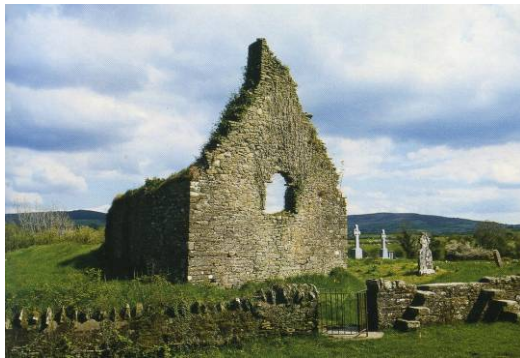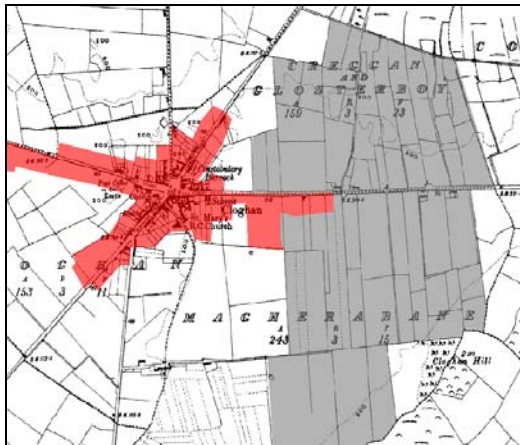# OFFALY

HISTORIC LANDSCAPE CHARACTERISATION

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Ar Thóir Na Sean

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CONTENTS

ACKNOWLEDGEMENTS

Executive Summary

This report presents the results from a project undertaken in 2003 which created a historic landscape characterisation map of Co Offaly.

Historic Landscape Characterisation (HLC) is a tool for understanding the landscape which makes extensive use of Geographical Information Systems (GIS). Its principal aim is to emphasize the dynamism of the landscape and its underlying cultural, political, social and economic influences.

The production of a HLC map of County Offaly was carried out as part of the broader EU Culture 2000 funded European Pathways to Cultural Landscapes (EPCL) Project. The Offaly project involved desktop research and used the OSI 3rd Edition Map series within a GIS to identify a range of land parcel morphologies in the landscape, and then group them into historic landscape 'types' or classes. Limitations due to project duration and background mapping availability were also a factor within the project.

The report is divided into five sections. The first section covers the aims and background of the project. This is followed by a section which presents overviews of Offaly's natural landscape and the chronology of human interaction with that landscape. Section 3 deals with the methodology employed in the creation of the HLC map for the county.

Section 4 of the report describes the 21 separate historic landscape types identified from the 3rd Edition OSI maps. These are:

- Enclosure Type A
- Enclosure Type B
- Enclosure Type C
- Enclosure Type D
- Enclosure Type E
- Enclosure Type F
- Enclosure Type G
- Enclosure Type H
- Ornamental Designed Landscape
- Reservoirs
- Rural Nucleation
- Urban Areas
- Riverbanks
- Natural Water Bodies
- Woodland Broadleaved
- Woodland Coniferous
- Woodland mixed
- Open Ground Undivided
- Open Ground Sinuous Irregular Divisions
- Open Ground Regular Divisions
- Unclassified

Statistics relating to the relative areas of each HLC type and their defining characteristics are presented. The distribution of each type across the county is also discussed along with data relating to associated monuments and historically documented activities.

Section 5 seeks to illustrate how the exercise for Co Offaly can be developed and its usefulness enhanced by the analysis of additional map sources. The map sources used in the 2003 exercise present us with a picture of the landscape as it existed almost a century ago. It is now possible to use up to date digital sources to classify the contemporary landscape. A breakdown of the different staged processes in the production of a contemporary, 3rdedition and 1st edition HLC maps is outlined with approximate production estimates.

Section 1: Introduction

'The current landscape …… has an historic dimension which needs to be recognized and presented in a readily understood format in order to facilitate appropriate landscape management, in regard to evaluation, conservation and preservation of this environmental capital'.

[Lynne Dyson-Bruce, quoted by Lili Eylon 'Spatial odyssey into the past' accessed at http://www.gisvisionmag.com]

BACKGROUND

HLC is a tool for understanding the landscape and in particular for emphasizing the dynamism of the landscape and its underlying cultural, political, social and economic influences. Although the study of the landscape as a historical source is well established, the use of the term 'historic landscape' to reflect the time-depth present in the modern countryside first became widespread in the UK in the 1990s. In the last decade there have been several studies based on the classification of historic landscapes in the UK employing computer based Geographical Information Systems (GIS) and generally using the county as the unit of analysis. Many of these have been conducted by English local authorities in partnership with English Heritage. One such exercise was conducted for Lancashire in 2002 and the resulting report by J. Ede and J. Darlington has been used to inform this present study.

In Ireland, the Heritage Act of 1995 specifically includes landscape within its definition of 'heritage' and the Heritage Council has been at the forefront of initiatives to promote classifications of Ireland's physical, archaeological and historic landscapes. In 2003 for example, the Heritage Council commissioned a detailed Landscape Character Assessment (LCA) for Co Clare which also included an assessment of the Historic Character of the landscape of that county. The Heritage Council has also initiated the Archaeological Landscapes Project which has produced a number a reports and conducted case studies in Counties Donegal and Louth.

BACKGROUND TO THIS PROJECT

The mapping element of the Historic Landscape Characterisation of Offaly was conducted as part of an EU, Culture 2000 funded project "European Pathways to Cultural Landscapes" (EPCL) which united archaeologists, historians and landscape specialists from twelve European countries. The main aims of the initiative were to improve the communication as well as the understanding of the cultural landscape. Within Ireland, the project focused upon the creation of historic landscape characterisation maps of Counties Offaly, Westmeath and Laois. It differs from the work on Clare by exclusively considering the historic character of the landscape and it differs from the work conducted as part of the Archaeological Landscapes Project by seeking to classify each part of the landscape of the study area and not just the areas around monuments or other special areas.

The GIS based work was carried out in 2003 and the maps were completed by the end of that year. This report seeks to provide background and context to the digital data by firstly presenting detailed information relating to the physical and cultural landscape of Offaly. The HLC map which presents the data at a county level is then deconstructed into its component parts making it possible to assess the area and distribution of each individual HLC type.

The 3rd edition OS map which was used in the classification dates from 1913 and therefore the characterisation which was undertaken relates to the landscape as it existed almost a century ago. Consequently, it cannot be used for an in-depth exploration of the historic character of the current landscape. It does however provide a very valuable overview of the early twentieth-century Offaly landscape and in the future it should prove an important means of assessing changes that have occurred between that date and the present day.

Section 2: Overview of natural and human influences on the landscape of Co Offaly

'Everything that happens in history is based in a fundamental way on the resources of the local landscape. The unique character of the place – its situation, its environmental history, its particular resource base shapes the human story and the character of the people, the pattern and course of settlement.'

[John Feehan, People *and the landscape in Offaly*. Accessed at
www.offalyhistory.com]

INTRODUCTION

The history of a landscape and the physical characteristics of that landscape are inextricably linked. In assessing landscape history therefore certain interdependent forces have to be taken into account. For example, soils are determined by a combination of geology and climatic components such as temperature and precipitation. The type of soil determines to a great extent the type of agriculture which a particular area can support and the farming practices which can be utilized. In addition, the flora and fauna of an area have impacts on the landscape and must be taken into account.

The historic character of the landscape is formed by a combination of natural attributes and anthropogenic (i.e. manmade) forces. The manmade forces include settlement, farming and the management and exploitation of resources. Another crucial force in formulating historic landscape character is the chronology of socio-political or cultural development. In the Irish context such forces would include the introduction of Christianity, the coming of the Vikings and Anglo-Normans, plantation, land-lordism, land-reform and independence. The following chart illustrates in a helpful way the combination of all these forces. [1]
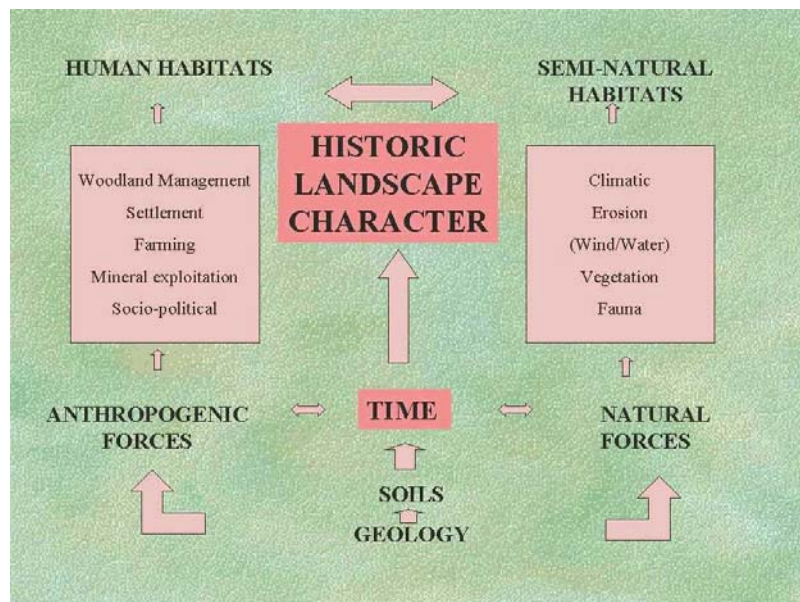

Fig 2.1 – Components of Historic Landscape Character

Situated in the middle of Ireland Offaly is almost half a million acres in size. Its greatest length east-west is 45 miles and north-south 39 miles.
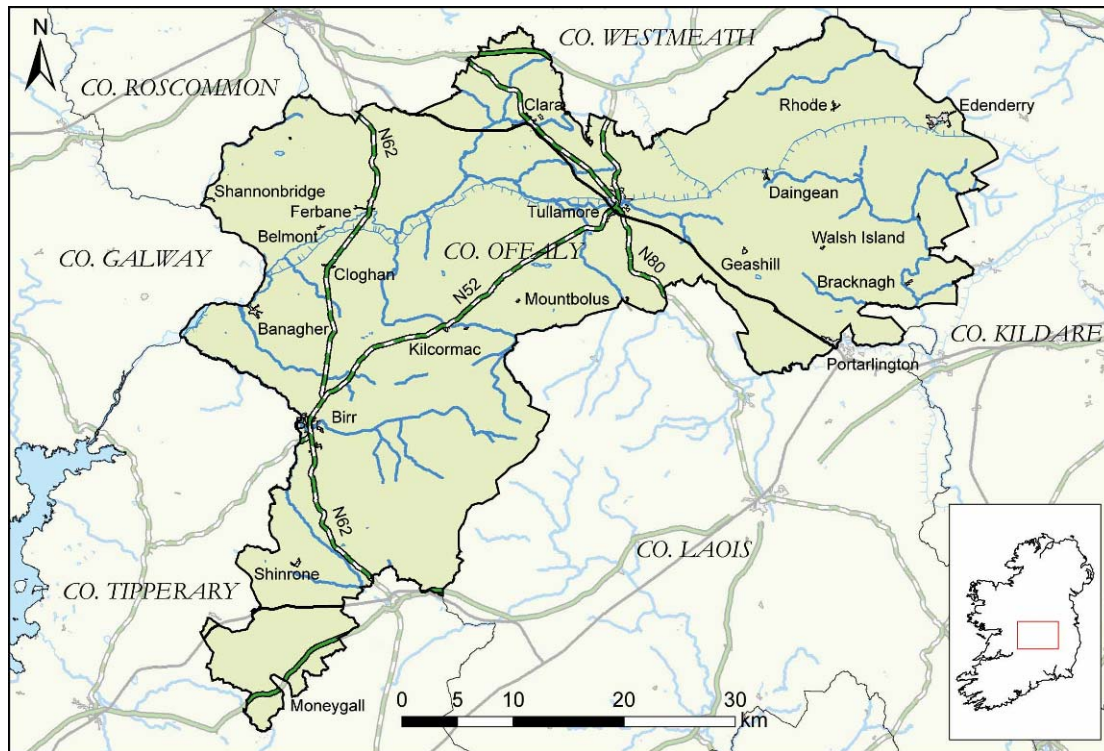

Fig 2.2 Offaly - situation

GEOLOGY

The greater part of the county is located on a floor of Lower Carboniferous limestone while outcrops of Upper and Middle Carboniferous limestone are found in the extreme west of the county and in a twelve-mile belt east of Tullamore. The limestone is for the most part gently folded, and the plain of Offaly and Westmeath no doubt owes some of its character to the approximately horizontal position of its strata. At the north eastern end of the county is an extinct volcano, Croghan hill, where the patches of green-stone diorite are surrounded by volcanic ash. This is the only significant upland feature in the east of the county. The remaining geological series are those of the Old Red Sandstone and Upper Silurian forming the Slieve Bloom range on the south western boundary. Offaly boasts some of the most spectacular eskers in Europe. Made up of sand and gravel laid down at the end of the Ice Age in rivers of meltwater, they are one of the most distinctive features of the county.

SOILS

A wide variety of soil types are found in the county. The basin peat of the lowlands dominates in the east and north west. This soil has a very limited land use range. Grey brown podzolics are found in large patches to the north of Tullamore and in the vicinity of Clara along the border with Co Westmeath. These are productive soils if carefully managed. A narrow strip of this soil type begins south west of Tullamore and runs down in the direction of Birr, widening into a broad patch to the south of this town. Minimal grey brown podzolic soil is fairly widespread in the north east and across the middle of the county and dominant in the south western tip.
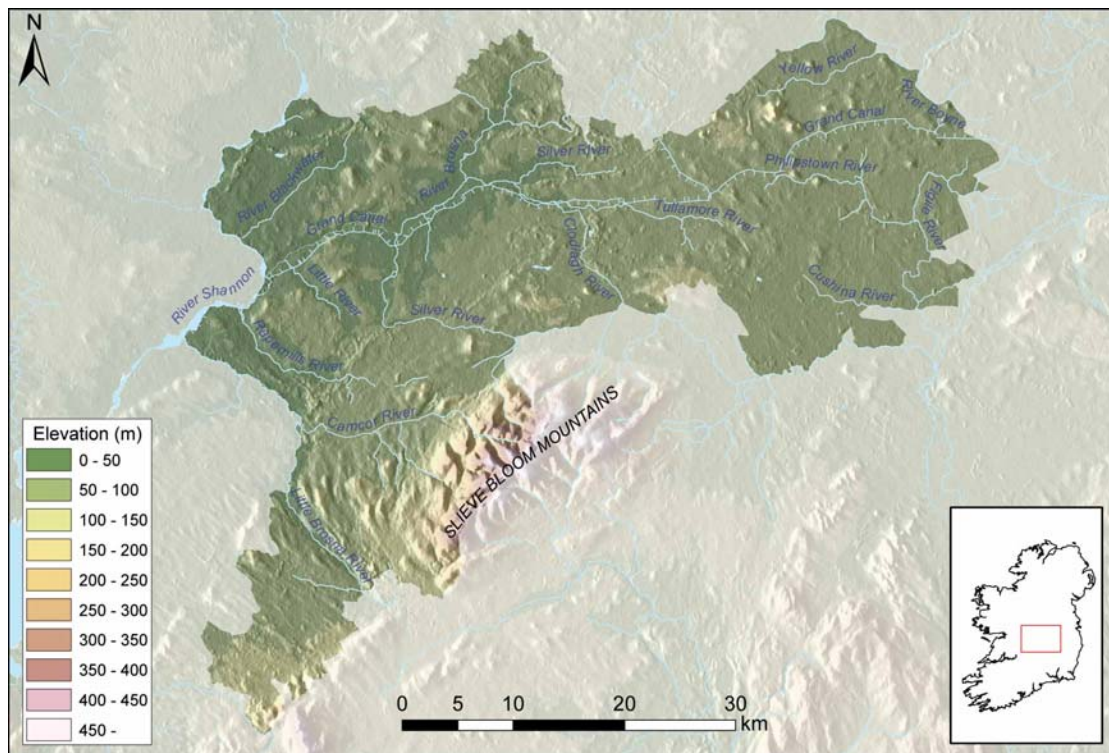
TOPOGRAPHY

Fig 2.3 Offaly - topography

Offaly is a low county with some 80 per cent of its surface between 30 and 120 metres above sea level. Apart from some isolated heights such as Croghan Hill which rises over 215 metres in the north-east, the range of the Slieve Blooms in the south east provides the only real uplands. They are hills rather than mountains with the highest point Ard Eirinn rising just a little over 539 metres above sea level.

