). Therefore, the Irish invasion must be considered as similar to the larger trends that define European history in the medieval period.

As Anglo-Normans poured into Ireland after their beachhead was established in 1169 CE, there was no Irish authority capable of mobilizing a unified defense against the foreigners (Frame 2012:17). It has been suggested that most Irish rulers had little interest in such a defensive action. Anglo-Norman lords represented military strength, and might offer reinforcement to a struggling Irish ruler in exchange for fealty (Frame 2012:56). As an example, the most powerful Irish leader, Rory O'Conor, had only recently attained island-wide supremacy by squashing his opponents, leaving him with many bitter enemies. It was his opponents who then viewed the Anglo-Normans as a shield against the O'Conors (Frame 2012:17). After Anglo-Norman arrival on the island, many Irish rulers rushed to submit to the English crown (Frame 2012:56).

The inherently divisive nature of traditional Irish politics was advantageous to the Anglo-Normans, as it provided them a constant stream of Irish allies motivated by the possibility of advantage over their rivals (Frame 2012:17-18).   Over time as the power of high kings like Rory O'Conor lessened in Ireland, politics once again centered around smaller kingdoms focused on local politics, with a concurrent loss of the unified national sentiment that had been developing (Simms 2000:12). Through the late 12th century, Anglo-Norman lords still gained power in Ireland, and much like Strongbow in 1169-1170 achieved rapid and effective military conquests along the east coast of the island.

By 1185, Anglo-Norman accomplishments in Ireland were substantial, as large portions of the east of the island were under the direct control of the English crown (Figure 3). Still more of Ireland was in the hands of powerful Anglo-Norman barons, who ostensibly reported to the English crown but also pursued their own interests (Frame 2012:23-4). Yet much of western and northern Ireland was still under the control of indigenous Irish rulers. In 1175, after much fighting Rory O'Conor swore fealty to English King Henry II, retaining only a shadow of his former authority that was restricted to the Connacht area in the west of Ireland (Figure 5) (Frame 2012:24). Elsewhere other Irish rulers also pledged fealty to the English crown or to his barons. However, due to the constant separatist violence endemic in Irish politics, these allegiances were mostly temporary (Frame 2012:25). Anglo-Normans could accept submission from the local Irish rulers who were most important at the moment, but once those rulers inevitably fell out of favor and power shifted, the established feudal relationships would fall apart (Frame 2012:25)

Although the many local power struggles common to Irish politics were initially beneficial to the Anglo-Normans, it later made the island significantly harder to hold as Irish allies could never be fully relied upon. In general, the fractured state of power in much of Ireland made it so that there was little in the way of a central government. As invasion in Ireland slowed and the Anglo-Normans attempted to impose control, it quickly became apparent that they were effective conquerors, but vulnerable settlers (Walton 1980:iv). Uncertainty in Ireland proved a constant threat to the security of Anglo-Norman colonial and economic interests from 1185 onwards.

Anglo-Norman Colonization

Aside from the challenging Irish political landscape, Anglo-Norman efforts in Ireland during the medieval period were also complicated by economic factors. Anglo-Norman lords coveted the use of the potentially productive Irish countryside to cultivate valuable grains. However, when the Anglo-Norman lords began to exploit their newly acquired territory in the late 12th century, the Irish rural population was primarily pastoralist and ill-suited for intensive working of arable land (Frame 2012: 94; Muldoon 2003: 38). To create the economic base to which they were accustomed, the Anglo-Norman lords chose to import large numbers of peasants and artisans from England and Wales to grow cereal crops and create profits for the lordship (Frame 2012: 94). These colonists arrived in Ireland from primarily western Britain with very different habits, beliefs, languages and lifestyles than the native Irish. As compared to the original Norman invasion of England, the invaders were not simply consolidating a conquest. In Ireland they were importing a new political and economic order (Muldoon 2003: 38).

This new order was embodied in the manorial system of landholding, which transformed the Irish landscape under Anglo-Norman control (Keegan 2005: 17). Geographically, in this form of land tenure, the manor was a territorial building block which designated a unit of land with fixed boundaries (O'Keeffe 2000: 58-9). Although all land was technically owned by the King in London, it was in fact held by powerful Anglo-Norman nobles who served as the lords of the manor and could therefore exploit the land and people directly. This hold on territorial wealth was allowed by the King in exchange for tax revenues paid to London and military service of the manor's occupants

when necessary to the king. The historic record shows that Ballintober was an Anglo-Norman manor founded in the late thirteenth century. To create the crops needed to produce wealth, manorial lords across Ireland kept tenants to work their land.

There were two broad types of tenants on the manors, leaseholders and freeholders. Leaseholders included cottars, villeins, and serfs, who leased land from the lord of the manor in exchange for an annual rent payment. They also labored on the lord's personal land (demesne) directly for the lord's profit, performed other services, and paid a variety of taxes. The most common of these in Ireland were cottars, who would be paid a wage to work the lord's demesne (Murphy & Potterton 2012: 189). In contrast, freeholders represented a wealthier manorial class who were able to afford the cost to actually own land for an indeterminate duration. They still paid rent to the manorial lord, but at a significantly lower rate than leaseholders.

The hierarchy of the manor was inherently tied to that of the larger feudal system, in which the tenants of the manor, whether freeholders or leaseholders, owed tax and service to the lord of the manor, who in turn owed tax and service to the king, in this case in London. The manor community was a microcosm of the wider feudal lordship, in that the relationship of tenant to manorial lord was a micro-scale reflection of the relationship of manorial lord to king (Shanahan 2005: 132).

Although with the imposition of this system some traditional Irish land boundaries were retained, much of the island's landscape was divided up into manorial holdings by Anglo-Norman lords (Frame 2012: 86). The manor was thus the primary geographical expression of Anglo-Norman lordship upon the Irish landscape (Keegan 2005: 17).

However, it is important to note that there was no definitive or archetypical physical realization of the manor in Ireland. Rural settlement in Anglo-Norman occupied Ireland was complicated and varied, as the imposition of the English social and economic systems were manifested in different ways around the island. Some areas, especially in the agriculturally productive southeast, saw intensive colonization and material investment, resulting in the replication of physical aspects of the manor seen in England during this time. In others, merely a thin veneer of Anglo-Norman feudal lordship was extended over pre-existing Irish structures (Frame 2012: 100). This contributed to the large amounts of variation seen in the archaeological remnants of manorial settlement in Ireland, variation inherently tied to specific regional political, economic, and social contexts. As one of the few nucleated settlements to be archaeologically investigated on the island, Ballintober offers a unique case study of a distinctly English model of a manorial built environment in medieval Ireland.

The English medieval manor stereotypically expressed itself upon the landscape in a number of well-known architectural types, which can still be seen today as archaeological site types (Keegan 2005: 18). Some of these are a central fortification (sometimes masonry castles), offering protection to tenants in times of danger, a church, acting as the social nexus of the manor, and manorial court, which generally legislated and regulated the lives of tenants (Keegan 2005: 18). Nearby would be a nucleated settlement where the majority of the lease-holding tenants would live. It is this type of settlement that is the focus of this thesis. This developed area would have been surrounded by strips of cereal cultivation areas and field systems, worked by the manor's tenants. Other dispersed farmsteads of

freeholders would be dotted across the landscape, consisting typically of moated sites surrounding houses with associated tilled fields (Keegan 2005: 19). The feudal elites of nobility and clergy would reside at the fortification and church, the leaseholders would occupy the nucleated settlement, and the freeholders would live independently at farmsteads across the area. At Ballintober, the historic record implies the existence of these site typologies across the landscape, and archaeologically several have been identified. A representation of a conjectural manor consists of the elements described above (Figure 9). While the nature and layout of an English style idealized manor in Ireland is something scholars have debated for decades, the accumulated research suggests only that, in general, manorial settlements varied greatly through space and time (Graham 1985).
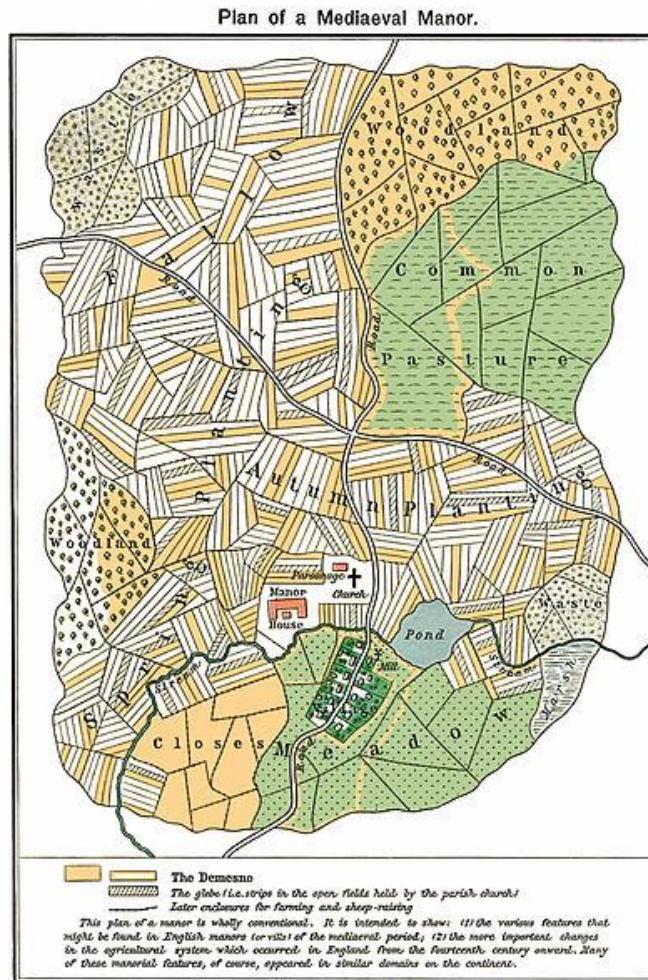
Figure 9: A conjectural map of a typical medieval manor, with manorial center of manor house, church (orange), and nucleated settlement (dark green), surrounded by tilled fields and pastureland (Shepard 1923).

The process of Anglo-Norman colonization of Ireland is mostly obscured from us by vagueness in the historic record. What written evidence has been used to study this time exists primarily in the form of royal land charters, which simply state the land "was colonized" without mentioning how this was accomplished (Frame 2012: 94). The settlers had to have left their homes and traveled to Ireland into what was unknown and often hostile territory, which was not likely to have provided an especially enticing prospect for

potential English colonists. However, attracting labor to this new and uncultivated land was a high priority for Anglo-Norman lords. Therefore the emigration package for those traveling to Ireland from England or Wales at this time had to look desirable. One tactic used to attract them was comparative lightness of *corvée* labor services in Ireland as opposed to that of their original home, which gave tenants more time to work their own leased lands and produce greater personal profits (Frame 2012:95). Another was elevating colonial tenants involved in the invasion and subsequent settlement to burghers, a higher status class with more privileges (Frame 2012:95).

Although the historic and archaeological records show the presence of great numbers of imported colonists from England starting in 1185, in areas of Anglo-Norman control the rural Irish population was often quickly enfolded into the manorial system just as had been done by the initial conquest of William in England after 1066. While Anglo-Norman lords during this time still had complicated and often violent relationships with Irish rulers, they had no interest in slaughtering or driving out the existing rural population as manpower was a highly valuable resource, and immigration alone could not fully meet the demands of the colonial lordship (Frame 2012:99). In the manorial records of Anglo-Norman Ireland, the term "betagh" is repeatedly encountered. This term originally described a class of Irish food providers who owed taxes in the way of agricultural production to their local Irish ruler. These relationships were continued under Anglo-Norman rule, but with food taxation redirected to the Anglo-Norman lordship (Frame 2012:99). In areas of Anglo-Norman control, it seems the betaghs would remain, living in their own communities associated with, but apart from, sites of Anglo-Norman

colonization. In addition to food taxation, the Irish betaghs also owed labor service to the new Anglo-Norman lords, making this class relatively similar to English lease-holding villeins (Frame 2012:99). There is also evidence of Irish people at other statuses of manorial tenants. In fact, the cottar class was predominantly of Irish descent, although there were English and Welsh cottars as well (Murphy & Potterton 2010: 189-92). Additionally, wealthier Irish people who lived in areas under Anglo-Norman jurisdiction seemed to have owned land on independent farmsteads with similar economic status to English freeholders (Frame 2012:100).

The Irish lordship was able to offer little resistance to the Anglo-Norman conquering armies, but the conquerors became vulnerable as soon as they became settlers (Walton 1980: IV). Attracted by wealth and prestige from plunder, Irish rulers found easy prey at newly established Anglo-Norman colonies and historic records from the time contain many accounts of raids and counter-raids (Frame 2012:51). For manorial lords and tenants, settlement in Ireland could offer great profit but also carried great risk. Especially because the Irish political landscape was in constant flux, with Irish alliances rarely secure, economic success and safety was never entirely ensured.

Colonization was greatly shaped by the physical geography of Ireland. Anglo-Norman lords were primarily interested in productive arable land. Boggy lowlands and craggy highlands tended to see scant occupation. These geographic features also correspond with the sorts of areas most difficult to control and defend, as bogs and dramatic topography are poorly suited for the military tactics the Anglo-Normans employed. There was thus a direct correlation between the economic and militaristic frontiers (Frame 2012:

86). The Ballintober area, with its boggy and relatively poor agricultural land, existed at the edge of economic productivity and military security for the Anglo-Normans. It thus became situated along a dynamic economic, militaristic, political, and social borderland between Anglo-Norman colonists and Irish natives. Connacht developed into a physical and ideological battleground between the English Crown, the powerful Anglo-Norman family of de Burgh, and the still influential O'Conor clan.

Connacht in the Later Medieval Period

By 1185, the eastern and southeastern coast of Ireland had already passed beyond the raw frontier stage, as manors were being established, land distributed to manorial lords, and colonists from England imported (Frame 2012: 35). Overall the areas of Leinster and Meath to the east of the island had become reasonably stable, enough so that they were profitable for Anglo-Norman lords (Frame 2012: 35). However, many lords still desired more land for cultivation. As the Anglo-Normans expanded their colonial efforts and sought new territory, they encountered resistance from Irish lords to the north in Ulster, the south in Munster, and the west in Connacht (Frame 2012: 49). Ballintober represents the furthest extent of Anglo-Norman colonial and military incursion into the O'Conor heartland in Connacht and is situated within a historical context of waxing and waning Anglo-Norman ambition along this frontier.

In 1175, Rory O'Conor the once high king of Ireland bent the knee to the Anglo-Norman King Henry II of England and became his vassal, with Rory's territorial expanse restricted to Connacht (Frame 2012: 49). In the Treaty of Windsor, an agreement between the two rulers, Henry II recognized Rory's position as the king of Connacht and claimed

Rory as his liegeman (Walton 1980: 11). The treaty seems to have been designed by Henry II to curtail Anglo-Norman ambition in Ireland, as he feared his subjects in Ireland would become too powerful by conquest and challenge his royal overlordship to the island (Walton 1980: 12). By legitimizing Rory's claim to Connacht, Henry II hoped to stop the territorial advance of the Anglo-Norman lordship in Ireland.

However, not even a royal treaty could restrain the land-hunger of the Anglo-Normans. The Treaty of Windsor was flagrantly violated twice in 1177, with Anglo-Normans invading and plundering Connacht (Walton 1980:12-13). On one of these occasions, the historic record claims that Rory's own son Murrough O'Conor, out of hatred for his father, guided the Anglo-Norman lord John de Courcy in a raid through Connacht, which proved unsuccessful. For this treachery, Murrough was blinded by his father and de Courcy was recalled to England for a time, making him politically impotent (Walton 1980: 12-14).

These attacks likely contributed to a royal policy change towards conquest in Ireland. Realizing it was impossible to withhold territorial expanse from his eager subjects, that same year of 1177 King Henry II began to grant sections of Rory O'Conor's territory in Connacht to Anglo-Norman lords (Walton 1980: 14). From Henry II's perspective, it was better to make land grants on his own terms than to have his subjects disobey him (Walton 1980:14). From 1177 onwards, Anglo-Norman lords made advances into Connacht, primarily in the form of raids originating from Meath (Walton 1980: 16).

Despite the blow Henry II's 1177 land grants dealt to his power, Rory O'Conor attempted to remain on good terms with the Anglo-Normans and fulfill the terms of the

Treaty of Windsor (Frame 2012: 49). In 1180, Rory sent a son to London as a hostage and married off a daughter to the Anglo-Norman lord Hugh de Lacy (Walton 1980: 15-6). Although Rory's shrewdness allowed the O'Conor family to remain politically relevant, his appeasing actions seem to have earned him the ire of some of his subordinates.

In 1183 Rory was usurped by one of his sons, Conor Maenmagh (Figure 10), likely buoyed by anti-English sentiment among some of the O'Conors (Walton 1980: 17-8). With Rory's loss of kingship, the ties between the king of Connacht and the English crown were severed. Conor Maenmagh had no interest in re-establishing a friendly relationship, as in 1187 he began a successful large-scale military campaign into Anglo-Norman occupied Meath (Walton 1980: 19). However, it seems that some O'Conors were not pleased with Conor Maenmagh, as he was murdered by his own people the following year in 1188 (Walton 1980: 20).

The O'Conor Kings of Connacht
Years of reign in parentheses

Toirrdelbach, high king
(1106-56)

Rory, high king (1156-83) — Cathal Crobderg (1189-1200; 1202-24) — Muirchertach — Brian

Andrias

Conor Maenmagh (1183-9) — Toirrdelbach (1225; 1228-30) — Aed (1228-30; 1231-3)

Aed (1224-8) — Felim (1230-1; 1233-65)

Conchobar

Brian

Cathal Carrach (1189-1202) — Brian (1236-7)

Aed (I) (1265-74) — Aed (II) (1278-80)

Tadhg

Rory — Toirrdelbach (1249-50) — Cathal

Cathal (1280-8) — Magnus (1288-93)

Eoghan (1274) — Tadhg (1274-8) — Aed (1274)

Domnall

Donnchad — Aed (1293-1309)

Rory (1316) — Felim (1310-16) — Toirrdelbach (1317-18; 1324-42; 1343-5)

Aed (1309-10) — Rory (1315-16) — Cathal (1318-24)

Figure 10: O'Conor Kings of Connacht, with years of reign as king in parentheses. The most historically relevant figures are highlighted (adapted from Frame 2012).

Following the fratricide of Conor Maenmagh, from 1189 to 1203 Connacht was impacted by a furious dynastic struggle among the O'Conor family (Frame 2012: 50). In 1203, Cathal Crobderg, the brother of Rory O'Conor, emerged as the victor and king of Connacht. As opposed to the previous king, Cathal was eager to form a relationship with the English crown. In 1215, King John of England (the successor of Henry II) granted

Connacht to Cathal and his successors for an annual rent (Frame 2012: 50). This was the furthest any English monarch would go towards assimilating an Irish ruler into the Anglo-Norman feudal hierarchy. However, the agreement with Cathal was hedged in two ways. First, on the same day as this agreement was drafted, King John also wrote a charter to the powerful lord Richard de Burgh, granting him prospective tenure in Connacht. Richard de Burgh already had large holdings to the southeast of the island, so Connacht would represent an extension of his territory to the north. Second, the agreement with Cathal and his successors was cautioned by the threatening phrase "for so long as they faithfully serve us" (Frame 2012: 50). If Cathal or his heirs disobeyed the English crown, the agreement could be dissolved, and the de Burghs could take control of the territory.

Connacht remained somewhat at peace for the rest of Cathal's reign. Towards the end of his kingship, Cathal seems to have become anxious of the continuation of his lineage and attempted to name his favored son Aed O'Conor his heir (Frame 2012: 50). His fears were well placed, as after Cathal's death in 1224 there emerged a fresh round of competition among the O'Conors over the next king of Connacht. During the confusion, in June 1226 King Henry III of England issued a proclamation stating:

> That he (King Henry III) cause to be summoned Aed, son of Cathal late king of Connacht, to be before the justicar at the king's court to surrender the land of Connacht, which he ought no longer to hold on account of his father's and his own forfeiture; by the charter of King John granted to Cathal, he held that land only so long as he should faithfully serve the king (CDI, I, no. 1402).

It is likely that de Burgh family members, currently in favor in the English court, were able to seize the opportunity of O'Conor power struggles to advance their family's interests in

Ireland. In May 1227, Richard de Burgh's title to Connacht was confirmed by royal charter (Frame 2012: 51).

Although the de Burgh charter of 1227 was not enacted upon until 1237, it set the pattern for Anglo-Norman activity in Connacht for the next hundred years (Frame 2012:51; Graham 1988:23). The de Burghs had received the majority of Connacht, amounting to 25 cantreds (subdivisions of territory for administrative purposes, comparable to the later baronies). The English king had reserved for himself five cantreds along the Shannon River, which served as the border between Connacht and Meath (Figure 11). After 1240, much of the king's cantreds were leased to the O'Conors, specifically Felim O'Conor, the younger son of Cathal Crobderg who had emerged on top after the twelve-year power struggle following his father's death in 1224 (Frame 2012: 51). The O'Conors were thus bordered by the Anglo-Normans on both sides, with de Burgh power to the west and royal authority to the east (Figure 11). Although the power of the O'Conor family had been greatly diminished, they remained notable figures in the Irish world, largely because so many of them were ferociously hostile to the Anglo-Normans (Walton 1980: 17). O'Conor resistance made the region challenging for de Burgh and English royal interests alike. This was especially true of Anglo-Norman colonial efforts, such as Ballintober, which were vulnerable and easy prey for Irish raids
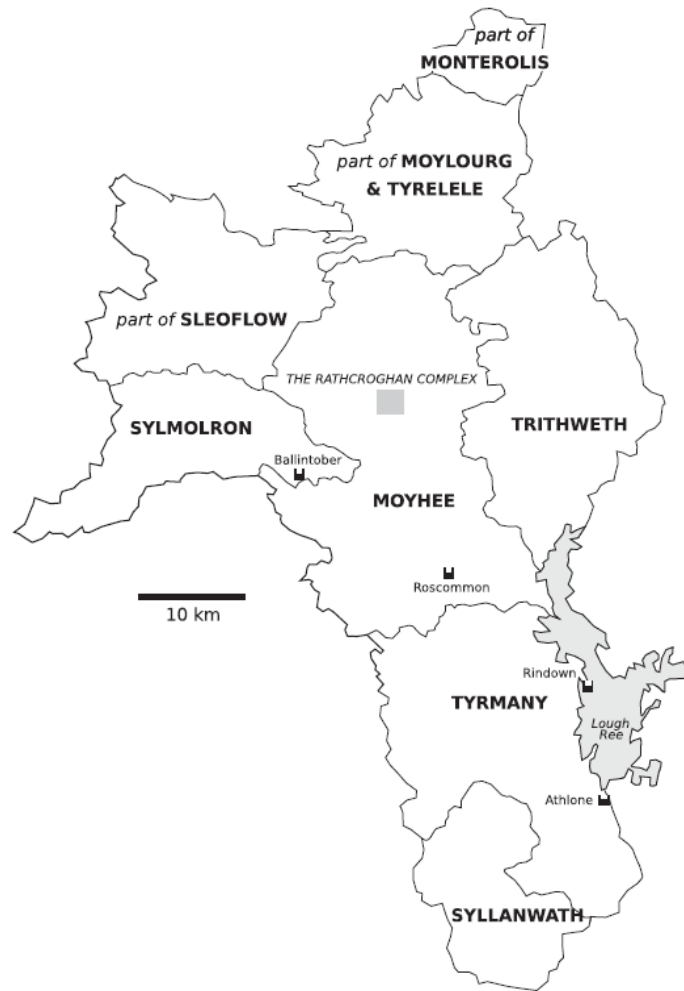
Figure 11: The medieval cantreds of County Roscommon. Marked are masonry castles in the county and the Rathcroghan megalithic ritual complex (O'Keeffe 2018: 5).

Anglo-Norman activity in this region, both colonial and militaristic, were part of a generally ineffectual policy of containment, where the English crown attempted to control the O'Conors by confining them within the king's five cantreds (Figure 11). Thus, the area that now constitutes county Roscommon (defined in 1585) became a contentious medieval frontier zone between the Anglo-Normans and the Irish (Graham 1988: 20). In the 13th and 14th centuries, it was characterized by a constantly shifting political landscape of power

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struggles between Anglo-Norman lords, Irish rulers, and the English crown. As compared to other regions in Ireland, where the Anglo-Norman invaders and subsequent colonists were absorbed into Irish society, it seems that the antagonism of this frontier created a clear divide between colonist and native (Graham 1988: 20). This divide was manifested in the medieval built environment of the region and can be observed in the archaeological record.

English royal investment in the region was focused first on the construction of a series of fortifications along the Shannon River, used as nexuses to contain unruly Irish leaders in Connacht and protect the productive and relatively stable Meath to the east. These fortifications included masonry castles at Clonmacnoise (1214), Athlone (1221), and Rindown (1227) (Brady et al. 2015:9; Harbinson 1995:140). Historical and archaeological evidence shows the construction of earthwork fortifications as well, which have survived in relative abundance across Connacht (Graham 1988:29-30; Walton 1980:182). Some of these fortifications were accompanied by settlement, such as a town at Rindown that will be discussed later.

Colonial advances into Connacht faltered in the mid-13th century when an especially fearsome coalition of Irish nobles, led by Aed O'Conor, raided Anglo-Norman settlements across the region. Aed O'Conor had made an alliance with another powerful Irish lord, Brian O'Neill, creating a dangerously unified Irish front in western and northern Ireland. After years of warfare and raiding, this coalition was ended by the death of Brian O'Neill during battle in 1260 (Frame 2012: 52). Aed O'Conor proved more durable, and his career of raiding and resistance continued until his death in 1274. He had left no clear line of succession however, and between 1274 to 1315 there was yet another wave of

O'Conor familial warfare (Frame 2012: 54). Within the first year of Aed's death there were three successors crowned, of whom the first two were killed after reigns of three months and two weeks respectively (Brady 2014: 10-1). In part taking advantage of the O'Conor divisiveness, Anglo-Norman colonial enthusiasm in Connacht swelled once again in this period.

English royal interests in the region expanded greatly with the construction of Roscommon Castle in 1269. It was severely damaged in the 1270's from attacks by an aging Aed O'Conor but was rebuilt with the latest advances in military architecture soon after. These renovations were extremely expensive for the crown and speak to a desire to assert control in the area (Graham 1988: 32). The royal Roscommon Castle also had an attached colonial settlement, established around 1270 at the same time as the construction of the castle. Interestingly, this settlement had burgess status, offering especially generous privileges to its inhabitants that equaled the large urban centers of Dublin, Waterford, Cork, and Limerick, despite being significantly smaller and far more rural (Graham 1988: 35). Likely this status was meant to entice settlers to such a remote and exposed area. Overall, it seems like the crown had great interest in solidifying and expanding their authority in the region.

At the same time, the de Burgh family began to make territorial advances into the area. The de Burghs were the most powerful of the Anglo-Norman barons in Connacht, having been granted the territory in 1227. Their base of power originated in Limerick, so their expansion took place from the south moving north. Through the mid to late 13th century the de Burgh's established a strong colonial presence in modern County Galway,

and less secure holdings in modern County Mayo and Sligo to the north (Frame 2012:50).

It was not until the late 13th and early 14th centuries that the de Burghs were granted the

cantred of Sil Maelruain by the English crown (Walton 1980: 386) and began to encroach

upon the territorial heartland of the O'Conors in County Roscommon (Figure 12). This

included the construction of the large masonry Ballintober Castle.

Figure 12: The location of Ballintober (red) and Roscommon Castle relative to the
Carnfree O'Conor inaugural site and the Rathcroghan ritual complex (adapted from
O'Keeffe 2018: 13).

Unlike the castles at Clonmacnoise, Athlone, Rindown, and Roscommon,

Ballintober Castle was not of royal build, and as such a written record of funds allocated

for its construction did not survive. Instead the first reference to Ballintober in the written record comes from the Gaelic historic chronicles, The Annals of Connacht, and describes O'Conor factionalist violence. This reference comes from 1311 and speaks of a double murder taking place at Ballintober, saying:

> Seonac Mac Uidilin killed the *Gruelach* at Ballintober and was himself killed at once therefore; and it is with the same short-handled axe wherewith he killed Aed Brefnach O Conchobair (O'Conor) that he was killed. A blessing on the man who killed him (AConn 1311.13).

Interestingly, Seonac Mac Uidilin had been solicited by a member of the de Burgh family, William Liath de Burgh, to murder O'Conor (Brady 2014: 11), likely in order to destabilize the region. Soon after this murder the O'Conors were forced to withdraw from the Ballintober area and William Liath de Burgh exerted control into the O'Conor heartland by stationing 200 soldiers in the territory. A castle was not explicitly mentioned in this account, but the building of Ballintober Castle likely predated this murder, and authors have roughly dated the creation of the castle to 1300 CE (Brady 2014: 11). This account both provides a potential date for the creation of the castle and speaks to the violence and unrest present within the region during this time.

Although William Liath de Burgh was an Anglo-Norman agent in the region, he was acting under the direction of the predominant de Burgh lord, Richard de Burgh, also known as the Red Earl. His power had recently been consolidated when in 1298 a long-standing feud with the powerful Anglo-Norman family Geraldine had been ended, with the victorious Red Earl gaining the Connacht lands of his Geraldine enemies (Frame 2012: 54). To secure his newly acquired territory, the Red Earl funded the construction of several

castles. In 1300, the historic record shows that he commissioned the construction of a castle at Ballymote, 40 km north of Ballintober (Brady 2014: 12). Although undocumented, it is highly likely Ballintober Castle was commissioned by the Red Earl as part of the same effort in a similar time frame. As opposed to other castles in the area, which were funded and exploited directly by the English crown, Ballintober was a direct product of the ambitions of Anglo-Norman lords.

The castle today consists of a large square area, approximately 70 m north/south by 80 m east/west, enclosed by a stone masonry perimeter wall with four corner towers (Figure 13). The castle is "keepless", meaning the principle element of defense were the external walls, with no central fortification for retreat if the walls were breached (Brady 2014: 17). This is a typology shared by the royal Roscommon Castle as well as the other de Burgh castle at Ballymote and reflects the military architectural style in vogue during the time period (Brady 2014: 10). While also undocumented, the settlement at Ballintober was likely established at the same time as the construction of the castle.

Figure 13: Northwest corner tower of Ballintober Castle (Brady et al. 2018) and laser scan of Ballintober Castle (Brady 2014).

Connacht under the Red Earl in the late 13th and early 14th centuries was prosperous for the Anglo-Norman lordship (Brady 2014: 13). This resonates with Ireland more broadly in this time, which saw increased expansion and colonial optimism. However, it was not to last, as the 14th century in Ireland became later defined as an age of territorial retreat and political, economic, and social stress (Frame 2012: 128). The king of England at that time, Edward I, had drawn heavily on Irish resources and demanded significantly more tax and tribute than previous monarchs, placing Ireland into economic crisis (O'Keeffe 1998: 88). The beginning of the 14th century also saw the decline of the warm and wet climate created by the Medieval Climactic Optimum, which led to consecutive years of bad harvest (Frame 2012: 128; Mann 2002: 514; O'Keeffe 1998: 88). Already bled dry by the English crown, famine struck the island starting in 1315 (Frame 2012: 128-31).

Coinciding with this famine, Ireland was also rocked by island-wide war with the arrival of Edward Bruce from Scotland (Walton 1980: 349). Edward Bruce was the brother of Robert Bruce, a Scottish lord who claimed the Scottish throne in 1306 and waged war

with the English for the next 15 years. Part of this struggle was played out in northern Ireland, where Edward Bruce attempted to unify the Irish to expel the English from their island and support his brother's claim in Scotland. Although he was somewhat successful, Irish politics proved just as challenging for Edward Bruce as they had for the Anglo-Norman lordship for centuries, and he was unable to create an island-wide alliance against the English (Frame 2012: 134). Edward Bruce's campaign ended when he was badly defeated and killed at the Battle of Faughart in 1318 by a force raised by Irish and Anglo-Norman lords (Frame 2012: 135).

Although nominally victorious in battle, Anglo-Norman cohesion in Ireland was seriously damaged by the Bruce Wars. This was most visible in Connacht, where 1315 marks the beginning of the decline of colonial power in the region. To oppose Edward Bruce, the Red Earl Richard de Burgh mustered his forces in Connacht and left to fight in northern Ireland. Accompanying him was the young king Felim O'Conor (Figure 10), who had arisen to supremacy among his kinsmen after the prolonged dynastic struggle following the death of Aed O'Conor in 1274. However, in their absence Felim's rival Rory O'Conor (a descendent of the Rory O'Conor who signed the Treaty of Windsor) took advantage and in 1315 proclaimed himself king, attacking the Anglo-Norman castles and settlements of Connacht (Brady 2014: 13-4). The historic record states Rory attacked and burned many colonial holdings, including Roscommon, Rindown, Athlone, Ballymote, and Ballintober. Although the accounts are unclear as to what Rory did with Ballintober Castle, some scholars have assumed that the de Burghs lost control of the castle and surrounding region (Brady 2014: 14).

Dethroned from his kingship, Felim O'Conor returned to Connacht the next year and waged war on his rival. Rory O'Conor was killed in 1316 and Felim was restored to power. Despite fighting Edward Bruce with the Anglo-Normans the previous year, in 1316 Felim O'Conor took advantage of the continued absence of the Red Earl and switched his allegiance, immediately attacking English strongholds in Connacht (Brady 2014: 14). To oppose him, William Liath de Burgh (the same man who had commissioned an assassin to murder Aedh Brefach O'Conor in 1311) met Felim O'Conor in battle and slew him at the Battle of Athenry. King Felim O'Conor died in 1316 at 23 years of age (AConn 1316: 4-5).

Although the Red Earl reacquired most of his lost holdings after 1316, he was unable to fully re-establish order in Connacht. Much of the stability in the region was vested in specific individuals, whether the Red Earl himself or his able lieutenant William Liath de Burgh. When William Liath died in 1324 and the Red Earl followed in 1326, there was no one left to reassert cohesive authority (Walton 1980: 367). The Red Earl's successor was his grandson William, who had been raised in England and was only sixteen when he arrived to take control of Connacht in 1328. It is no surprise that in 1333, dissatisfaction with his rule led to William's assassination by other Anglo-Norman lords (Frame 2012: 136). After his death, an inventory was made of de Burgh assets in Ireland. This includes Ballintober, and the post-mortem inventory of de Burgh holdings represents the only detailed account of Ballintober to survive from this period (Brady 2014: 14).

The de Burgh lordship as described in the *inquisitions post mortem* (*ipm*) for 1333 was significant in size, covering much of Connacht to the west of Ireland and Ulster to the

north (Brady 2014: 14). In describing the value of de Burgh assets, the *ipm* provides two numbers for each holding. One number, almost always larger, represents the value extracted by tax from the listed property in previous years.   The second smaller value represents the expected tax value from the listed property in 1333, during the current unrest (Brady 2014: 15). The entry for Ballintober reads:

Cantred of Sylmolron (Castle of Toberbride)

At Toberbride is an old castle surrounded by a stone wall, which would be very useful for keeping the peace of those parts, if a sufficient ward was. . . In the castle are ruinous buildings, a hall, a chamber, a kitchen, and other houses, worth nothing beyond cost of repairs, because they need great repairs.