The peatlands are one of the most dominant features of the county's landscape. They cover one third of the land surface of the county and include raised bogs and fens in the east and west as well as the blanket bog of the Slieve Blooms located in

the south. 'When areas of callows, alluviums, rivers and lakes are added, Offaly has one of the largest percentages of wetlands for counties in Ireland'.[2]

Most of the county lies within the Shannon basin. Land in the extreme north west of the county drains directly into the Shannon, while Shannon tributaries, most notably the Brosna and Little Brosna rivers, drain the central and southern regions, respectively. The Barrow River forms a portion of the county's southern boundary in east Offaly and provides drainage in the extreme south-east. The Yellow river, a tributary of the Boyne, drains the extreme north-east. The catchment basin of the Camcor river dominates the area around Birr and the Silver river, a tributary of the Shannon drains the central region of the county.

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[1] Taken from Lili Eylon 'Spatial odyssey into the past' accessed at
http://www.gisvisionmag.com

[2] Conor McDermott,, 'The prehistory of the Offaly peatlands' in Nolan & O'Neill, *Offaly History and Society*, p1.

HUMAN IMPACT ON THE OFFALY LANDSCAPE

The landscape of Offaly, set down by the Ordnance Survey in the 3rd Edition map of 1913 was the product of nearly 9,000 years of human settlement in the county. This section presents an overview of that settlement and the ways in which it progressively changed and shaped the landscape.

The monuments left behind by successive communities who lived and worked in this landscape allow us to assess in general ways the spatial and chronological patterns of settlement through the millennia.
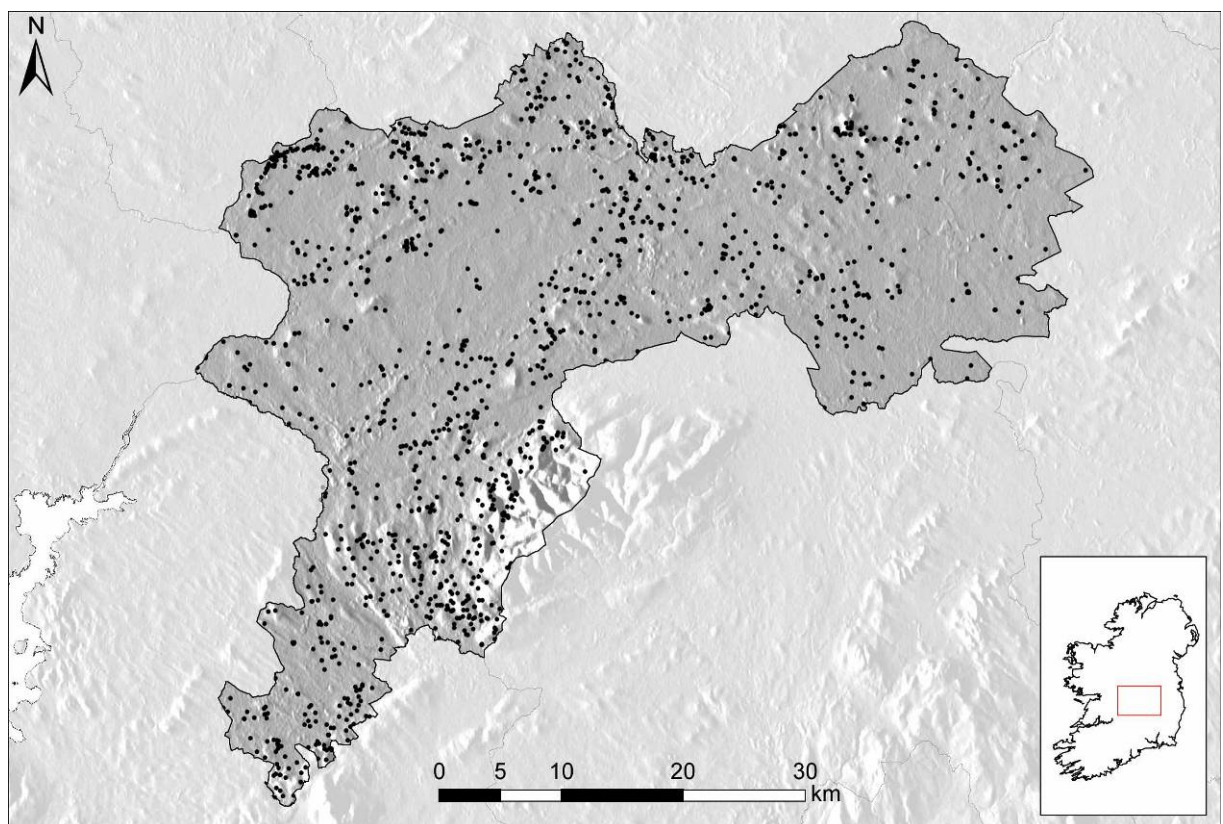

Fig 2:4 – Distribution of historic monuments in Offaly (Digital RMP data)

The current digital version of the Record of Monuments and Places (RMP) compiled by the DOEHLG includes a total of 1,771 sites under 124 different classes for Co Offaly. This total understates the real numbers of monuments in the county for several reasons. More recent research has added significantly to the numbers of certain types of monuments. Furthermore, the list does not systematically include monuments post 1700 such as industrial sites and protected structures. It can be used however to investigate general patterns in the chronological breakdown and

spatial distribution of Co Offaly's monuments. The distribution of these monuments across the county is shown above. The influence of topography on settlement is obvious with an avoidance of the most inhospitable environments. It is of course likely that monuments which pre-dated the bog cover remain to be discovered.

Assigning these monuments to broad pre-historic and historic time periods is a complex task. The chronology of many of the monument types is the subject of debate among archaeologists and historians while it is accepted that several cannot be assigned to any one period or function. Some of the most interesting sites display evidence of use over several time periods even millenia. The following table is an attempt to show very broad patterns in the distribution of Offaly's monuments across different periods.

Period	No. of sites	% of SMR	Main Themes
Mesolithic	1	0.06%	Broughal on the bed of Lough Boora
Neolithic	2	0.11%	In the Slieve Bloom mountains - unclassified
Bronze Age	92	5%	Standing Stones (22) Barrows, cairns & tumuli (45) Burials (4) Fulachta Fiadh (15) Rock Art (1) Lake dwellings (4)
Bronze Age/Iron Age	2	0.11%	Hillforts (2)
Early Christian (AD *c*500-1170)	292	16%	Ringforts (224) Souterrains (20) Horizontal mill (1) Bridges (1) Toghers & roadways (14) Ecclesiastical foundations (32)
Medieval (AD c 1170-1350)	55	3%	Earthwork castles (14) Stone castles (1) Bridges (1) Moated sites (13) Deserted settlements (1) Religious Houses (6) Manorial churches (19)

Late Medieval (AD c 1350-1600)	118	7%	Fort (1) Tower houses & Bawns (43) Fortified houses & stronghouses (14) Castle sites (60) Parish churches & chapels (53)
Post Medieval AD 1600+	?		Houses (Inventory lists 25 17th and 18th century houses)
Undated or multi-period	708	40%	Enclosures (379) Earthworks (78) Graveyards & slabs (91) Potential site (17) Non-antiquity (143)
Total Sites	1,771		

MESOLITHIC (C. 8000-4000BC)

The interaction between humans and the landscape in Co Offaly began c. 7000 BC during the early Mesolithic period. The people of the Mesolithic exploited food and other resources available in the natural environment through transitory camps to which they returned on a regular basis. Most of the camps identified in Ireland to date are located along the northeastern and southern coast. With the discovery of the camp at Lough Boora in Broughal townland, County Offaly became the only midland county where an early Mesolithic habitation site had been recorded.

The site was located on a gravel ridge which was found to be a natural storm beach which had formed around the edge of a post-glacial lake. The area was then covered over by peat and subsequently inundated by a modern lake. It was not revealed until the 1970s when the lake was drained and the peat harvested.

Fig 2.5 Arial photograph of Broughal, Co Offaly

(Source:http://www.heritagecouncil.ie/archaeology/unpublished_excavations/section3.html)

The settlement was excavated by archaeologists in the late 1970s. It was revealed as essentially a summer shoreline camp supported by salmon and eel fishing and pig hunting, with the technology of the community based on locally available chert.[1]The excavation revealed a number of charcoal-enriched hearths containing burnt mammal, bird and fish bones. Other evidence included the waste debris associated with the manufacture of bone tools. Over 400 objects were recovered including three polished stone axeheads, almost 200 microliths, along with chert blades and scrapers. Radiocarbon dating provided a range of dates from 7000-6500 B.C.

Fig 2.6 Ground pebble axehead from Broughal

(Source:http://www.heritagecouncil.ie/archaeology/unpublished_excavations/section3.html)

The likelihood is that sites of a similar nature from both early and late Mesolithic periods remain to be discovered under the Offaly peatlands. 'The implications of the Lough Boora discoveries for an understanding of the relationship between people and bogs in Ireland are profound. This discovery pushed the accepted date for the colonisation of the Irish midlands back by more than three millennia, establishing beyond doubt the presence of human communities little more than 500 years after the ending of the Ice Age not only in the heart of Offaly, but almost certainly throughout the landscape of lakes which preceded the bogs.'[2]

NEOLITHIC (C. 4000-2,500BC)

A shift from hunting and gathering to a settled agrarian society defines the Neolithic period. In this period the first evidence appears for settled communities within ordered landscapes with livestock and cereal production and some fixed field boundaries. It is possible that farming began in Offaly during this period although there is very little evidence for it. Analysis of vegetational historiy through pollen records at two sites in Offaly – Clara bog and Mongon bog close to Clonmacnoise had revealed heavy forest cover and very little evidence of antropogenic activity in the Neolithic. Monumental evidence would support this with the period represented solely by the remains of two megalithic tombs both of which are unclassified as to type. They are located in the Slieve Bloom mountains, at Ballywilliam in the barony of Ballybritt and Gorraun in Clonlisk barony. It has also been speculated that the mound on Croghan Hill may date to the Neolithic period and may be an example of a burial mound covering a tomb.

BRONZE AGE (C.2500-600BC)

Forest clearance and agriculture continued through the bronze age when metal started to be used in the production of weaponry, tools, ornaments, jewellery and utensils.

Over ninety monuments in the county can be tentatively assigned a date in this period. Included in this category are 22 standing stones, about a dozen of which are

extant in the county. 'Despite their homogeneous appearance they are not necessarily all of one period, nor did they serve a common purpose'.[3] Their function is thought to have been largely commemorative or ritual. Two of the Co Offaly stones are found in association with bronze age burial mounds or ring barrows. There are in the region of 45 of these burial mounds in the county as well as 4 pit burials.

Fulachta Fiadh, of which there are some 15 examples in Offaly are important indicators of Bronze Age settlement. These ancient cooking and washing sites are usually located on wet marshy land and are recognizable as small horseshoe or kidney-shaped mounds of heat-shattered stone and charcoal-enriched soil.

Four lake or lakeshore dwellings have been recorded in Offaly, three of which are crannogs. The fourth site, at Clonfinlough was excavated and is described as one of the best Bronze Age enclosures in Ireland. The sole example of Bronze Age rock art in Offaly is also to be found at Clonfinlough. Evidence from excavations at Cloonfinlough and Ballinderry revealed that the economy at both sites was based on agriculture and was dominated by domestic animals, cattle in particular. Quern stones were found at both sites showing that the processing of cereals took place and small amounts of bone from wild species indicated that the surrounding countryside was exploited for hunting as well as for agriculture.
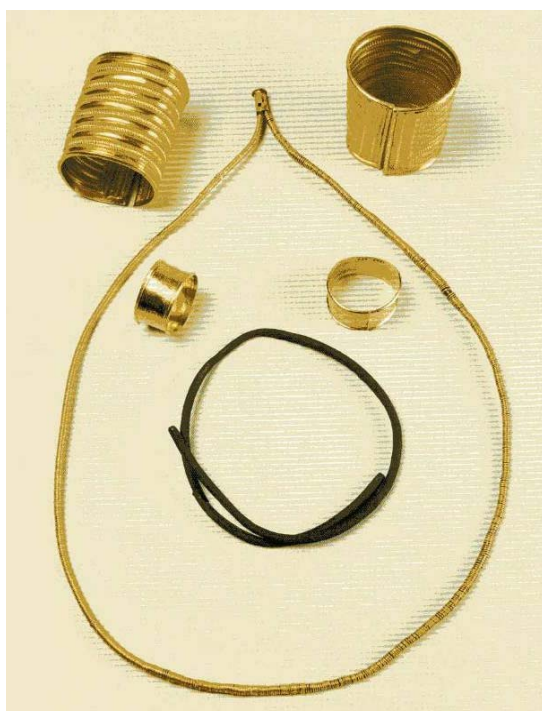

Fig 2.7 Artefacts found at Derrinboy Source: Wallace & O'Floinn, *Treasures of the National Museum*)

Further information for Bronze Age activity in Co Offaly comes from a number of important hoards of artefacts found in the county. The most famous collection, known as the Dowris Hoard was found in a bog at Whigsborough near Birr in the early nineteenth century. The hoard contained the largest collection of bronze objects ever found in Ireland. Other important hoards include a gold hoard found at Derrinboy near Kilcormac and a hoard found at Meewaun near Banagher.

Kilcormac also produced the Frankford Hoard of copper artefacts. The items found at these locations illustrate the wealth of Bronze Age society in Co Offaly as well as the contacts between these areas and other communities throughout Europe.

IRON AGE (C. 600BC – AD500)

Knowledge of iron working is thought to have been evident in Ireland by *c.* 600 BC however it was not until the phase known as La Tène (300 BC) that the Irish progressed into a full iron-using community. The people of the Iron Age have left rich evidence of their material culture but so far little is known of their domestic sites and by extension of their relationship with the landscape in which they lived.

Hillforts, large circular areas enclosed by one or many earthen banks are a monument type that spans the Late Bronze Age and Iron Age periods. To date, there have been just two hillforts recorded in Co Offaly. These are located at Ballycurragh/Glebe and at Ballymacmurragh/Clonlee/Cumber Lower. Hillforts were constructed from the Late Bronze Age into the Iron Age and are large circular areas enclosed by one or many earthen banks.

Wooden trackways from bogs in Broughal and Clonast townlands have also been dated to the Iron Age. These sites located in the east and west of the county indicate that Iron Age people were present in the Offaly landscape despite the paucity of the monumental and artefactual evidence. These people were undoubtedly involved in agriculture and in clearing the forest to make new arable land. The introduction of the coultered plough in the third century AD led to an increase in arable farming as it became possible to cultivate more difficult ground. Therefore, we must conclude that the people of the Iron Age played their part in shaping Offaly's landscape although few traces of their activity remains.

EARLY MEDIEVAL (C.500-1170)

The introduction of Christianity into Ireland initiated a period of considerable change and development with new types of settlement and more intensive exploitation of the land. Pollen studies show a dramatic increase in arable farming in conjunction with forest clearance and this in turn led to population increase. 'The church became a great driving force for change in Irish society and it had a deep influence on the

system of land tenure'.[4] As is the case elsewhere in Ireland, the Early Christian landscape in Co Offaly is represented by ringforts (including raths and cashels), souterrains and early monastic settlements, churches, graveyards with associated wells and crosses. In this period moreover, it becomes possible to move away from consideration of monuments alone and to incorporate the evidence of historical documents.

Offaly as a region did not exist during this period but as an area of land it occupied a unique frontier zone, located at the crossroads of the provinces of Meath, Leinster, Munster and Connacht. 'It was the confluence point of four powerful and frequently contending provincial overkingdoms and more significantly, the political playground of the Southern Uí Néill high-kings – a hegemony which reached the height of its power in the ninth century'.[5]

Documentary sources such as the law tracts which were written down from the early eight century onwards shed light on patterns of landholding and agriculture. Land was often held in common by a kindred but private land also existed. The farmers of early Medieval Ireland practised arable agriculture as well as tending herds of cattle, pigs and sheep. The law tracts contain a lot of information relating to the construction and upkeep of fences and boundaries indicating that much of the land was enclosed. While there was still a good deal of wasteland and forest there is evidence that this was being progressively cleared and reclaimed for agriculture.

Monasteries played a significant role in agricultural developments. The monuments of County Offaly are dominated by the monasteries of the Early Christian period with Clonmacnoise, Durrow, Rahan, Lemanaghan, Lynally, Gallen, and Seir Kieran representing some of the best preserved sites. Offaly's important frontier location combined with the presence of the esker ridges – which acted as transport routes across Ireland – are the main reasons why so many churches and monasteries were established in the county. A significant number of pre-Norman church sites are located close to either provincial or petty kingdom boundaries, or both.

Fig 2.8 Aerial view of Seir Kieran monastic site
(Source: FitzPatrick and O'Brien, *The Medieval Chruches of County Offaly*)

These monasteries were surrounded by enclosures comprising earthen banks of circular or sub circular plan. Within these enclosures were located not only ecclesiastical and commemorative functions but also craft working and processing of agricultural products. The striking earthworks at Seir Kieran enclose a ten-acre monastic site and comprise two substantial earthen banks separated by an intervening fosse. There is growing evidence that monastic communities played an important role in the development of arable agriculture and in particular with milling technology. The larger monasteries, of which there were several in Offaly, controlled extensive estates which produced food for the community and most probably also for exchange. The annals for the year 1023, for example record that during a raid on Clonmacnoise 'many hundred cows' were carried off.[6]

Early medieval secular settlement in the county centred on the ringfort which is in fact the single most prevalent monument type encountered in the county. The digital RMP lists 224 ringforts, while the County Inventory published in 1997 includes 194 individual monuments in this category. In a paper of 1998, however, Matthew Stout put forward the figure of 509 'definite, probable or possible' ringforts for the county.[7]

18

This figure was based on a re-classification of many of the 'enclosures' as ringforts and obviously reflects individual opinion. The variety of figures put forward for this monument type demonstrates the imprecise nature of much of the data.
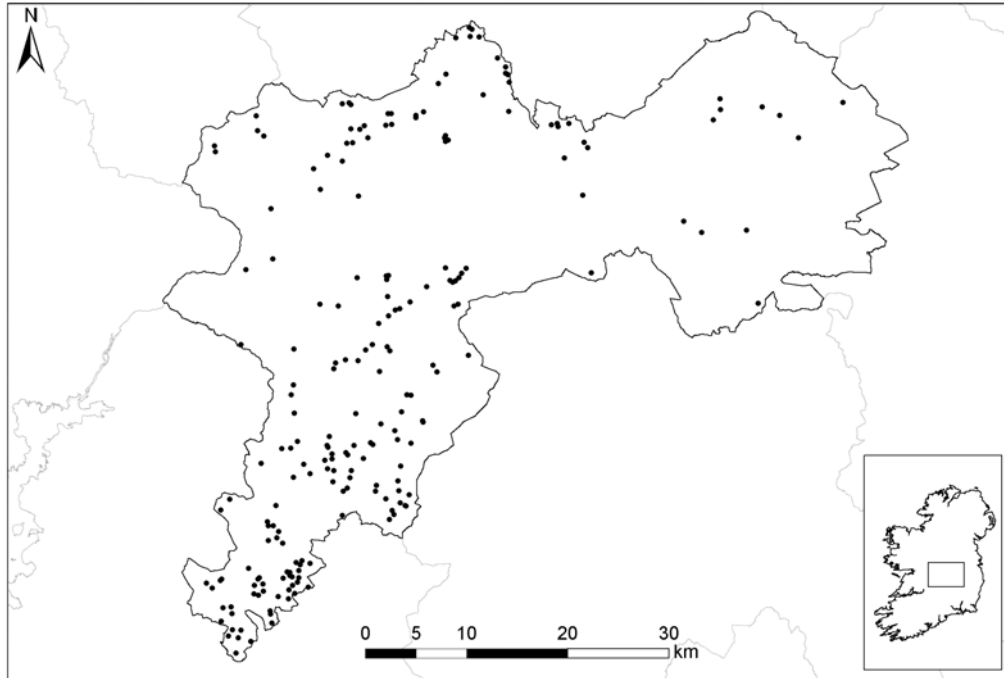

Fig 2.9 Offaly – ringforts/cashels

In Co Offaly the earthen ringfort is much more common than the cashel or stone fort. The majority are located not on hilltops but on hillslopes 'suggesting that their occupiers were more concerned with shelter and comfort than defence'.[8] Most would appear to have functioned as defended homesteads. There are also some examples of large mutivallate ringforts which possibly represent royal sites.

Fig 2.10 Ringfort known as 'Bergin's Fort' at Knock Co Offaly
(Source: *Archaeological Inventory of Co Offaly*)

Analysis of early medieval settlement density in Co Offaly based on the distribution of ringforts and ecclesiastical sites indicates that it was generally below the national average. The east of the county was thinly settled while the south and south west along with certain parts of the north west were much more heavily settled.

Ringforts functioned primarily as farmsteads and the different sizes and types of ringforts are presumed to have housed individuals of varying status. Cattle and pastoralism were very important to the ringfort economy but arable agriculture was also significant. There is evidence from different parts of Ireland of large co-axial field systems associated with ringforts and cashels.

Souterrains – sub-terrain, man-made structures are often associated with ringforts and also date to the early medieval period. They are variously interpreted as places of refuge or storage areas. There are 20 examples listed for Co Offaly.

MEDIEVAL (1170-1540)

On the eve of the Anglo-Norman invasion, the land of Offaly was divided into six Gaelic territorial units. These territorial divisions were used by the Anglo-Normans in their land grants and they are also represented, though not exactly, in the modern baronial units.
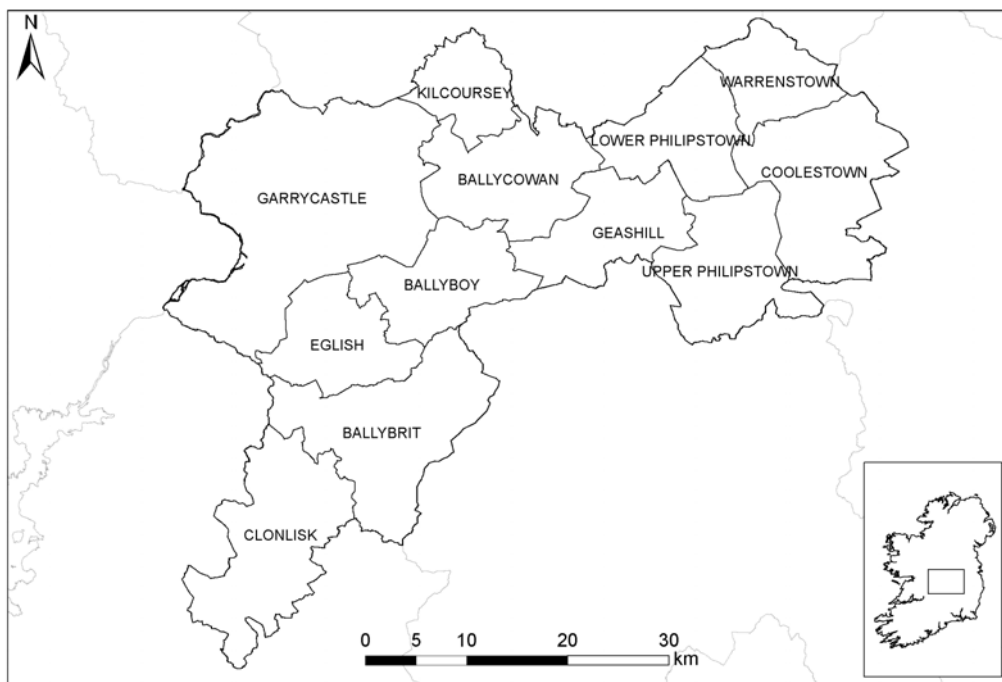
Fig 2.11 Offaly - baronies

These territories were Eile Ui Cearbhall (baronies of Clonlisk and Ballybrit), Fer Ceall (Eglish, Ballyboy and Ballycowan), Kineleagh (Kilcoursey), Delbna Ethra (Garrycastle), Ui Failghe (Upper and Lower Philipstown, Coolestown and Warrenstown) and Ui Maine (represented by the parish of Lusmagh in the extreme west of the county).

Following the invasion an area known as the barony of Offaly was granted to Robert de Birmingham. This comprised the modern baronies of Upper and Lower Philipstown, Geashill, Warrenstown, Coolestown along with the baronies of Portnahinch and Tinnahinch in Laois. De Birmingham died leaving only daughters and with the marriage of Eva de Birmingham to Gerald Fitzmaurice a large proportion of this area including the important centre at Geashill passed to this ancestor of the earls of Kildare. The territory known as Fer Ceall and comprising the baronies of Ballycowan, Ballyboy and Eglish is in the diocese of Meath and formerly part of the kingdom of Meath was granted to Hugh de Lacy by Henry II. De Lacy then granted a large portion to Meiler Fitz Henry. The territory of Ely O'Carroll (roughly the modern baronies of Clonlisk and Ballybritt) was granted together with extensive territories mostly in Tipperary to Theobald Walter. The caput or administrative centre of this large territory was situated at Dunkerrin in the extreme south west of the county.

The first impact of the newcomers on the landscape was manifest in the building of strongholds in the form of mottes, ringworks and masonry castles. Some of these were raised on the sites of ringforts, taking advantage of their position and saving labour. These strongholds became the centres of large manors and attracted associated settlement. Parish churches were also frequently located close by.
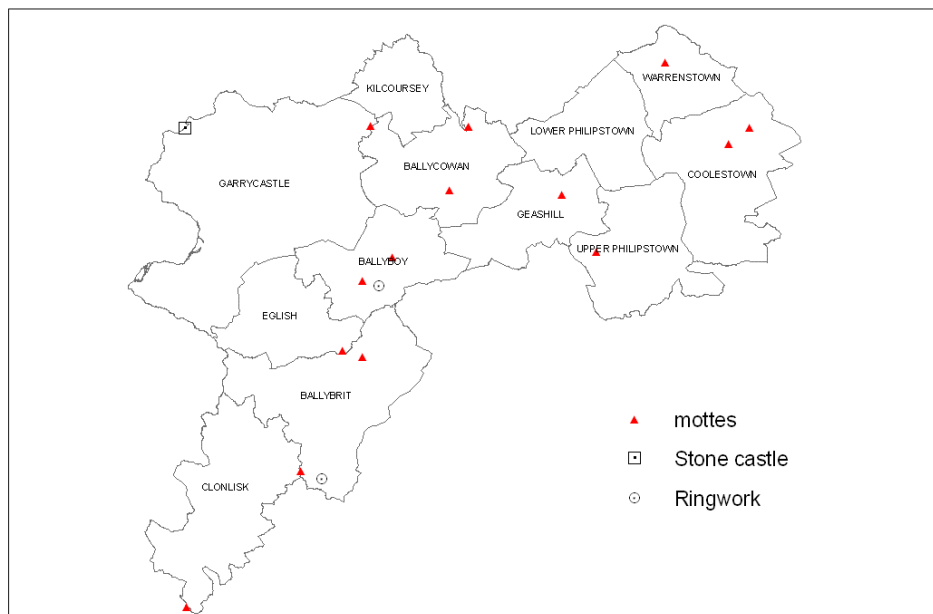

Fig 2.12 Offaly – medieval fortifications

Having acquired land through conquest and distributed it among their followers the Anglo-Norman lords set about retaining and exploiting it. 'It was in the management of [conquered] land and the means taken to hold it by peopling it with a reliable dependent population that the Norman conquerors made their most significant mark'.[9]

From the late twelfth to the early fourteenth century, the Anglo-Normans maintained a significant if localised presence in Co Offaly. The clearest picture of settlement comes from the manor of Dunkerrin for which a detailed extent of 1305 survives.[10] This document gives a snapshot of a large and densely settled agricultural unit which was starting to feel the pressures of the deteriorating political and economic situation. The demesne – that part of the manor managed directly by the lord, consisted of a complex of farm buildings, 300 acres of arable land, 8 acres of meadow, an unspecified amount of pasture land and a mill. The remaining land on the manor was held by tenants both free and unfree but there is also mention of land for which no

tenants could be found. The names suggest that a mix of English, Welsh and Irish were farming the land in this south west tip of the county. Betaghs are mentioned holding land in several locations. These were servile Irish tenants who tended to live together in communal groups. The manor also included about 130 burgess tenants indicating a nucleated settlement or borough of some size. Judging by what is known from better documented parts of medieval Ireland, the arable land would have been farmed in large open fields with wheat and oats predominating. Tenants would have held separated but non-enclosed strips scattered through these large open fields. Oxen would have provided some or all of the traction power and hay would have been cut for winter feeding.

The Anglo-Normans did not penetrate into many parts of Offaly however and here the principle Irish families continued to hold land and exercise power. Chief among these families were the O'Connors, the O'Molloys, O'Dempseys, MacCoughlans and O'Carrolls. During the fourteenth century the pockets of Anglo Norman settlement in the county came under increasing strain firstly from the Bruce invasion and associated famines of 1315-17 and later from the Black Death and declining agrarian economy. Furthermore, the resurgence in Irish power made life impossible for the open manor and the open village. It is likely that settlements such as Dunkerrin did not survive pass the mid-fourteenth century.

The ecclesiastical framework of Co Offaly in the late medieval period was complex. The area now covered by Co Offaly fell into six different dioceses – Clonfert, Clonmacnoise, Kildare, Killaloe, Meath and Ossory. In the present civil parish framework Offaly has 32 parishes and portions of nine others and this probably comes close to representing the situation in the medieval period. These parishes were formed during the late twelfth and thirteenth centuries and many of them would have been coterminous with Anglo-Norman settlement units. The remains of several simple parish churches and graveyards can be seen in the landscape today.