In demesne two carucates and sixty acres of arable land were under the lord's plough, worth 12d an acre, in all £15, but now nothing.
12 acres of meadow, 12s, but now nothing.
One pasture 13s 4d, but now nothing.
Another woodland pasture in Rathfernan, 26s 8d, but now nothing.
Another pasture, 10s, now nothing.
A watermill at Rathfernan, 46s 8d, now nothing, because ruinous, and on account of the war.
20s from prisage-of beer, with Staus, now nothing.
Grass of a certain place, 3s, now nothing.
At Toberbride, a water-mill, 66s 8d, now nothing.
26s 8d from prisage of beer there, now nothing.

Free Tenants. £14 from one townland in Balymacgagan, three townlands in Dyrydunus and elsewhere, which McCortan held at will, but now nothing.
Pleas and perquisites of the Hundred of Toberbryd, £4, now nothing.
10s from one townland in Fichbary [or Fithbary], which the heirs of John de Barry held, but now nothing.
6d from one piece of land in Clanfadd, which Lucas McCortan held, now nothing.
40s from one townland in Curran, which Adam de Burgo held, but now nothing.
£12 14s 4d from five townlands in the Burgage of Rathfernan, but now nothing.
£20 from five townlands at Toberbrid, now only £10.
40s from half a townland which was under the lord's plough, but now nothing.
52s from one townland in Myntynan, now nothing.

Total of old value of this cantred, parcel of the manor of Loghry, £84 1s 10d. Total of value now, £10 (Knox 1903: 59-60).

There is much in this account worth noting. Firstly, Ballintober Castle is described as an "old castle", despite having been built less than 30 years earlier. It is likely that this qualifier was added as the castle was built by Richard de Burgh the Red Earl, William's grandfather, and had passed to him through inheritance and was outdated (Brady 2014: 17). Moreover, the castle is described as ruinous and worthless, both monetarily and defensively. The account mentions that the castle has the potential to be useful for "keeping the peace", but it would require great repairs. Perhaps this destruction came from the 1315 attack by Rory O'Conor and Ballintober Castle had laid in ruins since then until 1333.

The remainder of the account describes the lands and holdings around Ballintober Castle. This entry reveals a typical manorial structure, with leaseholders working the lord's private demesne of 300 medieval acres, a significantly sized parcel of land, and freeholders residing in locations outside the demesne. Income was extracted from two water mills, where the tenants would have paid a fee to grind their grain, and from taxes on the production of beer. However, by 1333 all income derived from leaseholders was completely gone, "now nothing." The demesne, water mills, and pasture fields were expected to produce no value in 1333. Although not explicitly stated in the historic record, it is highly likely that the demesne lay fallow and produced no income because the tenants had either fled or been killed on account of the war in the region (Walton 1980: 387).

The freeholders in the area seem to have fared marginally better. Most of them appear to have fled as well, but some income was recovered from freeholding taxation.

One of the freeholders mentioned has an Irish name, Lucas McCortan, implying that at least one free tenant was of Irish descent.

In the 1333 account, lack of income from a "Hundred of Toberbryd (Ballintober)" is also noted. This refers to a legal body of a "hundred court", an institution that existed specifically within higher status boroughs. Thus, this implies that Ballintober held borough status, although this is never overtly stated (Graham 1988: 35). Similar to Roscommon town, affording borough status to Ballintober was likely a way to entice settlement in the area. Therefore, it is possible that the residents of the deserted settlement were burghers, with higher status and more privileges than other lease-holding classes.

In previous years Ballintober had produced over £84 in annual profits, a sizeable sum that equaled 6% of de Burgh total income from Connacht (Brady 2014: 16). In 1333, Ballintober was only expected to produce £10, none of which arose from the lord's personal demesne. This drastic decrease in income from the region was mirrored throughout Anglo-Norman occupied Connacht, and a loss of profits was recorded at nearly every property mentioned in the 1333 account. Overall, the value of de Burgh lands had fallen from £1,436 to £426 in 1333, but the decline was especially sharp in the Ballintober region (Walton 1980: 384). An authority like the Red Earl was desperately needed to reassert Anglo-Norman stability in Connacht.

However, the next successor in line was William's infant daughter, who was hardly in a position to take control of Connacht, and de Burgh supremacy and centralized lordship came to an end (Walton 1980: 431-2). The decay of de Burgh power in Connacht did not mean the immediate collapse of Anglo-Norman lordship in the west of Ireland. However,

after 1333 when Irish lords raided and necessitated Anglo-Norman military action, just as they had for hundreds of years, there was no longer a cohesive authority that could muster an Anglo-Norman response (Frame 2012: 137). After William's death in 1333, the Irish took advantage and warfare soon became widespread (Walton 1980:383). The English crown attempted to step in and assert order, but the unrest present in the region proved overwhelming. The region was producing nearly no income, and the crown was occupied by continental warfare with France (the Hundred Year War), so Connacht was a low priority. Moreover, all of Europe was rocked by the Black Death, an epidemic of bubonic plague that killed upwards of one-third of the European population between 1346 and 1353 (Benedictow 2004: 1). Bit by bit, the region slipped back into Irish lordship control and was eventually abandoned by the English crown (Frame 2012: 154). Both Roscommon and Rindown Castle were seized by Irish lords in the 1340's, and little effort was made to recapture them (Walton 1980: 429). At Ballintober Castle, the historic record is once again unclear, but the castle is in Irish lordly hands by 1375 at the latest (Brady 2014: 19), likely significantly earlier.

Although written accounts are sparse for Ballintober, the nearby Rindown Castle and associated settlement can offer a useful comparative (Figure 11). Like Ballintober, Rindown was strategically placed along the borderland in Connacht. Unlike Ballintober, Rindown Castle was commissioned directly by the English crown, making it of royal build and thus far better documented than Ballintober.

Rindown Castle sits less than forty kilometers from Ballintober on a promontory jutting out into Lough Ree (Figure 11), a large lake formed along the Shannon River (Lynn

1985: 112; Harbinson 1995: 138). The Shannon was a vital riverway for control of the area, as soldiers and supplies could be easily moved from the Anglo-Norman stronghold at Athlone to the western coast at Sligo. The castle was built around 1227, significantly earlier than Ballintober, with settlers arriving in the area at likely the same time (Harbinson 1995: 140). Of these settlers, only one name has survived in the historic record, Philip de Angelo. The obvious Englishness of the name implies that at least some portion of these settlers were of English stock.

From the early years of its construction, Rindown was subjected to continual surges of Irish raiding, looting, and burning, episodes of which can been seen in the historic record (Harbinson 1995: 141). Concerned for the safety of the English settlers, the king ordered repairs made to the castle, town, fisheries, and walls of Rindown in 1251 (Harbinson 1995: 141). These efforts proved insufficient, as by 1273 the village and countryside around Rindown had become depopulated due to the constant warfare (Harbinson 1995: 141) and the raiding from Aed O'Conor towards the end of his career. In response, the crown granted more leases to encourage settlers to move to Rindown and replace those that had fled. This appears to have been successful, as there is historic documentary evidence for the movement of goods to Rindown and the collection of taxes from the town (Harbinson 1995: 142). This profitability coincides with general Anglo-Norman optimism and investment in Roscommon in the second half of the thirteenth century, as can also be seen by the construction of Roscommon and Ballintober Castles.

However, this prosperity was short-lived. Starting in 1294 there was such unrest around Rindown that it produced no profits, and tenants no longer paid rent on their lands

beginning in 1314. By 1332 the lands around Rindown had been abandoned once again by their occupants, which prompted a declaration by the sheriff demanding the return of the fled English tenants to their land or their property would be seized by the crown. This appears to have been an empty threat, as in 1340 the Irish captured the castle and reclaimed control of the area from the Anglo-Normans (Harbinson 1995:146). Although in a different location, the abandonment of Rindown by its tenants provides a useful model for the abandonment of the settlement at Ballintober. As the historic contextual pressures faced by occupants of both sites were the same, it is possible that tenants at Rindown and Ballintober had similar reactions to them, namely flight.

Overall, the historic record shows that the deserted settlement at Ballintober existed within a violent and unpredictable context. As compared to the longevity seen at other Anglo-Norman colonial territories in Ireland, Roscommon County saw only brief and contentious settlement. The archaeological record at Ballintober and other similar medieval sites can offer insight both into the lived experience of people in this borderland but also explore the ramifications of the larger political and historical contexts on the medieval built environment.

Chapter Three: Archaeological Background

Medieval rural settlement has received relatively little archaeological study or published work in Ireland. Traditionally, Irish archaeologists have tended to concentrate their research on the prehistoric or Early Christian periods (O'Conor 1998:15) for a variety of reasons, including an Irish nationalist sentiment that was uninterested in the colonial medieval period (O'Conor 1998:15). However, in the past 20 years there has been a renaissance of medieval archaeology, especially in the study of the medieval rural landscape, which can be seen in an increase in publications on the subject and innovative research projects such as the Medieval Rural Settlement Project by the Discovery Programme (Barry 2009:viii).

Despite this resurgence of interest, few medieval settlement sites have been excavated. This is predominately due to the lack of surface remnants left by medieval settlements, making them difficult to identify for archaeological study (O'Conor 1998:47). In England, where medieval settlements have been more extensively studied, it has been shown that settlements were often deserted in the thirteenth or fourteenth centuries and leave little trace above ground, likely due to the ephemeral nature of their construction (Rowley & Wood 1982:27). In Ireland, which was shaken by a combination of famine, the Bruce Wars, and the Black Death in the early 14th century, it is generally accepted that many Anglo-Norman settlements were abandoned in that timeframe and subsequently degraded, thus leaving sparse archaeological evidence for site identification (O'Conor

1998:47-8). Still, a few rural medieval settlement have been identified and partially excavated, predominantly in the south and east of Ireland which were not as badly affected by the troubles of the fourteenth century and thus the settlements there remained inhabited and prosperous, resulting in a longer habitation period that has left a more significant remnant in the archaeological record (O'Conor 1998:48). These few studied medieval Irish settlements provide useful comparatives to the archaeology discovered at Ballintober and offer insight into the function and composition of identified features.

Archaeology of Medieval Settlements in Ireland

When Kiernan O'Conor (1998:57) wrote his seminal work, "The Archaeology of Medieval Rural Settlement in Ireland" in 1998, only five medieval nucleated settlements had been studied with archaeological excavations. Since then, there have been some new investigations into medieval settlement, typically as part of cultural resource management projects preceding development (Corlett & Potterton 2009). These have primarily focused on the excavation of individual medieval structures, and their immediate surroundings.

A review of previously excavated evidence of the houses of manorial tenants indicates a number of interesting aspects of life during this time. This limited evidence suggests that nucleated manorial settlement, as implied in the historic record, did occur in Ireland in a similar way to England. The similarity of structures and site layouts to villages from England also suggests English influence in design or direct English colonization starting in the 12th century (O'Conor 1998:57). Excavation information points to an overall picture of self-sufficiency of rural medieval settlements in terms of food, clothing, and tools. Evidence of locally produced ceramics and metal items also point to the existence

of industry and specialist craftsmen at medieval rural settlements. In contrast some discoveries of medieval coinage and imported ceramics implies a connection to wider trade networks and less regional economics as well (O'Conor 1998:56).

Excavations of dwellings in Ireland indicate that medieval tenants lived predominantly in houses of roughly rectangular shape, a design common in medieval England (Glasscock 1987:229). The materials used to build the walls were varied, built of stone, mud, wood, or a combination of these. It is likely that construction was dependent on the available resources and skill of the builders (O'Conor 1998:56). Evidence suggests that houses would have thatched rooves (O'Riordain & Hunt 1942:44-7). There is a general degree of conformity among house design, although excavated examples seem to come in two varieties. One version contains only one large room, while the other has a partition for two rooms, with one room likely serving as a livestock shed in farming communities and the other a habitation space (O'Conor 1998:57).

Within the houses, consistent typologies of internal features have been identified in excavated examples. Most prominent of these are hearths, located centrally in the house or along a wall. Ash from these hearths suggests that peat from nearby bogs was the main fuel source. Some houses contain interior paved surfaces of small cobblestones, either surrounding a hearth or located in an isolated spot elsewhere in the interior (O'Conor 1998:48-51) that were likely used for domestic activities such as food preparation where a dirt floor was nonideal.

Surrounding the houses, the primary features found by excavatiors are series of ditches and pits. These features seem to be for a variety of purposes and are often filled

with organic rich soils, animal bones, and ash, making them likely middens for refuse disposal (O'Conor 1998:54). Other larger pits near houses within settlements have been interpreted as quarry pits, dug to extract clay for building purposes (Eogan 2009:73). Similarly, some long ditches have been interpreted as water drains in waterlogged areas, while others are filled with organic rich soils and seem to be for waste disposal (O'Conor 1998:48-57; Eogan 2009:73).

At the Ballintober deserted settlement, all the above features have been identified either through geophysical analysis or excavation. This helps place the settlement within its wider medieval historic context and puts the site within a larger dialogue of medieval archaeological scholasticism.

Previous Archaeological Work at Ballintober

As a very visible architectural feature on the landscape, Ballintober Castle has received most of the previous medieval archaeological work in the region (Brady 2014; Brady et al. 2018; O'Conor & O'Donovan 1891). In 2008 and 2009, Target Archaeological Geophysics performed a geophysical survey of magnetic gradiometry, resistivity, and ground-penetrating radar on the interior of the castle and village green directly adjacent to the castle (Nicholls 2009). Resistance and ground-penetrating radar surveys of the castle interior revealed the remnants of three substantial rectilinear structures (Figure 14 & 15), while the magnetic gradiometric survey presents a large number of burnt and disturbed areas (Figure 14). The village green survey was inconclusive, as recent groundworks had disturbed the subsurface soil and rendered the geophysical datasets useless (Brady 2014:29-33). Overall, the 2008-9 geophysical surveys suggest that Ballintober Castle had

been occupied by many groups of people with resulting multiple occupational levels and

construction/destruction events (Brady 2014:33).
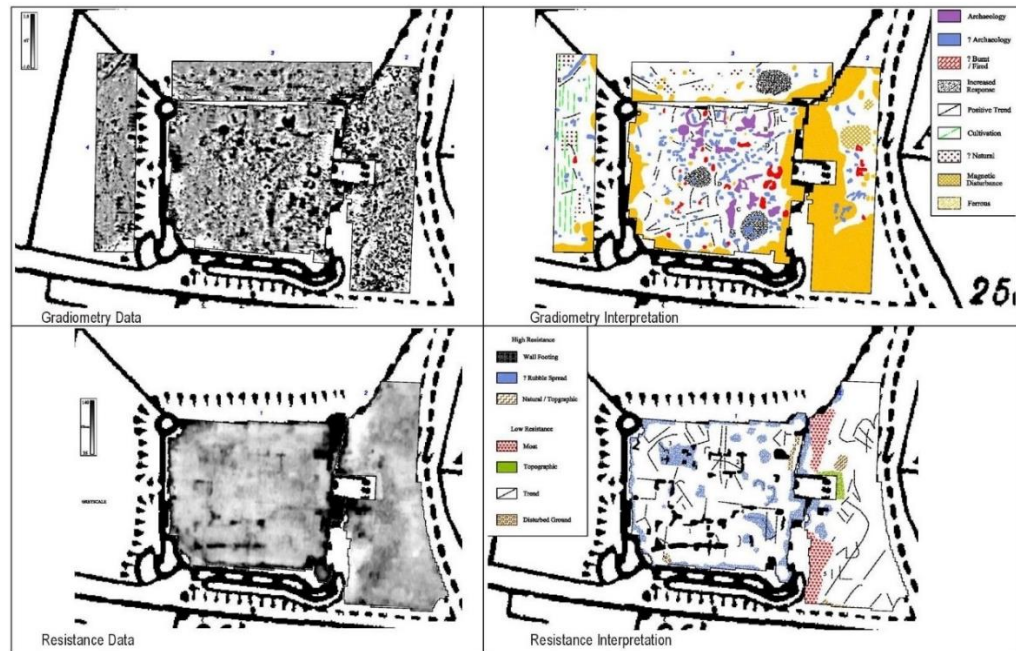
Figure 14: Magnetic gradiometry and resistance survey maps of Ballintober Castle interior and village green from 2008-9, with geophysical maps on the left and interpretations on the right (Nicholls 2009).
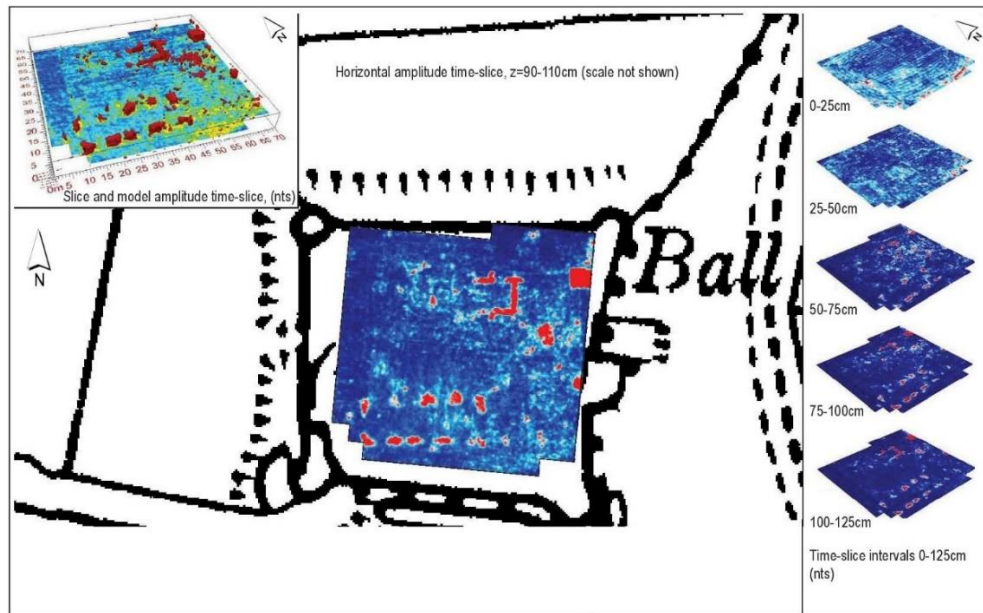
Figure 15: Ground-penetrating radar survey maps of Ballintober Castle interior from 2008-9 (Nicholls 2009).

Additionally, in 2005 a field to the east of the castle was archaeologically investigated as part of a proposed development project (Figure 12). The excavators created a number of machine-cut trenches across the field, varying from 3x30m to 1x140m in size, with all trenches excavated to a maximum depth of 0.65m (Markley & Read 2008). Testing revealed several definite and potential archaeological features in that field, primarily agricultural features of linear banks, ditches, and furrows. Many of the features contained pottery sherds of Post-Medieval age. On the western end of the field, a number of features implying settlement were discovered by the excavators, including hearths, compacted surfaces, and possible wall foundations. The excavators claimed their findings support the existence of a substantial medieval field system and possibly a related settlement (Markley & Read 2008).

Figure 16: Field investigated archaeological in 2005, preceding proposed but unbegun development.

The archaeological work utilized in this thesis emerges from the Castles in Communities archaeological and anthropological field school project (2015 - present). The project combines academic research, field school pedagogy, and intensive community engagement to investigate Ballintober in the medieval period. This is accomplished by incorporating many different methodologies to create a holistic understanding of the region and its inhabitants, including pedestrian surveys, the gathering of cultural narrative, topographic and geophysical survey, and excavation (Brady et al. 2018). The project directors are Siobhan Boyd, Niall Brady, Daniel Cearley, Samuel Connell, Chad Gifford, Ana Lucia Gonzales and Kathryn Maurer. The excavation is conducted under license 15E0232, which is held by Niall Brady. All work on this project and this thesis was funded by students of the project.

Castles and Communities was first primarily focused on archaeologically investigating Ballintober Castle. Since 2015, three large excavation units along the eastern perimeter of the castle interior have been opened and finished. These excavations have helped create a timeline of construction and destruction phases of the castle and have supported the hypothesis that Ballintober Castle was originally of Anglo-Norman construction (Brady et al. 2018).

That project later expanded its archaeological interests to the surrounding landscape. In part prompted by the findings of the 2005 investigations, in 2016 the field to the southeast of the castle, colloquially called Garvey's Field, was surveyed geophysically with magnetic gradiometry and ground-penetrating radar. This revealed the subsurface deserted settlement that is the subject of this master's thesis (Conyers 2018).

Following the 2016 discovery the geophysical survey was expanded with datasets collected in adjacent fields, revealing and exploring the footprint of the village. Two targeted archaeological units were also excavated in the deserted settlement. The geophysical and excavation datasets from this deserted settlement comprise the primary datasets used in this thesis.

Chapter Four: Methods

Geophysical Survey

The ground-penetrating radar (GPR) and magnetic gradiometry surveys utilized in this thesis were completed in the summers of 2015-2018. Just under seven hectares of area were surveyed with GPR (Figure 17) and magnetometry (Figure 18) in and around Ballintober Castle. Each geophysical grid was placed in space using a real-time kinematic differential global positioning system (RTK DGPR) and grids were incorporated into the same GIS platform using a compatible coordinate system using *ESRI ArcMap*. The elevation of the ground surface was also measured, which produced topographic maps to compensate for elevation changes in GPR profile and to identify subtle archaeological features that might still have surface remnants.

Figure 17: GPR survey area at Ballintober, with white grids from 2015, grey grids from 2016, and black grids from 2017.

Figure 18: Magnetic survey area at Ballintober, collected in the summers of 2015-2018.

The placement of geophysical grids starting in 2015 was originally intended to explore the interior of the castle and the relict field boundaries to the east, which were excavated in 2005. In 2016, the identification of visible surface earthworks in the more southern "Garvey's Field" through pedestrian survey led to the geophysical prospection of that field. This led to the discovery of the deserted settlement through maps created by magnetometry and ground-penetrating radar data in 2016. From that point onwards, geophysical survey became focused on further defining the footprint of the settlement, working from the known to the unknown and expanding into additional fields to the south and east of the castle. Magnetometry data was also collected in the fields around the castle in 2018. Geophysical surveys at Ballintober were performed by many students and staff

members of the field school from 2015-2018. However, most of the geophysical data was collected by the author, Sean McConnell, Valerie Watson, Marie Critchfield, and Talia Macbeth. Surveys were overseen by the author, Daniel Cearley, and Dr. Lawrence Conyers. Geophysical interpretations on the resulting datasets were performed in part by Dr. Lawrence Conyers, but most interpretations in this thesis were performed by the author.

Ground-penetrating Radar

Ground-penetrating radar (GPR) is a near surface geophysical technique that records and processes reflected radar waves from subsurface discontinuities and produces a three-dimensional dataset of buried geologic and anthropogenic features (Conyers 2013: 42). Thousands of individual reflections are combined to create two-dimensional vertical profiles displaying stratigraphy where anthropogenic units can be viewed and interpreted much like soil and sediment profiles in the walls of excavation trenches. When closely spaced GPR profiles are combined and amplitudes are resampled the radar reflections can be used to create horizontal slice maps that show areas where varying reflection values identify geological units and cultural features such as occupation surfaces, walls, and middens. As opposed to many other geophysical techniques, GPR creates a three-dimensional dataset, making it of great use to archaeologists.

Ground-penetrating radar data is acquired by transmitting pulses of radar energy from a surface antenna downwards into the ground. Radar waves propagate through the ground, with their shape and speed determined by the physical and chemical properties of the subsurface (Conyers 2013:47). As the waves move through the ground, they will encounter changes in the subsurface, including stratigraphic layers, large buried objects,

and most importantly for archaeologists, buried anthropogenic features. When radar waves pass through subsurface changes, the velocity of the waves will change, depending on the physical and chemical properties of the materials (Conyers 2013:107). If the change in materials is abrupt, for instance a soil layer of dry sand rapidly changing to a layer of wet clay, the velocity of the radar waves will also change abruptly. This results in the creation of a reflected wave, which can move back to the ground surface from the reflection interface (Conyers 2018:22). Some of this reflected energy will reach the surface and be recorded by a surface receiving antenna, producing the radar dataset utilized for interpretation. Not all radar energy will be reflected however, and some will continue into the ground to be reflected off deeper subsurface interfaces and so on, until all radar energy is attenuated and dissipates in the ground. The depth at which radar energy attenuates is dependent on the physical and chemical properties of the subsurface, most importantly water saturation (Conyers 2013:74). At Ballintober, GPR can resolve stratigraphy to roughly one and a half meters below the surface.

Hundreds or thousands of reflections are stacked to produce a trace, which represents the many reflected waves from different depths in the ground. Each trace is recorded at a discreet location, and as the radar antennas are moved across the surface many hundreds of traces are collected. These traces can be combined to produce a two-dimensional vertical profile into the ground (Conyers 2018: 24). Interpretation of reflection profiles is the primary method of data interpretation used in this thesis, as profiles are very useful for the analysis of complex subsurface stratigraphy.

Many reflection profiles collected in a grid can be used to produced plan view maps of depth slices in the ground (Conyers 2018: 25). This can be helpful in creating a general visualization of large areas in the subsurface, especially at archaeological sites with substantial buried architecture. However, at the Ballintober settlement, slice maps proved of little use for interpretation of archaeological features. They did however show underlying geologic features that were of some interest. For a visual summary of the creation of GPR data, see Figure 19 below.
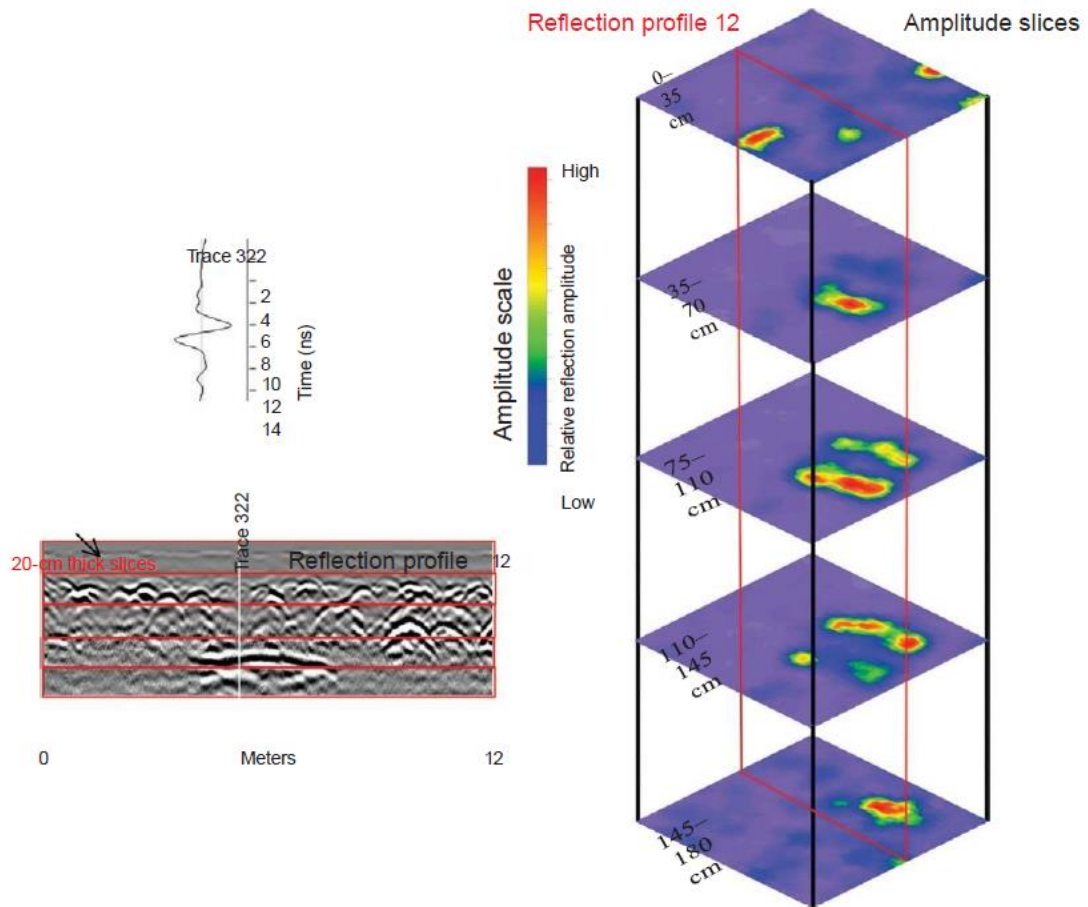
Figure 19: Visualization of the creation of GPR images, beginning with an individual trace (top left). Many traces are stacked together to produce reflection profiles (bottom left). Many profiles are combined to produce slice maps at various depths (right) (Conyers 2016:13).

A GSSI SIR-300 system using 400 MHz antennas and survey wheel was used for GPR collection (Figure 20). Reflections were recorded within time windows ranging from 40ns to 80ns depending on the depth of investigation necessary and filtered between 200 and 800 MHz, with 40 reflection traces collected per meter. Reflection profiles were

typically spaced at 50 cm intervals, with some higher-resolution grids at 25 cm intervals.

Data were processed using *GPR Viewer* for profile analysis and *GPR Process* for amplitude

slice-mapping (Conyers 2013). *Surfer 12* was used for amplitude mapping of radar

reflections that were re-sampled from the profiles using *GPR Process*. For all GPR data,

hyperbola-fitting was used to calculate the relative dielectric permittivity (RDP). This can

be used as a proxy measure for velocity and allows for the depth of subsurface features to

be calculated (Conyers 2013).
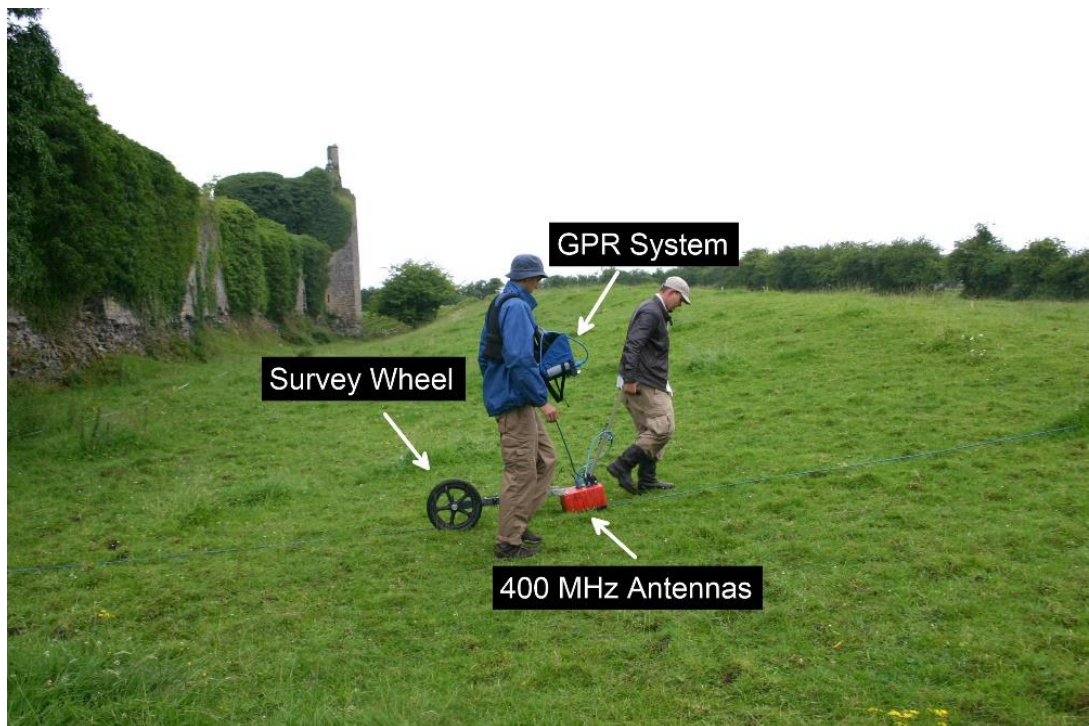
Figure 20: Collecting GPR transects by Ballintober Castle with a SIR-3000 system
and 400 Mhz antennas, with transects produced along lines marked with ropes (image
courtesy of L. Conyers).

Magnetometry

Magnetometry is a passive geophysical method that measures variations in the

earth's magnetic field as a product of remnant magnetism and the magnetic susceptibility

of subsurface soils, sediments, bedrock and buried archaeological materials (Kvamme 2006a). Magnetometry relies on magnetism generated deep within the earth's core, where currents within the liquid core generate a magnetic field (Kvamme 2006). The main magnetic field has two poles, north (positive) and south (negative), which vary in orientation over time (Reynolds 1997:119). Magnetometry measures local changes in the strength of this magnetic field due to variations in the magnetic properties of near subsurface materials. Recorded on the order of nanoteslas (nT), these measurements are plotted spatially to create plan view maps of magnetic variations derived from subsurface materials (Conyers 2018: 27-8). Magnetometry has proven useful across the world, including Ireland, for locating features such as pits and post holes, objects made of iron or other highly magnetic materials, and thermally-altered features such as fire hearths and burned structures (Barton & Fenwick 2005; Bonsall et al. 2013; Gaffney et al. 2002; Gaffney 2008: 320; Kvamme 2006b: 206-208). However, this method is a strictly two-dimensional technique that measures values within the upper few meters of the ground surface.

There are two basic types of magnetism that are measured by magnetometry, remnant and induced (Clark 2000: 100). Induced magnetism is derived from a material's magnetic susceptibility, meaning the material has some magnetic components that are affected by the earth's magnetic field (Conyers 2018: 31). Remnant magnetism means that some event in the past caused materials to retain magnetism, the most common example of this being burning above the Curie point (Fassbinder 2015). These sorts of burned features, such as hearths, will often appear in magnetic maps as a distinctive dipole feature, with

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strong paired positive and negative anomalies (Conyers 2018: 31). Similar are iron objects, which will also be visible as a dipole feature (Kvamme 2006: 207-8).

Magnetometry relies on the contrast of archaeological features in comparison to their natural background, labeled "anomalies." If archaeological features possess different physical or chemical properties from their surrounding matrix, a difference might be noticed between them (Kvamme 2006b:206). For example, certain materials such as basalt have a high magnetic susceptibility, while others like limestone have a very low magnetic susceptibility (Conyers 2018: 32). A buried stone wall of basalt surrounded by limestone would be more magnetic than its surrounding matrix. On a magnetic map, this basalt wall would be visible as a higher nT magnetic anomaly surrounded by a background of lower nT values. The reverse could also be true, with a buried wall of limestone surrounded by basalt. This wall would also be visible in magnetic map, but for the opposite reason. The limestone wall would have a low or even negative nT value surrounded by a background of high nT values.

Many soils will be magnetically susceptible due to the precipitation of iron by soil formation processes and by the decomposition of organic material by bacteria, which enhance the transmutation of non-magnetic hematite to magnetic maghemite (Conyers 2018: 33; Fassbinder 2015). For the purposes of magnetometry, this means that organic-rich soils or sediments will often have a higher magnetic susceptibility than their surrounding matrix and will be distinctly visible in magnetic maps (Aspinall et al. 2009; Conyers 2018: 33). Archaeological features such as ditches, pits, or middens that are filled

over time will often appear magnetically positive as they had higher concentrations of organic soil and are thus more magnetic than the surrounding ground.

Magnetometry data analysis typically begins with post-processing software, such as *TerraSurveyor*, which offers functions that can correct and normalize magnetic data in a variety of ways. Some of the most common of these are "destaggering" and "destriping", which correct for user or machine derived error during field collection. Others, like "clipping" or "despiking" serve to narrow the focus of the magnetic dataset to a desirable scope for identifying archaeological features. The overall purpose of magnetic post-processing is to create magnetic maps of subsurface "anomalies" that are accurate and usable (Conyers 2018: 40).