Fig 2.13 Roscomroe Church
(Source: FitzPatrick and O'Brien, *The Medieval Chruches of County Offaly*)

In late medieval times there were at least seven religious houses in County Offaly, including four Augustinian priories (Gallen, Killeigh, Seirkieran, Durrow and), two Franciscan friaries (Killeigh and Monasteroris) and one Carmelite priory (Kilcormac). All appear to have been founded by Anglo-Norman and Gaelic families at the sites of long-established early medieval religious centres and/or monastic towns. The order most noted for its impact on the landscape – the Cistercians – was absent from the county. The orders that were present, however, would have been supported by considerable estates, similar in scale to those which surrounded the earlier monasteries. 'In most instances the lands pertaining to religious houses were intermixed in common field systems with those of the lay settlement, from where the labourers were drawn to farm the monastic estates'.[11]

At Killeigh the estates of the Augustininan monastery and Franciscan Friary covered a considerable part of the village and extended into the surrounding countryside incorporating arable, pasture, bog and woodland. The evidence of many centuries of intensive farming is visible in the landscape and include traces of ridge and furrow.
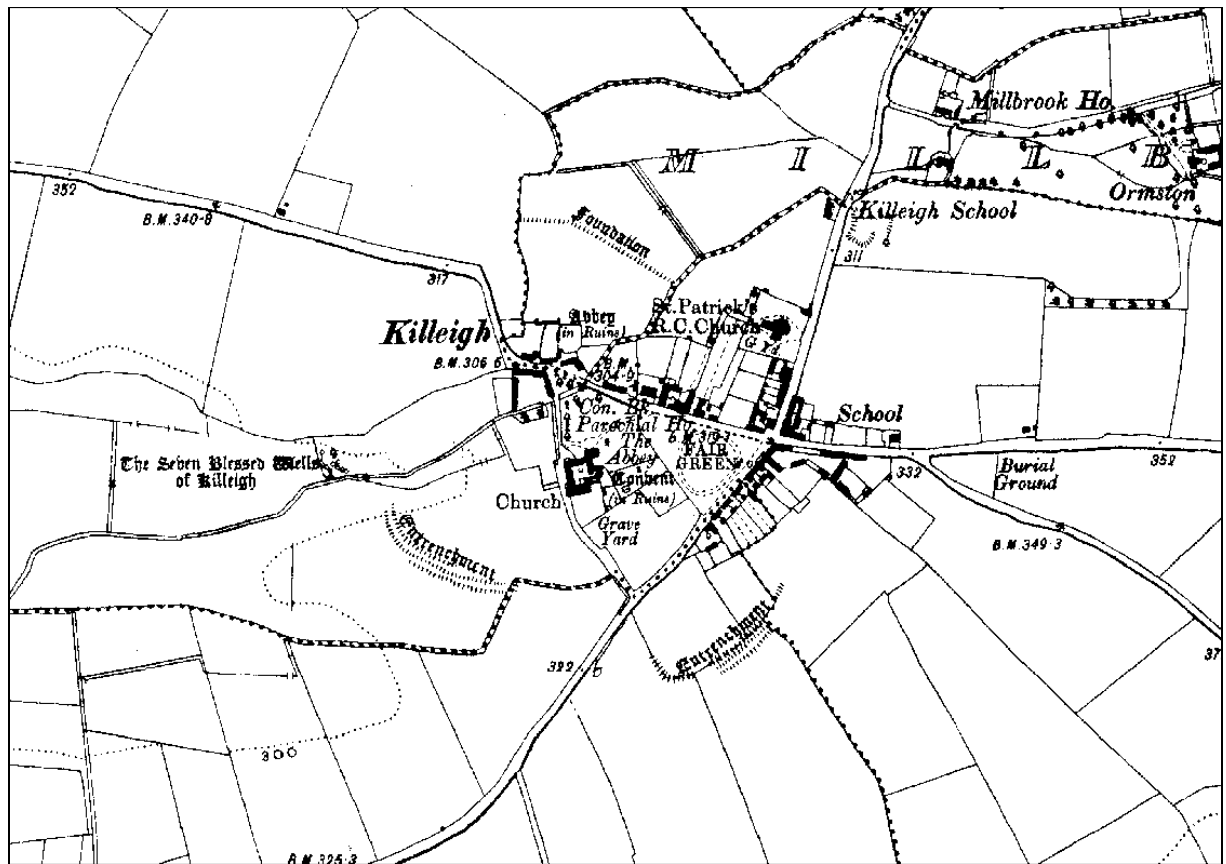
Fig 2: 14 Killeigh and surrounding area on the 3rd ed. OS map

SIXTEENTH AND SEVENTEENTH CENTURIES

In the early years of the sixteenth century the territories which were later to constitute county Offaly were controlled by Gaelic lords - notably the O'Connor Faly, whose principal power bases were the strongholds of Daingean and Brackland. Many of the manorial centres and settlements associated with the Anglo-Norman conquest of Offaly in the twelfth and thirteenth century are believed to have been abandoned well before 1500, although others may have continued to operate under Gaelic hegemony, and the presence of an identifiable 'Old English' population in parts of the county in the sixteenth and seventeenth centuries shows that at least a proportion of Anglo-Norman settlers succeeded in integrating into the wider society while retaining a distinctive identity.

The territorial organisation of Gaelic lordships in the sixteenth century is exemplified in Loeber's study of Ely O'Carroll.[12] The lordship was divided between the chiefry or demesne lands of the O'Carrolls and the remainder which was in the hands of

25

freeholders. Some 40% of the profitable lands of Ely O'Carroll are estimated to have been held in chiefry. Both chiefry and freehold lands contained identifiable permanent settlements, villages and hamlets, many of them associated with 'castles'. A plantation document observed that 'many of the Natyves have Castles, upon the lands they hold, wch are their dwellinge howses'.[13] Many of these are likely to have been quite small structures, but others were more substantial tower houses, as at the O'Carroll strongholds of Leap and Ballybrit, which were incorporated into later structures and survive in the present-day landscape.

Fig 2.15 Leap Castle
(Source: *Archaeological Inventory of Co Offaly*)

 The landscape which such strongholds dominated, while far from 'natural' or 'untamed', still contained substantial tracts of woodland which, together with bog, mountain and rough upland pastures comprised the extensive 'unprofitable' lands described in many early surveys. The Laois and Offaly map of c.1562 shows extensive woodland in the foothills of the Slieve Blooms, in the river valleys and ringing the boglands.
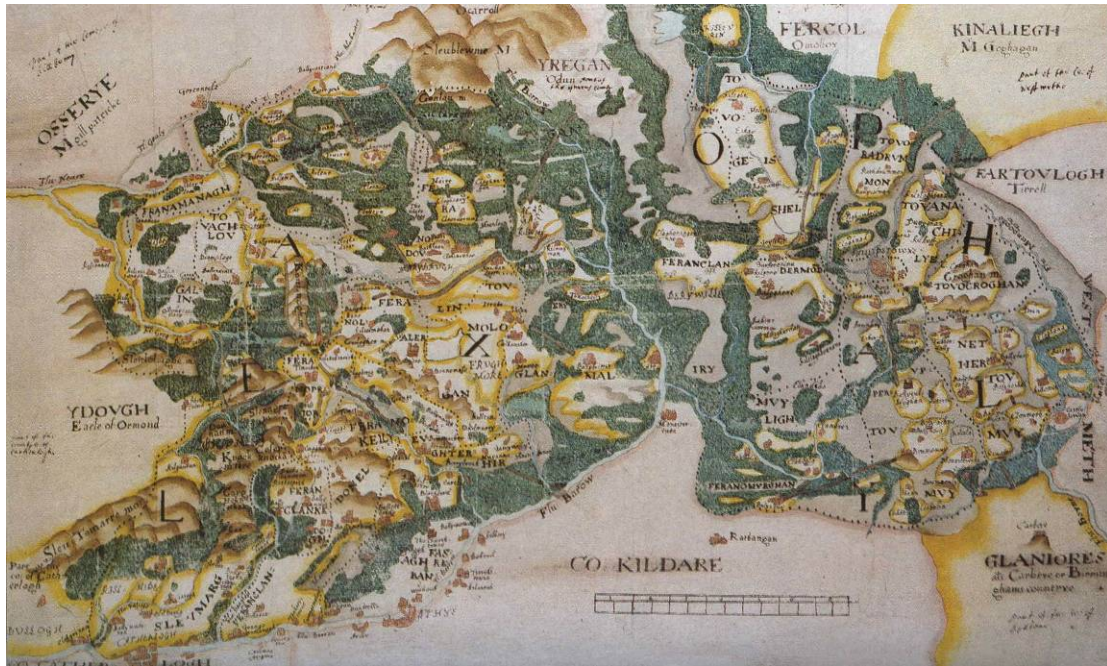
Fig 2.16 Leix and Offaly, the Carew Map

(Source:Trinity College, Dublin MS 1209 9 – taken from Nolan & O'Neill eds, *Offaly History and Society*)

 As late as the 1830s Lewis, after nearly three centuries of plantation and reclamation, accounted for a quarter of the area of King's County as 'unprofitable mountain and bog'.[14] The notion of 'unprofitability' is of course culturally defined, and the sixteenth-century woods and bogs supplied and would continue to supply vital elements of subsistence for the rural poor within both Gaelic and later estate polities. Tillage and lowland pasture were present in early-sixteenth century Offaly, but they are likely to have been substantially overshadowed by less intensive land-uses.

The progressive transformation of this landscape was set in train by the renewed imposition of royal power in the midlands, following the destruction of the house of Kildare in 1535. It was achieved through military intervention, which by *c.*1600 had effectively destroyed the power of the Gaelic lords, bolstered by the foundation of forts and dependent towns, and the associated process of settlement or plantation. The garrison of Fort Governor was established at the former O'Connor power-base of Daingean and together with Fort Protector in neighbouring Leix became a prime focus for the earliest quasi-military plantation of the midlands. As an intrinsic part of the process Offaly and Laois were shired in 1557 as King's County and Queen's County, making them subject to the authority of a crown-appointed sheriff and subordinate officers in the same way as were the counties of the Pale. The process

of shiring was based upon the progressive incorporation of the 'countries' or territories of Gaelic lords, rather than upon topography or the ecclesiastical geography of late medieval Ireland, resulting in the irregular shape and considerable ecological and social diversity of modern county Offaly.

The completion of the shiring process by 1610, and the associated final subjugation of the Irish clans, brought about more settled conditions and permitted the process of plantation to go beyond the embattled early settlements around Fort Governor. The latter was renamed Philipstown and in 1567 and 1569 acquired charters granting the right to hold a weekly market and effecting incorporation as a borough.[15] Although the monastic communities at Clonmacnoise, Durrow and elsewhere and the settlements surrounding Gaelic powerbases like Kincora and Leap may have had some 'proto-urban' characteristics, it is generally accepted that towns in the full sense were unknown in Offaly before the late-sixteenth and seventeenth centuries when the planted settlements at Philipstown, Birr and Banagher began to prosper and to acquire a range of economic and administrative functions.

Birr, whose 'Black Castle' had been one of the principal seats of the O'Carrolls, was granted to Laurence Parsons in 1621 as part of the plantation of Ely O'Carroll and the lands centred on the castle became the manor of Parsonstown. The influence of the new aesthetic of landscape began to be felt, particularly in the layout of the demesne lands and gardens surrounding the castle, which had been substantially rebuilt as an imposing country house.

At the manor's core Parsons promoted the development of a town and despite suffering during the turbulence of the mid-seventeenth century, Birr became the leading town of Offaly in the later seventeenth century, with a population which may have approached 1,000. Its development must be seen in the broader context of the transformation of landownership and networks of political power, which saw the ownership of land by Catholics, both native and Old English, reduced to less than a quarter of the county's area by 1688. At the same time improvements in agriculture and communications were gradually opening the midlands to wider markets and to the social and cultural influences of Dublin, London and the world beyond. Crucial to these developments was the development of the network of roads and bridges. The pre-existing network of toghers and esker-top trackways was supplemented by new roads, initially designed to allow rapid movement of troops but later facilitating the increase in local and regional trade. Planters' leases frequently included the

obligation to maintain roads, as well as to build their houses in 'the English manner'. New stone bridges were constructed, as at Birr before 1626 and at Banagher some time before 1690.[16]

'THE LONG EIGHTEENTH CENTURY'

The Williamite wars brought renewed social and economic disruption to Offaly at the end of the seventeenth century, with both town and countryside suffering from the direct and indirect effects of conflict. The longer term effects of the war and its political aftermath were to strengthen and entrench the power of Protestant landlords, both resident and absentee, with a further 18,000 acres of confiscated Jacobite lands passing into their hands.

The period was one of population growth which was achieved with comparatively little new in-migration. The era of large-scale plantation was effectively over, the last major population influx into the county being the settlement of Huguenots (French Protestants) at and around Portarlington in the 1690s, establishing a distinctive French identity in the area which persisted into the nineteenth century. Huguenot immigrant's were also involved in the development of the county's glass industry, which drew upon the still significant if geographically localised woodland reserves for fuel.

The eighteenth and early nineteenth centuries formed the highwater mark of landlord power, and saw much planned reorganisation of the rural and urban landscapes by active resident landlords such as the Parsons of Birr and the Moores of Tullamore. Their residences were redesigned according to the classical and palladian fashions then current in England. Landscape change in the form of demesne engineering was particularly prevalent in the south of Offaly. The greatest concentration of demesnes ranging from 250-1,000 acres was located in the fertile barony of Clonlisk. Demesne engineers were employed to create artificial landscapes with lakes, canals and waterfalls. A variety of tree species was planted in strategic copses and avenues led to the house and to aesthetically placed follies. Charleville demesne featured a 40 acre artificial lake and a deer park. The formal gardens at Oxmantown Demesne, Birr covered over 200 acres and were laid out with lakes, waterfalls and boathouses as well as plantings of exotic tree species.[17]

Outside their demesnes, it is possible to exaggerate the power and omnipotence of the landlord class. They were responsible for many agricultural developments such as drainage schemes and the introduction of new crops and livestock breeds. Many of the developments which were taking place, however, had an 'organic', unplanned aspect, as wider forces of economic and social development impinged upon the Irish midlands. The market economy, although promoted by the efforts of landlords, had a dynamic of its own which by the early eighteenth century was engaging an increasing proportion of the population in wider networks of exchange and fostering new patterns of consumption. A new middle class was emerging which to a significant degree transcended the religious and ethnic divides. This is evident in the surviving records of early eighteenth century traders and shopkeepers based in Birr and Edenderry, nearly one-half of whose customers, male and female, were of native Irish stock. [18]

The larger tenant farmers were able to build substantial farmhouses at the centre of their consolidated holdings (see fig. below)

Fig 2.17 Farmhouse at Coolroe near Shinrone in an estate map of 1778
(Source: John Feehan & Alison Rosse, *An Atlas of Birr*)

Occupying the better land these farmers practiced a mixed farming regieme in which tillage played a significant role, particularly in the early nineteenth century. Crops grown included wheat, oats, barley, rape, root crops, clover and potatoes. Dairying and beef production were both less important than in most neighbouring counties, although the barony of Ballybrit fattened bullocks for the Dublin market. In terms of the number of cattle per 100 acres Offaly was the third least densely stocked county in Ireland in 1841, but oxen played an important role as the principal plough-beasts.[19]

The balance between tillage and pasture undoubtedly shifted over time. It is, however, certain that commercial cereal production expanded rapidly in the late-eighteenth century, under the influence of overseas market demand and improvements in transport and communications. The most significant single factor in this regard was the construction of the Grand Canal, which linked Tullamore to Dublin in 1798 and had extended to the Shannon by 1804. This sharply increased the impact of distant markets upon Offaly agriculture, and shifted the county's economic centre of gravity to Tullamore, which became the leading grain market, handling large quantities of wheat, oats and barley, much of which was carried to Dublin, either as grain or already milled into flour.[20] Malting and distilling industries developed in Tullamore based upon its hinterland's production of grain. Cheap water transport also promoted the commercial exploitation of Offaly's boglands, which by the early nineteenth century were sending large quantities of turf to Dublin each year to fuel the capital's fireplaces.
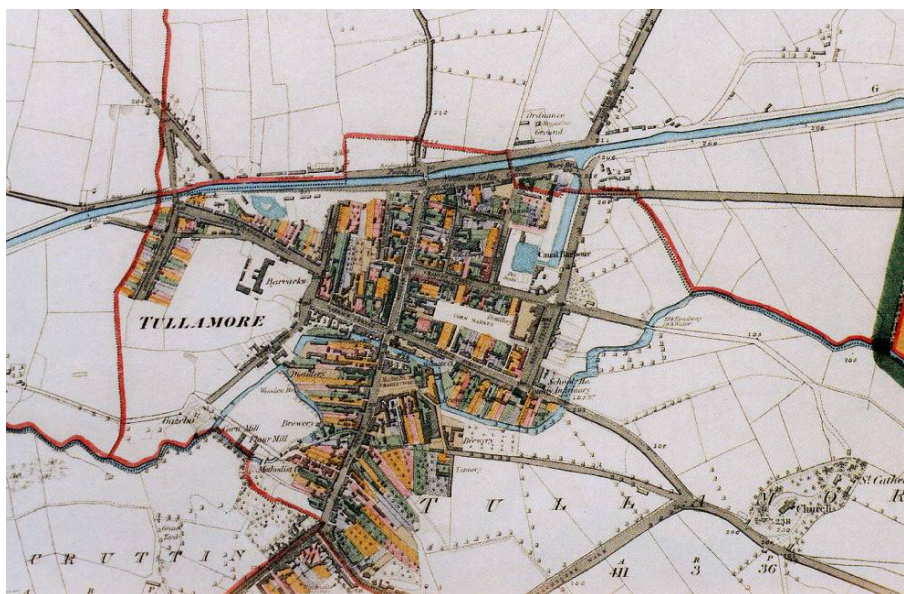

Fig 2.18 Tullamore and the Grand Canal (1st ed. OS)

(Source: Nolan & O'Neill, Offaly History and Society)

These changes were beneficial to some but they were taking place against a background of population growth and the increasing marginalisation of a significant section of society. At the same time that expanding market opportunities were stimulating commercial agriculture, population growth was pushing many of Offaly's people towards the limits of subsistence, exacerbating the effects of grossly unequal access to land and other productive resources. There were between 5 and 7,000

holdings of less than 5 acres in Offaly in 1847, of which more than 1,000 were of one acre or less.