The primary interpretive method for magnetic maps by most practitioners is visual analysis, where the alignment, shape, and strength of magnetic "anomalies" are translated into subsurface archaeological features (Keay et al. 2014, Kvamme 2006). This is effectively pattern recognition, where interpreters look for shapes and alignments in the magnetic maps that deviate from natural features and correlate with archaeological features of interest. Although this type of analysis can be productive and accurate, there are many potential factors of subsurface physical and chemical composition that can affect visual anomalies and complicate archaeologically useful interpretations (Conyers 2018: 6). To enhance the detail and precision of analysis, the method utilized in this thesis integrates both magnetometry and GPR simultaneously, as will be explained in the next section.

The magnetic data were collected with a dual sensor Bartington 601 Single Axis Fluxgate Gradiometer (Figure 21). Initial data processing was performed using *TerraSurveyor* with additional processing and map production with *Surfer 12*.

Figure 21: Bartington 601 Single Axis Fluxgate Gradiometer used in the field with transects produced along lines marked with rope (personal photograph).

Integration

Although GPR and magnetometry are both near-surface geophysical methods, they are designed to record and process very different ground properties. Features easily interpretable in GPR can be challenging to interpret using magnetics and vice versa, depending on the underlying geology and their physical and chemical properties (Figure 22). For example, a small piece of iron would be visible with magnetic readings as it is highly magnetic but likely invisible with GPR unless it was quite large. The GPR method in contrast could be used to identify a specific subsurface soil horizon, which would be

impossible to observe in a two-dimensional magnetic map. Thus, in combination GPR and magnetometry create a powerful dataset as they provide different lenses with which to interpret units and objects in the subsurface, where GPR provides a stratigraphic lens and magnetometry a compositional lens with respect to magnetic properties. Each dataset thus compensates in some way for the other's weakness and creates a holistic geophysical analysis (Conyers 2018; Kvamme & Ahler 2007).
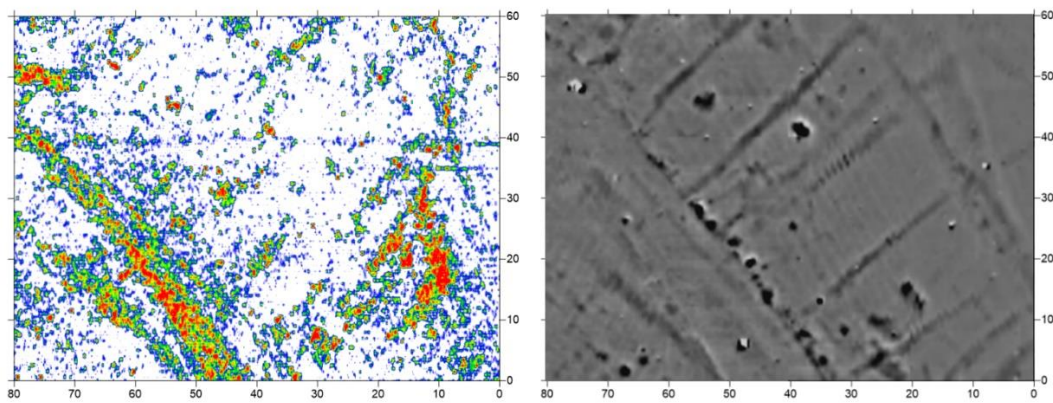
Figure 22: Comparison of spatially identical GPR slice map and magnetic map from the Ballintober deserted settlement. Although there is some similarity in linear features, these two geophysical methods provide a very different, but complimentary, picture of the archaeological subsurface.

These two methods are integrated here in a multi-step approach to geophysical analysis, as was first proposed in Dr. Lawrence Conyers' book, *Ground-penetrating Radar and Magnetometry for Buried Landscape Analysis* (2018). Dr. Conyers describes this method as "deconstructive" geophysical analysis, as the approach analyzes small amounts of data from targeted areas to better understand geophysical readings of individual subsurface features (Conyers 2018:10-1). Once many different individual features are understood, the larger scale geophysical datasets can be interpreted with more confidence.

In this thesis, spatially identical plan-view magnetic maps and GPR slice maps are overlaid in *Surfer 12*. At Ballintober, magnetic maps were very useful in the identification of some anthropogenic subsurface features, like hearths, ditches, middens, and many more. Once features of interest were located by magnetometry, they were investigated stratigraphically with GPR profiles. At the same time, individual magnetic data points were also extracted from magnetic maps and compared directly with spatially identical GPR profiles. This allowed for the comparison of subsurface stratigraphy with subsurface magnetic composition, which proved very informative to more holistically understanding archaeological features. Overall, magnetometry provided useful preliminary feature identification and compositional analysis and GPR provided complementary three-dimensional stratigraphic analysis (Conyers 2018).

This approach is especially beneficial at Ballintober as bedrock in the area is limestone overlain by glacial till, also composed of limestone clasts (Parkes et al. 2012: 16). The limestone and limestone-based till has a low magnetic susceptibility, which produces neutral or slightly negative magnetic readings, but high amplitude radar reflections. Most positive magnetic readings were found to be associated with built or culturally modified features, with GPR providing good three-dimensional control of both the natural and anthropogenic stratigraphy and features, making this an excellent environment for testing these two methods jointly (Conyers 2018).

The process of developing a geophysical interpretive methodology for the Ballintober settlement is one that took many years of trial and error, both in the field and the lab. The details and results of this interpretive methodology, most importantly a

geophysical interpretive map of the entire settlement, will be the subject of the following chapter, Data Analysis. The remainder of this chapter will be focused on the progression of our understanding, interpreting and correlating the geophysical results with buried features and stratigraphy at Ballintober. This was primarily aided by targeted excavations, which were of tremendous importance in informing geophysical analysis. Exposing subsurface geological units and archaeological features and then correlating them directly to the geophysical readings allowed us to understand their physical and chemical properties, which in turn helped explain the underlying reasoning behind their geophysical signatures. Instead of being content to solely answer the "what" of geophysical interpretation by merely identifying subsurface features, this research instead asks the follow up question of "why". Why do these features look the way they do in magnetics and GPR maps and profiles? Targeted excavations proved vital to answering both the "what" and the "why" questions and to informing accurate analysis of unexcavated archaeological features more widely.

Excavation

In the summers of 2016 - 2018, three archaeological units were excavated in and around the deserted settlement at Ballintober (Figure 23). The placement of these excavations was determined by geophysical survey. Although of varying degrees of archaeological interest, the three excavations were vitally important to creating a geophysical interpretive methodology for the Ballintober buried landscape.

Figure 23: Excavation unit placements at the Ballintober deserted settlement from 2016 to 2018.

All units were excavated stratigraphically, using a combination of trowels, shovels, and mattocks. The removed soil was for the most part not screened, although the 2016 excavation utilized wet screening of spoil through a quarter inch mesh to limited success. The provenience of exposed artifacts and ecofacts were collected using a Total Station EDM in the Irish Transverse Mercator (ITM) geographic coordinate system. Artifacts and ecofacts were removed and bagged according to their stratigraphic unit. These were transported to an offsite lab facility where they were cleaned, photographed, and stored. The lab manager for the project is Ana Lucia Gonzalez, assisted by numerous students of the Castles in Communities field program. Additionally, for the 2018 excavation, soil samples were taken from each excavated stratigraphic unit.

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2016 Excavation

In 2016, a small excavation unit was opened in the fields to the east of Ballintober Castle (Figure 23) to investigate supposed relict field boundaries identified using ground-penetrating radar in 2015. This unit was excavated by a team of students led by Dr. Samuel Connell. The excavation location was in the same field where test excavation was conducted in 2005, as part of pre-development archaeological work by Shirley Markley and Christopher Read. The excavation unit was 1m wide by 12m long and was placed at a right angle to cross a highly reflective long linear feature as interpreted by GPR data analysis from 2015 (Figure 24). The GPR reflection profile across the linear features shows it to be a ditch parallel to an adjacent berm, with the berm structure and the base of the ditch both highly reflective in profile (Figure 25). When magnetic values spatially identical to the profile were extracted from an overlying magnetometry dataset, it became apparent that the positive magnetic values were associated with the ditch and negative values with the berm (Figure 25). Excavation provided insight into the origin of these magnetic readings (Conyers 2018: 85).
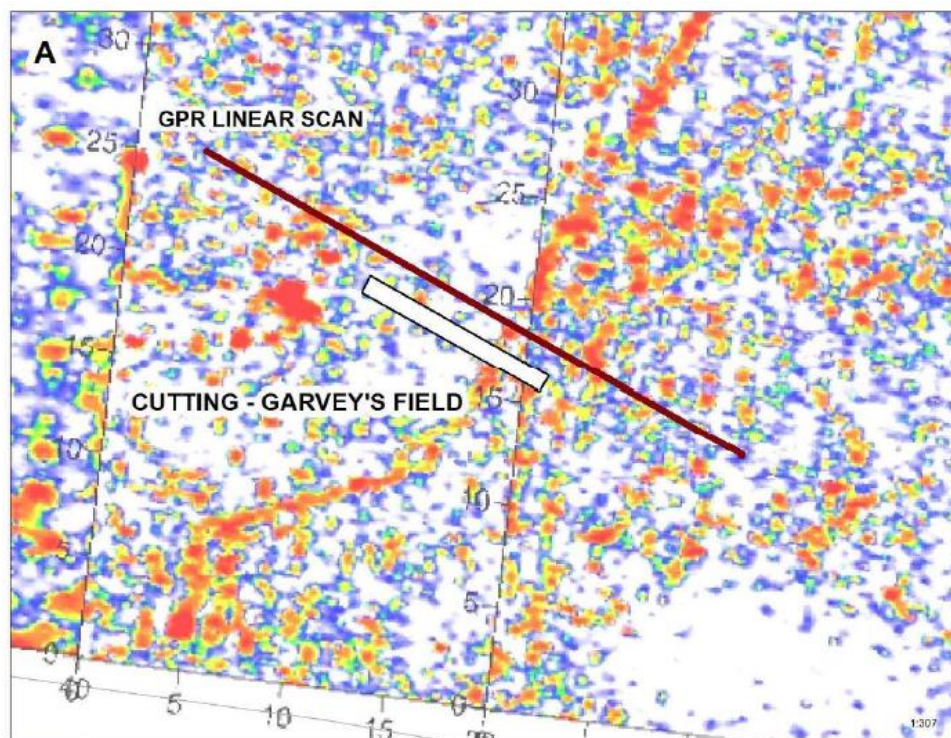
Figure 24: Location of 2016 excavation unit, crossing a highly reflective feature seen in GPR slice.
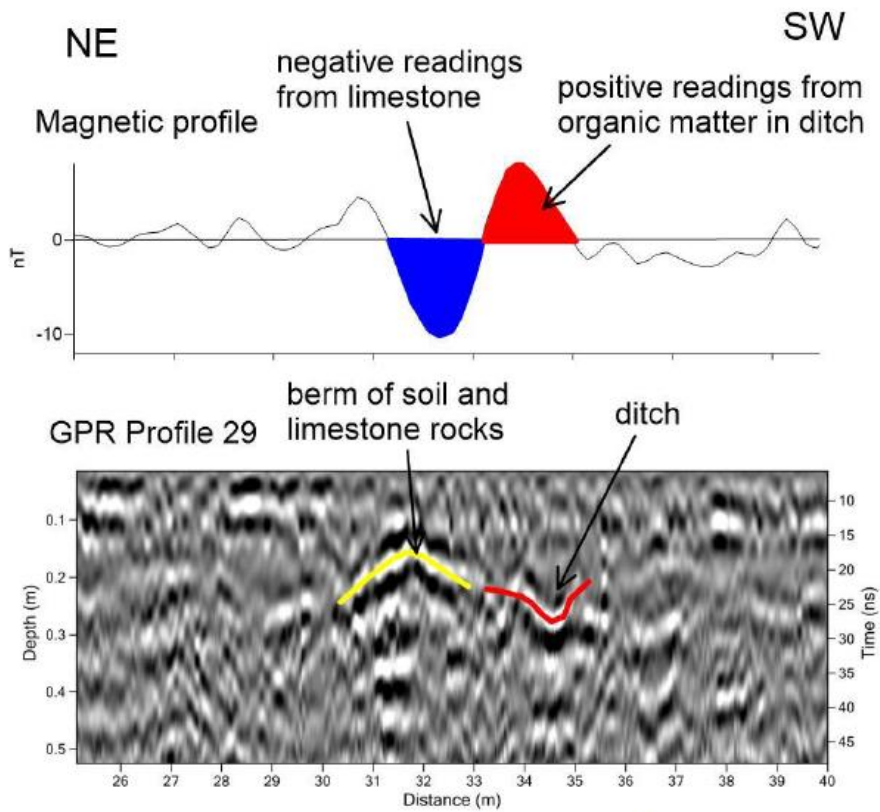
Figure 25: Magnetic and GPR profiles crossing the ditch and berm feature excavated in 2016. Notice the berm is associated with negative values, while the ditch is associated with positive values (Conyers 2018: 85).

Upon exposure (Figure 26), the geophysically identified feature was revealed to be the remnants of a French drain, as part of a larger relict field system (Brady et al. 2016: 26-8). The berm was constructed of unconsolidated limestone rocks mixed with a limey and clayey subsoil. The ditch or drain was cut into the same underlying subsoil as was used in the construction of the berm and was filled with organic rich soil. Likely, as the ditch was constructed, removed soil and rocks were piled to form the berm (Conyers 2018: 86).

Figure 26: Excavation unit across a French drain composed of a berm and ditch
(Conyers 2018: 86).

This excavation demonstrated that at Ballintober, organic rich soils will be displayed as positive magnetism in magnetic maps due to the higher magnetic susceptibility from biological processes (Figure 25) (Fassbinder 2015). Archaeological features like ditches or pits that fill slowly overtime with organic rich topsoil will thus be more magnetically susceptible and display as magnetically positive. In contrast, concentrations of limestone rocks or soil with limestone parent-material will be displayed as negative magnetism in magnetic maps, since limestone has very low magnetic susceptibility (Conyers 2018: 86). Therefore, archaeological features with concentrations of limestone or limestone-based soils will be displayed as negative magnetically. The physical geometry of these features is of course visible in GPR as well. This provides an

excellent example of the principle described earlier, namely that GPR data can be interpreted for subsurface stratigraphy and geometry, while magnetometry can be interpreted for subsurface composition. Together, these two methods created a highly accurate understanding of this excavated drain.

2017 Excavation: DS1

In the summer of 2017, the first field season after the initial identification of the settlement in 2016, the excavation unit DS1 was opened in the deserted settlement, exposed by a team of students led by the author and Maureen Carpenter. The unit was placed to cross the geophysically identified central road (Figure 7). The primary purpose of DS1 was to test the integrity of geophysical analysis in the deserted settlement and better understand the subtle stratigraphy of the settlement in preparation for more ambitious excavation in future years. The unit was 2m-wide and 12m-long, crossing the roadway at a right angle, aligned to the northeast-southwest. The DS1 excavation (Figure 27) confirmed the existence of a central roadway, comprised of small cobbles placed within a clay matrix (Figure 28), and revealed associated features, including a second cobbled surface adjacent to the road as well as a berm and ditch system alongside the central roadway (Brady et al. 2017).
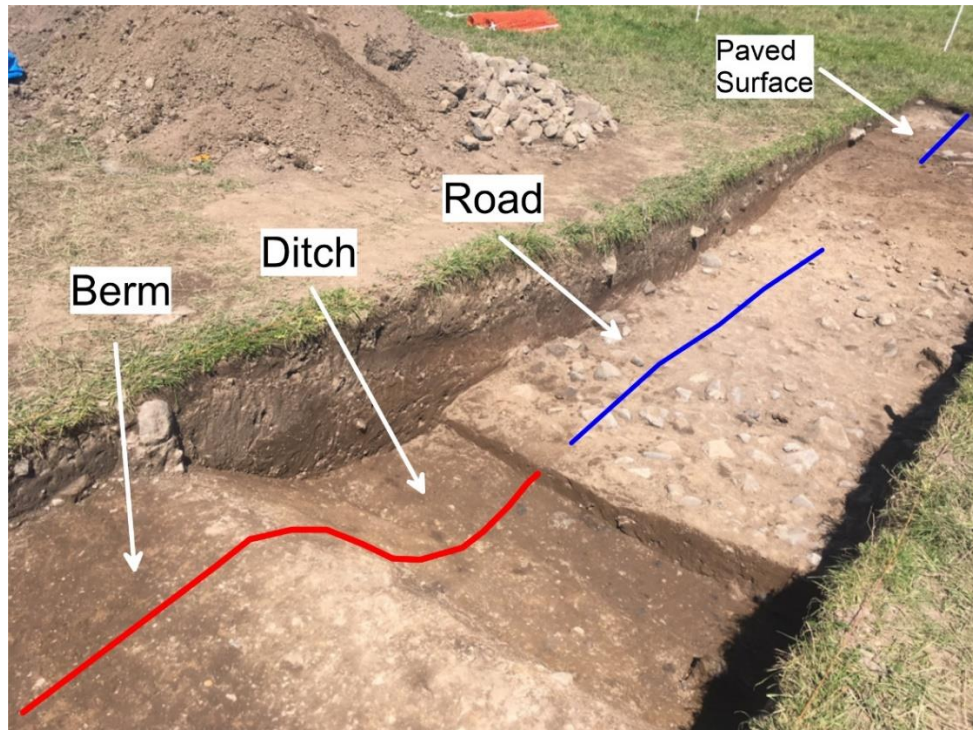
Figure 27: DS1 from the north end of the excavation (Brady et al. 2017). Visible here are a small paved surface to the north, the central paved road, and an adjacent ditch and berm. Not shown here is the additional ditch, out of frame to the left.

Figure 28: Roadway excavated in DS1, composed on limestone cobbles within a clayey soil matrix (Brady et al. 2017).

When comparing the geophysical datasets of magnetics and GPR with excavation results (Figure 29), we see the same magnetic phenomena as was observed at the 2016 excavation. The two ditch features with higher levels of organic soil have a higher magnetic susceptibility and are displayed as magnetically positive. The berm between the ditches and the two roadways surfaces contain more limestone than their surrounding matrices, and thus have lower magnetic susceptibility and are displayed as less magnetic or magnetically negative.
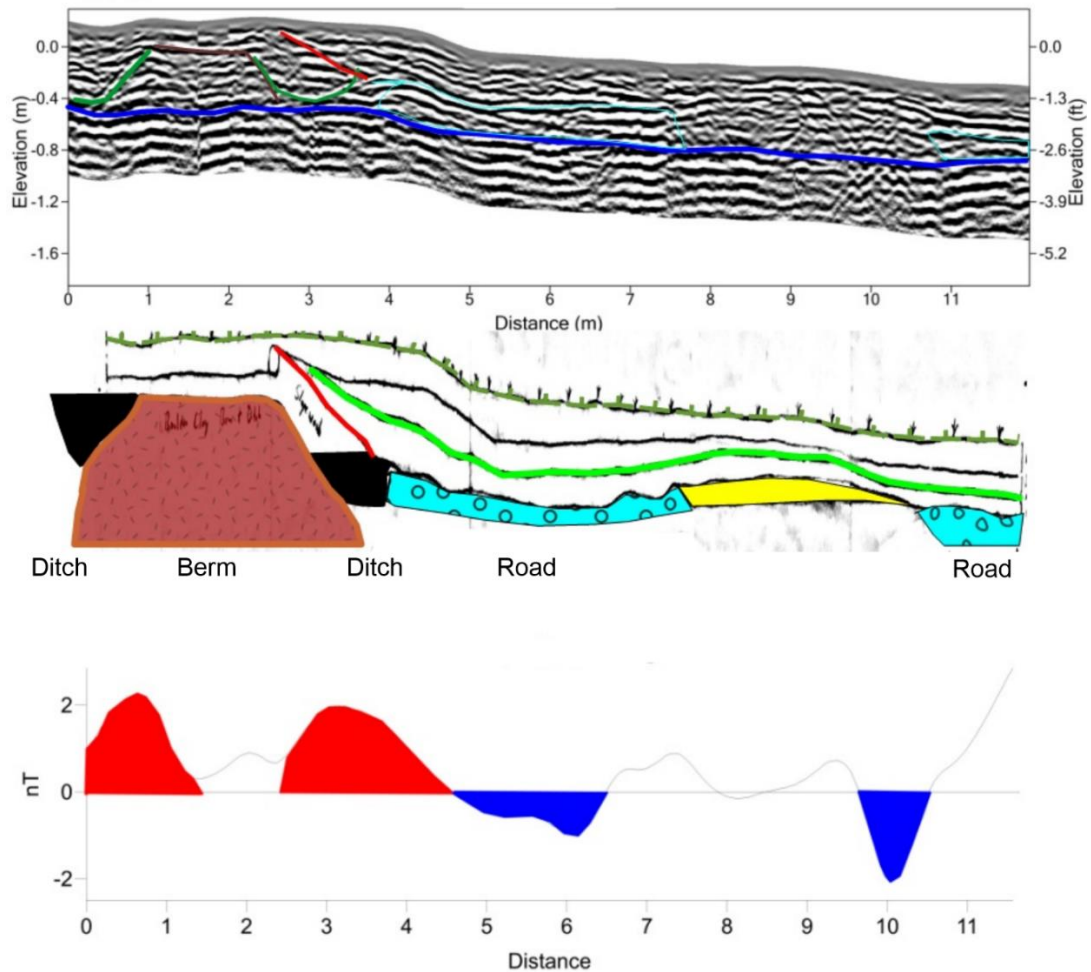
Figure 29: In descending order, comparison of GPR reflection profile, soil profile, and extracted magnetic value profile from DS1. The scale of the soil profile is exaggerated for better visual comparison with the other two datasets.

Excavated stratigraphy was also directly interpretable in GPR reflection profile (Figure 29). Likely, the difference in water retention between the berm and the ditches' fills was substantial enough to produce the strong reflections visible in GPR profile along the sloping sides of the ditch. Similarly, the concentrations of limestone cobbles forming the roadway surfaces caused a sufficient velocity change of propagating radar energy to produce interpretable reflections over the two road surfaces.

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Of most interest for broader geophysical interpretation from this excavation was the magnetic signature of the berm and ditches (Figure 29). Although the two ditches are distinctly positive magnetically, the berm is magnetically neutral. This is not especially surprising, as the berm is comprised of the same material as the magnetically neutral limestone-based subsoil. Removed from the two flanking ditches, the slightly positive signature of the berm would be uninterpretable in magnetic map as its magnetic susceptibility is very similar to its surrounding matrix. This berm feature is only interpretable due to the contrast between it and the ditches.

Overall, the 2017 excavation was most useful for its exposure of subsurface soil units and anthropogenic features as related to geophysical interpretations. It provided greater support to hypotheses regarding the magnetic composition of features and offered a direct comparison between magnetic, GPR, and soil profiles.

2018 Excavation: DS2

In 2018, a 20x1 meter excavation trench was opened bisecting two of the geophysically-defined medieval land plot boundaries that were hypothesized to be ditches and a dwelling containing a central hearth with wall foundations possibly composed of burned clay (Figure 30). The GPR reflection profiles and associated magnetic values extracted from the magnetic map were collected about 25 cm from the north edge of the excavation unit to provide direct comparisons between visible exposed features and geophysically defined units. This excavation provided extremely useful comparatives of specific archaeological and natural soil units for wider geophysical analysis. The DS2

excavation was undertaken by Castles in Communities students led primarily by Rachel

Brody, with assistance from the author and Lauren Brooks.
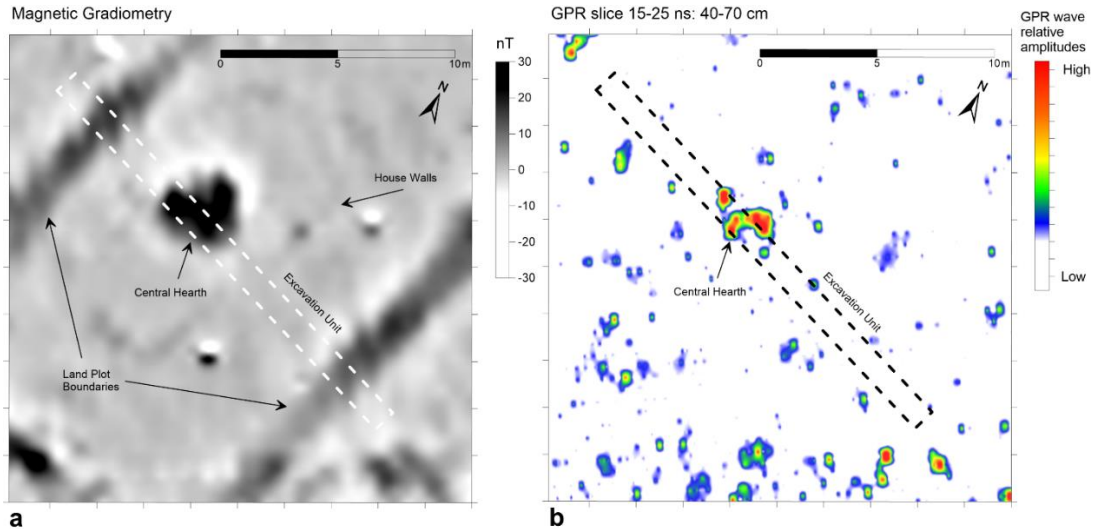
Figure 30: 2018 excavation location in magnetic map (a) and GPR slice map (b) with annotations. This excavation unit crosses a geophysically defined house plot and house at the settlement. It is interesting that the magnetic map is very useful for the identification of these features, but the GPR slice map is not.

The excavation trench revealed geological units starting at the top with an A

horizon, characterized by a dark brown and highly organic soil (Figure 31). Directly

beneath it lay a Bw horizon, which was a clay gley soil mottled with iron oxides, indicative

of water table fluctuations (Birkeland 1984). Underlying the Bw horizon was a stone line

lens of small cobbles and medium grained gravels that is likely indicative of agricultural

activity in the early modern period (1700-1850), after the abandonment of the site in the

later medieval period. Directly beneath the gravelly tillage zone is a second clay-rich B

horizon that was produced on weathered limestone glacial till parent material. The B

transitions downward into an indurated C horizon with larger inclusions of limestone

cobbles. The limestone bedrock was not exposed in this trench but is visible in the GPR

profile as a high amplitude planar reflection (Parkes et al. 2012), which outcrops in a quarry just to the south. All excavated soil horizons are visible in the GPR reflection profile (Figure 31) due to the difference in water saturation between stratigraphic layers, causing a velocity change in radar energy that creates interpretable planar reflections (Conyers 2016: 14).
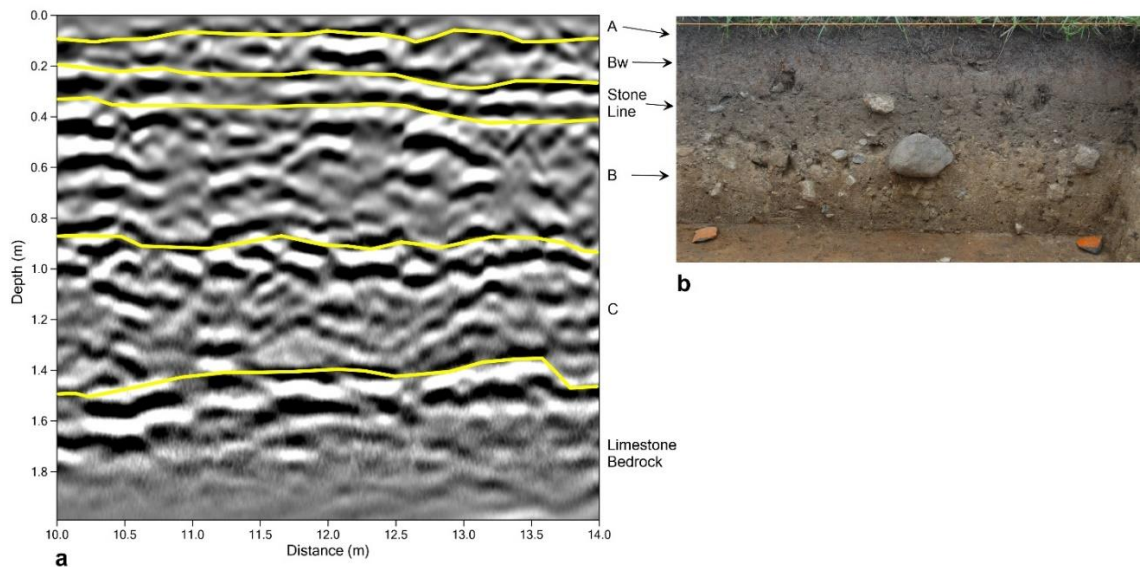
Figure 31: Soil horizons at the DS2 excavation. (a) GPR profile as compared to the sidewall of the excavation unit, photographed in (b). Despite not being excavated to the same depth as the GPR profile, the underlying C horizon and limestone bedrock is interpretable.

Cultivation Furrows

One of the first identified features in excavation and especially distinct in the geophysical survey is the parallel striping of cultivation furrows. In the magnetometry dataset, this type of feature can be seen throughout the entire survey area as roughly 2nT magnetic linear features at 2-3-meter intervals arranged in parallel groups. These features have no visible remnant on the ground surface. Although central Ireland is predominantly

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pastoral in modern times, in the early modern period (c. 1700-1850) it saw labor-intensive tillage that in some places survived in the archaeological record. Other authors have written far more substantially on this topic, most prominently O'Sullivan (2008) detailing this phenomenon as seen in magnetometry datasets from Irish National Road Schemes and Bell (2008) on early modern Irish farming.

These sorts of straight parallel ridges and furrows would have been formed by hired gangs of agricultural laborers working by hand (O'Sullivan 2008; 37). Techniques for the construction of ridges and furrows and their finished dimensions were both highly variable across central and western Ireland (Bell 1984; 21-2). This sort of tillage is distinct from medieval cultivation ridges, which were characterized by broad S-shaped ridges. O'Sullivan described the cultivation ridges from magnetic data as "ghost" ridges, since upon test excavation they had no detectable presence in the soil profile (O'Sullivan 2008; 37).

However, in the DS2 excavation, sections of tillage ridges were visible in excavation (Figure 32). The most notable example lies at the western edge of the excavation, where tillage activity cut into an underlying B-horizon. The cut is filled with a dark brown fairly compacted silty clay soil. Only a portion of the deepest section of the furrow remains, with the rest of the furrow and the surrounding ridges likely truncated by later indeterminate agricultural activity.
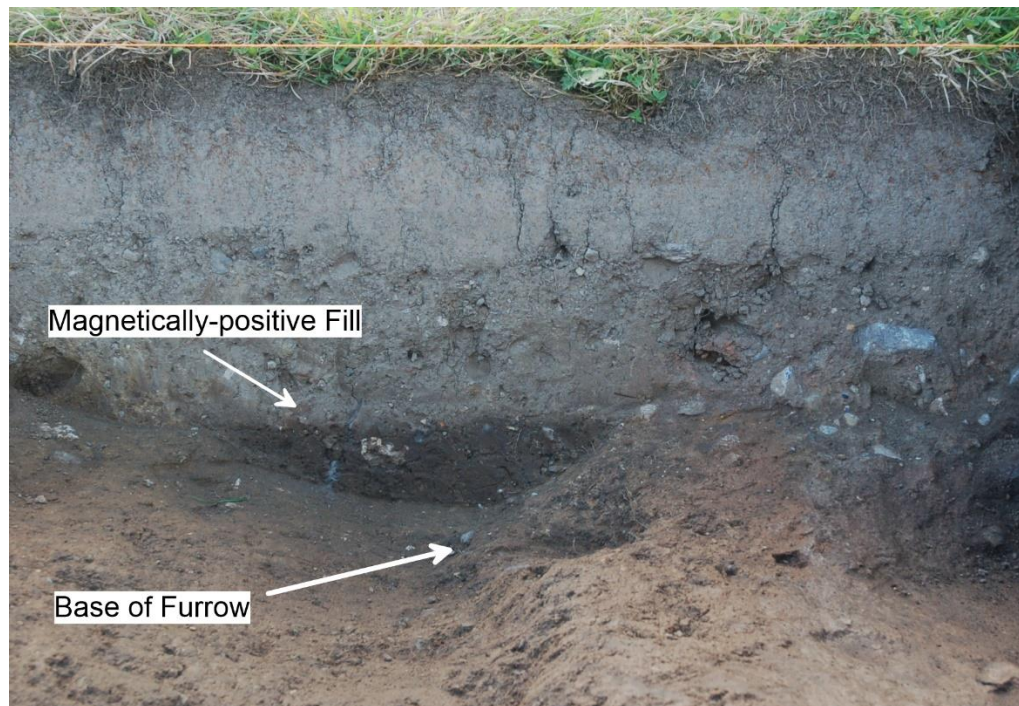
Figure 32: Remnant base of tillage overlying medieval features, which can be seen as the dark organic rich soil lens. The cut of the furrow is visible into the underlying B horizon subsoil.

In the magnetic data, furrows appear as magnetically positive features (Figure 33). Physically, as exposed by excavation, the fill of the furrow is far darker and looser than the surrounding matrix implying the soil has either high levels of organic matter or is mixed with burnt sod, a common fertilizing practice that would cause ashy silt to deposit at the bottom of the furrow. Either way, this would create a slightly positive magnetic feature in the magnetometry map. Thus, these "ghost ridges" are more appropriately "ghost furrows" as the furrow is the feature visible with magnetics.
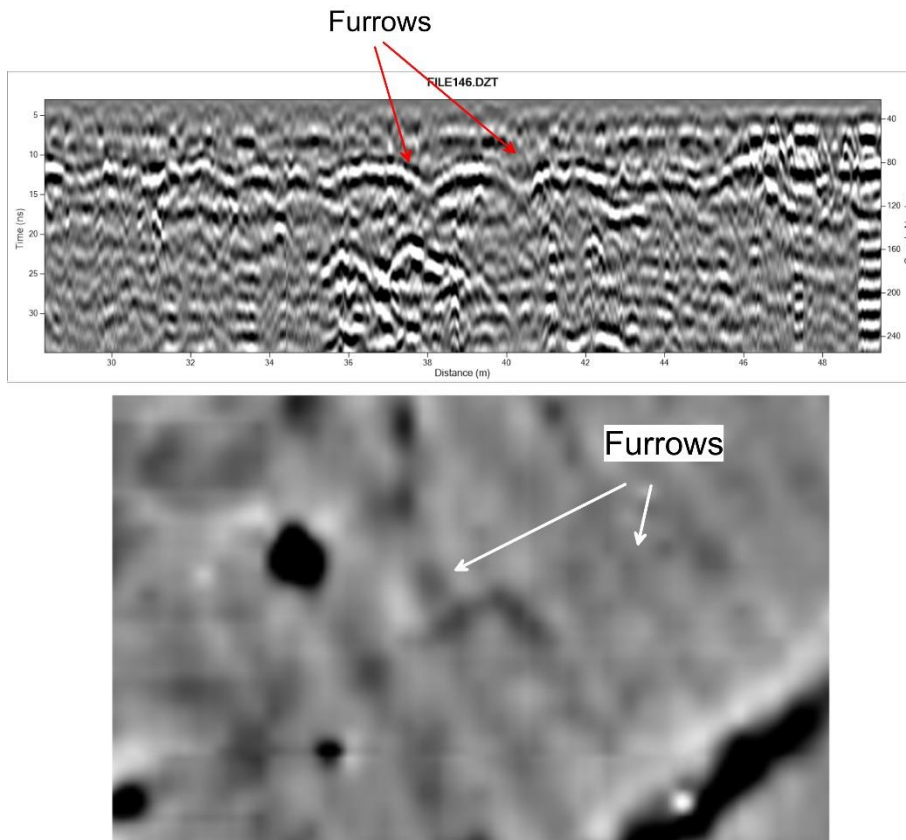
Furrows

Figure 33: Tillage at the Ballintober settlement in GPR profile (top) and magnetic map (bottom). Individual furrows and ridges are interpretable in both GPR profile and magnetic map.