Lewis describes how areas of bog and upland were being brought into cultivation piecemeal in the years before the Famine: "Considerable tracts of mountain and bog are reclaimed each year by young men after marriage, who locate themselves in cabins generally near the bog for the advantage of fuel. Many of the little elevated patches in the Bog of Allen, here called islands, have been thus brought into cultivation." [21]Squatters and landless labourers also congregated around the bog margins, the cutting and marketing of turf being one of the few means of livelihood open to them, and their dwellings were described by contemporary observers as 'wretched hovels'. At the time of the 1841 census 32% of Offaly's families lived in fourth-class houses, defined as 'all mud cabins having only one room' and a further 47% in third-class houses, which had more rooms, possessed windows, but were still of mud construction.[22]

THE FAMINE & ITS AFTERMATH

The population of Offaly stood at 146,857 in 1841, an increase of 12% over the level of 1821. The arrival of potato blight in the autumn of 1845 and its recurrence in subsequent years brought hardship, starvation and prompted mass emigration, resulting in a decline of 34,000 people, or 23%, by 1851. Some two-thirds of that fall is estimated to have been due to emigration, the remainder resulting from famine mortality and a sharp decline in marriage and birth rates. Population decline was spatially uneven, reflecting variations in land-use and fertility and the prevalence of potato cultivation within the county. The baronies of Ballybrit,, Ballycowan, Coolestown and Warrenstown were somewhat less hard hit than the remainder of the county, recording population declines of under 20% between 1841 and 1851. Amongst the worst affected communities were the rural parishes of Killoughy, Balllyboy and Lusmagh, where burial records indicate that mortality levels in 1846-50 were between 50% and 65% higher than in 1841-50.[23] The famine decade was only the start of the decline in population, however, with continuing large-scale emigration seeing Offaly's population shrink to 72,852 by 1881, half the pre-famine level, and just 65,408 by 1891. In the first post-Independence census of 1926 Offaly had a population of 52,521. Although the immediate effects of the famine included a temporary influx into the county's urban centres, in the longer term the towns were also subject to the general downwards drift in population. Within the stagnant or

declining urban hierarchy Tullamore held first place, with 4,924 people in 1926, followed by Birr with 3,391, Edenderry with 2,093 and Portarlington with 1,951.[24]

One of the key consequences of the dramatic decline in population was the consolidation of holdings, as tenants and sub-tenants left the land voluntarily or, in some cases, were evicted for non-payment of rent. Together with the declining profitability of arable husbandry, which with the repeal of the Corn Laws was now subject to the increasing competition of imported wheat from America and Russia, this encouraged the formation of large grazier holdings. Both sheep and cattle numbers increased between the 1840s and the 1860s, and the area of cultivated land devoted to meadow expanded. Among the grain crops, wheat lost ground to barley, which supplied an expanding distilling industry, while oats retained its importance as an animal fodder and in human diet as oatmeal.

The structure of landownership also began a process of profound change in the second half of the nineteenth century under the impact of social, economic and political forces. The added costs of famine relief, placed upon landlords by the government, speeded the bankruptcy of some, and the Encumbered Estates acts of 1848-9 made it possible for such lands to be sold, although many were acquired by speculators. A series of Land Acts from 1860 onwards, however, began to effect 'the biggest change in the ownership of farmland in Ireland's history' (Fegan, 124), promoting the progressive break-up of the big estates and increasing security of tenure. The Downshire estate at Edenderry, for example, had consisted of 14,000 acres in 1871, which by 1922 had shrunk to 6,780 acres most of which comprised unleased bogland. The process of land purchase was extended and completed after independence by the Irish Land Commission, and only ground rents in Edenderry town were left to the former landlords. Many 'big houses' had already been abandoned before 1921, or remained shorn of most of their tenant lands and surrounded only by residual areas of demesne.[25]

The abstracts of agricultural statistics for 1910 give a detailed picture of Offaly agriculture in the early twentieth century, which can be compared with the 1854, one of the first post-famine years for which reliable figures are available:

Crop	Acres	
	1854	**1910**
Grains & legumes	52,276	34,948
Potatoes	21,017	11,715
Turnips & other green crops	11,419	12,878
Fruit and flax	214	138
Meadow	36,837	56,625
Total under crops and meadow	**128,723**	**116,304**

(Source: *Agricultural Statistics of Ireland 1854*, 1910, Sessional Papers, HMSO).

Overall, the progressive shift away from tillage is visible in these statistics, and the continuing predominance of extensive land-uses is evident, given that in neither 1854 nor 1910 did arable and meadow combined account for much more than one-quarter of the total area of the county, with upland pasture, uncultivated land and bog accounting for the remaining three-quarters. Mid-nineteenth century surveys accounted for almost 30% of the county as bog, wasteland or water.

The post-famine period saw the beginning of experimental industrial exploitation of the Offaly boglands. Mechanical harvesting and briquette manufacture was carried out at Derrylea between 1862 and 1867 and a shortlived venture near Banagher was attempted in 1873. More long-lasting were the Rahan peat works established in 1880 and the Drumcooley works near Edenderry, which operated from 1905 to 1945. Large-scale and sustained industrial exploitation of the peat resources of Offaly's bogs did not, however, occur before the Irish government initiatives of the mid-twentieth century.

The centuries-old exploitation of the bogs by hand and spade had, however, already reduced their area significantly. It has been calculated that in the Midlands as a whole nearly one-half of the total area of large raised bogs recorded by the Bog Commissioners in 1814 had been cut away by the time of the establishment of Bord

na Móna in 1946.[26] The very formation of the bogs themselves had, of course, been due in part to human activity at a much earlier period of Irish history. In this and other respects, most of the key elements of the modern Offaly landscape were already in place at the start of the twentieth century, formed and moulded by centuries and millenia of human action upon the county's diverse natural environment.

[1] Peter Woodman 'The Mesolithic period' in Ryan ed. *Irish Archaeology Illustrated* p 40.

[2] John Feehan, People and the landscape in Offaly, accessed at www.offalyhistory.com.

[3] O'Brien & Sweetman *Archaeological Inventory* p 3.

[4] Mitchell & Ryan *Reading the Irish Landscape* p 253

[5] Elizabeth Fitzpatrick, 'The early church in Offaly' p 93.

[6] *Annals of the Four Masters*, vol. 2, p 805

[7] Matthew Stout 'Early Christian settlement, society and economy in Offaly' pp 29-93

[8] O'Brien & Sweetman *Archaeological Inventory* p 24.

[9] Mitchell & Ryan, *Reading the Irish Landscape*, p 305.

[10] N.B. White, *The Red Book of Ormond*

[11] Fitzpatrick & O'Brien *Medieval Churches of County Offaly*, p 85

[12] Rolf Loeber, 'The changing borders of the Ely O'Carroll lordship'.

[13] Carew Ms 625, cited by Loeber, 'The changing borders of the Ely O'Carroll lordship' p 293.

[14] Lewis, *Topographical Dictionary*.

[15] Byrne, 'The origins and growth of Offaly towns and villages',
http://www.offalyhistory.com/content/reading_resources/offaly_gen?offaly_towns.htm

[16] O'Brien & Sweetman *Archaeological Inventory* pp 169-70

[17] Grainne Breen, 'Landlordism in King's County in the mid-nineteenth century'.

[18] T.C. Barnard 'The world of goods and county Offaly in the early eighteenth century' p.381.

[19] Kennedy et al. *Mapping the Great Irish Famine*, p 196.

[20] Michael Byrne, 'Tullamore: the growth process 1785-1841', pp 576ff.

[21] Lewis, *Topographical Dictionary*

[22] Kennedy et al. *Mapping the Great Irish Famine*, p 76.

[23] Timothy O'Neill, 'The famine in Offaly' p 702.

[24] *Bartholomew's Survey Gazetteer of the British Isles*, (Edinburgh, 1927).

[25] W.A. Maguire, 'Missing persons: Edenderry under the Blundells and the Downshires, 1707-1922', p 537

[26] Aalen et al., *Atlas of the Irish Rural Landscape*, p 111.

Section 3: Methodology

The production of HLC maps for the three counties as part of the EPCL project was carried out by three GIS and historian operators. A methodology was designed to categorise and digitise the historic landscape using GIS technology based upon available map sources and within the available time frame for project completion. The process of digitising HLC information is designed to generalise the landscape into discrete units that share the same historic landscape character and is not meant to record individual land parcel morphologies, but rather groupings of fields that share similar morphologies.

SOURCE DATA

Due to the limited amount of large scale mapping information (no modern OSI vector data set was available) for rural Ireland, and the financial constraints of the project preventing us from purchasing recent orthorectified aerial photographs, the HLC of Co. Offaly was created using the OSI 3rd Edition Map series (1:10,625 scale) as a map base. This map source represents the landscape of 1913 and therefore the resulting landscape characterisation map reflects land use at that time.
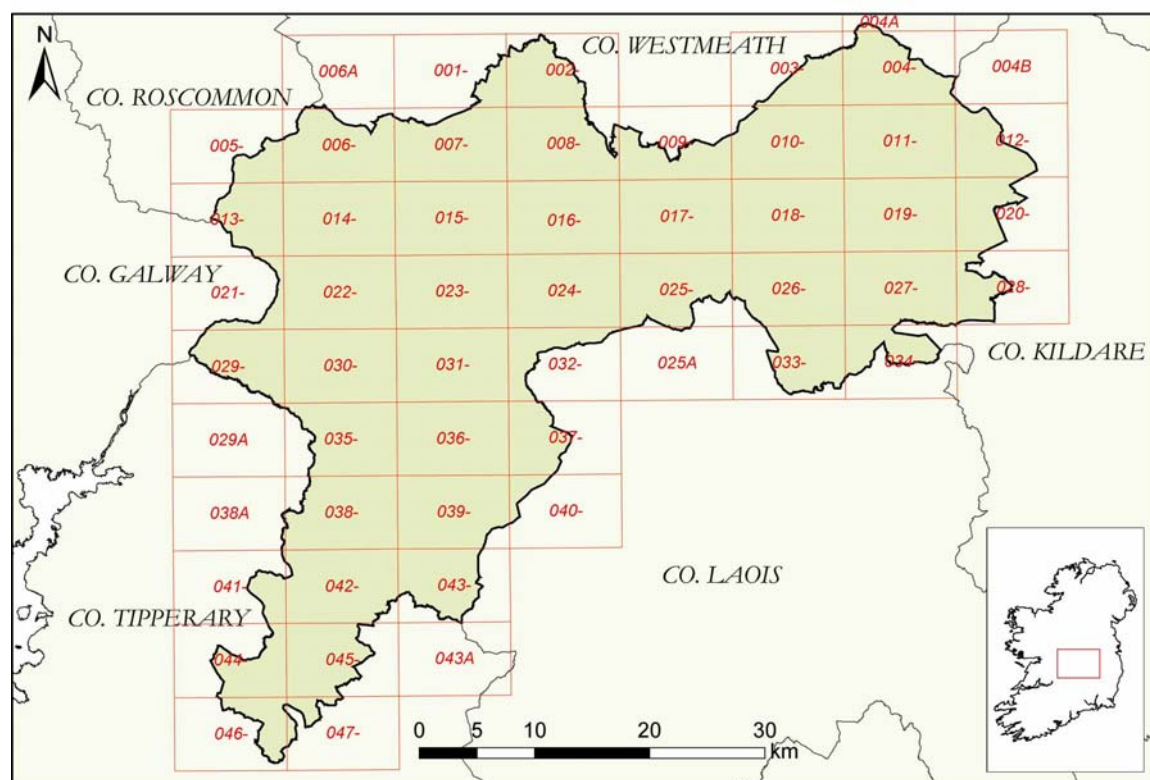
Fig 3.1: Distribution and number of 3rd edition maps within County Offaly.

CREATION OF HLC TYPES

To successfully create the HLC map of county Offaly, the cultural landscapes of each county needed to be identified to assess the range of landscapes present. To make the process simpler and reflective of the previous HLC attempts it was decided to firstly inspect the classification types developed by the Co. Claire pilot and by English Heritage.[1] Although the classifications prescribed by these projects would not be exclusive to Offaly, they formed a good foundation to develop new classification systems. Both the English Heritage and Co. Clare pilot study classification types were combined into a single list of HLC types that would be applicable to the County Offaly landscape. *The Atlas of the Irish Rural landscape* was then used as a consultation document to see if the identified classifications covered all the appropriate classification types for Offaly. New historic landscape classifications were added to the Offaly classification list where they were found not to be present.

The constructed HLC type list was then tested using an iterative process on several randomly selected map sheets. Firstly the map sheets were classified using the HLC type list. Those areas which were not allocated a HLC type were inspected and collated to produce a new HLC type, or previous HLC types were adapted to include these characteristics. After several iterations of this process a definitive HLC type list for Co. Offaly was produced.

DIGITISATION PROCESS

Ditigisation is the process of converting analogue or physical objects; in this case a paper map sheet, into a digital representation. Within the GIS this is represented as polygon land parcel data that has attached attribute information which describes the HLC of each polygon. In this case we wished to digitise the land parcels within County Offaly that share HLC characteristics. Using ArcMAP™ GIS software, geo-referenced digital versions of 3rd edition OSI maps were used to digitise on screen polygons which enclose areas of the same HLC type. It was felt that within the time period that full digitisation of the County HLC could not be achieved. Where HLC data existed within previously created digital data sets (1:50,000 OSI vector mapping) these polygons were incorporated into the project to save time. These included the 1:50,000 polygon data for water features, forestry, and urban and rural developments.

Fig 3.2: Creation of a HLC polygon using 3rd edition map sources and the inclusion of 1:50,000 OSI data within the creation of the HLC map.

To eliminate the production of "null areas" where operators have not assigned a HLC type to an area of land or assigned two HLC types by mistake a process of digitising called "cookie cutting" was utilised. This method uses previously digitised boundaries to construct new neighbouring polygons that mutually share a boundary. This method is also efficient as the number of edges need to be digitised decreases as the HLC map approaches completion.

Once a polygon has been digitised it is assigned attributes which include a classification code that indicates the HLC types to which the land parcel belongs. Operators also noted down extra information about the classified land parcels including remains of derelict walls, evidence of peat extraction and much more.