Tillage is also visible in GPR profiles across the site (Figure 33) making it of great use for broader geophysical interpretation. All surviving medieval features must lie beneath this later anthropogenic feature, making the base of the tillage zone a convenient interpretive bench mark.

Boundary Ditches

The boundary ditches which were constructed during the settlement occupation are clearly visible in the magnetic map (Figure 30a) and can also be seen in GPR profiles (Figure 34a). The excavation revealed them to be about 60 centimeters deep bottoming

out just a few centimeters into the partially cemented glacial till C horizon and filled with layers of dark organic loosely compacted soils, which produce the elevated magnetic susceptibility measured with the magnetometer (Fassbinder 2015). These fill layers appear to have accumulated over time, caused by natural slope wash and refuse deposition by settlement occupants, and contain refuse of animal bones, wood debris, and wood ash.
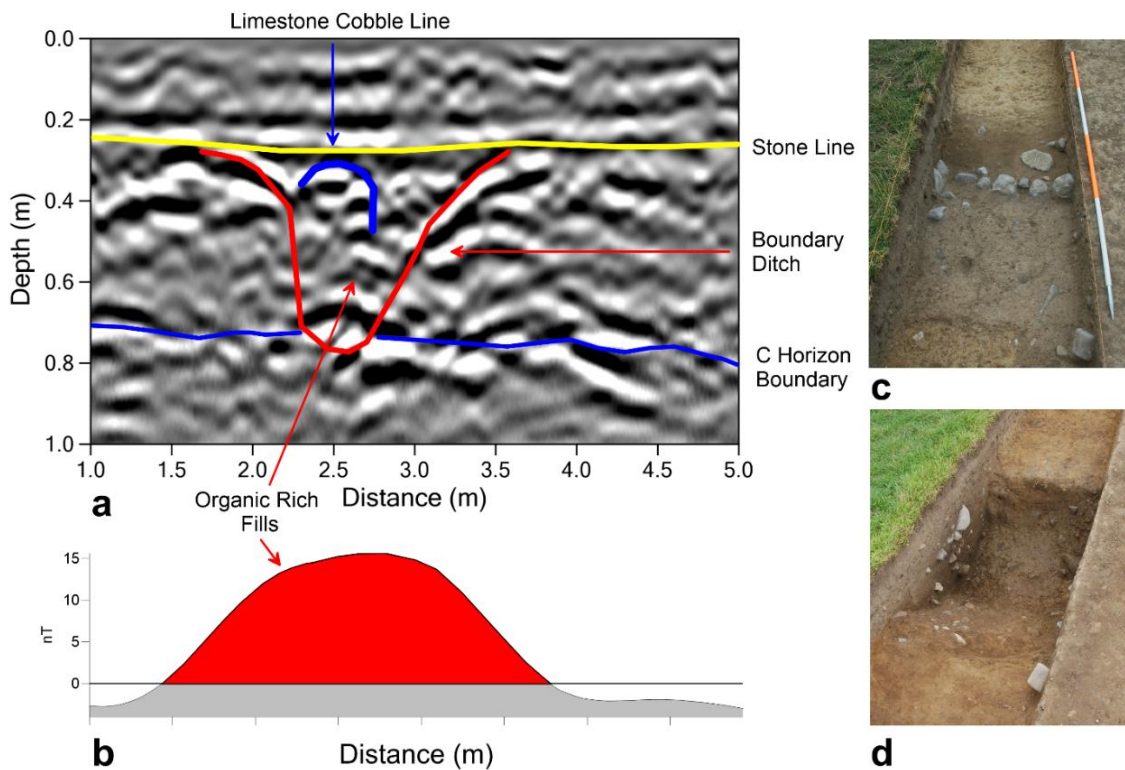
Figure 34: Western boundary plot ditch in annotated GPR profile (a) and extracted magnetic values profile (b). Also shown are an opening feature photograph with the surface line of limestones (c) which are also interpretable in GPR profile and a closing feature photo of the fully excavated ditch (d).

Excavation of the western boundary plot (Figure 34) uncovered a line of degraded large and medium sized limestone cobbles placed near the center of the ditch running the same direction north-south, resting on the sequence of ditch-fill layers (Figure 34c).

Although this stone feature was too subtle to interpret using GPR profile analysis prior to excavation, retrospectively the limestone cobbles can be identified as a series of stacked high amplitude reflections (Figure 34a). Perhaps during habitation in the village, once the ditch was filled, these stones were placed to redefine the property boundary.

House Walls

Flanked by the two boundary ditches, the house walls are magnetically defined as weakly positive linear features and were not readily visible in GPR profile or amplitude map (Figure 30). The excavation exposed one section of surviving wall, showing it to be composed of small limestone cobbles mixed within a clay coarse grained sand matrix (Figure 35). The standing sections of the wall completely degraded over time. As with other very subtle architectural features at this site the surviving wall was only interpreted after it was exposed in excavation.
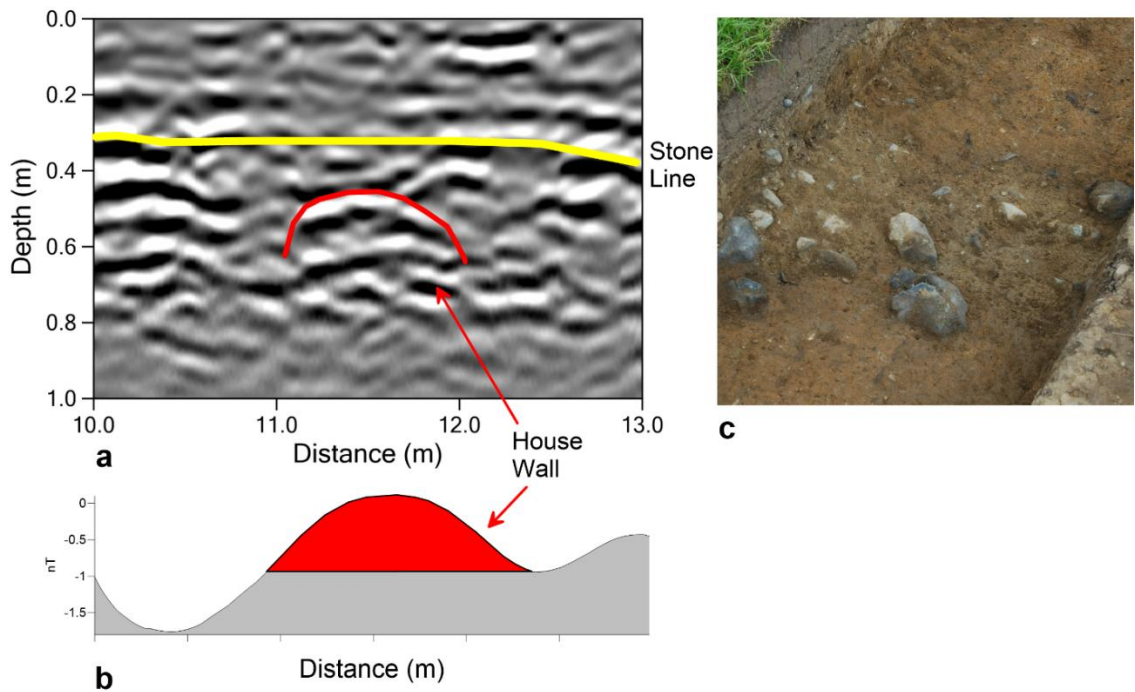
Figure 35: Eastern house wall. The wall is reflective in GPR profile (a) and has slightly higher magnetic readings than its surrounding matrix, possibly due to its sandy clay matrix (b). In the photograph (c) the wall's limestone cobbles and lighter sandy matrix can be seen.

Hearth

Within the house is a central hearth, visible in the magnetic map as a broad dipole and in the GPR slice map as a high amplitude series of planar reflections (Figure 30). This is common with very highly magnetic remnant features that were burned (Kvamme 2006). Excavation revealed a complex set of burned clay deposits surrounding a limestone cobbled unit, all overlain by a layer of dark-colored ashy soil (Figure 36). When viewed in a GPR reflection profile, the limestone cobble surface is visible as a high amplitude planar feature, unlike the surrounding burned clay surfaces. (Figure 36a). Although the entire hearth was magnetically positive due to the overlying layer of charcoal ash, the most

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magnetic portions of the feature were the burned deposits (Figure 36b). This can also be seen in the plan view of this feature (Figure 30), where the most intensely magnetic portions (the darkest black in the grayscale image) correlate with the burned deposits, while the most reflective area in the GPR amplitude map is depicting the limestone cobbles. It is usual to see cobbled surfaces around hearths, likely for domestic purposes such as food preparation (Cleary 1982; O'Conor 1998: 51-53).
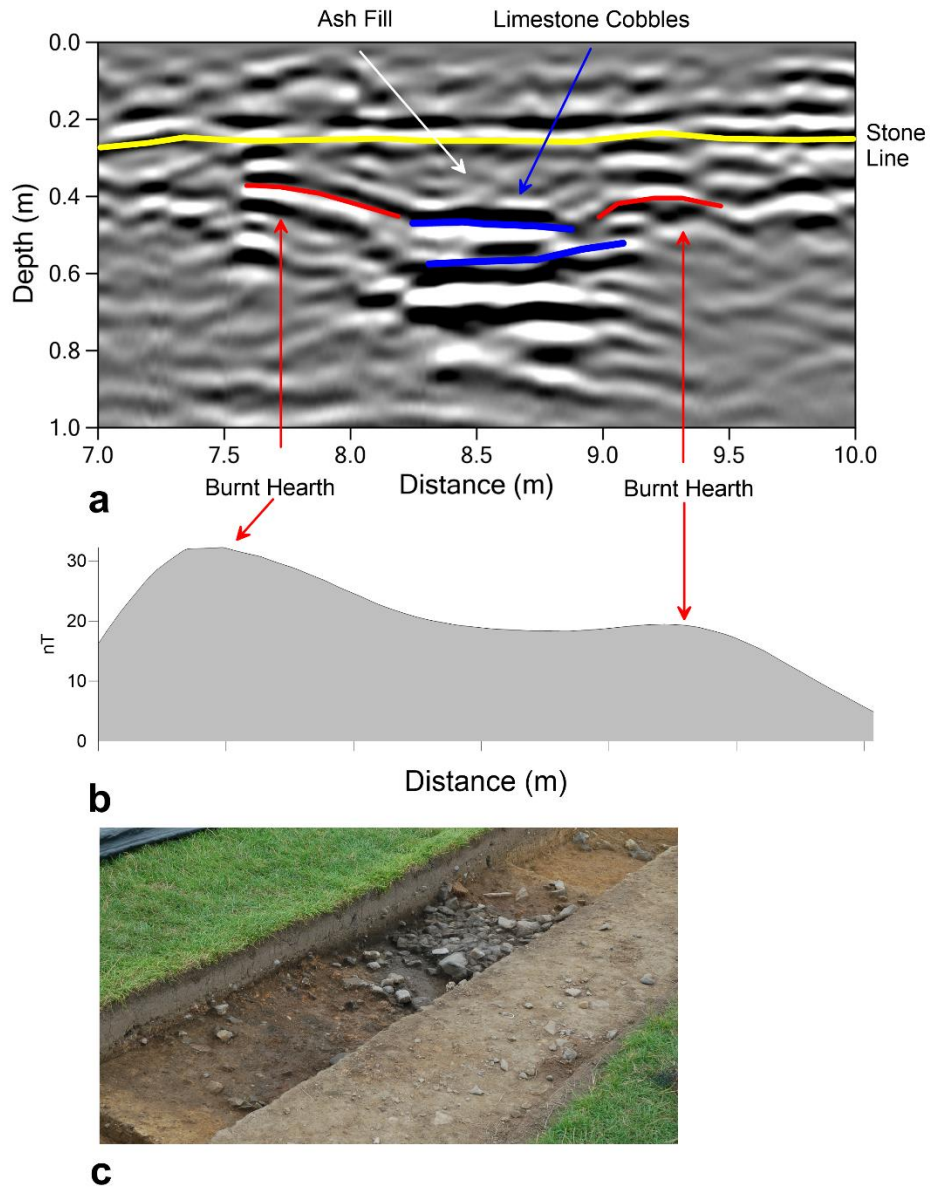
Figure 36: Hearth within the medieval dwelling, seen in annotated GPR reflection profile (a), extracted magnetic values (b) and feature photograph (c). Although the burned hearth surfaces are visible as planar reflections, the highest amplitude GPR reflections come from the limestone cobbles (a). In magnetic profiles, the two most magnetic areas correlate with the burned surfaces (b).

Conclusions

Three years of excavation has provided the opportunity to expose and study archaeological features and natural soil units at the Ballintober deserted settlement. For the purposes of this thesis, excavation was most useful as a method to create comparative models within geophysical datasets. Features previously imaged in geophysics, stratigraphically through GPR and compositionally through magnetometry, were exposed by excavation. The archaeological subsurface was then directly compared to geophysical data analysis, providing a direct comparison. By better understanding the physical geometry and chemical makeup of these features, they act as models for the exploration and interpretation of similar features at the site across nearly seven hectares of surveyed area. This was done by analyzing features on an individual basis with both magnetometry and GPR across the site and placing features within their three-dimensional provenience in relation to many other features. This process is described in the following chapter, Data Analysis, the result being a precise and detailed large-scale interpretative map of the buried medieval cultural landscape at Ballintober. The map can be used to pose and test hypotheses about the inhabitants of the deserted settlement.

Chapter 5: Data Analysis

Data collection and analysis for this project was in many ways a recursive process. The Ballintober settlement site was originally discovered by geophysical methods and preliminary hypotheses regarding subsurface feature composition and geometry were proposed. These hypotheses were used to guide multiple targeted excavations at the site that exposed archaeological and natural features of interest, as was described in the previous Methods chapter. Excavations in turn offered invaluable insight for wider geophysical analysis at the site, allowing for the refinement of geophysical hypotheses and interpretation of subsurface anthropogenic features. This chapter details this interpretive process.

Over four years, 203 magnetometry grids and 53 ground-penetrating radar grids have been collected at Ballintober. All collected data have been analyzed and interpreted by cross-examining GPR and magnetometry data. Going into a detailed description of the analysis of each grid, nearly seven hectares of surveyed area, is far too unwieldy and tedious for this thesis. Instead, this thesis will divide geophysical interpretations into two categories. First, over the course of geophysical analysis, a number of anthropogenic feature typologies were identified in the datasets. The following section will describe the geophysical signature of each identified feature type, and then map each individual

appearance of that feature type across the wider surveyed site. Second, several geophysically distinct archaeological areas were discovered at the site. These areas will be closely analyzed in detail as discreet entities. Overall, this process has led to the construction of an interpretive map of the buried medieval landscape at Ballintober, creating a picture of the built environment during the settlement's habitation during the later medieval period (Figure 37 & 38).
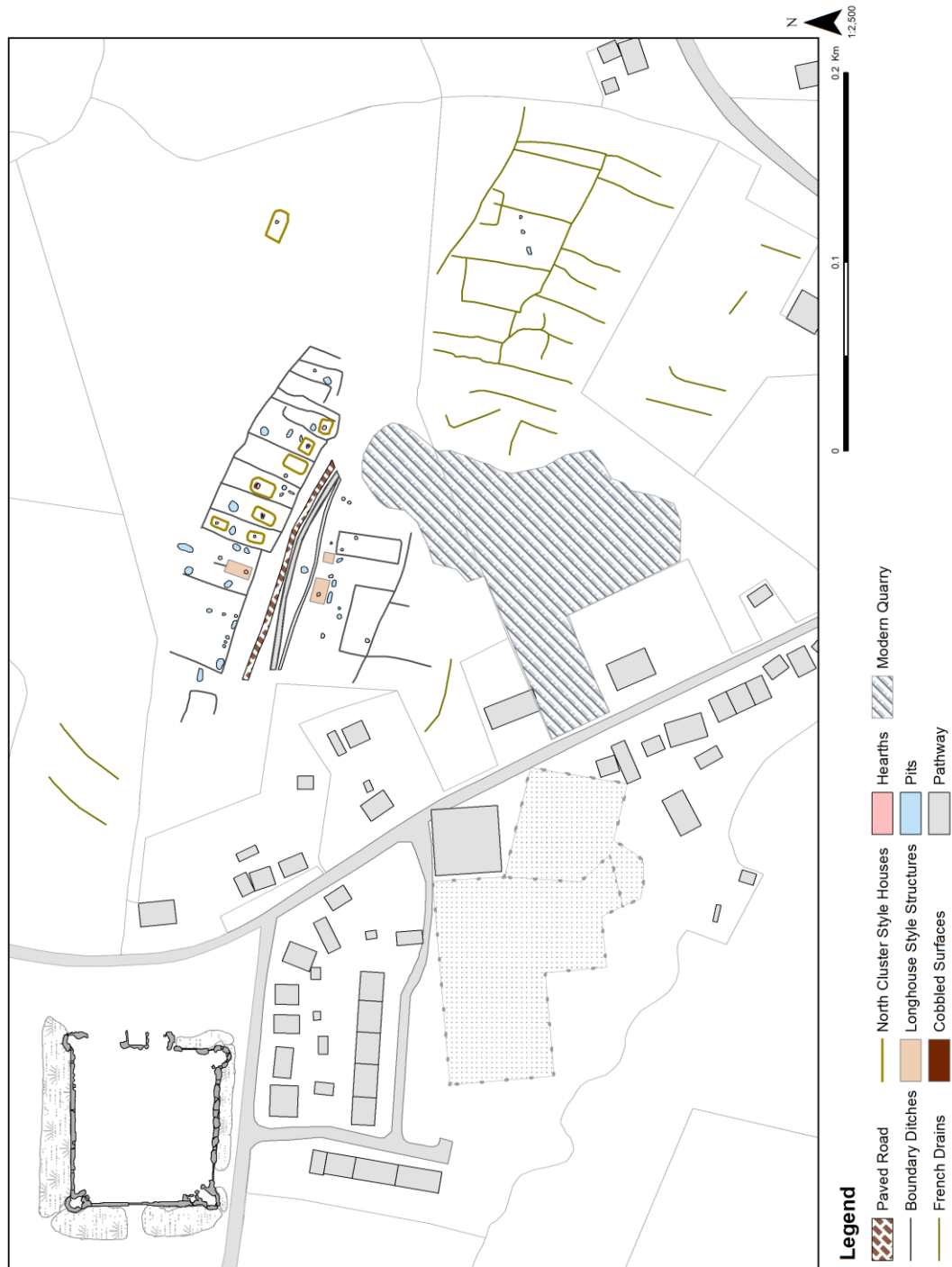
Figure 37: Geophysical overview interpretive map of the deserted settlement.
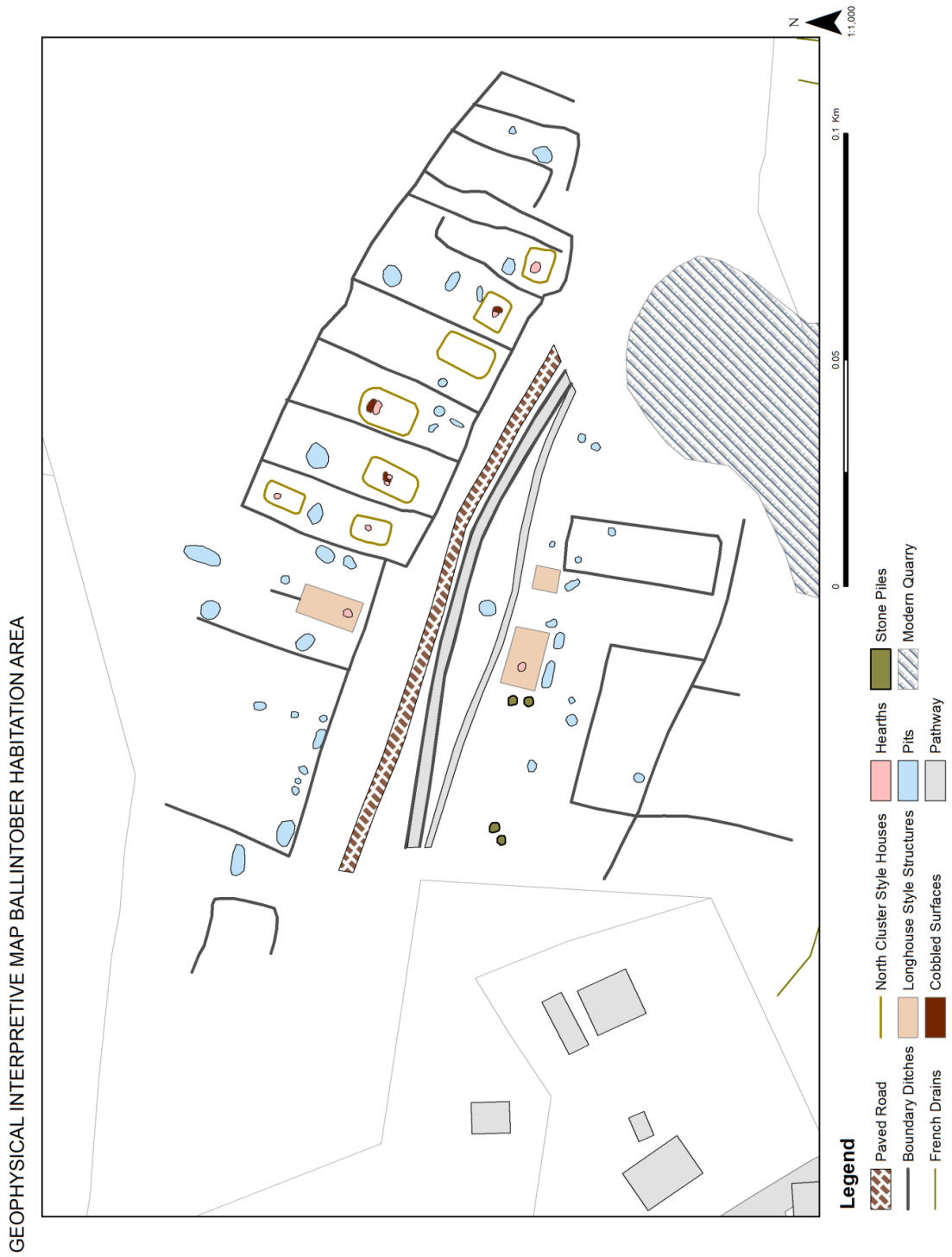
Figure 38: Geophysical interpretive map of the habitation area at the deserted settlement.

Surface Features

Although the majority of the settlement is invisible on the ground surface of the modern landscape, two still visible surface features are important to note for understanding the spatial arrangement of the settlement (Figure 39). These micro-environmental features played a role in the settlement pattern at this site and have impacted the survivability of the archaeological record.
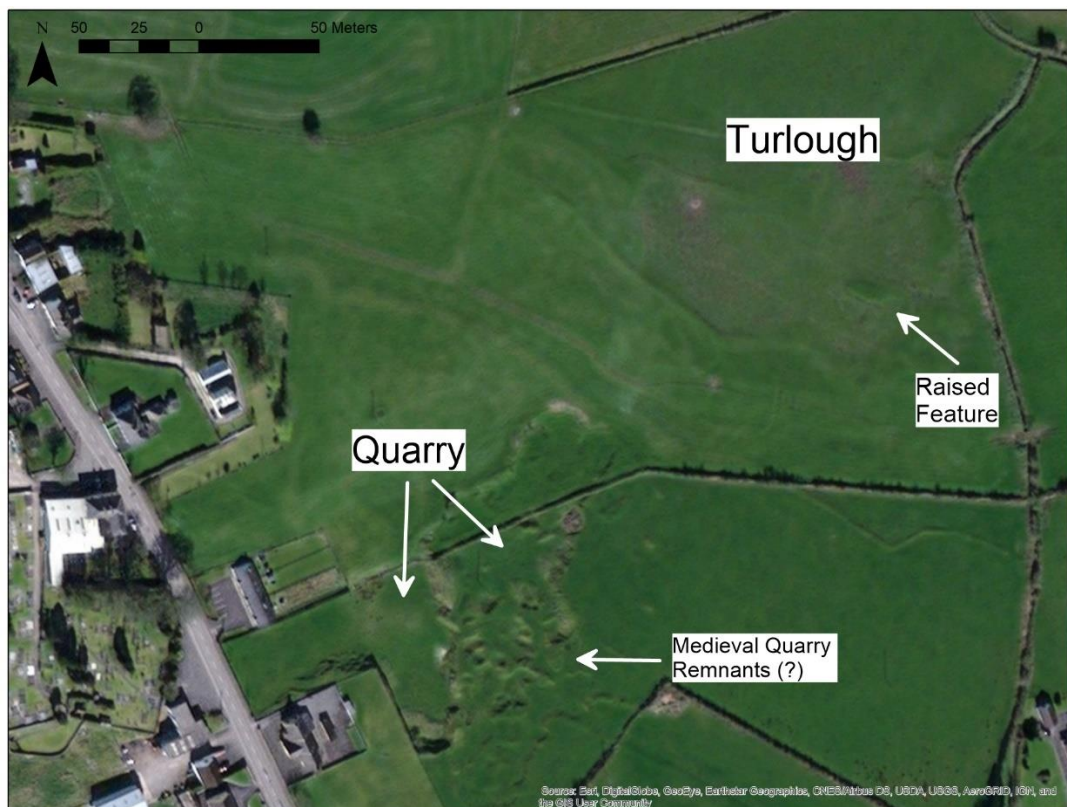
Figure 39: Annotated map of surficial features at the Ballintober deserted settlement.

The first of these features is a large limestone quarry pit, which is located directly to the south of the bulk of the settlement. This quarry was utilized by local people until the 1950's, when it fell out of use (Brady et al. 2016). Although covered with soil and overgrown with foliage today, limestone outcrops are still visible within the quarry. The

presence of this quarry speaks to the shallowness of limestone bedrock across the site, subcrops of which are visible in GPR profile and slice map. Limestone subcrops have impacted the spatial arrangement of the settlement, as medieval occupants created their built environment to take advantage of them, especially in the building of the central road.

This quarry is also important as it could have been the source of limestone utilized for the castle. The sources of medieval building stone are often difficulty to identify in the modern landscape, either because the quarries had been exhausted and later filled in or because modern quarrying has obliterated all signs of medieval activity (Parsons 1991:4). This has mostly been the case at Ballintober, as the quarry was utilized until only recently and much of it was filled in to the west. However, a small section of the quarry to the east seems to exhibit signs of having been utilized in the medieval era (Figure 39), as its pitted appearance compares well with other known medieval quarries (Figure 40). The utilization of local stone for the creation of Ballintober Castle is strengthened by the historic record from the medieval period, which details the extreme expense of transporting stone for any significant distance in that time. Exploiting local natural resources was quite common for medieval stonework (Parsons 1991: 4-8).
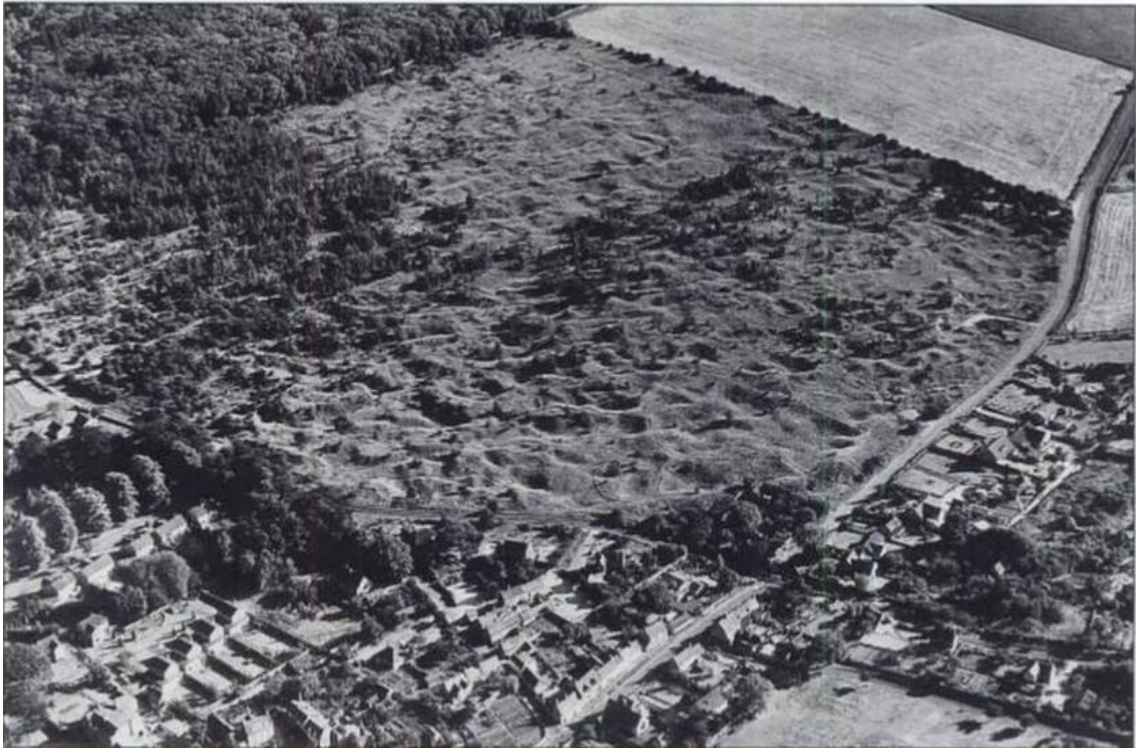
Figure 40: Abandoned medieval quarries at Barnack, England seen from the air (Parsons 1991: 3). Note the similarity in appearance to the section of the quarry at Ballintober seen in Figure X1.

The second natural feature at Ballintober is the seasonal lake, known as a turlough, that exists on the northeastern edge of the surveyed settlement. Turloughs are found in areas of near-surface limestone bedrock and are lakes that will flood in the winter and dry in the summer. The turlough at Ballintober was altered in recent years, with heavy machinery used to alter the flow of a small stream that runs along the turlough's east edge in hopes of improving drainage in this field (Brady et al. 2016: 37). Despite this, the turlough will often still return in the winter (Figure 41). The raised feature that sits above the water level seen in Figure 39 and Figure 41 is of archaeological interest and will be geophysically investigated later in this section.

Figure 41: Photograph of the Ballintober turlough filled with water in the winter months, depicting raised features both within the turlough and in the foreground (Brady et al. 2016: 116).

This turlough almost certainly existed in the medieval period when the settlement was occupied. However, it is likely that its boundaries have changed significantly from that time. This is evident in magnetically visible features to the north of the settlement (Figure 42). These features seem to be a continuation of the settlement moving further northeast but mapping of the seasonal turlough shows that they lie within the boundary of the modern turlough flooding. It is likely that these features in the medieval period existed outside the flood zone of the turlough, but as the seasonal lake's boundary changed, they were partially or completely erased from the archaeological record by sediment deposition or other natural processes from flooding.
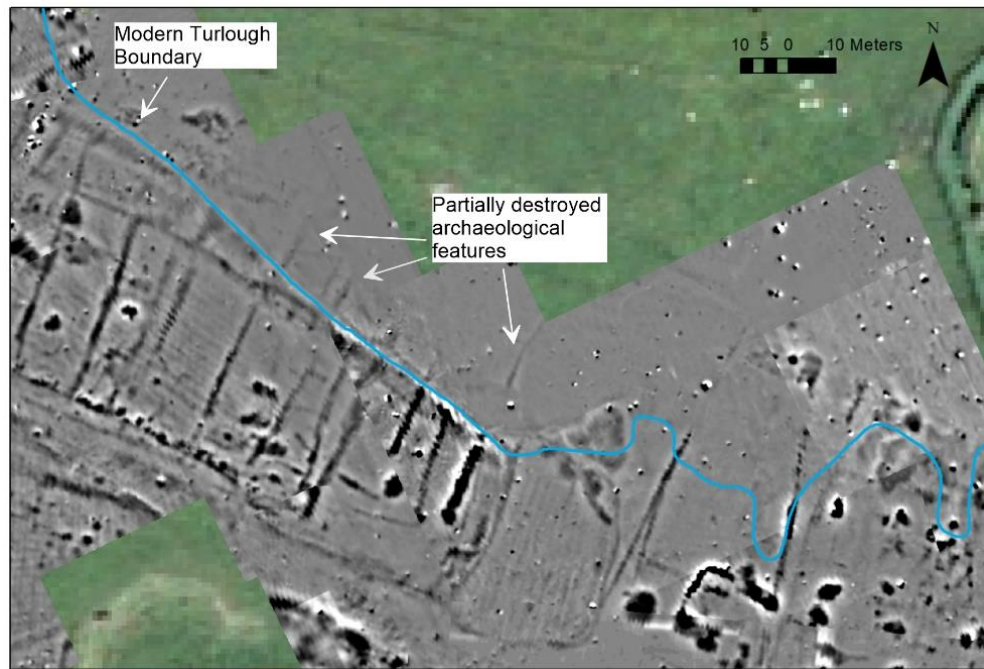
Figure 42: Modern turlough boundary in blue, with several archaeological features from the settlement impacted by flooding annotated.

Geophysical Features

The remainder of this section will detail features identified by the interpretation of overlying datasets of ground-penetrating radar and magnetometry. These types of features were primarily identified first in magnetometry plan view maps, which proved very useful for preliminary feature identification. Ground-penetrating radar slice maps were generally uninformative for the mapping of archaeological features. Most of the archaeological features at this site were either cuts and fills or subtle architectural features very similar to their surrounding soil matrix, both are types of features that would be invisible in GPR slice. However, at Ballintober anthropogenic features were very interpretable in GPR profile. The geophysical analysis was first driven by visual analysis of magnetometry maps to identify areas of archaeological interest, followed by the interpretation of adjacent GPR

profiles in that area. These GPR profiles could then be compared with extracted magnetic values to better understand the magnetic composition of stratigraphic units identified by GPR profile. Subsurface archaeological features were then plotted in a plan view map of the settlement (Figure 37 & 38).

Interpretations were enhanced by excavations, which provided useful physical comparatives to geophysically identified units. These excavated feature types included tillage, ditches, house walls, hearths, roads and cobbled surfaces. Additional unexcavated yet geophysically interpretable archaeological feature types were also identified, including house floors, pits, pathways, and stone piles.

Tillage

Although not dating to the medieval period, overlying tillage at the settlement was geophysically identifiable in both GPR and magnetics. Remnants of tillage marks were exposed in the 2018 excavation, but it is geophysically visible across the site, most obviously in magnetic map (Figure 43). This tillage was likely created in the early modern period sometime between 1700-1850.

Figure 43: Early modern tillage over the deserted settlement, with orientation of tillage marked by red arrows. A medieval feature damaged by early modern tillage is identified in the top right as well.

Luckily for the site's survival, early modern agriculture did not damage many settlement related features. However, in several areas it is geophysically apparent that the creation of furrows cut into subsurface archaeological features and damaged them (Figure 43). Tillage was aligned in different directions across the site, with varying orientation of parallel ridges and furrows (Figure 43). Interestingly, in one area the orientation of tillage was altered over its usage (Figure 43), with two different alignments of tillage overlying each other. This was not unusual for the time period, as the direction of ridges and furrows might be changed from season to season (O'Sullivan 2008: 38). Also of interest, in some geophysically surveyed areas it seems that the early modern farmers took advantage of underlying medieval features when orienting their ridges and furrows (Figure 44). These

medieval features, identified as drainage ditches, were likely visible on the surface as long

linear indentations in the ground. When planning their tillage, the farmers aligned their

furrows along these medieval relict features (Figure 44).

Figure 44: Early modern tillage in magnetic map, showcasing the orientation of early
modern features (red arrow) taking advantage of underlying medieval ditch features.

For this thesis, the zones of plowing and associated marks were most useful as a

benchmark in GPR profile analysis (Figure 45). The transition from the base of the tillage

layer into the underlying subsoil, as revealed by the excavation of DS2, is a dramatic shift

in subsurface composition and strongly reflects radar energy. This reflection is easily

identifiable in GPR profile, and all medieval features underlie it, easing interpretation

across the settlement. In all GPR profiles collected in areas where tillage occurred, the

base of that tillage can be immediately recognized as a high amplitude planar reflection. All features underneath that reflection and soil horizon can be dated to prior the early modern period.
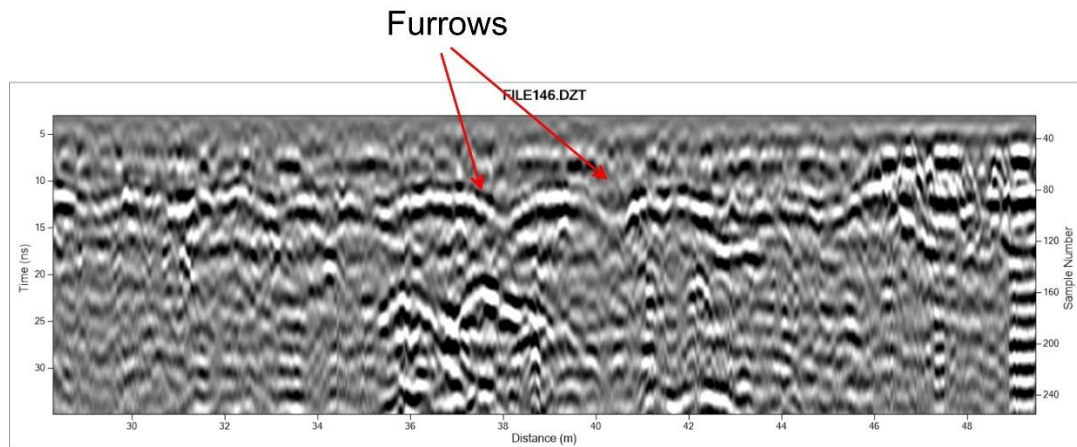
Figure 45: Furrows as seen in GPR profile. These provided a highly reflective and useful benchmark for further interpretation.

Road

The central road traveling through the settlement was partially exposed by the DS1 excavation in 2017, revealing it to be composed of limestone cobbles within a clayey soil matrix that is roughly four meters wide. It can be interpreted in GPR profiles as a planar reflection and in magnetic map as magnetically neutral or slightly negative.

Mapping the road across the wider geophysical datasets was challenging as it was complicated by underlying geological and anthropomorphic factors. On the southern end of the settlement the central road either rests on or is close to subcrops of limestone that rise near the ground surface (Figure 46), which can be seen in GPR profiles. This was no accident, as it is likely the medieval inhabitants consciously placed the road along pre-existing natural geological units, perhaps where the ground was less muddy when bedrock

was near the surface. However, it made geophysical interpretation difficult in both GPR

and magnetometry. In GPR, the reflection of the road was challenging to discern from its

neighboring geology as they had a very similar appearance in slice maps. Similarly, in

magnetic maps the road is comprised of the same material as the geological subcrops,

making it magnetically very similar and therefore magnetically invisible.
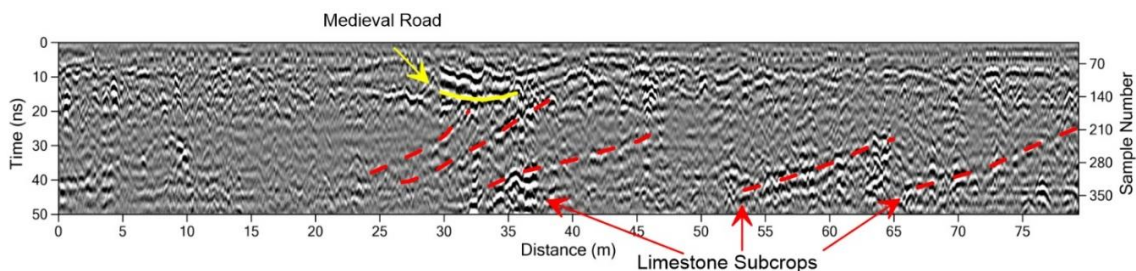
Figure 46: Limestone near surface subcrops (red) as related to the medieval roadway (yellow).

Interpretation was also complicated by anthropogenic site formation processes.

Since the abandonment of the settlement until the present day, local people have utilized

the now-buried roadway. The combination of the geology and medieval road have made

it an ideal avenue for travel through this field, especially when it is waterlogged. Even

cows pastured in the field today prefer this path, choosing to travel along it when traversing

the area. When the field was tilled in the past, the central roadway area remained untilled

(Figure 47) as it was poor for agriculture with the bedrock so near the surface and instead

the area continued to be utilized as a roadway. These factors have made the soils in the

roadway area highly compacted from human and livestock foot traffic, which in GPR slice

can be especially hard to discern.
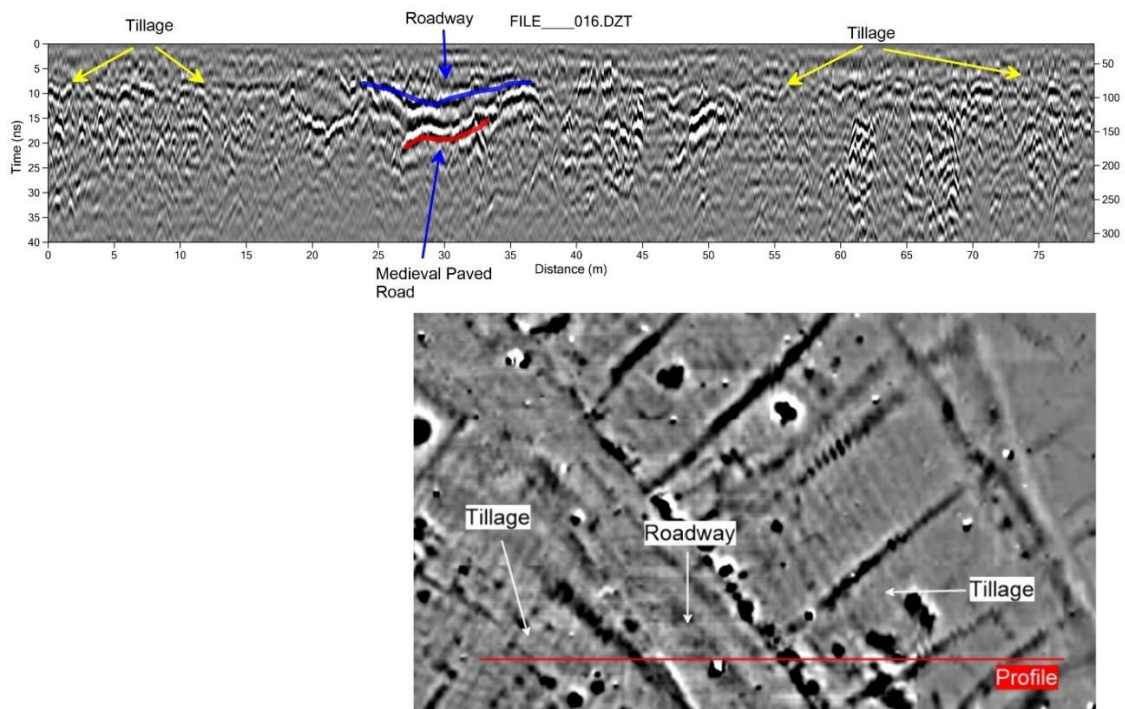
Figure 47: Ground-penetrating radar profile (top) crossing the central roadway, seen in magnetic map (bottom). It is clear in both methods that tillage did not occur across the compacted surface that forms the central roadway. A deeper planar reflection can be interpreted as the medieval paved road.

Despite this, an excavation along the road served as a model for GPR profiles do discern the limestone cobbled road. The units visible in the excavation and also the geophysical images were then used to project the road through the entirety of the settlement (Figure 37 & 38).

Ditches

Perhaps the most prevalent feature type were many ditches of varying size, construction, and function. There were either excavated, geophysically identified, or both. In the wet climate regime of western Ireland, it is likely that a major function of all ditches

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was water drainage. However, this thesis will divide ditches into three major categories: French drains, boundary ditches, and household drains.

A French drain at this site is defined as a long thin ditch with a gravel coated base and an associated berm of heaping soil and limestone cobbles. The source of the berms that are often parallel to the ditches was materials excavated from the drain and piled upslope during its construction (Conyers 2018: 86). These features would have been used to drain waterlogged fields for cultivation purposes.

A feature of this type was excavated in 2016 (Figure 26). The berm, composed of limestone and limey soil was magnetically negative, while the ditch, filled with organic material, was magnetically positive. Both the berm and the ditch were interpretable as distinct reflections in GPR profile. Upon examination of similar linear magnetically positive features, many additional French drains were discovered at this site (Figure 48), all with similar geophysically identifiable ditches and berms.
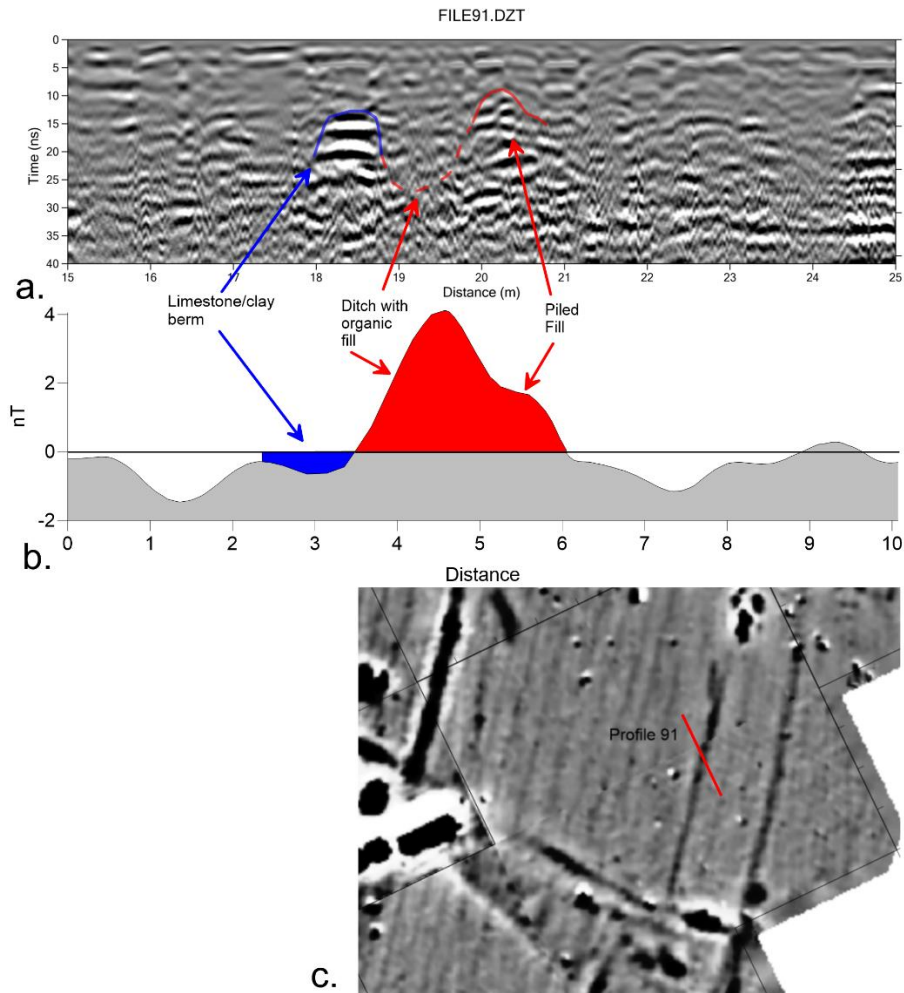
Figure 48: French drain geophysical interpreted from the southeast of the deserted settlement in GPR profile (a), magnetic profile (b), and magnetic map (c). In this example the berm and ditch are clearly interpretable in GPR profile with corresponding magnetic values. The right side of the drain in GPR profile (a) shows another reflective area that corresponds with slightly higher magnetic values, perhaps representing the removal and piling of organic rich fill that accumulated in the drain during its use life.

This feature type was interpreted broadly to the south and north of the surveyed area (Figure 37 & 38). These areas are crisscrossed with French drains, making it likely that they were utilized for medieval agriculture. Specifically, the intensity of drainage implies that these areas were used for the cultivation of crops that require a drier soil than western Ireland usually provides. An example of this could be wheat, a cereal grain that

requires much drier soil than those at Ballintober and was the main prestige crop of the Anglo-Normans (Frame 2012: 94; Murphy and Potterton 2010: 306). It is interesting that the settlement's inhabitants went to such great lengths to attempt to grow crops not well suited for the region.

As opposed to a French drain, a boundary ditch here is defined as a long thin ditch without any distinct adjacent berms. Two examples of these were excavated in 2018 (Figure 34). Geophysically, boundary ditches are visible primarily in magnetic map and GPR profile. Boundary ditches, with organic rich fill, are often magnetically positive. In ground-penetrating radar profiles, the sloping edges of the ditches and their bases are also often visible (Figure 49).
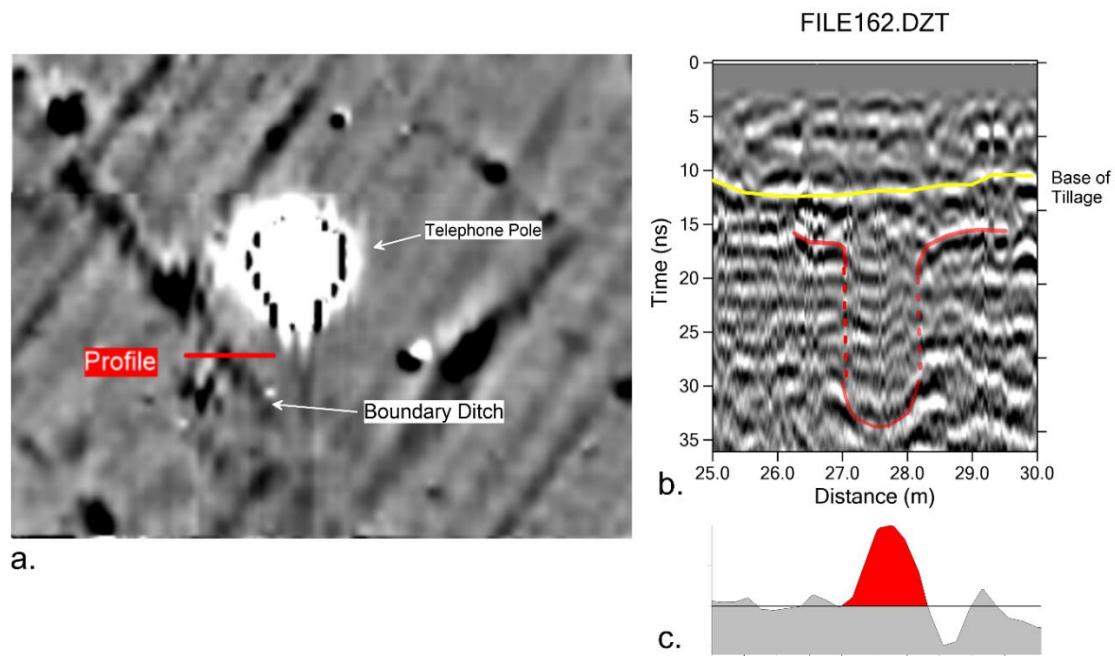
Figure 49: Boundary ditch in magnetic map (a), GPR profile (b), and magnetic profile (c) from the southern side of the Ballintober Settlement.

Some boundary ditches were only identifiable by one geophysical technique, with some only visible in GPR profile and some only visible in magnetics, for different reasons. Sections of ditches not visible in GPR are likely either too similar to their surrounding matrix to create interpretable reflections or are shaped in such a way as to make radar energy not reflect back towards the ground surface. Magnetically invisible sections of boundary ditches likely do not contain enough organic material or other magnetically positive fill to appear in magnetic maps (Figure 50). This makes the use of both methods especially important, as use of only one technique would miss some of these important features.
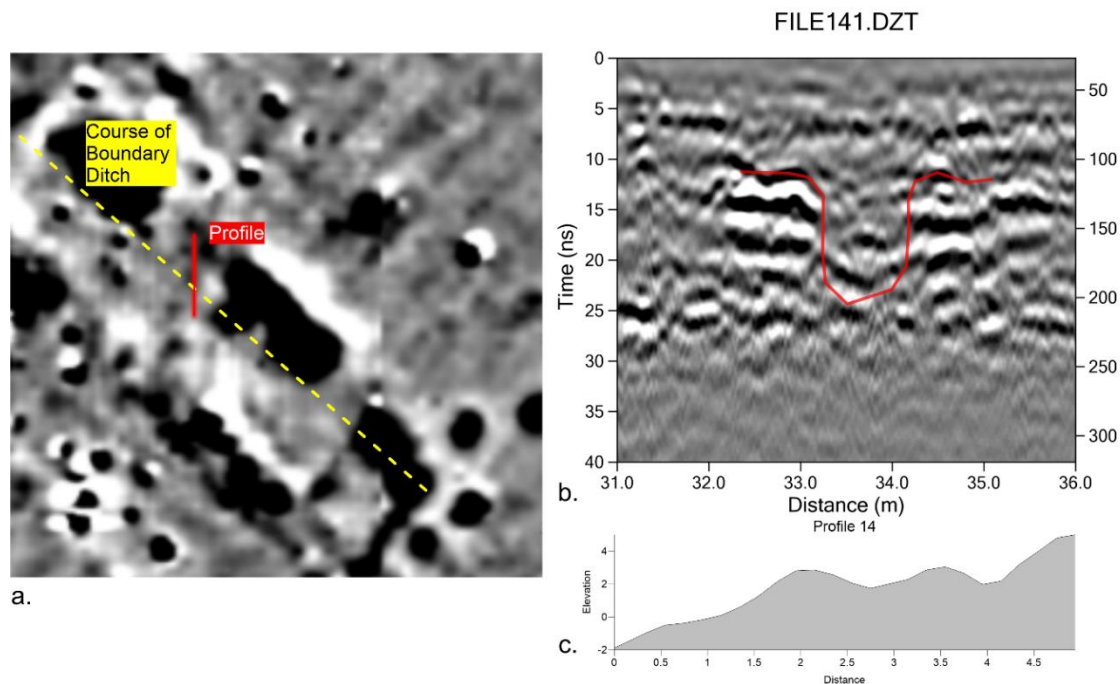
Figure 50: Boundary ditch in magnetic map (a), GPR profile (b), and magnetic profile (c). Despite being clearly interpretable in GPR profile, the ditch has little distinctive magnetic signature.

Boundary ditches are especially interesting archaeologically as they are informative about refuse disposal at this site. When examining boundary ditches across the site, certain

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sections of ditches have a much higher positive magnetic signature, which implies the ditch

fill is highly magnetic (Figure 51). The DS2 excavation in 2018 crossed two segments of

highly magnetic boundary ditch. Excavation revealed that these sections contained organic

rich fills, which would partially explain the highly positive magnetics, but also contained

layers of wood ash. The ash was interpreted as refuse disposal from the nearby hearth and

would greatly increase the magnetic positive signature of these features.
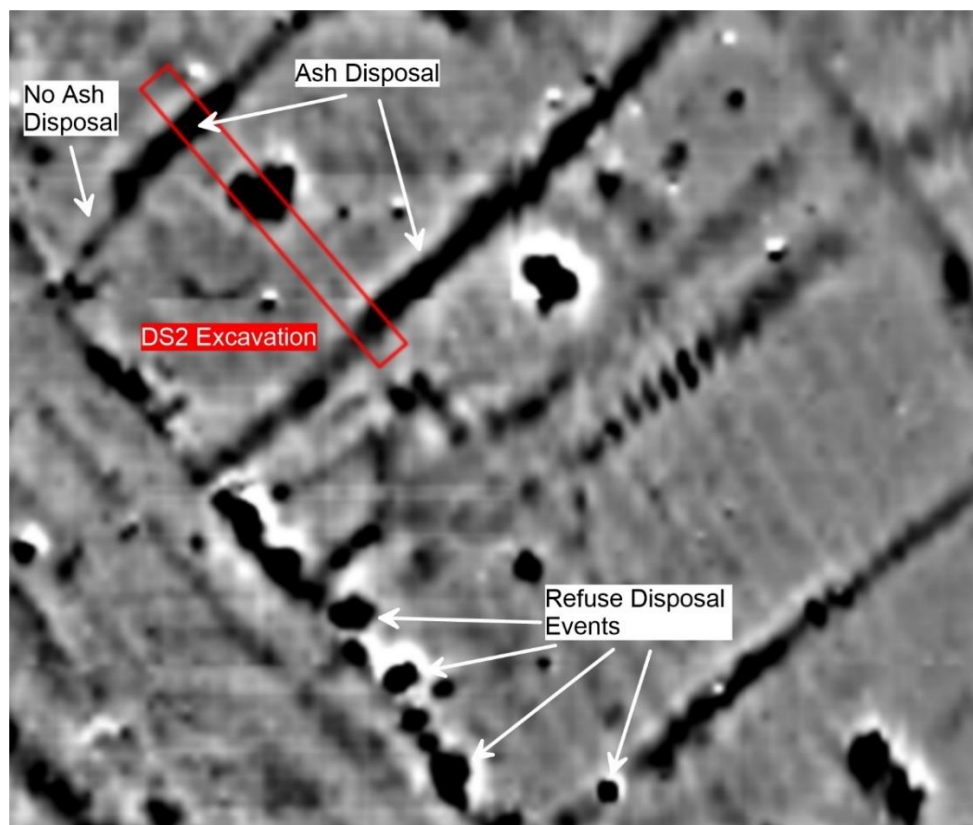
Figure 51: Boundary ditches from the north end of the settlement, with interesting differences in magnetics. Despite all being geometrically similar, sections of ditches have very different magnetic appearances. These can be attributed to differential ash refuse deposition, with areas of greater magnetics representing areas of greater refuse dumping.

In the example above in Figure 51, slightly to the left of the excavated section of

the northern ditch, the positive magnetics of this ditch greatly decrease. This does not

represent any change in the actual geometry of the feature, but instead is the petering out of ash disposal by the people living here. While the higher magnetic parts of the ditch to the north are magnetically positive by a combination of organic rich fills and wood ash, the lower magnetic parts of the ditch are magnetic by organic fills alone and are thus significantly less magnetically positive.

Similarly, some boundary ditches contain what appear to be individual circular magnetically positive features (Figure 51). The GPR profiles revealed these seemingly discreet magnetic features to be part of long linear boundary ditches. Considering the excavation of DS2, it is likely that each of these individually magnetically positive features represents a single episode of refuse deposition in a larger boundary ditch, likely ash from hearths (Figure 51). It is interesting that many of these refuse depositional events occur in boundary ditches along the central road. Perhaps the areas by the road were unsuitable for other functions so they were used for waste disposal.

While French drains were identified in agricultural areas, boundary ditches mostly occurred in the residential areas of the settlement. This could be attributed to the difference between these two features, namely the presence of a berm. For the French drains, removed material was simply piled on the side of the ditch during its construction. For the boundary ditches, since they were built in the residential portions of the settlement, removed material was instead utilized as building material for structures in the settlement, primarily houses, which would have been constructed primarily of compacted earth.

The final category of identified ditches is here referred to as household trenches. These are an uncommon type, only occurring at a few locations. Household trenches are

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defined as long linear cuts directly adjacent to house walls (Figure 52). They are highly

magnetically positive features in magnetic maps and are visible in GPR profile as roughly

2-meter-wide trenches. The function of this feature type seems to be two-fold. First, their

highly positive magnetic signature implies they were used for the disposal of ashy and

organic rich refuse. Second, their orientation directly adjacent to house walls implies they

had a drainage function as well. This is a feature type discovered elsewhere in Ireland and

has been interpreted as being designed to channel water off the roof and away from wall

foundations. This would keep the foundations and interior of the house drier and make the

house structure last longer (Gardiner & O'Conor 2019: 145-6, Scully 1997: 38-9).
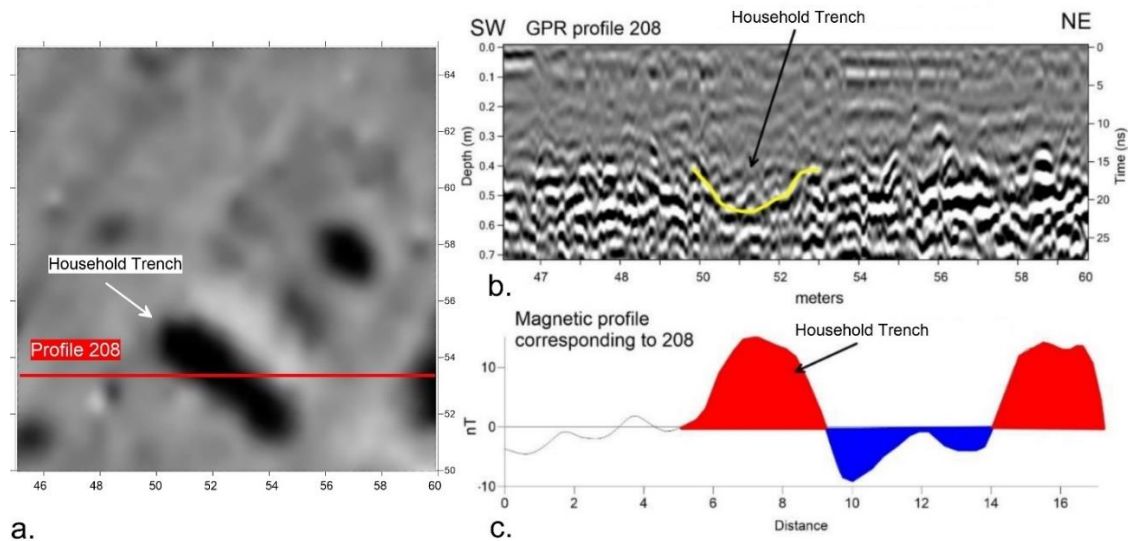
Figure 52: Household ditch in magnetic map (a), GPR profile (b), and magnetic
profile (c) (adapted from Conyers 2018: 91-2).

An example of an important, yet unique, ditch feature type at the site was one

uncovered by the 2017 DS1 excavation and is comprised of a berm flanked by two ditches

(Figure 27). This feature could be traced beyond the excavation unit along the southern

edge of the central road using both magnetics and GPR. This was a rare feature that was interpretable in GPR slice, as the top of the berm proved highly reflective and visible in slice map. The ditches were interpretable both in magnetic map as positive magnetic linear features and in GPR profile, where the sloping sides and bases of ditches were readily identifiable.

Pits

The disposal of refuse can also be seen by the presence of numerous pits throughout the site. Although a pit was never excavated at the settlement, they are easily geophysically interpretable (Figure 53). Pits are identifiable as magnetically positive roughly circular features, with the magnetic signature likely due to fills of organic rich refuse and ash. In ground-penetrating radar profiles the sloping edges of the pits and their bases are also often visible (Figure 53). As opposed to ditches, pits are not part of linear earthwork features and instead exist as discreet cuts in the ground. Pits at the site vary greatly in size, but it seems their primary purpose was waste disposal. These are a common feature type discovered at medieval sites in Ireland, having been excavated on many occasions in the past (Corlett & Potterton 2009).
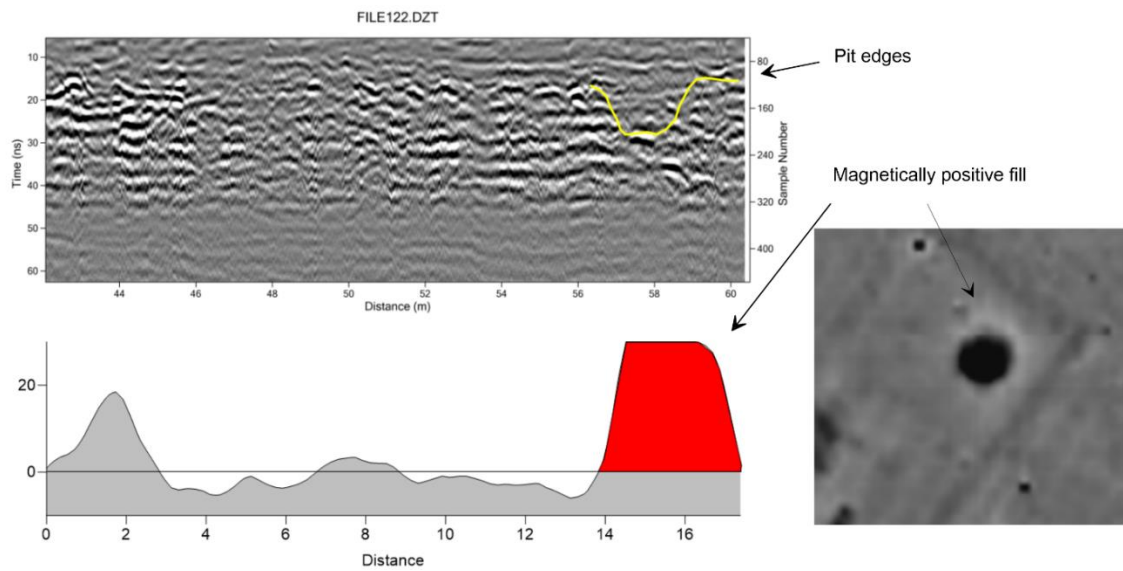
Figure 53: Pit feature in GPR profile (top), magnetic profile (bottom), and magnetic map (right).

Some especially large pits (Figure 54) could potentially be quarry pits, initially dug to extract clay for building houses. It seems these quarry pits were then also used for refuse disposal, based upon their high magnetism. Quarry pits have been identified at other medieval sites and their identifying characteristic is their abnormally large size (Eogan 2009: 73).
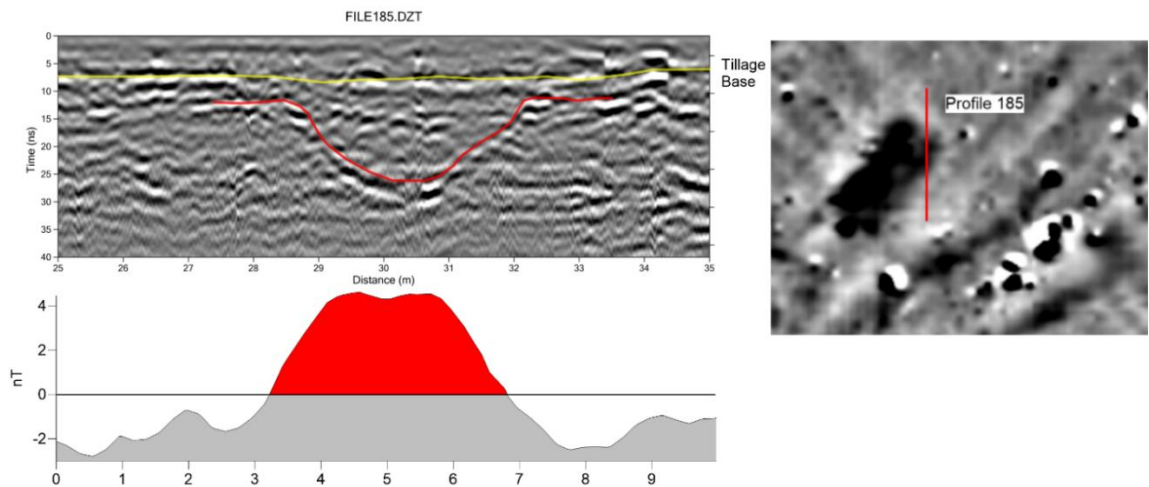
Figure 54: Potential quarry pit in GPR profile (top), magnetic profile (bottom), and magnetic map (right). The pit covers roughly twenty-five square meters of surface area,

Houses

A total of nine dwellings were geophysically interpreted at the Ballintober deserted settlement.   These were the subject of the highest level of analytical scrutiny of anthropogenic feature types, as their survivability and appearance in the geophysical archaeological record was variable. Study revealed two distinct categories of house design at the site. One group, called here the North Cluster house type, were all similar in appearance and are described collectively in the following section (Figure 55). The other two houses were of a distinctly different design and were found to the west of the North Cluster. The geophysical appearance and interpretive process for the analysis of these two houses are discussed separately.
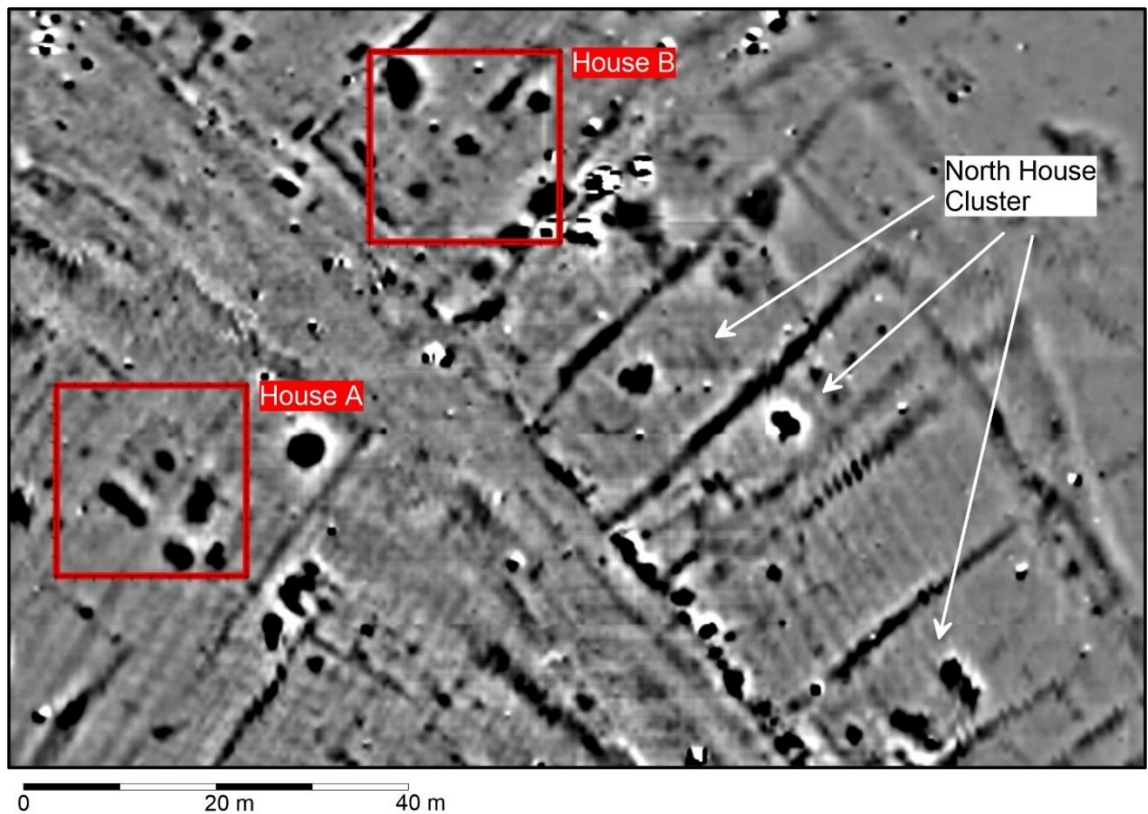
Figure 55: Houses at the Ballintober settlement, including the seven North House Cluster style dwellings and the more unique Houses A and B.