OBJECTID	Shape	CLASS_CODE	CLASS_DESC	COMMENT	SUB_CLASS
794	Polygon	19	WOODLAND CONIFEROUS		
796	Polygon	19	WOODLAND CONIFEROUS		
2895	Polygon	2	Enclosure Type B	LARGE FIELDS.INCLUDES MONUMENTS	<Null>
3039	Polygon	9	Ornamental Designed Landscape	<Null>	<Null>
3060	Polygon	2	Enclosure Type B	<Null>	F
3061	Polygon	2	Enclosure Type B	INCLUDES MONUMENTS	
3062	Polygon	5	Enclosure Type E	SMALL FIELDS	<Null>
3065	Polygon	5	Enclosure Type E	<Null>	<Null>
3066	Polygon	2	Enclosure Type B	<Null>	<Null>
3067	Polygon	6	Enclosure Type F	<Null>	<Null>
3076	Polygon	21	Open Ground Sinuous Irregular Divisions	<Null>	PE
3077	Polygon	2	Enclosure Type B	<Null>	<Null>
3078	Polygon	5	Enclosure Type E	<Null>	<Null>

Fig 3.3: Within the GIS HLC landscape units are given attribute information and additional descriptive information.

[1] *Landscape Character Assessment of Co. Clare*: March 2004 Prepared by: ERM Ireland Ltd in association with ERA-Maptec, MoLAS, Julie Martin Associates & Gina Johnson http://www.heritagecouncil.ie/publications/clare_landscape/index.html; Ede & Darlington *Lancashire Historic Landscape Characterisation Programme.*

Section 4: Overview of historic landscape types found in Co Offaly

'Enclosed fields are now the most ubiquitous and conspicuous element of the cultural landscape. Their size, shape and construction contribute much to the distinctive character of regional landscapes.'

[Aalen, Whelan and Stout, *Atlas of the Irish Rural Landscape*, p. 27]

GENERAL PATTERNS

In the HLC of Co. Offaly, 21 of the 23 isolated land types were identified. Only land types 'Airport' and 'Extractive Industry' were absent. The following table lists land types in descending order from those occupying the greatest percentage of land area to those occupying the least

HLC Type

Enclosure Type A		Ornamental Designed Landscape		Woodland Broadleaved	
Enclosure Type B		Extractive Industry		Woodland Mixed	
Enclosure Type C		Rural Nucleation		Woodland Coniferous	
Enclosure Type D		Urban Areas		Open Ground Undivided	
Enclosure Type E		Riverbanks		Open Ground Sinuous Irregular Divisions	
Enclosure Type F		Natural Water Bodies		Open Ground Regular Divisions	
Enclosure Type G		Reservoirs		Unclassified	
Enclosure TypeH					

HLC Land Type	Percentage of total area of county	Ranking
Enclosure B	35.87%	1
Enclosure E	23.82%	2
Open Ground Undivided	16.80%	3
Woodland Coniferous	4.89%	4
Open Ground Sinuous Irregular divisions	4.19%	5
Ornamental Designed Landscape	4.08%	6
Open Ground Regular Divisions	3.35	7
Enclosure F	1.83%	8
Enclosure H	1.37%	9
Woodland Broadleaved	0.71%	10
Urban Areas	0.54%	11
Enclosure A	0.40 %	12
Enclosure G	0.40 %	13
Unclassified	0.40%	14
Enclosure C	0.39%	15
Woodland Mixed	0.37%	16
Enclosure D	0.23	17
Riverbanks	0.21%	18
Reservoir	0.05%	19
Natural Waterbodies	0.05%	20
Rural Nucleation	0.05%	21

As can be seen in the table Enclosure Type B was found to be the dominant HLC type covering almost 36% of the total area of the county. The next dominant was Enclosure Type E which covered just under 24%. The four next dominant were Open Ground Undivided, Woodland Coniferous, Open Ground Sinuous Irregular Divisions and Ornamental Designed Landscape covering 16.80%, 4.89%, 4.19% and 4.08% respectively.

If the table is simplified to reflect general patterns of land use across the county, it reveals that 64% of the county was covered by field systems, the dominant characteristic of Offaly's landscape. The next dominant characteristic was Open Ground accounting for over 24% of the county's area. Combined woodland types accounted for 6% - much of it made up by coniferous woodland (5%) while Ornamental Designed Landscapes covered 4%.

THE RELATIONSHIP BETWEEN HLC TYPES AND MONUMENT DISTRIBUTION

The monuments of Co Offaly as listed in the digital RMP are present on 19 of the 21 HLC types found in the county. There are no listed monuments on land classified as 'Natural waterbodies' or on 'Extractive industry' – both of which account for 0.05% of land area. The following table shows the number and percentage of monuments (of all types) found on the county's different HLC types. It ranks the HLC types by numbers of monuments present and shows the difference between the percentage of land area covered and the percentage of monuments located on each.

HLC Land Type	Number and % of Monuments	Ranking	Difference between % cover and % monuments
Enclosure B	966 (54.55%)	1	+ 18.67%
Enclosure E	232 (13.10%)	2	-10.72%
Ornamental Designed Landscape	193 (10.90%)	3	+6.82%
Enclosure H	146 (8.24%)	4	+6.87%
Open Ground Undivided	65 (3.67%)	5	-13.13%
Woodland Coniferous	44 (2.48%)	6	-2.40%
Open Ground Sinuous Irregular divisions	25 (1.41%)	7	-2.78%
Urban Areas	24 (1.36%)	8	+0.81%
Woodland Broadleaved	17 (0.96%)	9	+0.25%
Enclosure F	14 (0.79%)	10	-1.04%
Rural Nucleation	12 (0.68%)	11	+0.63%
Open Ground Regular	7 (0.40%)	12	-2.95%

Divisions			
Enclosure A	6 (0.34%)	13	-0.06%
Unclassified	5 (0.28%)	14	-0.12%
Enclosure C	5 (0.28%)	15	-0.11%
Riverbanks	5 (0.28%)	16	+0.08%
Woodland Mixed	3 (0.17%)	17	-0.20%
Enclosure G	1 (0.06%)	18	-0.35%
Enclosure D	1 (0.06%)	19	-0.18%

Enclosure Types B and E emerge as the top ranking HLCs in terms of both land area and numbers of monuments present. However the numbers of monuments are not evenly co-related with surface area. Enclosure Type B has almost 19% *more* monuments than statistically 'expected' while Enclosure Type E has just under 11% *less*. Type E is generally considered to represent a later type of field system than Type B due to the linear nature of its field boundaries and is linked with substantial reorganisation of agriculture and in particular with increased size of enclosures. It seems likely that these processes may have resulted in the loss of field monuments.

The third and fourth ranked HLCs in terms of monument coverage are Ornamental Designed Landscapes and Enclosure Type H. Both of these types show percentages of monuments disproportionate with land area covered.

Enclosures (Field systems)

8 of the classification types relate to enclosures. All were present in Offaly and taken together these account for just over 64% of the area of the county.
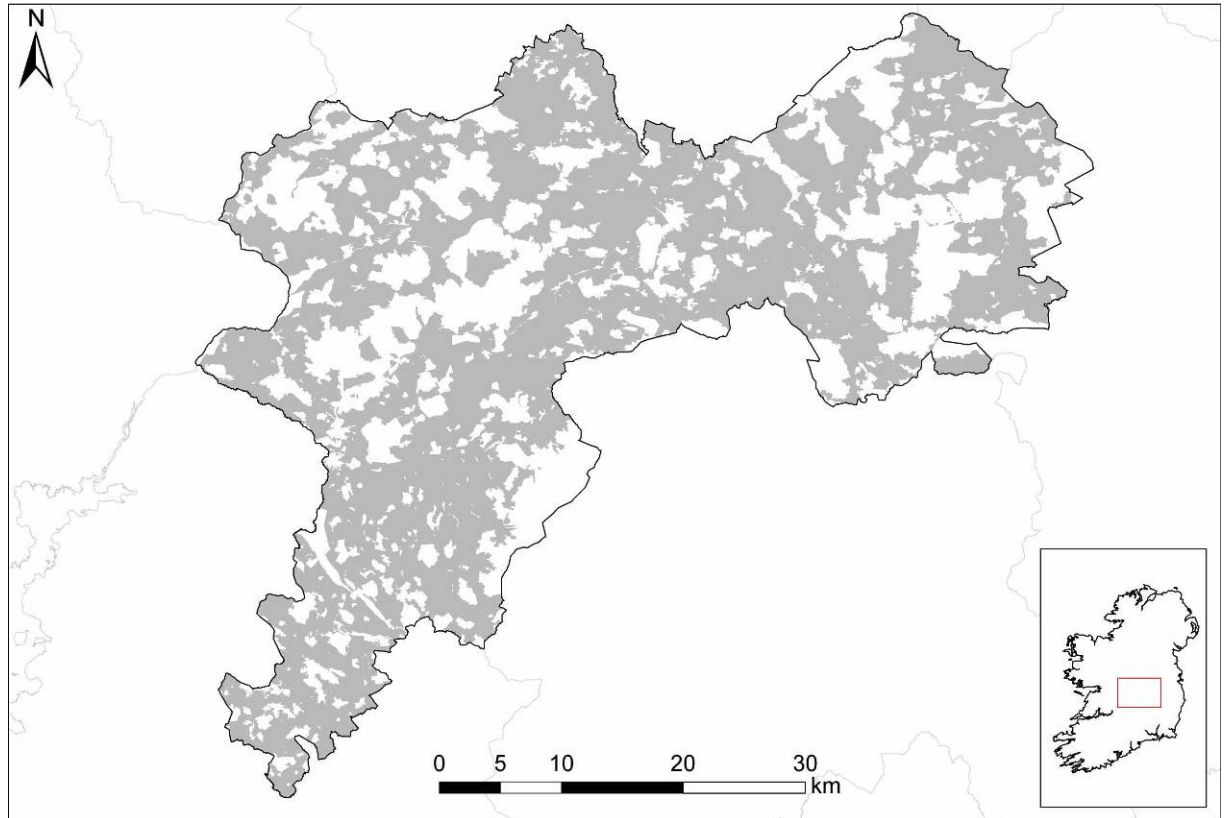
Fig 4:1 – Area covered by enclosed land

This prevalence of enclosed land in Co Offaly reflects the agrarian nature of the county and is shared with much of Ireland. The authors of the *Atlas of the Irish Rural Landscape* wrote in 1997:

> *'Ireland currently possesses a heavily enclosed rural landscape. Eighty per cent of the surface is devoted to agriculture and the farmed land is everywhere divided into field separated by continuous and permanent enclosures. These enclosures are the most pervasive features of the cultural landscape'.*

The type of enclosure varies both from region to region and from period to period. The following table summarises the principal characteristics of the eight types found in Co Offaly.

Type	Percentage Cover	Description
Enclosure A	0.40%	Small irregular enclosures with sinuous and curvilinear boundaries. Usually associated with single farms
Enclosure B	35.8%	Variable sized irregular enclosures, with sinuous and curvilinear boundaries. Usually associated with single farms. Not as small as type A or as regular as type E
Enclosure C	0.39%	Long rectilinear field, often subdivided by cross walls. Main boundaries are usually perfectly straight, but may gradually curve and primary strip-shaped enclosures are normally at least four times long as wide. Primary lines are not always parallel and cross-walls are not always perpendicular.
Enclosure D	0.23%	Small strip-shaped field enclosures. Usually associated with habitation cluster. Smaller in size compared to Type C.
Enclosure E	23.82%	Irregular patterns of fields in size and shape, most of which are rectangles or polygons. Virtually all boundaries are perfectly straight. Distinguishable from Type B by having no or very few sinuous boundaries and from Type C by not being based on long straight-sided strips.
Enclosure F	1.83%	Regular patterns of medium to large sized enclosures with straight boundaries
Enclosure G	0.40%	Regular patterns of small sized enclosures with straight boundaries
Enclosure H	1.37%	Incomplete enclosures with broken field boundaries of varying sinuosity
Total	**64.31%**	

There is intricate variety in the distribution of enclosures which is sometimes observable at a very local level. The figure below gives a detailed picture of an area in Co Offaly where all eight enclosures types were identified in close proximity.
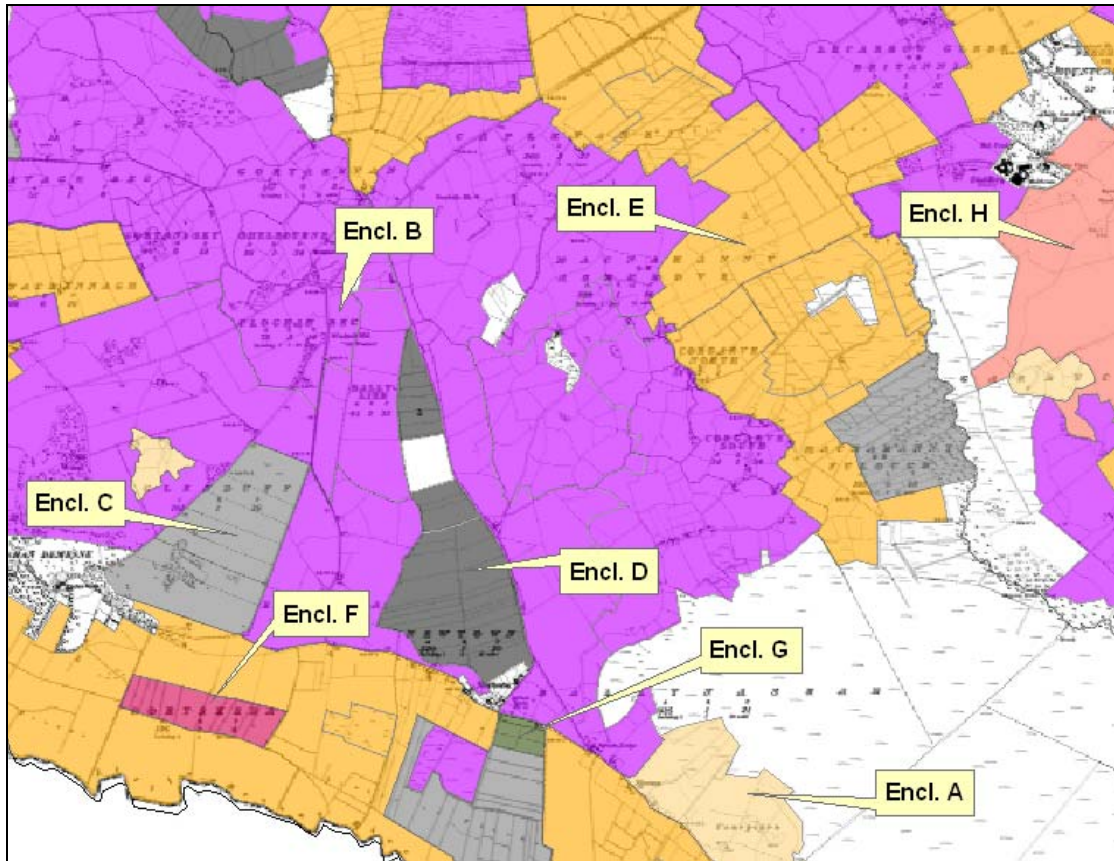
Fig 4:2 Detail from Offaly HLC map showing the area to the south-east and north of Cloghan Demesne in the western spur of the county.

It is a complex task to assign particular chronologies and functions to enclosure types. Across Ireland as a whole the widespread pattern of rectangular fields enclosed by walls, banks and hedges has mainly developed since the seventeenth century with the result that the majority of enclosures in the modern landscape are post-medieval. This pattern of course frequently replaced and was influenced by older systems of open-field organisation.