It is important to note that despite their differences, all houses here were almost certainly of waddle and daub construction with walls, made of interwoven sticks and compacted mud. Their roofs were probably thatch, as was common everywhere during this time (Salzman 1979). These house characteristics were very common in the Irish medieval period as with the majority of the medieval population across Europe (Salzman 1979: 187). As opposed to stone, waddle and daub does not survive well architecturally in the archaeological record. However, medieval structures were interpretable in the geophysical maps at Ballintober and proved highly informative to the site's formation and use.

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North Cluster House Type

The North Cluster house style includes the house that was excavated in 2018 during the DS2 excavation (Figure 30-6). In the magnetic map, this style can be identified by a very subtle positive magnetic outline of house walls forming a round-cornered rectangle. It is unclear why the walls are magnetically positive, but there are two hypotheses. When creating mud for the daubing of houses, it was customary to mix in some fibrous material like hair, straw or hay (Salzam 1979: 190). This was to help the mud adhere to the walls properly. After abandonment, the fibrous organic material would decompose and could provide a higher magnetic susceptibility than its surrounding matrix and produce subtle high magnetic readings. It is also possible that ash from a central hearth was deposited along the walls, leading to higher magnetic readings as ash is magnetically positive. Regardless of the reason, remnants of the house walls survive as magnetically positive linear features in the magnetic geophysical record. Interestingly, upon excavation at DS2, it was impossible to identify a distinct surviving wall segment in the soil by the naked eye. Likely the magnetic difference visible in magnetic map was so subtle to be invisible. The remnants of medieval house walls after 700 years had probably degraded to such an extent as to be unrecognizable from the surrounding matrix. Their chemical composition however was different enough to be observable in magnetic maps. This is worth noting, as it shows the advantages of geophysical methods at very architecturally subtle archaeological sites.

Although standing wall remnants proved challenging to interpret, excavation at DS2 exposed the house wall foundation, composed of a sandy gravel matrix that was likely placed underneath the waddle and daub walls to provide support. The wall foundations

there were reflective in GPR profile but were so subtle as to be challenging to interpret

geophysically without a model from the excavation results. However, using these results

it was then straightforward to identify foundations at other houses at the site (Figure 56).
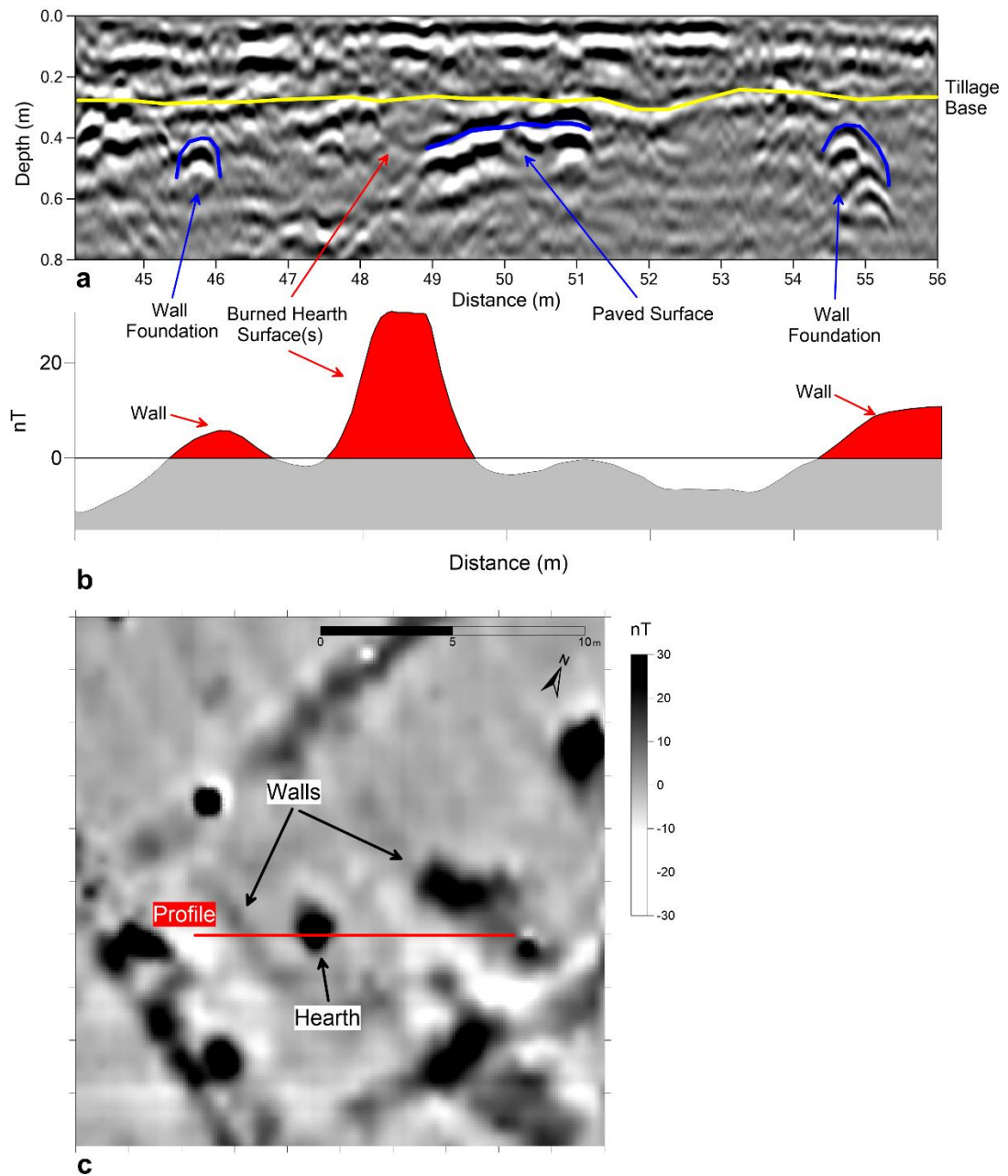
Figure 56: GPR profile (a), magnetic profile (b), and magnetic map (c), from an unexcavated house on the north side of the central road.

The Ballintober houses all contain a central hearth, which is primarily identified in magnetic map as a highly positive magnetic circular feature. The size, shape, and magnetic intensity of hearths vary on an individual basis. The limestone cobbled surface adjacent to

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the hearth as excavated by DS2 (Figure 36) was identified at several other houses of this type, also adjacent to hearths (Figure 56). Excavation results were highly useful here, as it would have been difficult to interpret the cobble surfaces without a comparative model.

Any medieval earthen flooring at this type of house is not interpretable in either excavation or in geophysics. Likely floors for this house type were comprised of compacted clay that has since become undifferentiable from its surrounding matrix. A potential sliver of floor was excavated at DS2, but it was so small as to be uninterpretable in GPR or magnetics.

Seven houses of this type were identified at Ballintober (Figure 37 & 38). Their individual level of survivability and therefore visibility in the archaeological record differed, with houses expressing variable amounts of evidence for walls, foundations, and hearths. However, houses marked here were geophysically interpretable in both magnetics and ground-penetrating radar and clearly fit within this house typology. Houses of this type were all located on the north side of the central road and sit within enclosing boundary ditches that create individual plots of land. These houses mostly exist individually on their own plot of land. However, there is one example of two houses of this type in the same land plot. Overall, all houses of this type exist as a cluster to the north of the settlement within distinct land plot boundaries.

Additional Houses

Aside from the North Cluster style of house, there are two additional dwellings geophysically identifiable at this site (Figure 55). These differ enough from the North

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Cluster style to be treated as discreet entities for geophysical interpretation. For the purpose of this study, the two houses are here labeled House A and House B.

House A

As opposed to the North Cluster style, what is most immediately striking about House A is its distinctly recognizable floor. This is apparent in both GPR slice (Figure 57) and reflection profile (Figure 58) as high amplitude planar reflections. The floor's appearance and associated negative magnetic values imply that it is either composed of compacted clay or limestone cobbles, perhaps similar to the small paved interior surface exposed in excavation at DS2 (Figure 36). Although wall foundations at House A are difficult to interpret, point source reflections in GPR profile associated with high magnetic values could represent surviving remnants of post holes for walls or perhaps wall segments (Figure 57). Along the southern end of the house are household ditches (Figure 57), likely used to both discard refuse and drain water from the immediate area.
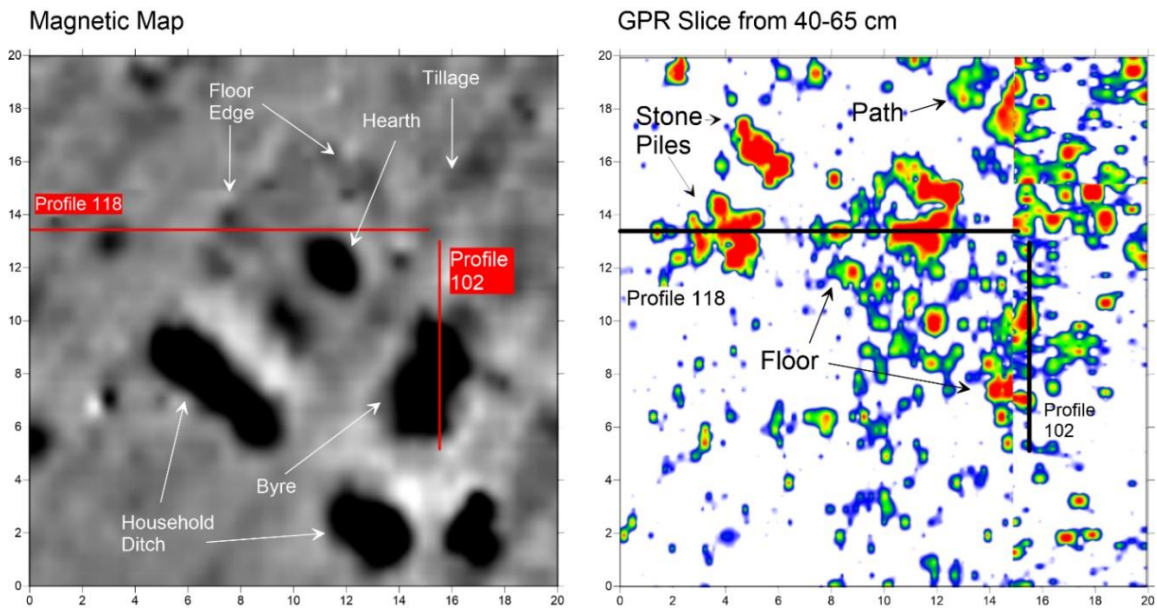
Figure 57: House A focus area in magnetic map (left) and GPR slice map (right), with GPR and magnetic profile locations marked.
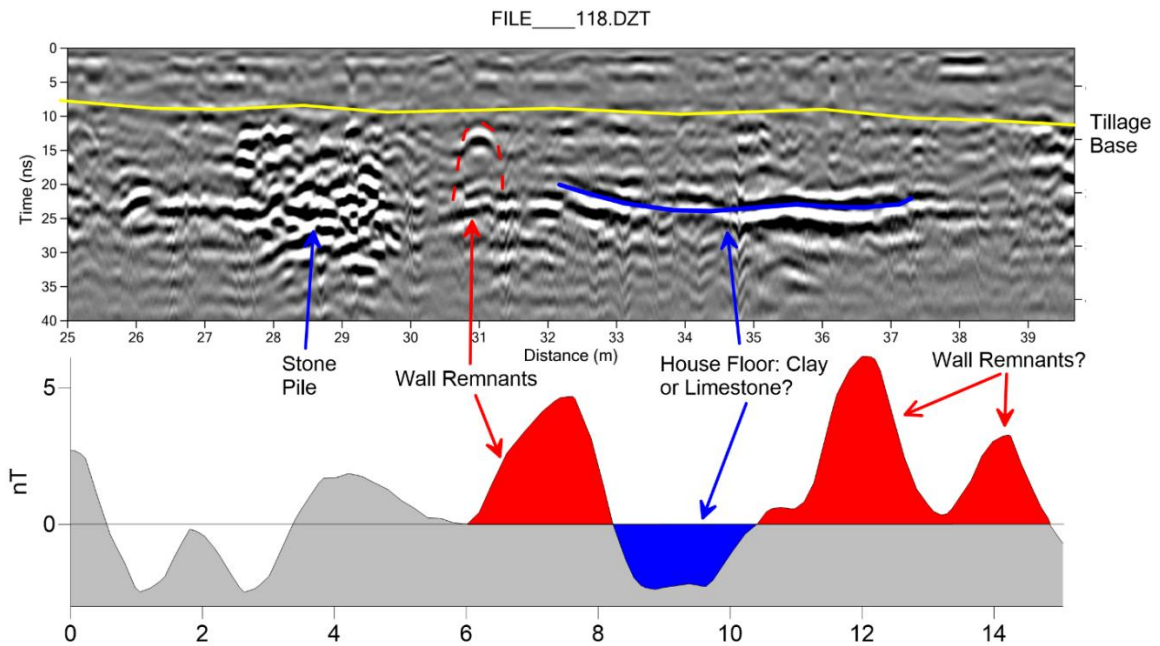
Figure 58: GPR profile (top) and magnetic profile (bottom) from the living space of House A.

Interpretations of GPR profiles and slices have revealed a long rectangular shaped structure of roughly eleven meters by six meters. However, the magnetic map shows two

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distinctly different aspects of the structure. The west side (Figure 58) has a floor that is recorded as magnetically neutral or negative, as has been seen elsewhere. A central highly positive magnetic feature is interpretable as a hearth. The east side floor, while identical in GPR appearance, is instead highly magnetic (Figure 59). Considering other excavated contemporary medieval sites, the east side of the house could be interpreted as an attached livestock pen, called a byre. This is an area to keep livestock near a house, adjacent to the living space (Schwietzer 2009). The highly magnetic floor in this byre is thus a product of organic rich animal manure from the livestock that were penned in that area.
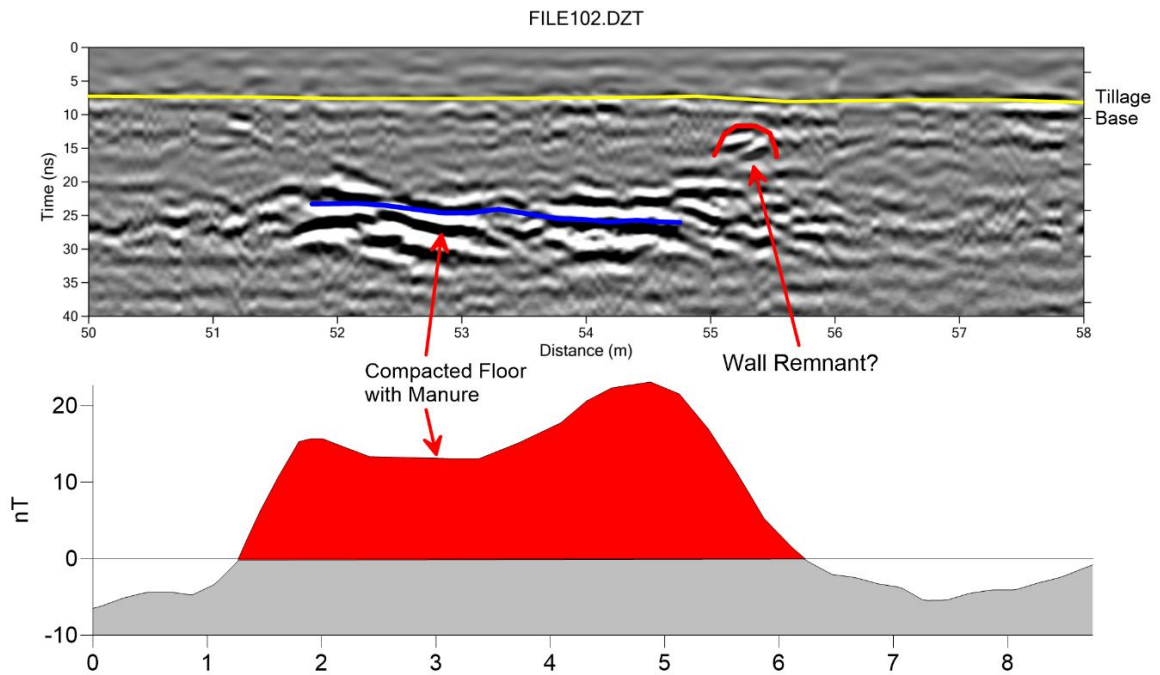
Figure 59: House A floor from the eastern side in GPR profile (top) and magnetic profile (bottom). As compared to the western side, the floor here is extremely magnetically positive.

Houses of this design (Figure 60), labeled "longhouses" by other authors, have been discovered in Ireland before (O'Conor 1998; Schweitzer 2009). These have typically been thought to have been the homes of freeholding tenants living in isolated farmsteads

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(Schweitzer 2009). The discovery of this type of structure at the nucleated settlement here, as opposed to dispersed across the landscape, is significant and could be indicative of the sequence of construction and habitation at the Ballintober settlement.
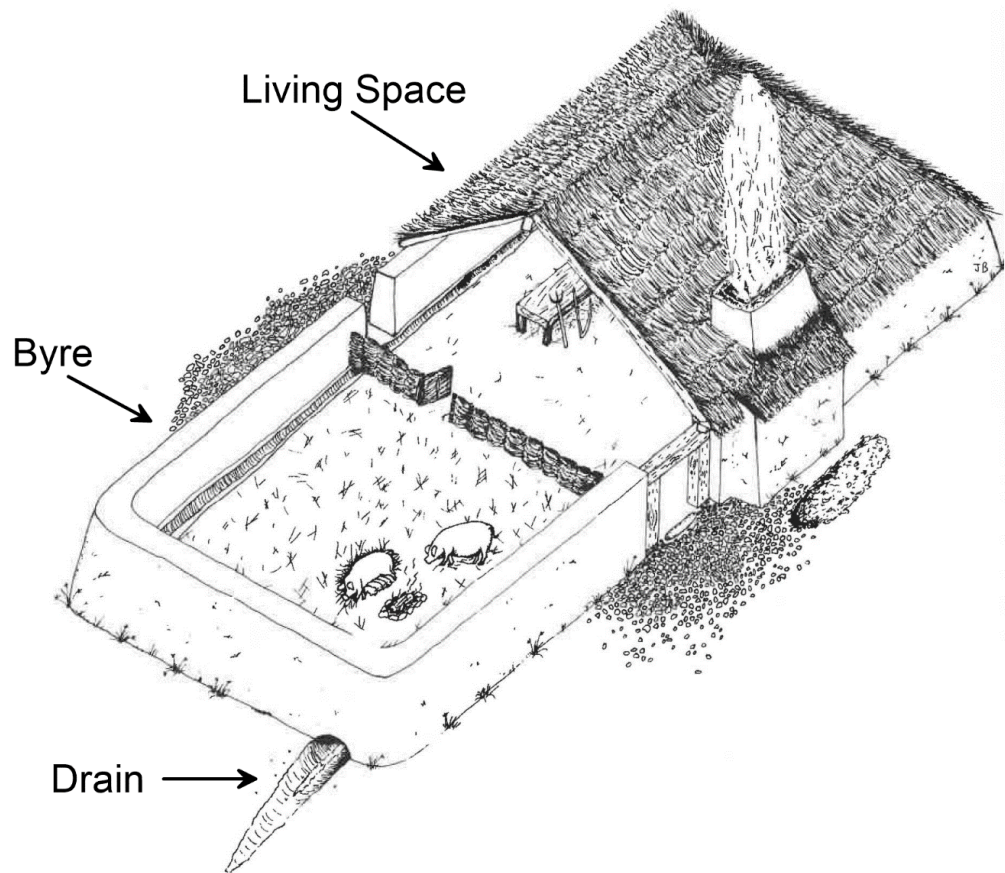
Figure 60: Reconstruction of a medieval farmhouse of the "longhouse" design with an enclosed living space adjacent to a livestock byre, excavated at Moneycross Upper, County Wexford, Ireland (Schweitzer 2009: 182).

The immediate area around House A contains several other notable individual geophysical features (Figure 61). Directly adjacent to House A is a GPR feature that appears to be two piles of stacked stones with no magnetic signature (Figure 57 & 58).

These are likely piles of limestone cobbles, which are too similar to their surrounding matrix to exhibit a magnetic reading. Perhaps these piles of stones were used for the building and repair of floors in the house. Additional piles of stone exist to the northwest of House A, but any potential structures associated with them lie outside of the survey area.
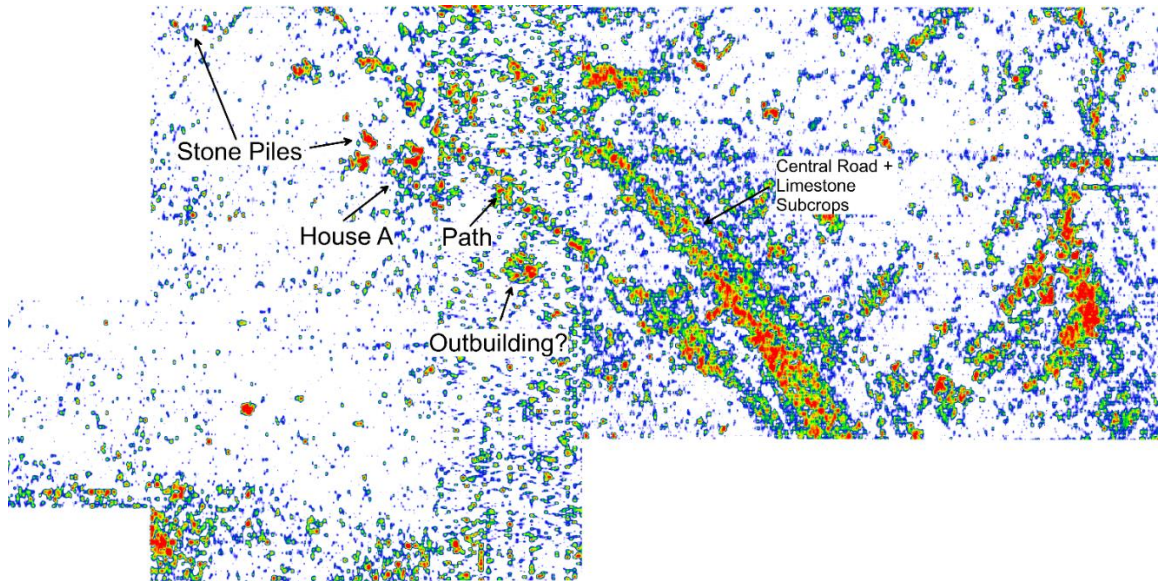
Figure 61: Notable features in the House A vicinity, seen in GPR slice from 40-65cm.

In addition to the main central paved road, a secondary pathway was discovered geophysically (Figure 62). Roughly two meters wide, its geophysical appearance is distinctly different than the road. While the excavated paved road is magnetically negative or neutral, this path is magnetically positive. This feature is also easily interpretable in GPR slice and profile as a highly reflective planar reflection. Its positive magnetism is probably because it was constructed of compacted organic-rich soil as opposed to limestone cobbles. Perhaps over time the organic material was continuously trampled into the pathway, leading to this magnetically positive appearance.

This path passes directly in front of House A (Figure 61). It seems the occupants of that house utilized this pathway for foot traffic instead of using the central road. Fortunately, some of this pathway was compacted and therefore preserved in the geophysical archaeological record.
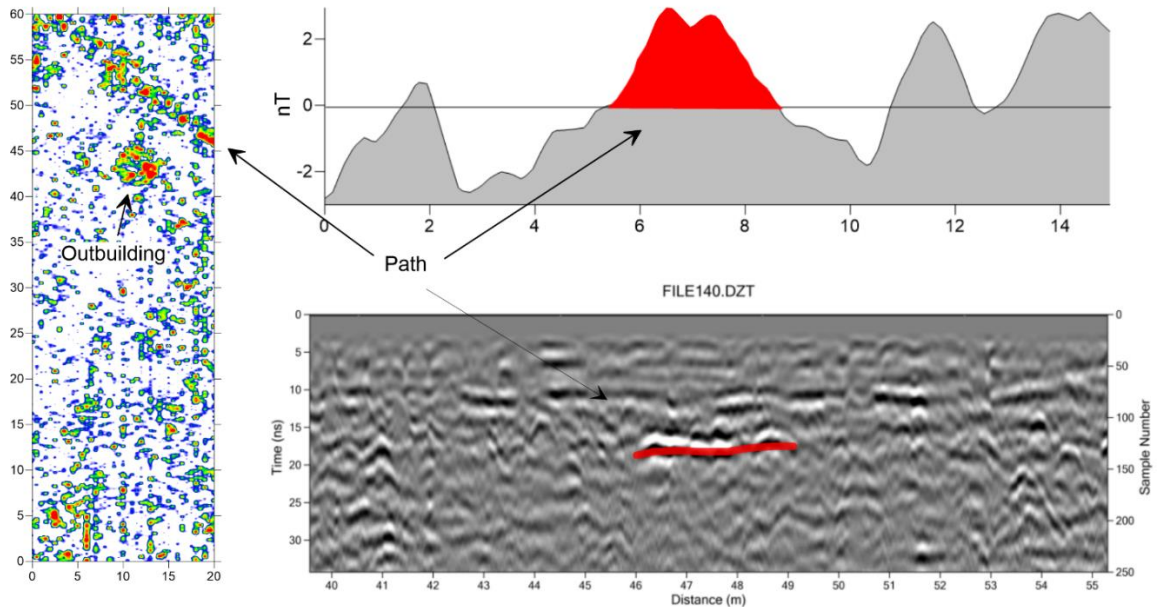
Figure 62: Secondary compacted earth pathway seen in GPR slice (left), GPR profile (bottom), and magnetic profile (top). Also marked is the reflective floor of the potential House A outbuilding (left)

To the southeast of House A is a structure hypothesized to be an outbuilding of House A (Figure 61). It is a small structure, roughly three by three meters, with a distinct floor visible in both in GPR amplitude maps and reflection profiles (Figure 63). Magnetics show the floor to be positive. Potentially this structure could have been utilized for food processing and the positive magnetism therefore indicative of ash from cooking. This was not unusual at medieval farmsteads in Ireland, where excavations have exposed cooking-related buildings separate from the main house (Gardiner & O'Conor 2019: 141).

Regardless of its specific function, as the structure lies directly alongside the same path that passes House A, it is likely that they were somehow related (Figure 61).
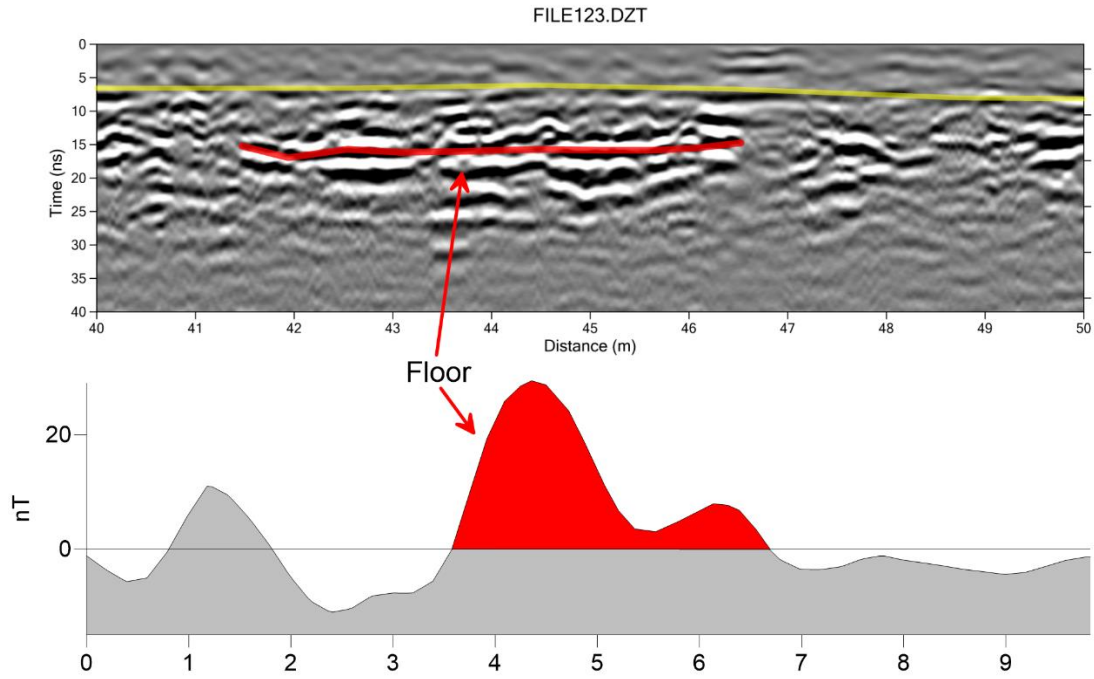
Figure 63: GPR profile (top) and magnetic profile (bottom) of the House A outbuilding.

House B

House B sits northeast of House A on the other side of the central roadway (Figure 55). This house is of the same "longhouse" design as House A to the south, with a living space attached to a byre (Figure 64). There are, however, some geophysical differences that are important to note.
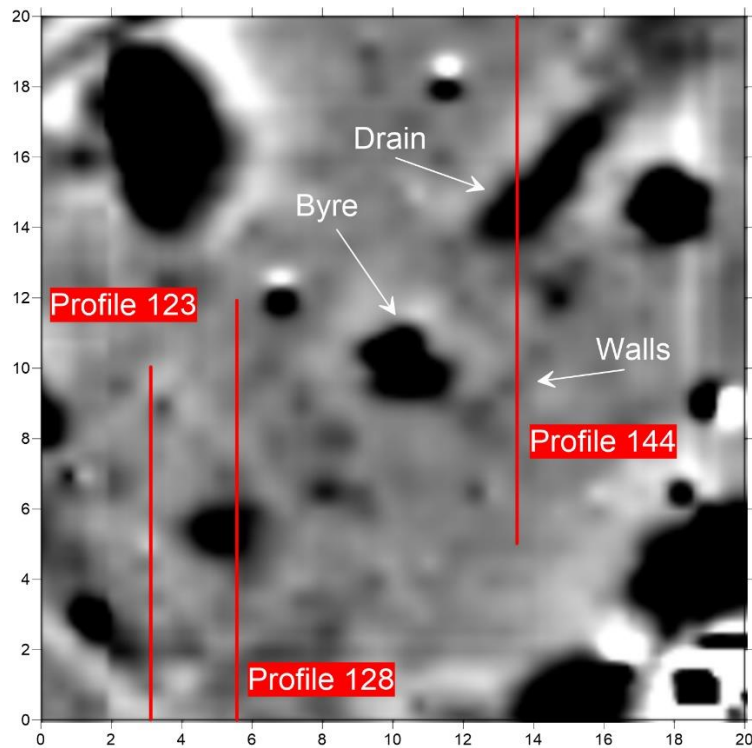
Figure 64: House B focus area in magnetic map, with GPR and magnetic profile locations marked.

House B's floor, while visible in GPR profile in both the living space and the byre (Figure 65), is not as distinct as House A's and is thus not visible in GPR slice. However, the walls of this house are visible in GPR profile. These have a similar appearance to the limestone piles discovered by House A (Figure 58). Combined with the walls' lack of magnetic signature, this could imply that the house had more substantial stone wall elements. Medieval house walls made of a combination of stone and daub have been discovered before in Ireland (O'Conor 1998).
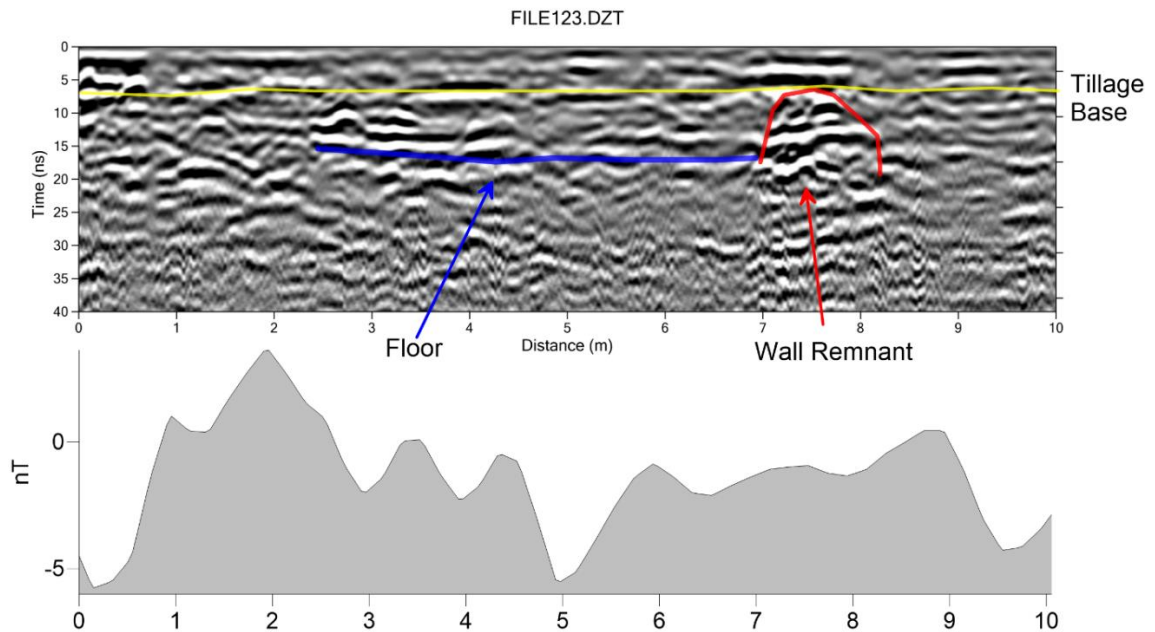
Figure 65: GPR profile (top) and magnetic profile (bottom) crossing the living space interior of House B. A compacted floor surface and the remnants of one section of wall are interpretable in the datasets. However, there seems to be little correlation between magnetic readings and GPR reflections in this profile.