The factors which influence the reorganisation of field enclosures include improved farming with more intensive livestock rearing, crop rotations and individual management of consolidated holdings. In terms of chronology a very general interpretation would be that the more modern the enclosure the more regular and straighter the boundaries. Thus Type E characterised by very straight boundaries is likely to be a more recent enclosure type than Type B which is characterised by sinuous and curvilinear boundaries. (See above). Both enclosure types however are associated with single farms and are found throughout the county. Analysis of the distribution of enclosure types characterised by regular straight boundaries in relation

to those with sinuous boundaries and irregular patterning does reveal certain spatial manifestations (See Fig.4.3)
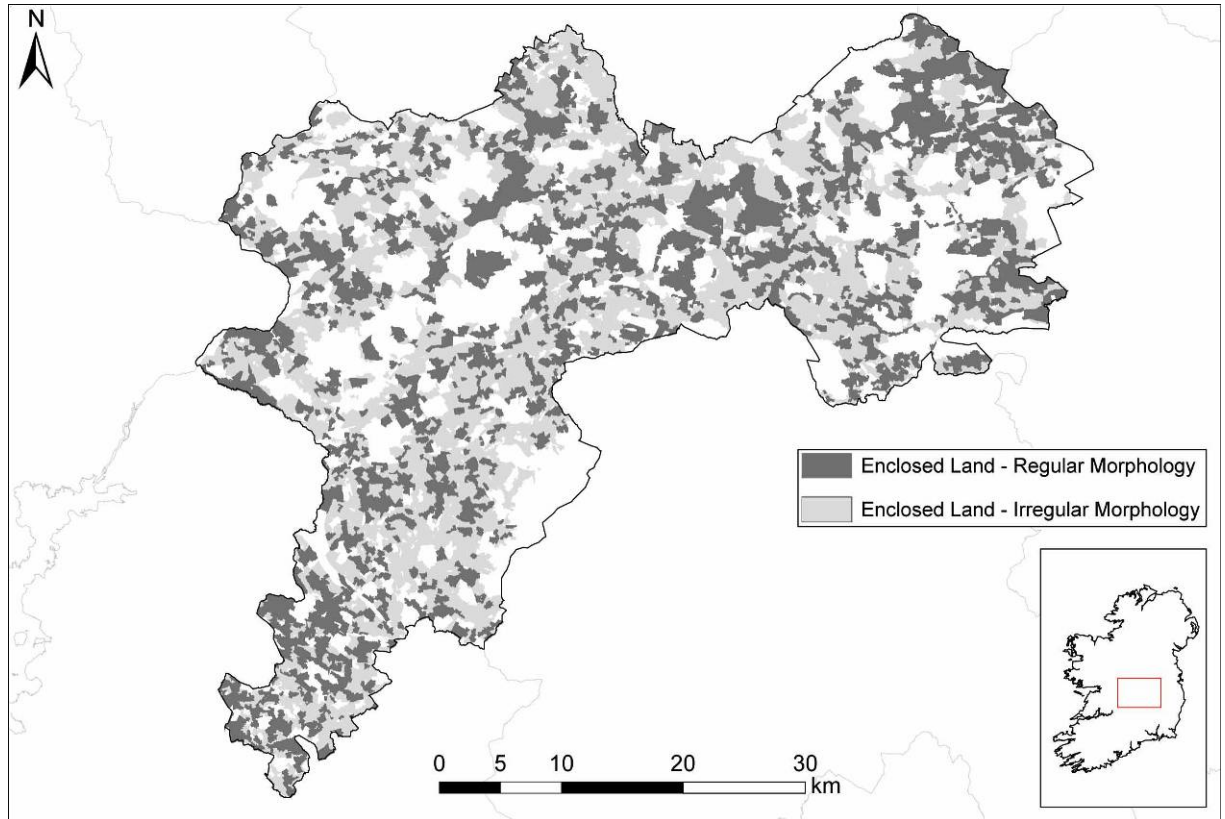
Fig 4:3 – Distribution of enclosed land with differing morphologies

Enclosure Type A in Clonlyon
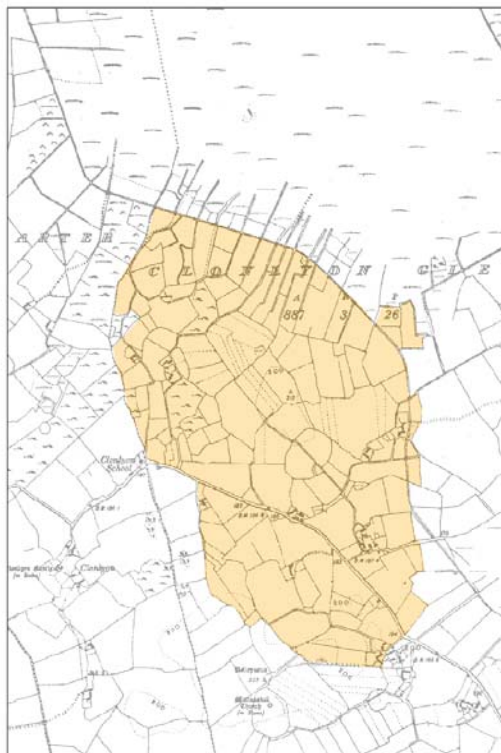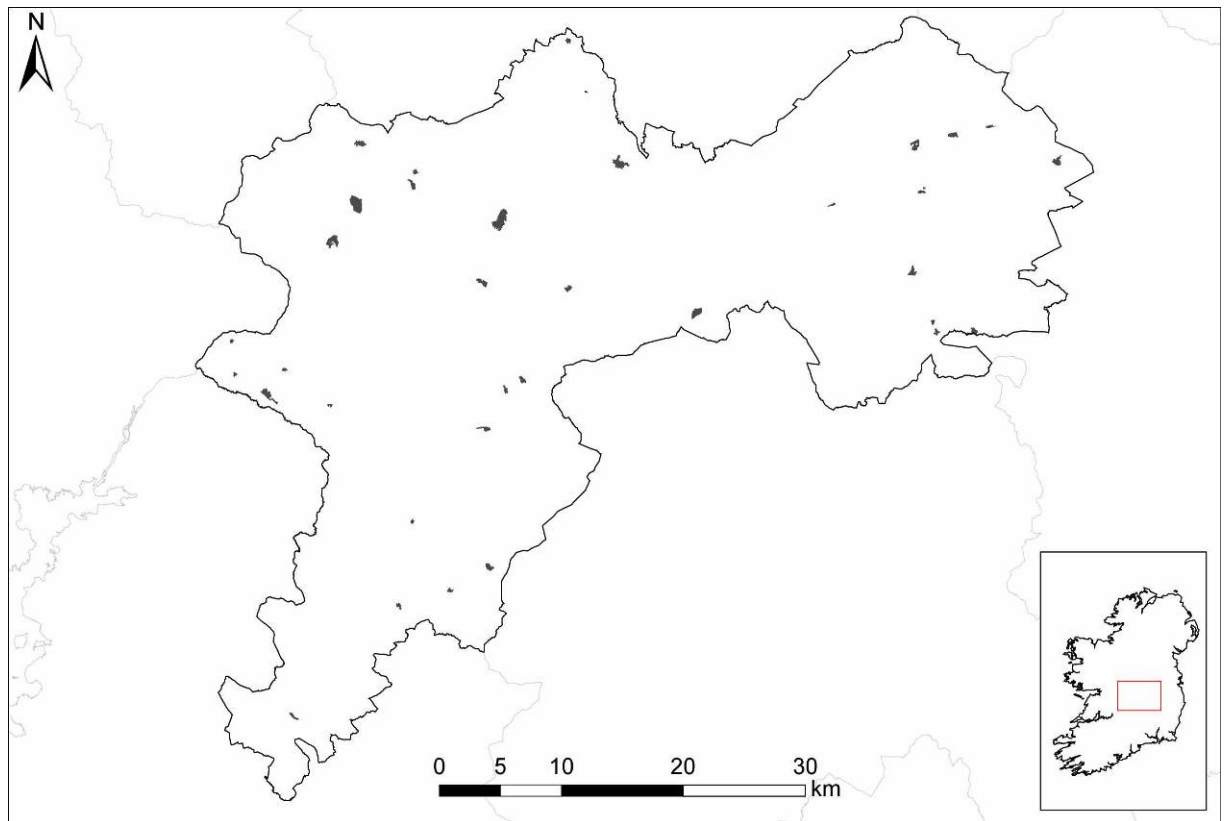
Small irregular enclosures with sinuous and curvilinear boundaries. Usually associated with single farms. Occupying only 0.40% of the land area in the county, it is not a common landscape type. It is most likely to be found in the north-west quarter of the county.

It may represent remnants of ancient enclosure. Such fields are not suitable for mechanised farming and are associated with older, subsistence-scale farming patterns.

A sizeable area of this type of enclosure was found in the Clonlyon area (see fig.). It was bounded on the east, south and west by Enclosure B while open ground (bog) lay to the north. A possible earthwork lies at the centre of a circular enclosure with additional field boundaries radiating out from it.
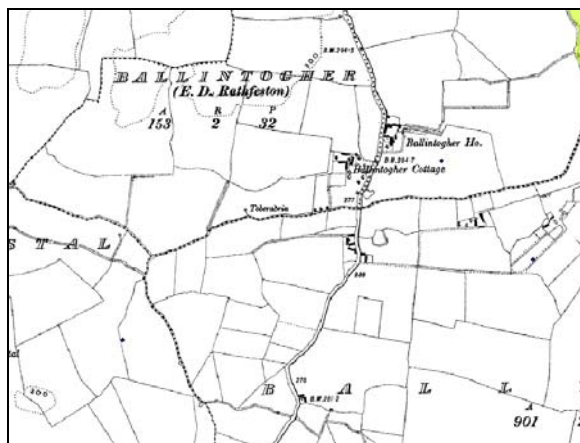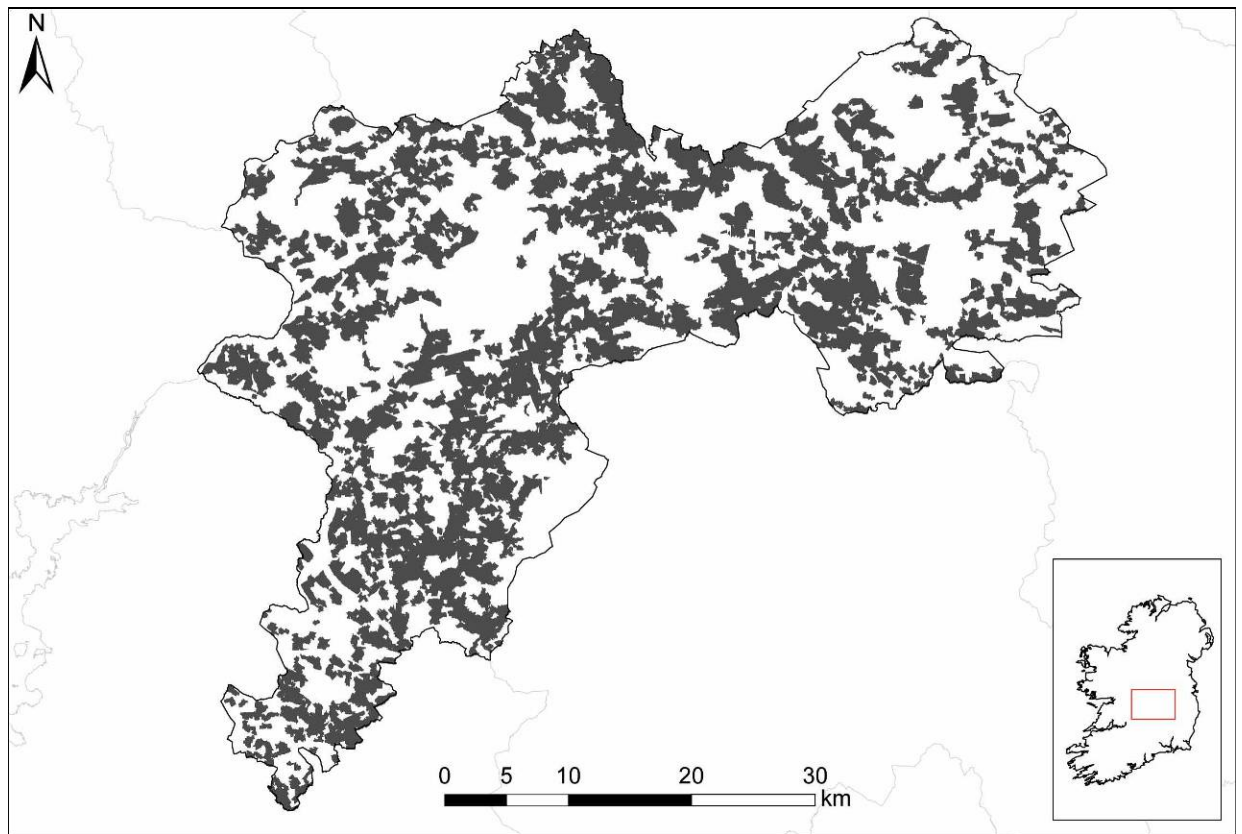
Blanket coverage of Type B enclosure around Ballintogher

Variable sized irregular enclosures, with sinuous and curvilinear boundaries. Like Type A it is usually associated with single farms but the fields are of a larger size. It was the most commonly occurring category of enclosed land in the county. The greatest densities lying in the more western parts of the county

Nine hundred and sixty six or 55% of the listed monuments for Co Offaly were associated with this HLC type.
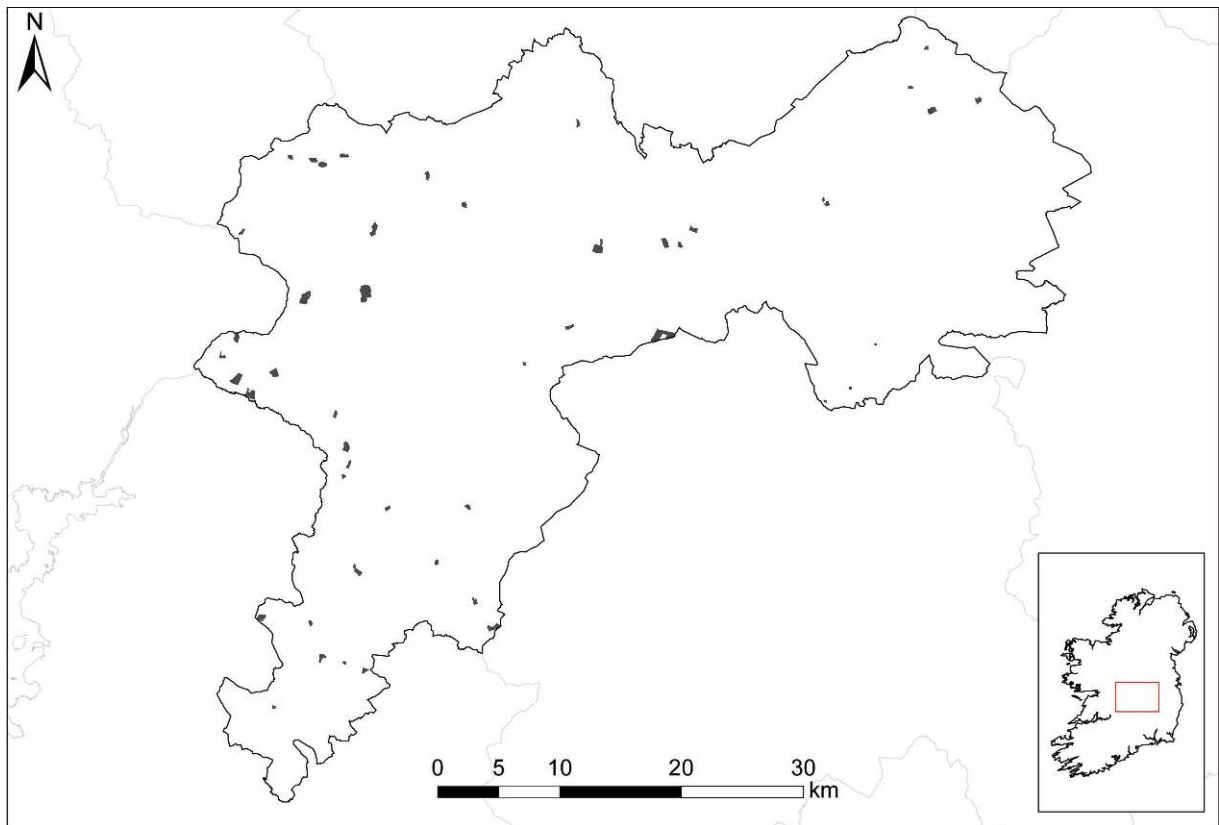
Fig 4:8 Distribution of Enclosure Type C
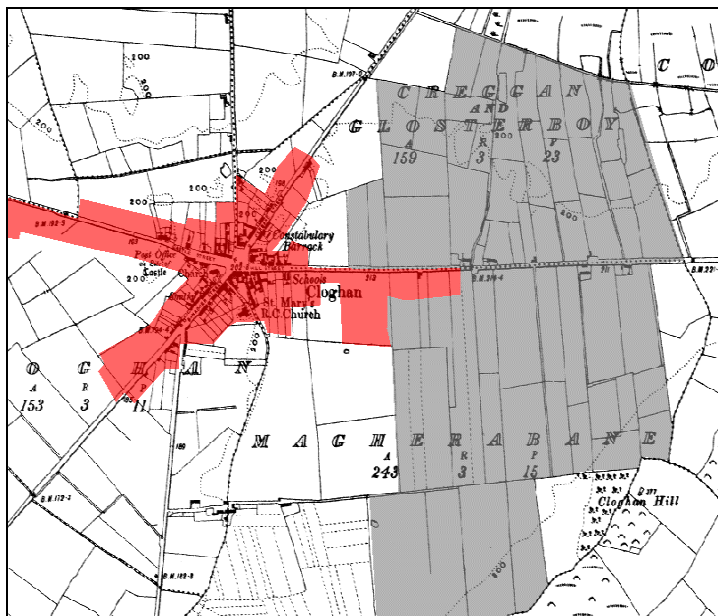
Enclosure Type C close to Cloghan