As opposed to many of the other houses in the settlement, the highly magnetic central hearth at House B is visible as a planar reflection in GPR profile and GPR slice (Figure 66). Likely these reflections were caused by a burnt clay hearth surface, although why this hearth is reflective while many others in the settlement are not is unknown. Perhaps there are stones mixed in the hearth that produced the high amplitude radar reflections.
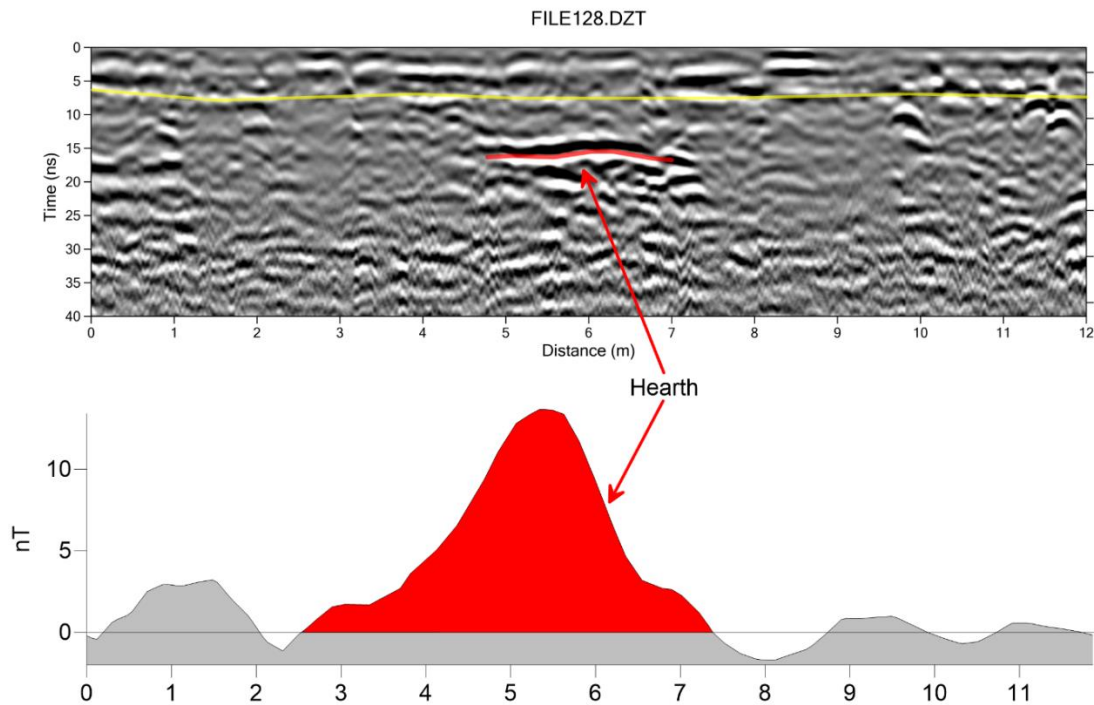
Figure 66: GPR profile (top) and magnetic profile (bottom) of the central hearth at House B.

Although the byre at House B is less magnetically distinct than House A, its floor is still visible in GPR profile as a planar reflection and is magnetically positive. On the north end of the byre is a magnetically positive linear feature that can be interpreted in GPR reflection profiles as a drain leading out of the byre (Figure 67). Drains in this manner have been discovered at medieval sites of this type before (Figure 60). These would have served to drain moisture from the byre, which were likely consistently damp from a combination of exposure to the elements and animal refuse.
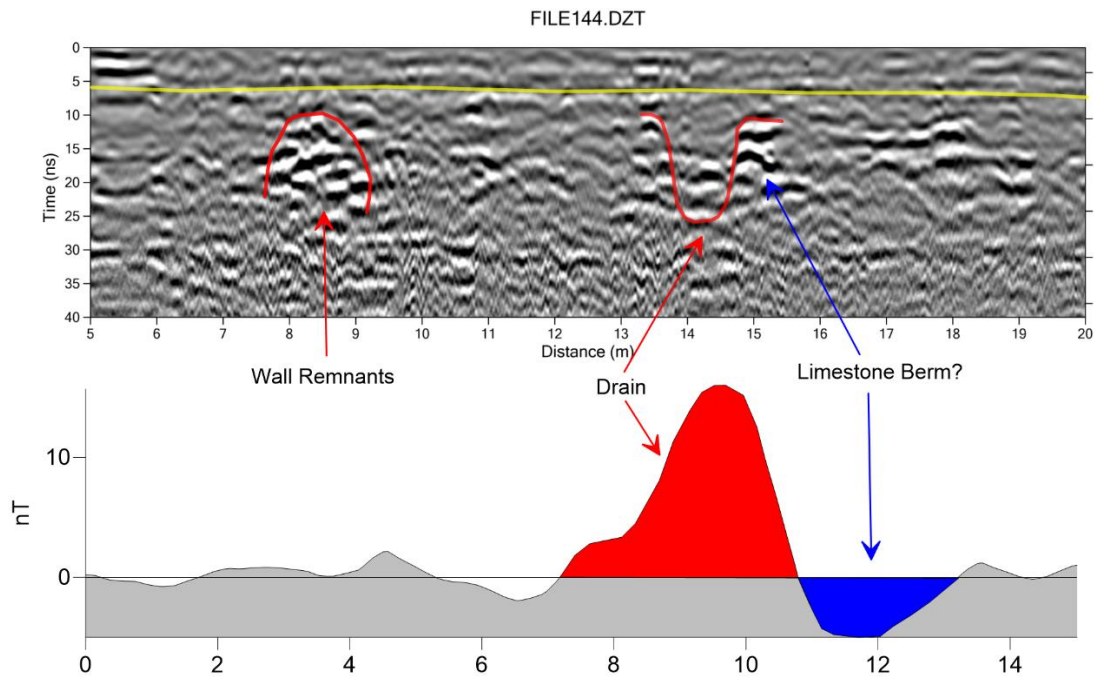
Figure 67: GPR profile (top) and magnetic profile (bottom) crossing the corner of House B's byre and the drain feature.

Crannog

The other most significant archaeological feature in the area is the potential crannog found in the middle of the seasonal lake (Figure 41). Crannogs were high status lake dwellings found throughout the British Isles built on artificial islands constructed of timber, stone, and earth (Edwards 1996). In Ireland, over 1500 have been discovered in the many small lakes throughout the island and primarily date to the Iron Age through Early Medieval periods, although some show occupation into the later Medieval.

To test if this feature was a crannog, geophysical data of ground-penetrating radar and magnetometry was collected over the raised area. Analysis of the data showed a structure built on this island within the turlough (Figure 68). High resolution GPR slice maps illustrate the floor of a structure built on the island (Figure 68). The outline of the

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structure can be seen in an oval of small circular high amplitude reflections, interpreted here as postholes surrounding the floor. To the west of the structure is a substantial architectural feature, interpreted as a stone retaining wall. A central hearth is also visible in magnetic map as a highly magnetic circular feature and in GPR slice and profile as a high amplitude reflective area (Conyers 2018: 95-8).
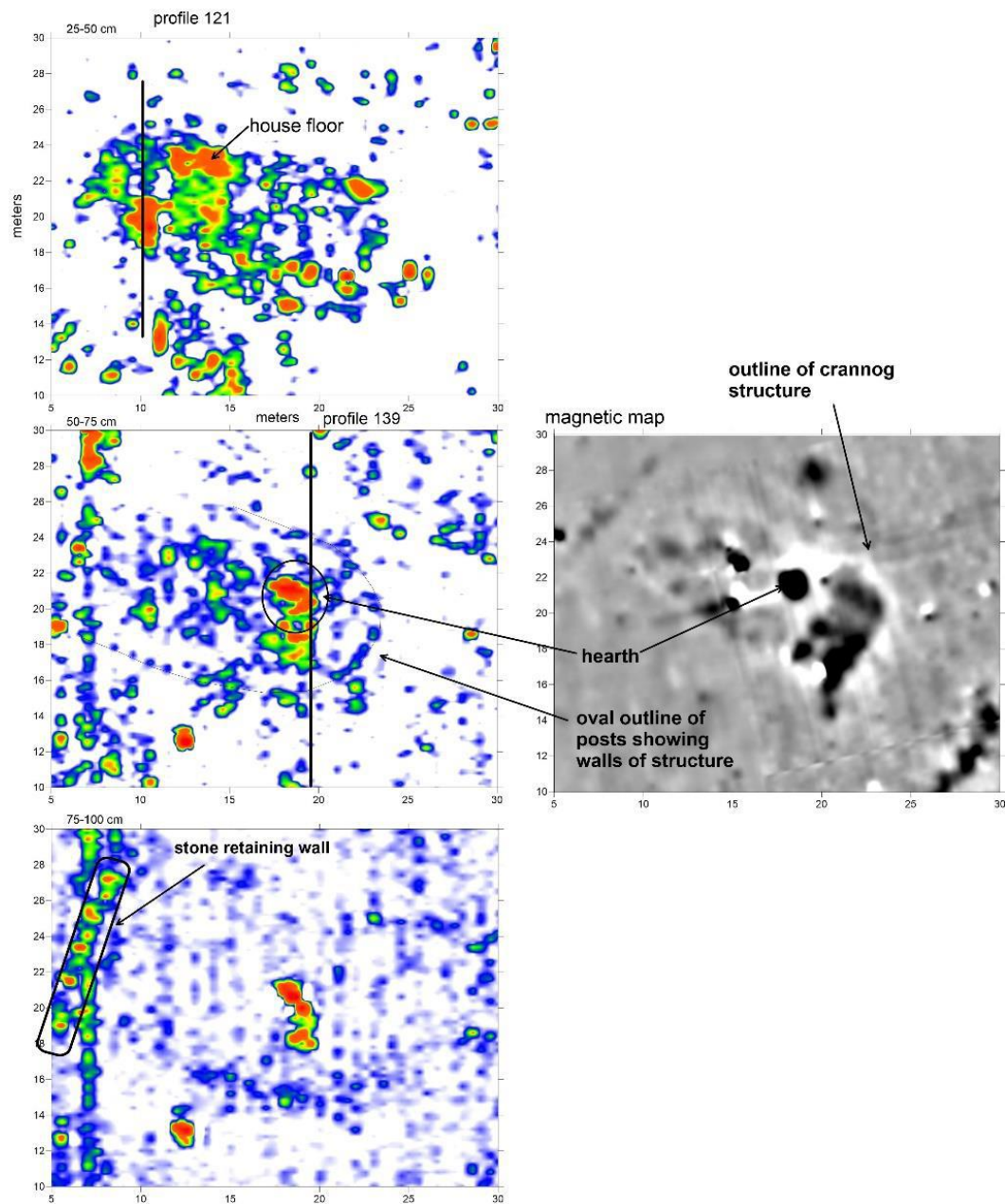
Figure 68: GPR slice maps (left) and magnetic map (right) of the structure on top of
the island in the turlough, potentially the remnants of a crannog (Conyers 2018: 96).

Geophysical data interpretation implies that this structure was indeed a crannog.

This is interesting when considering the spatial location of Ballintober Castle and

settlement as it is immediately east of the settlement. A castle and a crannog are both elite

structures, physical manifestations of political power, so the placement of the castle overlooking the crannog was no accident.

Conclusion

This chapter details the creation of large-scale geophysical interpretive maps of nearly seven hectares of subsurface archaeological features from the medieval landscape at Ballintober. These maps reveal a nucleated settlement of the medieval period, with a residential area surrounded by agricultural features. While this chapter shows the geophysical complexity and appearance of these features, here I have only made a case that with a combination of excavations and geophysics these buried remains are visible and can be accurately mapped and interpreted. To my knowledge, this is the first time this has been done for a settlement of this age in Ireland, and perhaps the first time a medieval settlement has been identified and mapped to this extent anywhere in Europe.

Chapter 6: Data Synthesis

The combination of excavation and geophysical interpretive maps allows for the definition of archaeological features on a landscape-scale across the medieval settlement at Ballintober. Archaeological data are here utilized to better understand the physical use and function of various households and other areas in the settlement, the relationship of this site with the historic record, and its broader significance as one of the only archaeological examined remnants of a dynamic and complicated moment in Irish history.

The geophysical interpretive map delineates a nucleated settlement surrounded by drained and agriculturally utilized land. However, in an analysis of this settlement within the larger landscape of medieval time it is important to note that the surveyed area is only a small region of what was likely a much larger settlement around the castle. I suspect that much of the medieval settlement lies under the modern day Ballintober village (Figure 69) and is out of reach or has been destroyed by construction. It is also likely that the initial parts of this settlement began closer to the castle, especially in the area around the town well, what is today called St. Bridget's Well ('Ballintober' means 'place of the well'). Therefore, the surveyed area here likely represents the outskirts of the larger medieval settlement, something that is important to be aware of when making hypotheses related to the use, size, and chronology of occupation at the settlement.

Figure 69: Surveyed area as related to the modern Ballintober village. The bulk of medieval settlement likely lies underneath the modern village.

Interpretive Map Analysis

Analysis here will begin with a close examination of the interpretive maps to place the many geophysically interpreted features within relation to each other. To do this, I have divided the settlement into three distinct areas for interpretation, based upon differing feature typology and spatial arrangement (Figure 70). These parameters are primarily the orientation of boundary ditches and the design of houses.

Figure 70: Three areas of differing boundary ditch orientation. Notable is the interface in between Areas 1 and Areas 3. Also, Area 3 is significantly more densely settled than Areas 1 and 2, which sit within more expansive plots of boundary ditch defined land.

Area 1

This area, lying at the northwest extreme of the surveyed area, is comprised of two sections as delimited by boundary ditches (Figure 71). These two sections are considered related as they both extend from the same southern boundary ditch. The western section, which contains a number of large pits on the southern edge, was likely was utilized for arable-agriculture or pasture. The eastern section contains a longhouse-style dwelling (House B) along with other pit features, likely used for the disposal of wood ash and other

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household refuse. This house was constructed of substantial architectural elements, with what can be seen in GPR to have been limestone foundations and potentially lower wall courses for the walls. I suspect that the stone used here was sourced from either the limestone quarry to the south or was collected during the excavation of earthwork features such as boundary ditches. The soil at Ballintober is full of large limestone clasts that could have been collected and utilized in construction. It is likely that packed mud was used in the construction of the superstructure of the walls, just as all other houses in this settlement. The mud was likely sourced from a combination of excavated material from boundary ditches and pits, especially the large potential quarry pits to the north end of the section. This hypothesis is supported by other archaeological excavations in Ireland, which have excavated houses with stone foundations and lower walls, surmounted by clay superstructures (Murphy & Potterton 2010: 199-201). The south side of the longhouse was domestic, as distinguished by its central hearth (Figure 71). The north side of the longhouse is comprised of an attached byre for the penning of animals. The byre has a ditch emerging from it to improve drainage.
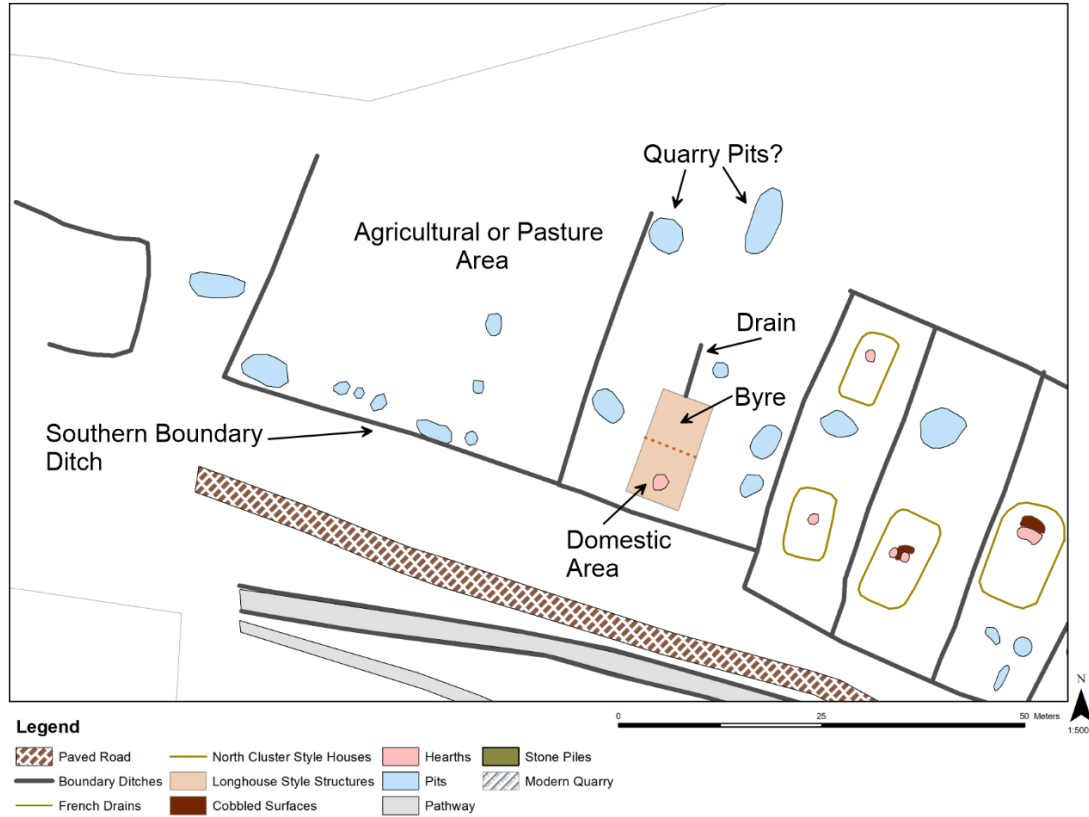
Figure 71: Area 1 in detail with annotations. Area 1 has been interpreted here as a longhouse dwelling adjacent to an agricultural or pastoral area.

I suggest that this area contains the dwelling and attached land plot of a single medieval household. As the western section is architecturally undeveloped, it was likely exploited for arable agriculture or used as a pasture field, potentially for animals that would have been housed within the byre.

Area 2

Area 2 is in the southernmost section of the surveyed domestic area. It is comprised of several small areas delimited by boundary ditches within a large open area, which contains a longhouse and associated outbuilding (Figure 72). This longhouse (House A)

has an attached byre, but no associated drain. Instead there are a number of drainage ditches surrounding both the domestic section of the house to the west and the byre to the east. The house contains a substantial surviving floor, of what was hypothesized to be limestone cobbles as it is highly reflective in GPR profiles and slice maps. Similar to the house in Area 1, I suspect that the material for this floor was sourced during the construction of domestic and agricultural features such as boundary ditches. Outside the house to the east are piles of limestone cobbles, which were perhaps used to construct and repair that cobbled floor or represent the consolidation of cobbles discovered during domestic or agricultural activity. To the south of this area are boundary ditches extending to the south, although some of these appear to have been truncated by modern quarrying. There are also a number of pits likely for the disposal of household refuse.
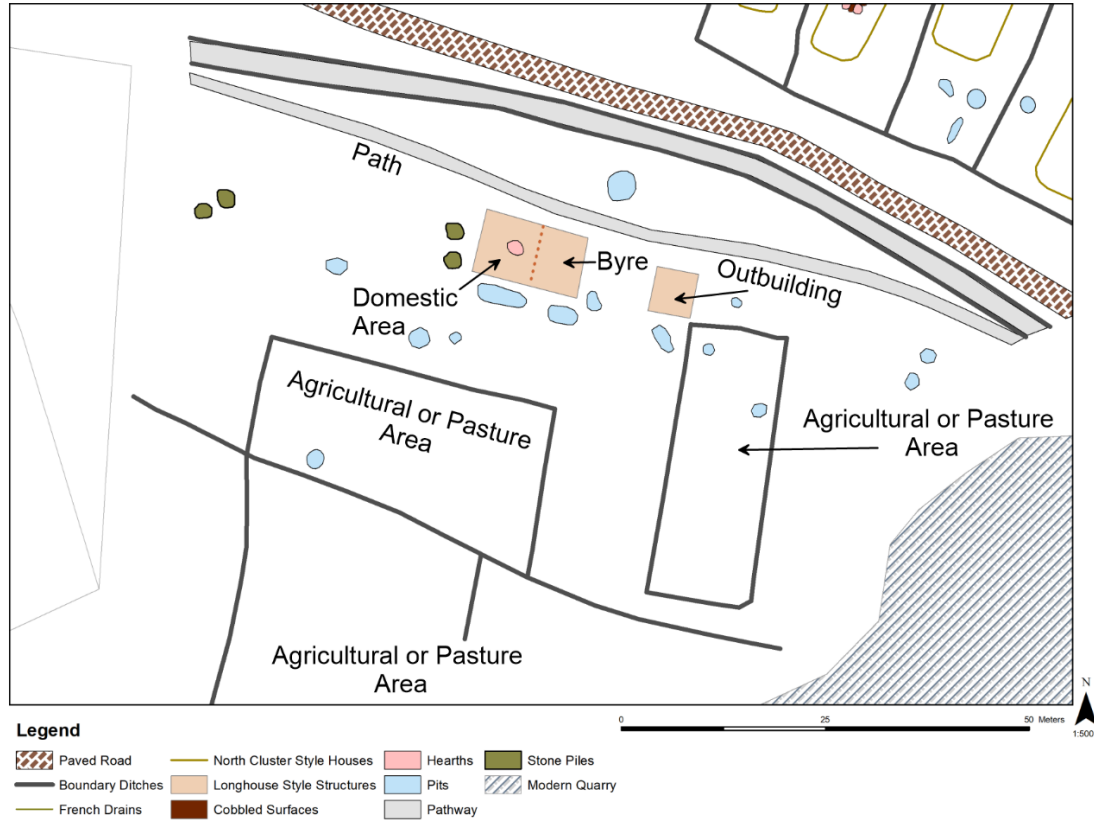
Figure 72: Area 2 in detail with annotations. Area 2 contains a longhouse style dwelling with a nearby related outbuilding. As opposed to lying along the central road, these structures are set back along a foot path. The longhouse is surrounded by areas for agricultural and pastoral activity.

Especially interesting is the presence of the geophysically identified path of compacted earth that passes directly in front of the structures in Area 2. This path trends westward, towards what would have been the bulk of the medieval settlement (now underneath the modern village) and eastward, out into the wider agricultural landscape. To the south, outside the survey area, it seems that the path and the road intersect. I propose here that this path was a desire path that connects the Area 2 household and outbuilding to the central road. The builders and occupants of this household perhaps wanted their

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structures to be removed from the central road, so they constructed their built environment further south. However, they were still utilizing the central road, and the remnant path seen here shows their foot traffic to access the central road further east and west. This also places the construction of the central road either before or coincident with the creation of the built environment at Area 2.

I hypothesize that Area 2 contains the dwelling, associated structure, and attached land plots of a medieval household (Figure 72). The small sections within the larger plot delimited by boundary ditches could have been individual small plots of agricultural fields or could have been utilized to pasture animals.   The boundary ditches that extend beyond the survey area to the south are part of an agricultural area, seemingly attached to Area 2 and exploited by the residents of the longhouse (Figure 72).

The similarities between Area 1 and 2 should be briefly noted. Although they have different uses of space as defined by their boundary ditches, they both share a very similar longhouse design.   These are houses of substantial architectural composition with a separate living space and byre.   The two houses are also of very similar size, both containing roughly ninety square meters. More than that, the houses are located directly across the central road from each other, perhaps implying a relationship between the two. As the houses are of very similar design, perhaps these people were from the same group who settled in the area.

Area 3

Area 3 is delimited by two roughly parallel boundary ditches that move east-west (Figure 73). These are divided up by other parallel ditches in the north-south direction that

create small individual rectangular plots of land. Many of these plots contain houses of the

North Cluster style, which are roughly rectangular waddle and daub structures with central

hearths. A number of these houses also contain cobbled stone surfaces adjacent to central

hearths, likely for domestic use such as food preparation. The land plots, demarked by

enclosing boundary ditches, also contain pits for refuse disposal and clay quarrying for

house building.

GEOPHYSICAL INTERPRETIVE MAP BALLINTOBER HABITATION AREA
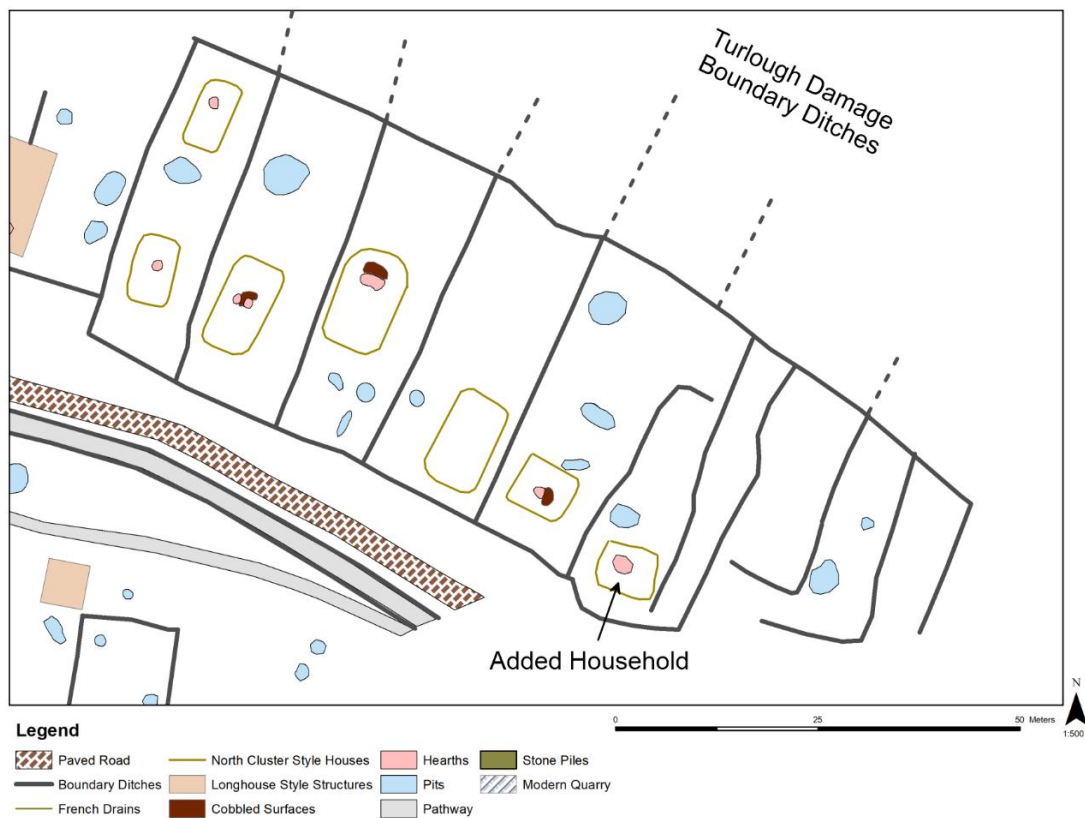
Figure 73: Area 3 in detail with annotations. This area is highly clustered in its settlement pattern, with houses set within adjacent boundary plots. There is some evidence for the addition of new houses and boundary ditches that do not fit the original alignment created by two property ditches to the north and south, most notable one that is marked to the south end of this area. Also of interest are the presence of geophysically indistinct boundary plots to the north.

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The plots and houses here show signs of modification. An especially interesting example can be seen in the eastern portion of the area (Figure 73), where it seems a larger land plot was truncated by the creation of a new boundary ditch and the construction of a house. This could perhaps represent the addition of someone new to the community, whose plot of land was created by lessening another's. This is apparent by the orientation of this new house's surrounding boundary ditches, which do not conform to the typical orientation.

To the north of this area are what seem to be the remnants of other boundary ditches (Figure 73). These were also seen in the other areas, but here they seem to have been damaged by the seasonal flooding of the turlough in more modern times. It is likely that in the medieval period these were constructed as additional plots of land attached to Area 3 that extended to the north. These damaged ditches are also the direct extension of the boundary ditches that separate the plots in Area 3, making it likely each plot of land to the north is directly related to one of the house-containing plots to the south. These were perhaps utilized for small-scale agricultural activity by the residents of this area.

I hypothesize that Area 3 contains the densely arranged settlement of seven or more medieval households. While almost entirely removed from the geophysical archaeological record due to the flooding of the turlough, these households also utilized attached land plots to the north, perhaps for agriculture or horticulture. There is evidence for modification in this area, most notably in the altering of land plots by the addition or movement of new boundary ditches.

Overall, the evidence suggests the presence of two different status groups of people living at the Ballintober settlement. Areas 1 and 2 contained large and substantially built longhouses situated on large plots of agriculturally exploited land. These dwellings and land plots were located on the western side of the surveyed, which was higher in elevation, and thus drier, and was also more closely adjacent to Ballintober Castle. In the medieval period, castles were physical manifestations of political and social power, and possibly living spatially closer to the castle represented higher status (McNeill 1997: 236). In contrast, Area 3 consisted of the small and cramped dwellings of at least seven medieval households, with only small attached plots of land for agricultural usage. This area was on the eastern edge of the settlement and was directly adjacent to the seasonal lake, making it wetter, prone to periods of flooding, and likely less preferable for occupation or agriculture than Areas 1 and 2. Area 3 was also further from Ballintober Castle, making it of lower status relative to the castle. Therefore, Areas 1 and 2 were occupied by households of higher status, while Area 3 was occupied by households of lower status. The specific nature of these people, their practices and behavior, and a potential timeline for their occupation at Ballintober can be hypothesized by comparing the archaeological data to the historic record from the period.

Historic Record Integration

The historic record of the medieval manor at Ballintober comes entirely from the accounting of the de Burgh holdings in western Ireland after the assassination of William de Burgh in 1333 (Knox 1903). While this is a good record in that it provides a general overview for the nature of the settlement, it does not provide much specific detail. The

1333 account comes from the period of collapsing Anglo-Norman control along the Connacht borderland, and the account suggests that most of the tenants at the settlement had abandoned their holdings at the time it was written. It does not provide any information on tenants or their holdings (Knox 1903), which is not unusual for documents from the period as in general these sorts of documents were more concerned with the tallying of composite monetary income (Frame 2012). These types of records do not typically indicate where or how the various grades of medieval tenants lived or worked (O'Conor 1998: 44). Despite this, the account provides some useful clues for the further interpretation the archaeological record, especially related to the specific levels of status and the types of practices performed by occupants of the settlement.

First, the 1333 account states that Ballintober had a "Hundred Court." This is a medieval legal body that is associated with a borough status settlement (Graham 1975). Tenants of a borough, called burghers, were lease holders who rented land from the manorial lord. Burgher status was the highest level of lease-holding status available, as burghers were able to rent plots of land, called burgage plots, at an extremely low rate that they could work for their own profits (O'Conor 1998: 42). They had other special privileges, including the creation and use of a Hundred Court where the burghers could sit in judgement and decide many of their own affairs, without oversight from the feudal lordship. Offering burgher status seems to have been a commonly used tactic by manorial lords throughout the medieval period to entice settlers to the borderland regions in Ireland (Frame 2012; Murphy & Potterton 2010; O'Conor 1998). Many of these have been identified in the Irish historic record and have been called "rural boroughs" by other

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authors, to distinguish them from the true towns of the medieval period (O'Conor 1998: 42). Based upon the 1333 account, Ballintober was likely one of these rural boroughs, occupied by people of burgher status.

Considering the archaeological record, Areas 1 and 2 of the surveyed settlement contain architecturally substantial longhouse-style dwellings situated adjacent to large plots of land (Figure 70). I propose that these two areas were the households and associated burgage plots of burgher tenants. It is likely that there were once many other burgher households at the settlement, but these lie under the modern village. The two burgher households seen here would have exploited their rented plots of land, which in the interpretive map can be seen by the large open agricultural fields that extend beyond the surveyed areas but are attached to the household's plots. The two households are also located on better quality land for agriculture and are closer to the castle than the households of Area 3. This suggests that Area 3 was resided by people of lower status than the burgher tenants of Areas 1 and 2. The nature of these lower status individuals in Area 3 is hinted at by the historic record from Ballintober.

The 1333 account describes the presence of a "demesne" at Ballintober. As opposed to lease land, which is rented to tenants, the demesne is agricultural land owned directly by the manorial lord. The lord would of course not work the land personally but had to find other ways to exploit it for agricultural profits. Typically in England, all tenants on a manor would owe labor service to the manorial lord as part of their rent and would work to produce crops from the demesne that went directly to the lord (Frame 2012). In Ireland, that was typically not the case, as many statuses of tenants owed very little labor

service as part of their tenure. This was especially true of burgher tenants, who as an aspect of their higher status would usually not owe any sort of labor service to the manorial lord (Frame 2012). Therefore, it has been suggested by other medieval scholars that burgher status at rural settlements was only offered to individual tenants and not the entire settlement. Instead, rural boroughs in Ireland would have contained two classes of lease holding tenants, the high-status burghers and some other variety of low status tenants to work the lord's demesne (Murphy & Potterton 2010: 189). At Ballintober, Area 3 contains a cluster of many small houses with small attached plots of land. I hypothesize that this area was a house cluster of low status small-scale manorial tenants at the settlement, who would have labored to exploit the demesne as described in the historic record.

The specific legal status of these people is challenging to definitively conclude, as they are not overtly mentioned in the historic record from Ballintober. However, I suspect that they belong to the status of cottar. Cottars were paid a wage to labor and produce crops on both the manorial lord's demesne and possibly the lands of larger manorial tenants. They would also rent a plot for a cottage and a small attached portion of land, usually less than an acre, upon which they could grow crops for personal use (Murphy & Potterton 2010: 189). Although never excavated, study of historic maps elsewhere in Ireland has suggested that cottars would live within small house clusters attached to manorial centers (Graham 1975). Cottars were generally considered the lowest status medieval tenant, as they owned little to no land and their economic prosperity was highly dependent on the manorial lordship or larger tenants. The built environment at Area 3 follows this model closely, as it contains a dense cluster of small cottages. The attached

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plots of land to the north could have been the small plots of leased land for personal exploitation by the cottars. Although impossible to decisively claim the residents of Area 3 were of cottar status, it is a reasonable working hypothesis.

Overall, the Ballintober settlement's built environment reveals two distinct status occupants, based upon their differing domestic architecture and space usage. In consultation with the historic record, these two categories of occupants were likely high-status burgher tenants and some variety of small-scale and low-status tenants, perhaps cottars. This supports a model proposed by other medieval scholars for rural Irish settlement in the time period, which posits the existence of higher and lower status tenants living within a single settlement. The mapping of this medieval landscape at Ballintober is significant as it provides support for a model based almost entirely on historical documents from the time period. This settlement provides one of the few (perhaps the only) archaeological examples with which to test this model of different land usage by different status groups of people, as it provides a landscape-scale map of the medieval built environment.

Rural Life at Ballintober

Regardless of differences in status, all residents of the settlement were likely involved primarily in the same form of labor, which was agriculture. This can be seen in the broader medieval landscape, in which geophysical interpretations revealed the construction of significant drainage field systems. For the land to have been most profitable, both for the manorial lord and the individual burgher tenant, it is likely that the fields at Ballintober were used to produce grains, most importantly wheat. That crop was

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the foundation of the economy of northern Europe and commanded the highest price and status of all grains, ensuring its widespread cultivation in areas of Anglo-Norman settlement (Frame 2012: 94; Murphy and Potterton 2010: 306). As wheat demands a drier soil regime than Ballintober would have provided, the land would have required the creation of a drainage system. Agricultural drainage has been revealed at medieval sites in the past but has not been seen in western Ireland (Murphy and Potterton 2010: 296). It may be the product only of this time in history and related purely to the larger European markets upon which wheat could be sold for a premium (Frame 2012).

Although wheat was likely the major prestige and cash crop, many Anglo-Norman settlements in Ireland utilized a three-field system of crop rotation, where fields would have been rotated between cultivating wheat, oats, and lying fallow (Murphy & Potterton 2010: 292). It is difficult to see evidence of that in the geophysical datasets, but it is probable the arable agricultural landscape was being rotated through wheat and oats in some capacity.

Arable agriculture, especially wheat, was extremely labor-intensive. Aside from the initial construction of drainage features, all arable land would have had to have been fertilized, ploughed, sowed, weeded, reaped, carried, threshed, winnowed, and many other more specific tasks (Figure 74) (Murphy & Potterton 2010: 323). In an area known more for animal husbandry than grain crop agriculture, this shows the lengths to which medieval occupants went to produce profitable crops.

Figure 74: Detail from King's Inn (Dublin) Manuscript, dating to the fifteenth century, showing (from left) weeding?, digging, and flailing. Illustrated scenes of rural daily life are very rare in Irish contexts (adapted from Murphy and Potterton 2010).

It has been estimated that every acre of cultivated land required fourteen man-hour days of work every year (Hennessey 2004: 106). The size of the Ballintober demesne was roughly 300 acres (Knox 1903), which translates to an estimated 4,200 man-hour days of work yearly to cultivate. If these rough calculations are applied to what can be interpreted from this settlement, it would have required twelve agriculturally productive adults to fully cultivate what the historical records indicate was grain-agriculture land. Assuming two to three agriculturally productive individuals per house, the residents of the cottar house cluster in Area 3, could have cultivated the entire demesne at Ballintober.   This is interesting as it shows that the eastern edge of the settlement could have been where these people lived. And the rest of the settlement, as yet unstudied, would have been comprised of additional burgher status tenants and their associated land plots.

Aside from arable agriculture and the cotter households on the outskirts of the settlement (Area 3), the presence of the two byres at the longhouses and the discovery of animal bones during excavation at DS2 suggests animal husbandry at this site. Animals

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likely served three purposes at Ballintober: work for agriculture and transport, meat and other foodstuffs, and raw materials such as wool and skins (Murphy and Potterton 2010: 326).

Preliminary zooarchaeological evidence from excavation at the Ballintober settlement from within the boundary ditches and within the central hearth suggests the presence of cows and sheep at the settlement. The DS2 excavation, located in the North House Cluster, shows that cottar status residents were consuming these animals. It is difficult to guess where animals might have been grazed, but the historic record claims Ballintober had two areas set aside for pasture (Knox 1903). Those areas are likely in part the "barren" areas of the maps, where no structures, ditches or other construction were visible.

Although Ballintober was primarily an agricultural center, the archaeological and historic record from other sites in the British Isles suggests that places like this also contained a rural household-based industry (Murphy & Potterton 2010; O'Conor 1998: 56). There is evidence of local ceramics, clothing, and tools from small finds at these other sites, as well as smithies and potteries for their creation (O'Conor 1998: 56; Murray et al. 1993). At Ballintober, several medieval pottery sherds were discovered at the DS2 excavation, although it is uncertain if these were locally produced. They were however of quite poor quality, so it is possible that they were created by a part-time potter at Ballintober. Overall, a site such as Ballintober would have been largely self-sufficient and not reliant on trade for necessities (Murphy & Potterton 2010: 467).

However, the settlement was undoubtedly involved in larger networks of trade throughout Anglo-Norman Ireland, the British Isles, and mainland Europe more broadly (Murphy & Potterton 2010: 467). This is most notable in the historic record at Ballintober, which details taxes levied for importing beer into the region (Knox 1903). The settlement in turn was likely exporting surplus agricultural goods such as wheat for sale on the Irish and wider European markets (Murphy & Potterton 2010: 467-74).

Chronology

Excavation at this site has only just begun and there are no radiocarbon dates available that would provide chronometric information related to the occupation at the settlement. However, a combination of the archaeological and the historic record can be used to hypothesize a potential sequence for the construction, usage, and abandonment of the built environment at this site.

The settlement's creation is likely coincident with the construction of Ballintober Castle. Unfortunately, there is no historic evidence that provides a date for its founding. Some authors have concluded that 1300 is a good rough date for the creation of the castle, based upon its tangential reference in other historic sources (Brady 2014: 11). The manorial lordship, ultimately the preeminent Anglo-Norman lord Richard de Burgh, desired settlement in the area to grow crops, pay rent, produce profits, and potentially solidify Anglo-Norman hold on the landscape. This sort of expansion was happening elsewhere in this time and speaks to a sense of colonial optimism that characterizes a boom in settlement during the late 13th and early 14th century in Ireland (Frame 2012; O'Conor 1998). As such, settlers were likely offered burgher status if they moved to Ballintober at

this time, a strategy being utilized at other settlements in Ireland. The initial inhabitants were people who moved either directly from Britain or other areas in Ireland in order to take advantage of the social advancement burgher status offered (Frame 2012). However, it has been suggested that by the late 13th century most of the direct emigration from England to Ireland had slowed, so it is more likely these people were coming from other parts of Ireland, perhaps from the major de Burgh holdings to the south (O'Conor 1998: 42). Those were the individuals who first resided in the Ballintober settlement and constructed their homes in Areas 1 and 2. These people likely worked their personal burgage plots, created agricultural features, dug pits to dispose of refuse, kept livestock, and perhaps engaged in rural industrial practices. Evidence for this initial influx of people can be seen in the archaeological record of Areas 1 and 2, although there were likely many more such buildings that now lie underneath the modern village. I suggest these two areas, 1 and 2 (Figures 71 & 72) were created first as they are the westernmost in the surveyed area and would have been closest to both Ballintober Castle and the nucleus of the medieval settlement.

Sometime later, a group of small-scale tenants, perhaps cottars, arrived in the area to receive payment in exchange for the exploitation of the lord's demesne land. These people, who likely came from elsewhere in Ireland, lived in the more densely populated Area 3 (Figure 73), and worked both their small plots of land and the lord's demesne, likely growing primarily wheat. This phase of construction came after the initial burgher status people had already established themselves and built the dwellings in Areas 1 and 2. Area 3 is the most eastward of settlement that would have been on the outskirts. In the

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geophysical mapping there is a clear shift in the orientation of boundary ditches in the transition from Area 1 to Area 3, implying they were constructed at different times (Figure 70). When these small households were built the orientations were no longer in use, or these people did not care. The road was likely in place by this time and they therefore aligned their plots to have frontage to the road, and not adhere to some other orientation that had been in place initially when the burghers settled in Areas 1 and 2.

In 1315 Ballintober was attacked by Rory O'Conor as part of his attempt to usurp his cousin Felim O'Conor (Brady 2014: 13-4). Although the historic accounts claim that Rory burned Ballintober, there is no evidence for any sort of burning or destruction at the surveyed settlement or the castle. Perhaps the historic record embellishes the extent of Rory's attack or the burned part of the settlement is under the present village. It is more likely that Rory attacked Ballintober in a manner similar to the type of raiding that had occurred in Ireland for centuries, in that his priorities were plunder and prestige, not destruction. If he arrived in Ballintober, set fire to the masonry castle, liberated some food and some livestock from the settlement, and moved on to his next attack, this part of the village may not have been impacted. Historically Rory O'Conor's actions of this sort here and elsewhere eventually lead to his death in battle in 1316 (Brady 2014: 14).

It is likely that O'Conor had little desire to destroy the settlement, as settlers were a resource he could raid a number of times, if they were allowed to stay in the area and reestablish their agriculture and industry. In any case, the raiding would have left little archaeological trace in the settlement and wider landscape, although future excavations might reveal traces of destruction from this phase at Ballintober Castle.

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The historical record implies years of thriving rural economy at Ballintober after Rory's attack in 1315, with apparently a cultivated demesne, pasture fields, woods, watermills, and taxes from the burgher's Hundred Court all creating tidy profits for the manorial lordship (Knox 1903). Ballintober produced over £84 in annual profits, a sizeable sum that equaled 6% of de Burgh total income from Connacht (Brady 2014:16).

Due to a combination of escalating unrest and violence (Frame 2012: 154), worsening climate as the Medieval Climactic Optimum came to an end (Mann 2002: 514), plague across Europe in the mid-14th century, and many other factors, there was a general collapse of centralized Anglo-Norman political power in Ireland in the 14th century (Walton 1980: 431-2). All these reasons probably led to the Ballintober settlement being abandoned sometime in the 14th century, which was a common theme among nucleated settlements in Ireland but also happened more broadly in England during this time. It was likely a slow process, with individual people leaving at different times. I suspect the small-scale tenants were the first to leave, as they had the least to lose from abandoning the area. The burgher tenants had much more invested in the land and local economy and perhaps stayed longer. Abandonment can be seen in the historic record from 1333 (Knox 1903), which describes the demesne as lying fallow. By this time, its laborers who once resided in the house cluster of Area 3 had likely fled the region (Knox 1903). It is difficult to say if and when the burghers abandoned the landscape, but Ballintober Castle was captured by Irish lords by 1375, although perhaps earlier (Brady 2014: 19). However, it is evident this settlement was eventually abandoned as it has been buried. There is little evidence for

structural modification of features at this site before burial, which further implies a short occupational window.

Ballintober Castle and settlement, as an Anglo-Norman enclave in Roscommon County, was short-lived and may have been occupied for only thirty years. Although probably unfortunate for some of its settlers, this short time-frame is advantageous to archaeologists and historians. The medieval built environment seems to have been created, utilized, and abandoned from roughly 1300 – 1333, providing a dataset to test ideas related to some of the larger themes that were occurring during this tumultuous moment in history.

Broader Significance

During the later medieval period, Ireland was not merely conquered by the Anglo-Normans, but also underwent a deeper and more pervasive colonization (Frame 2012: XV). Despite occurring hundreds of years before the post-Columbian European colonization of the Americas and Africa, the occupation of medieval Ireland shows great similarity to early modern European colonial periods. I think this speaks to the difficulty of neatly categorizing later medieval Ireland, which straddles the threshold between the medieval and early modern worlds, displaying traits and themes common to both. The built environment from Ballintober, as a remnant of the height of Anglo-Norman colonialism in Ireland, embodies Irish medieval colonial dynamics very analogous to those observed in European post-Columbian colonial contexts around the globe.

To explore this, I use here Chris Gosden's definition of colonialism, which he summarizes as a "particular grip that material culture gets on the bodies and minds of people, moving them across space and attaching them to new values" (Gosden 2004: 3).

These values have a center, in this case England, from which connected objects and practices derive power. The access and relationships of people with objects and practices in colonial settings creates varying hierarchies and modes of power (Gosden 2004: 24-5). Importantly, no one within this model of colonialism is completely powerless. As such, colonizer and colonized alike choose and influence their relationships with power as linked to practices and material culture. Colonial encounters cause changes to all those who participate in them, leaving the colonizer and colonized irrevocably altered by the experience. Gosden's definition is especially useful here as it removes colonialism from specific economic or political modalities, instead offering a universal comparative framework. Although medieval Ireland comes well before the commonly attributed start of European colonialism, by this definition it is still consistent that the Ballintober archaeological record can display themes highly alike colonialism in other contexts.

For colonizers both in medieval Ireland and around the world, colonization represented an opportunity for upward social mobility and a chance to develop a new social identity (Trigg 2004: 224). At Ballintober, this was most obvious in the presence of burgher tenants. These people were attracted to settle in this area along the periphery of Anglo-Norman territorial control by the rights and privileges offered to that high-status manorial class. This was likely very appealing to the medieval commoner in Ireland, as can be seen by a useful comparative from Spanish colonization in New Mexico (Trigg 2004:224-5). Colonists who resided in New Mexico for five years were given hidalgo (nobleman) status, something that was extremely desirable to Spanish commoners.

Similarly, it is likely that the burgher tenants at Ballintober were newly minted, in that they became burghers and were able to move up in society by relocating to the settlement.

However, social status and upward mobility in colonial Ireland was not only a facet of manorial tenure categories, but was also inherently tied to ethnicity, specifically the perceived duality of Irish ethnicity versus English ethnicity. Ethnicity is defined here as the ways in which social and cultural processes intersect with one another in the identification of, and interaction between, ethnic groups (Jones 1997: XIII). Ethnic group is in turn defined as any group of people who set themselves apart and/or are set apart by others with whom they interact or co-exist on the basis of their perception of cultural differentiation and/or common descent. This is important in understanding the spatial arrangement and physical presentation of archaeological features at this site, which represent the crossroads of material culture and ethnicity. Although authors have criticized a simplistic connection of the two (Upton 1996; Jones 1997), it has been argued by others that material manifestations are an important aspect of the presentation of ethnicity (Clark 2005; Harrison 1999a). I take the stance here that material culture is importantly correlated to ethnicity, but whereas scholars in the past have used this connection to simplify the classification of ethnic groups, I suggest the opposite in that this site complicates notions of ethnicity in medieval colonial Ireland.

Ideas of ethnicity are especially important as ethnicity was a large theme underlying Anglo-Norman conquest and colonization in Ireland. When the Anglo-Normans entered Ireland in the late twelfth century, they encountered a people who to their eyes were both European and not-European. The Irish were Christians and connected with larger

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continental trade networks, and therefore civilized, but were also pastoral and tribally

organized, and therefore uncivilized (Muldoon 2003: 35). The Anglo-Normans seemingly

chose to highlight the perceived uncivilized aspects of the Irish, as before the invasion of

Ireland in 1169 Anglo-Norman authors began to perceive and depict the Irish people as

barbarous (Frame 2012: 4-5). It is common for colonists and settlers to portray themselves

as superior to the societies and people they are displacing and subjecting. The most

infamous of these Anglo-Norman authors, Gerald de Barry, wrote the following in the late

12th century about the Irish people:

> They (Irish people) live on beasts only and live like beasts. They have not progressed
> at all from the primitive habits of pastoral living. While man usually progresses from
> the woods to the fields to settlements and communities of citizens, this people
> despises work on the land, has little use for the money-making of towns, contemns
> the rights and privileges of citizenship, and desires neither to abandon, nor lose
> respect for, the life which it has been accustomed to lead in the woods and
> countryside."

Here, Gerald was offering his Anglo-Norman readers a set of barbarous practices

undertaken by the Irish that are in direct contrast to the "civilized" behavior of English

people, such as nucleated settlement and agriculture (Frame 2012: 5). As Irish people and

English people likely looked phenotypically very similar, the only way to differentiate

them was by the observation of specific behaviors, what I call here ethnically entangled

practices. Irish people were identifiably Irish due to the clothing they wore, the pastoral

lifestyle they led, the language they spoke, and many other types of practice. English

people were identifiable as English in a similar way, as they wore different types of

clothing, were arable agriculturalists, and so on. This illustrates the definition of ethnicity

provided above, in that Irish and English ethnic identity existed only in contrast to each other.

Ethnic distinctions became important as they formed the basis of the legal system in colonial medieval Ireland. Designations of ethnicity carried distinctly different legal ramifications (Frame 2012: 150-1; Muldoon 2003: 39; Murphy & Potterton 2010: 188). People who were considered English were offered the rights and privileges of the English court system that had been imported into Ireland. People who were considered Irish were not allowed access to that court system. For example, the murder of an Irishman was not considered a felony in the English courts (Murphy & Potterton 2010: 188). Overall, under the colonial Anglo-Norman regime, an English ethnic identity was highly advantageous. Practices and material culture considered English became attached and derived power from the colonial nexus in England.

However, as the occupation of Ireland continued the relationships of colonizers and colonized with ethnically entangled practices and objects became more complicated, challenging a clear definition of ethnic identity. Over time, it seems that ethnically English people began to behave in an Irish manner, while ethnically Irish people, living under the colonial regime, began to behave in an English manner (Frame 2012; Muldoon 2003). This greatly confused the ethnically derived colonial legal system and in response, starting in 1297, a series of laws were passed by Anglo-Norman lawmaking elites that forbade the mixing of ethnically entangled practices. English people were prohibited from adopting Irish dress and hairstyles, English and Irish people could not intermarry, speak the same language, or even ride a horse in the same manner (Frame 2012: 150-1; Muldoon 2003:

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39; Murphy & Potterton 2010: 188). This type of reaction has been observed by many anthropologists before, when an elite group takes steps to restrict its ethnically charged practices to keep outsiders from claiming membership (Harrison 1999b: 243). Ethnically defined elites, like the English in colonial Ireland, have a strong interest in preventing their distinctive habits from being copied, and their ethnic identity being reproduced by those of lower status, like the Irish. An interesting comparative comes from caste-climbing and Sanskritization in India, in which lower-placed groups move up the caste system by adopting the lifestyle and ritual practice of higher castes, often in the face of extreme opposition from the higher status castes (Bailey 1970: 95-100; Harrison 1999b: 244; Kertzer 1988: 112-3). As the Ballintober settlement was created in the early 14th century, at the same time as these ethnically charged laws were being created, it is interesting to consider how issues of ethnic identity could have been preserved in the built environment.

When examining the Ballintober deserted settlement, what is most striking is its similarity to nucleated rural medieval settlements of the same time period from England (Dyer 1982; 2003; Sheppard 1976). The quintessential manorial settlement in England contained a masonry castle, nucleated settlement with adjacent land plots, and expansive agricultural fields for the cultivation of grains (Dyer 2003). The archaeological record at Ballintober shows a medieval built environment very similar to this ideal. As seen in excavations and geophysical maps, the Ballintober landscape was composed of a masonry castle, nucleated settlement, and arable agricultural fields likely for the growing of wheat. Furthermore, the longhouse dwellings at Ballintober are a distinctly English style of structure (O'Conor 1998: 56). Longhouses of this nature have been discovered at other

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medieval sites before, but all in areas of intensive Anglo-Norman settlement and control along the east coast of the island. Similarly, the cottar's section in Area 3 is arranged like a smaller version of a planned medieval village from the English midlands (Figure 75). Overall, Ballintober in the medieval period follows the English model of manorial settlement very closely.
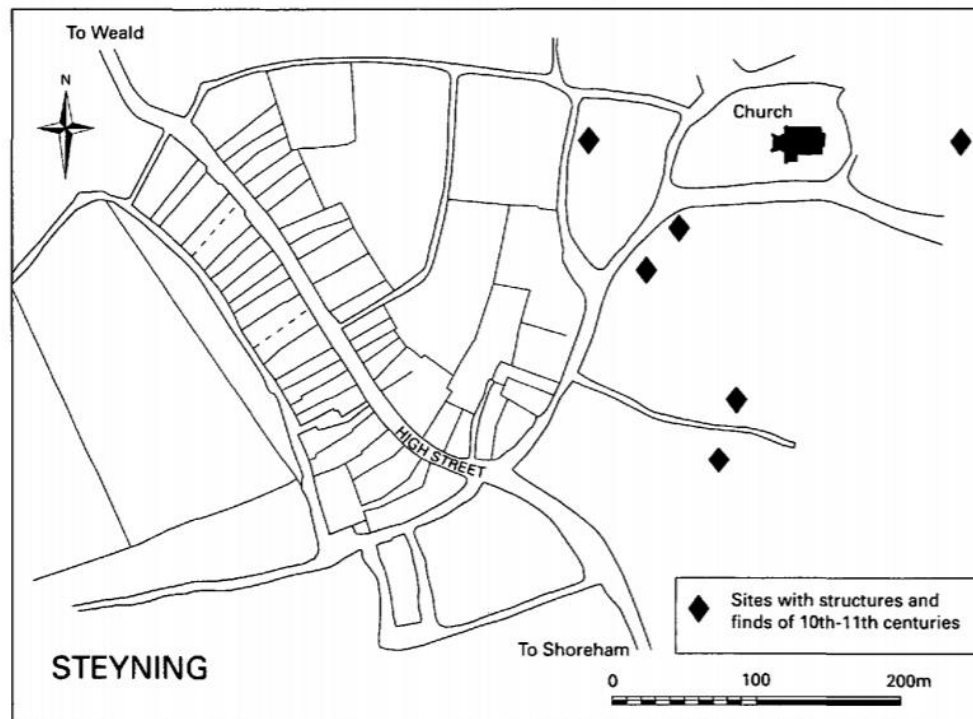
Figure 75: Village layout of Steyning, Sussex, where the western portion of the town dates from the 13th century (Dyer 2003: 90). Note the similarities to the spatial arrangement of Area 3.

The aggregated built environment at this settlement can be partially attributed to economic and defensive concerns. Large-scale intensive arable agriculture like what was performed at Ballintober typically is accompanied by population aggregation and nucleation, as has been seen at many archaeological sites in many different contexts (Earle 1987). Having an aggregated workforce allows for quicker and easier mobilization of

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labor. Similarly, the historic record from this region speaks to the inherent unrest and violence of the time period in which the Ballintober settlement was constructed and inhabited (Walton 1980). A nucleated population would be able to flee to the castle in times of danger far more easily than if they lived dispersed on the landscape. These two factors perhaps partially contributed to the nucleation seen at Ballintober.

However, archaeological investigations in other regions on the outskirts of Anglo-Norman control have shown that settlement was far more dispersed than anticipated (Barry 2000; O'Conor 1998; Murphy & Potterton 2010). A survey of Anglo-Norman rural settlement patterns in Westmeath County, just east of Roscommon, showed that of 150 hypothesized Anglo-Norman deserted medieval villages in the county, only thirteen showed any sign of having been nucleated settlements (Meenan 1985). This included the rejection of nucleated settlements hypothesized to exist by fortifications and at manors, like the settlement seen at Ballintober. The potential settlements that were discovered were irregular in layout, not at all displaying the spatial patterning seen at Ballintober (Barry 2002). The presence of a distinctly English-style medieval built environment in Ballintober is unusual and subverts expectations posed by other scholars for the region (Frame 2012: 100)

I hypothesize that the reason for this settlement's English style landscape comes from the intersection of the distinct moment in time when it was constructed combined with its geographic location along the Anglo-Norman and native Irish borderland. A borderland is here defined as an ambiguous landscape that is created when two or more groups come into contact with each other (Naum 2010: 101). Although the geographic

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aspect of a borderland is the most obvious, they are ultimately also political, social, and economic, and especially at Ballintober, ethnically entangled. When settlers arrived at Ballintober, they were coming into an area where Irish people were performing distinctly Irish practices, likely as pastoralists living dispersed on the landscape (Barry 2000: 113-4). Moreover, the central Roscommon area was a highly significant historical, ritual, and mythological region in Ireland (Figure 12). The traditional royal inaugural site Carnfree of the O'Conor family, perhaps the most powerful and vigorous Irish ruling family in the time, lay merely four kilometers from Ballintober. The mythological and ritual center of Rathcroghan was also draped across the landscape roughly the same distance away. The Anglo-Norman elite were surely aware of these important Irish places when they chose the location of Ballintober Castle and settlement, perhaps using Ballintober to make an overt claim of ownership over not just the physical land in central Roscommon but also the history and mythology of this important space (O'Keeffe 2018: 11). However, the commoners residing at the settlement certainly understood the significance of Ballintober within this distinctly Irish ethnically charged landscape as well.

In the early 14th century, when the presentation of ethnic identity was under scrutiny across Ireland, I propose the inhabitants of this settlement constructed their built environment as an overt demonstration of Englishness in contrast to the presentation of Irishness latent in the landscape around them. These people wanted to gain or retain access to the privileges and power offered to them by an English ethnicity, so they exaggerated their presentation of Englishness through material practices. Exaggeration of ethnically entangled practice in similar circumstances has been observed by anthropologists before.

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Notably, Thomas Eriksen observed how Croats and Serbs magnified their cultural differences by the performance of exaggerated ethnic practice when the civil war in Yugoslavia began in 1991 (Eriksen 1993: 38-9). The residents of Ballintober in the construction and inhabitation of their built environment were demonstrating their English ethnicity during the early 14th century, a time in Ireland when ethnic divisions were becoming blurred and Englishness had profound societal advantages for its connection to the colonial nucleus in England.

While this was apparent in the spatial layout and design of structures within the settlement, it was especially pronounced by the creation of the field drainage systems, likely built for growing wheat. This is a crop very poorly suited to the region, but the inhabitants went to great lengths to cultivate it. Wheat was a highly economically valued crop, but it was also a marker of English elite status (Frame 2012: 94; Murphy and Potterton 2010: 306). The people living at this settlement, through the wishes of the manorial lordship, their own volition, or likely both, went to great lengths to produce this prestige crop. This suggests their desire to be involved with larger European currents of trade and to display their Englishness across the broader landscape. This relationship of colonialism and food has been observed in many contexts before, where colonizers attempted to grow familiar and prestigious crops in new environments that were often poorly suited for them (Trigg 2004).

The presentation of ethnicity at Ballintober is complicated by the fact that many of the settlement's occupants were likely not ethnically English. Although burgher status individuals were almost certainly of English ethnicity, historic documents from elsewhere

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in Ireland have shown that many varieties of small-scale tenants, including cottars, contained individuals of a mix of Irish, English, and Welsh ethnic background who seemingly coexisted in the same space (Murphy & Potterton 2010: 190-1). For example, at the manor of Cloncurry in east Ireland, of forty-two cottars accounted in the historic record, thirty-six were Irish and six were of English and Welsh descent (Murphy & Potterton: 190). While the historical record at Ballintober does not provide the names of any lease-holding tenants, if there were small-scale tenants at the settlement as has been hypothesized, they were likely of mixed ethnic backgrounds. This is interesting because the archaeological remnants of the cottars' space usage and agricultural practice were overtly English. The house cluster in Area 3 was highly reminiscent of English medieval villages yet was likely occupied by people of non-English ethnic descent. This is evidence of people of diverse ethnic backgrounds appropriating ethnically laden practices associated with an English identity. In this way, they were assimilating themselves into the privileged ethnically English elite through their expression in the built environment (Harrison 1999b: 243-5). These people desired access to the privileges and power offered to those of English ethnicity, or at least those of perceived English ethnicity. The primary signifiers of Englishness were practices considered ethnically charged, such as nucleated spatial planning and arable agriculture, and adoption of these practices could have allowed for entry into the higher status group.

Of course, this becomes more complicated still when considering practices and aspects of material culture that have not survived in the archaeological record. The presence of legislation forbidding English and Irish people from speaking the same

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language and dressing alike in the early 14th century strongly suggests that there were many individuals performing these exact behaviors in this time. The spatial arrangement of this settlement, with the burgher status and likely ethnically English people living directly adjacent to the lower status tenants of likely mixed ethnic background implies a relationship between these two groups. At the very least, they were surely treading the same roadway, seeing, hearing, and smelling each other as they navigated their built environment. More likely, they were also speaking the same language, going to the same church, and closely interacting in many other subtle ways. As a traveler riding into Ballintober during the height of its colonial medieval occupation, you would be initially struck by the looming masonry castle, nucleated settlement of English style houses, and rolling fields of wheat and oats; overall an image that could have been plucked from the English midlands and plopped in western Ireland. But as you got closer, perhaps you would realize the occupants were wearing Irish looking clothes, with Irish hairstyles, and maybe even speaking Gaelic to each other as they labored in the fields. For the modern anthropologist and the medieval colonial legislator, this creates a confusing image. However, the people living at the settlement likely thought there was nothing contradictory or confusing about their lifestyle. In this sense the tenants of Ballintober possibly embodied the hybridity of identity and fluidity of relationships to material culture and practices that has been recognized by modern scholars as being endemic to colonial situations. Although this can be hypothesized from the historic record, unfortunately archaeological data at Ballintober is not yet able to offer concrete evidence of this kind of hybridity. What is apparent, however, is that the people living in this settlement

constructed, occupied, and performed practices within their built environment to offer an overtly English and thus power laden ethnic identity to the world.

Colonial Ireland, seen here manifested in the built environment at Ballintober, was highly complicated. This statement was equally true for the medieval people living that reality in the past as it is for the anthropologists and historians attempting to better understand the period in the present. I suggest here that the reality of ethnicity in medieval Ireland was far subtler than a simple reading of Englishness and Irishness but existed somewhere in between with individuals appropriating ethnically entangled practices and material culture as was advantageous to them under a distinctly colonial milieu.

Chapter 7: Conclusions

In this thesis, I used a combination of ground-penetrating radar, magnetic gradiometry, and targeted excavations to reconstruct the built environment of an early 14th century medieval colonial settlement at Ballintober, Roscommon County, Ireland (Figures 37 & 38). By integrating my findings with the historical record from the time period, I posed hypotheses related to the varying status of the settlement's inhabitants, the domestic and agricultural behaviors interpretable in the archaeological landscape, the chronology of the site's occupation and abandonment, and the complex colonial dynamics that are reflected in the archaeological record.

The Ballintober landscape likely looked quite different during the medieval period than it does today. Although certain features across the modern landscape seem to have been consistent in the medieval period, namely the presence of a quarry and seasonal lake, the archaeological record revealed the creation of expansive field drainage systems. This suggests the intensive arable agriculture of crops, most likely wheat and oats, which is very different than the modern landscape composed entirely of verdant fields for the pasture of livestock (Frame 2012: 94; Murphy and Potterton 2010: 306). As animal husbandry is far better suited to the environment both in the present and medieval period, this shows the great lengths taken by these medieval people to perform arable agricultural practices.

The reconstruction of the medieval built environment shows a remarkable similarity of the Ballintober settlement to rural medieval settlements from England (Dyer

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1982; 2003). The presence of a masonry castle, a nucleated settlement with neat linear land plots, and an agricultural regime for the production of cereal grains at Ballintober was very similar to the types structures and behaviors seen at English rural settlements from the time period. This is interesting as it is different than the varieties of medieval settlement discovered in the historical and archaeological record in this area and time, which were for the most part highly dispersed across the landscape (Barry 2000; O'Conor 1998; Meenan 1985; Murphy & Potterton 2010). The site is significant for its ability to inform the understanding of nucleated medieval settlement from this time, something that has proven elusive for medieval archaeologists.

A chronology for the construction, occupation, and abandonment of this site can be hypothesized, based upon the historical record and the spatial arrangement of

The nucleated settlement at Ballintober contained two distinct varieties of house design and spatial structure (Figures 55 - 67). In correlation with the historic record, these were hypothesized to have been the dwellings of two differing statuses of manorial tenants living at the settlement. The higher status burghers at Ballintober lived in substantially constructed longhouses of limestone and compacted mud with attached byres for animal penning on large plots of agriculturally exploited land (Figure 71 & 72). The lower status tenants, possibly cottars, lived in smaller houses built of compacted mud on small land plots densely located adjacent to each other (Figure 73). These people had access to small plots of land for their personal use, which can be seen to the north of their houses, but for the most part would have labored directly for the profits of the manorial elites (Murphy & Potterton 2010: 189).

A chronology for the construction, occupation, and abandonment of this site can be hypothesized, based upon the historical record and the spatial arrangement of

archaeological features. The settlement was first inhabited by burgher status people who came to the area at around 1300 CE, roughly the same time as the construction of Ballintober Castle (Brady 2014). A group of small-scale tenants, likely cottars, arrived sometime later. These people lived on the landscape, constructing the built environment preserved in the archaeological record and performing arable and pastoral agricultural practices. Their way of life may have been disturbed by attacks in 1315 CE, but there is no evidence for that in the archaeological record (Brady 2014). Although the process of abandonment of the site is somewhat unclear, the historic record implies at least partial abandonment of the settlement by 1333 CE (Knox 1903). Therefore, the colonial medieval landscape at Ballintober was created and occupied within a short timeframe, making it a useful case study to better understand the impact of larger Irish social, political, and economic themes from the early 14th century on the lives of everyday people.

The historical and archaeological evidence suggests that the medieval built environment at Ballintober embodies behaviors seen in many other colonial contexts. Most interesting are the ways in which this site complicates the presumption of a simplistic ethnic dichotomy between Englishness and Irishness in the medieval period. Despite being occupied by people of likely diverse ethnic backgrounds, this settlement displays itself as overtly English. I proposed that the inhabitants of this settlement constructed and occupied their built environment as an exaggerated and overt claim to English ethnicity in an effort to gain or retain access to the privileges such an ethnicity offered (Eriksen 1993: 38-9; Harrison 1999a). Practices and material culture considered English were importantly connected to the geographical and metaphorical colonial center in England and were

therefore imbued with power in colonized Ireland. At the same time, the medieval residents of Ballintober were also likely participating in distinctly Irish behaviors, such as language and dress. This represents the inherent hybridity of colonial encounters, where the relationships of both colonizer and colonized to objects and practices are constantly renegotiated and reinvented (Bhaba 2004; Gosden 2004). Yet, by the construction of their built environment and their agricultural practices, these people seemed to desire access to the colonial Anglo-Norman social, economic, and political systems.

Future Research

As medieval Ireland is relatively understudied archaeologically, there is great potential for future work in this time period. At Ballintober specifically, the first and crucial next step is the radiocarbon dating of previously collected samples from excavations in past years. Although all evidence strongly suggests that this settlement dates from the early 14th century, there are still no chronometric dates from the site. While this first step would include the dating of samples from previous years, the collection of additional radiocarbon samples from other archaeological features in the landscape would be very informative as to the chronology of occupation and abandonment at this settlement. Performing paleoethnobotanical and soil chemical analysis on soil samples already collected in previous excavations could further inform our understanding of the specific agricultural practices performed at this site. Although the discovered agricultural features imply the cultivation of wheat and oats, paleoethnobotanical and soil chemical work could confirm or deny that hypothesis. Most ambitiously, opening additional and larger excavation units at the Ballintober settlement would greatly enhance our understanding of

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the people who lived here. While geophysical methods are highly useful for the landscape scale understanding of the built environment, they cannot recover material culture and samples. These datasets could open many additional lines of questions, including those related to the complicated reality of ethnic identity in medieval Ireland.

More broadly for Irish medieval archaeology, I would like to stress the potential of this integrated geophysical approach for the future of the field. Ireland is especially fruitful for magnetometry, thanks to its predominantly limestone bedrock and limestone derived soils. I was amazed by the ability of magnetometry to reveal archaeological features so subtle as to be uninterpretable in excavation. Combining this method with the three-dimensional capabilities of GPR could make an important contribution to Irish medieval scholarship. A problem that archaeologists have encountered in Ireland is the lack of surficial visibility of subsurface medieval sites, making them challenging to identify from either pedestrian or aerial survey. However, geophysical methods can quickly and accurately create three-dimensional maps of the subsurface, which could result in the discovery of many new medieval sites. This could allow for the further testing of ideas related to the Irish medieval period, including the perception and presentation of ethnicity as I discussed in this thesis.

I think that complicating the notion of ethnicity in the Irish past is important, as the reductive sorting of ethnicity in Ireland may have begun in the twelfth century but has continued to this day. The idea of Irish people being involved and complicit in the Anglo-Norman colonial machine is an uncomfortable idea for a nation that only recently gained independence after seven hundred years of English imperialism (O'Conor 1998: 11). This

has in part led to Irish archaeologists turning their study towards the prehistoric and Early Christian periods, especially as concurrent with a nationalistic effort to create and define an ethnically pure Celtic past of the Irish people (Horning 2004; Jones 2002: 8; Woodman 1995). Thus, the medieval period has been relatively neglected by archaeological study, as it is remnant of a time many people would rather forget. However, I believe that archaeological research of medieval Ireland, and the medieval period more generally, has great value. The medieval archaeological record reveals the lived experience of ordinary people, who for the most part have gone undocumented in the historic record. As opposed to mere vehicles for the creation of feudal profits, the archaeological record casts commoners as active agents who negotiated the inequalities and complications of their political, economic, and social context. Moreover, medieval Ireland existed within a unique time and place in history. Sitting on the threshold between the medieval and the early modern, the European and the non-European, the Self and the Other, medieval Ireland offers a case study to examine the genesis of worldwide narratives such as capitalism and colonialism, narratives that anthropology as a discipline has a great vested interest.

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