This enclosure type is characterised by rectangular fields at least four times as long as wide. It occurred very rarely in the county and accounted for only 0.39% of surface area. There would appear to be a correlation between this enclosure type and areas of nucleation or proto-urban areas. In the example shown here, land with this classification type is found

to the east of Cloghan in the townlands of Creggan, Glosterboy and Magherabane. It was also found in the Shannon Harbour area and close to the rural nucleation of Clonfinlough. On occasion Enclosure Type C was associated with peat extraction, for example at Mahahanny or Fulough.

Five listed monuments were found in association with this HLC.
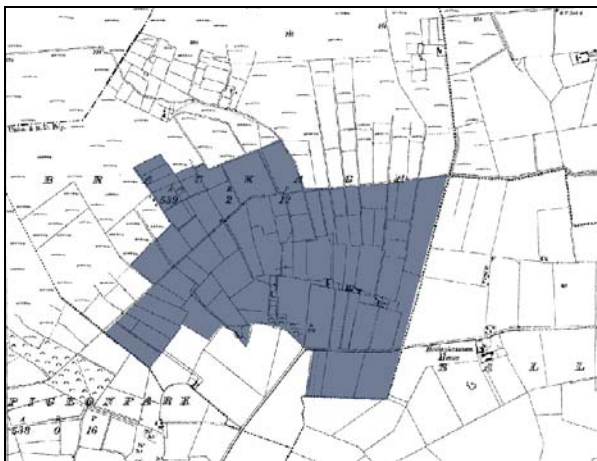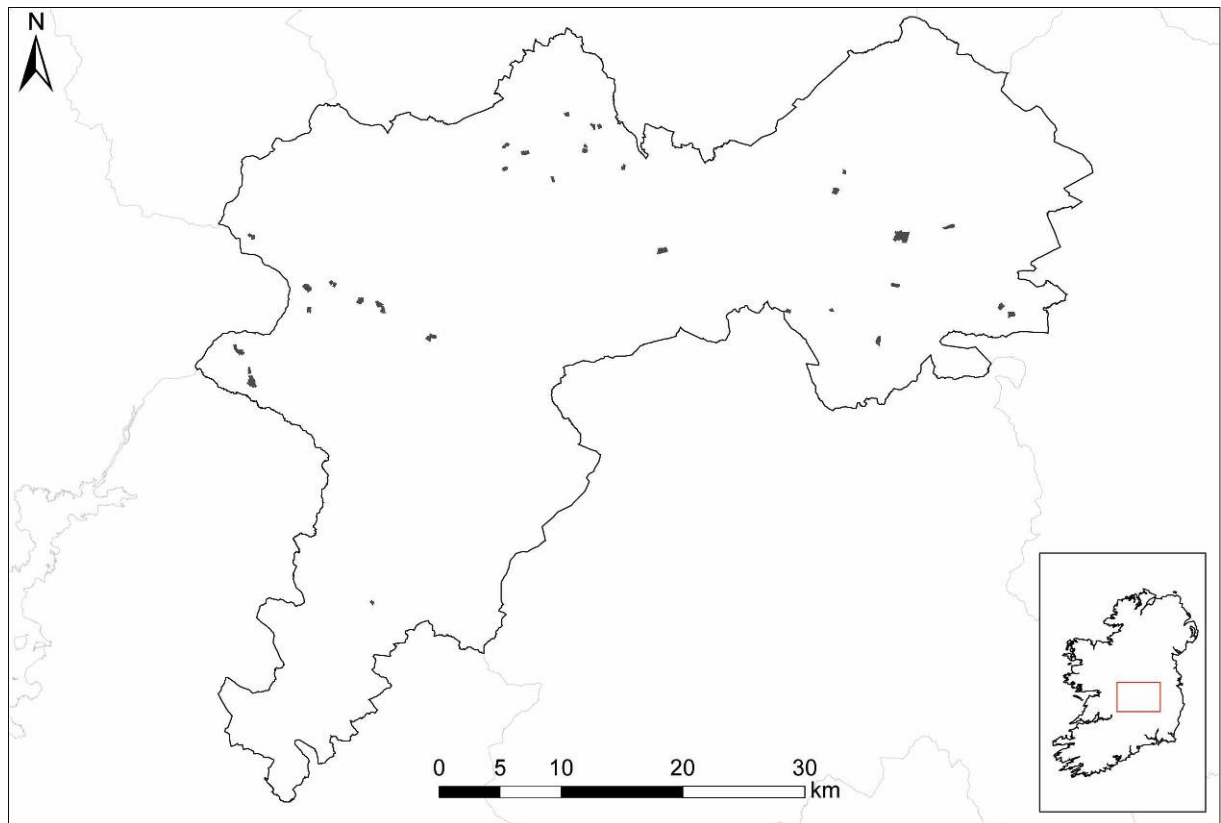
Cluster of Type D Enclosure in Brackage

This is the rarest enclosure type found in the county and in 1913 it accounted for just 0.23% of the land area. It is characterised by small strip-shaped field enclosures. The fields are smaller in size than Type C

It was almost completely absent from the south of the county. One of the largest clusters of Enclosure Type D was found in Brackage in the east of the county just north-east of Pigeonpark. The enclosure was bounded to the west and north by rough bogland and it may represent reclamation.
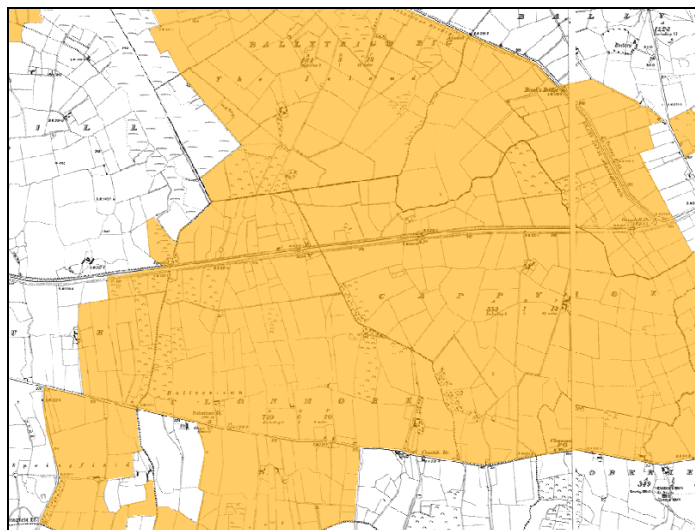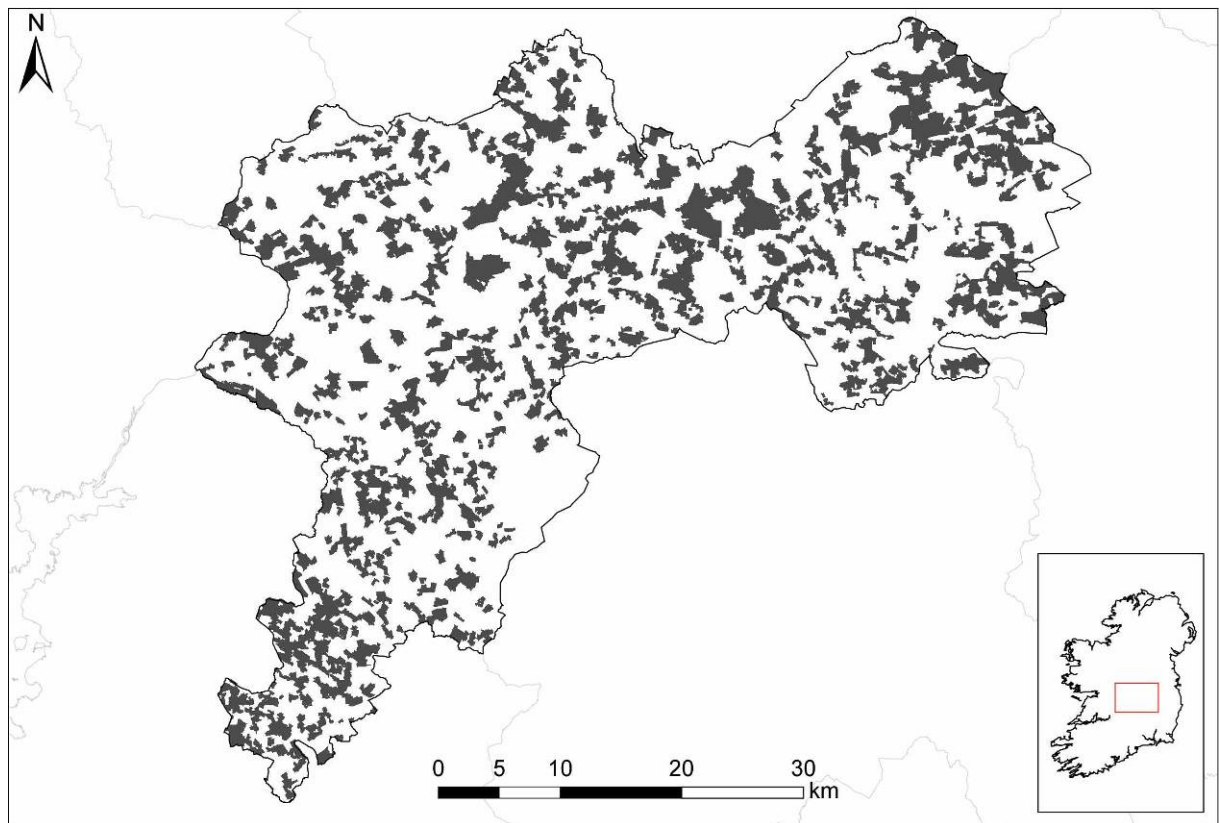
Large area of Type E Enclosure to the east of Tullamore

This type of enclosure was typical of just under 24% of the land area of the county. It is found throughout and is particularly prevalent in the regions around Tullamore and Edenderry. It is characterised by straight boundaries which distinguish it from Enclosure Type B.

Most of the fields are rectangles or polygons. Preliminary analysis indicates a correlation between Enclosure E and the areas characterised by productive soils of the grey brown podzolic type. This correlation is particularly apparent in the north eastern section of the county and in the vicinity of Tullamore. This suggest a reorganisation of agriculture focused on the more productive lands which had not yet

reached into what might be termed more marginal areas. It is associated with family farms and agricultural regimes which may have been geared towards provisioning the growing urban centres.

232 of the listed monuments were found on land characterised by this type of enclosure. As mentioned above, this is considerably less than would have been expected given the proportion of land area covered by the type. An interesting example of an associated monument is shown in the figure below.
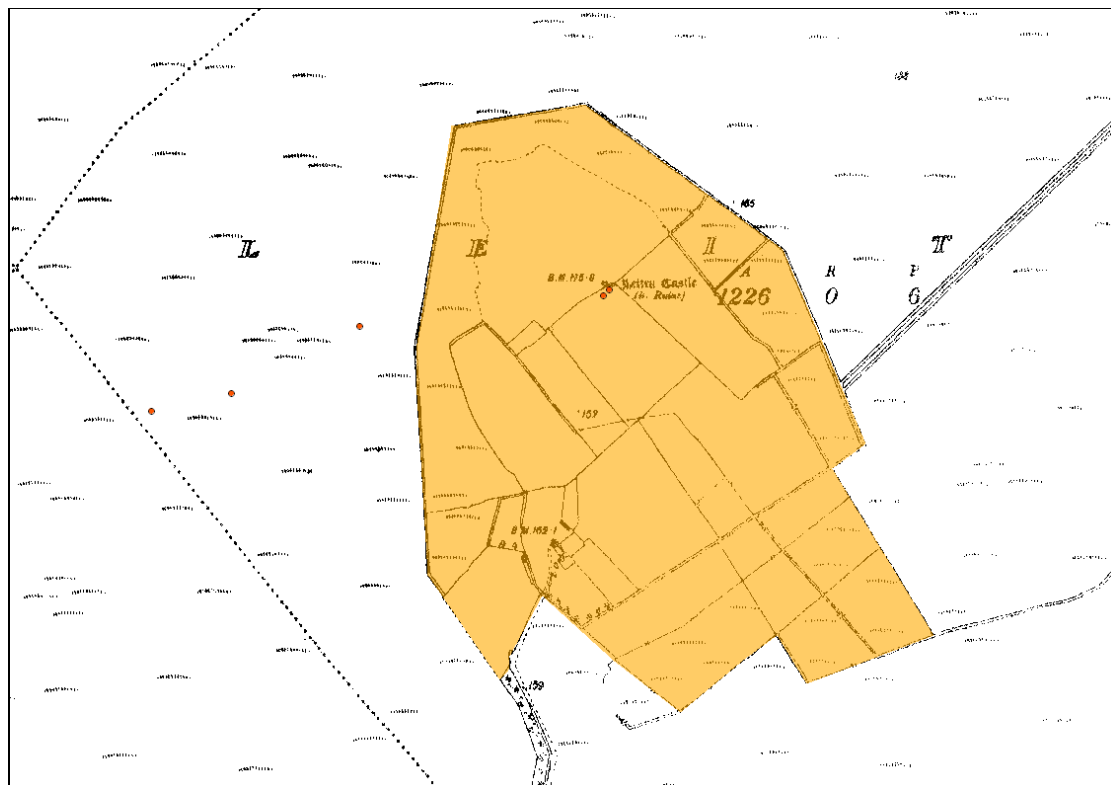
Enclosure Type E at Leitra

This area of Enclosure Type E is found at Leitra on a natural island completed surrounded by bogland. The associated monuments are Leitra Castle – a seventeenth century stronghouse which was perhaps built by the MacCoghlan family. A togher or trackway (marked by red dots) leads through the bog towards the island.

Stronghouse at Leitra

(Source: *Archaeological Inventory of Co. Offaly*)

This enclosure type accounts for just under 2% of the land area of the county. It is generally found in small pockets, often of half a dozen fields or less. Larger concentrations are however found in the North east of the county and in the west in the vicinity of towns such as Banagher (See fig.)
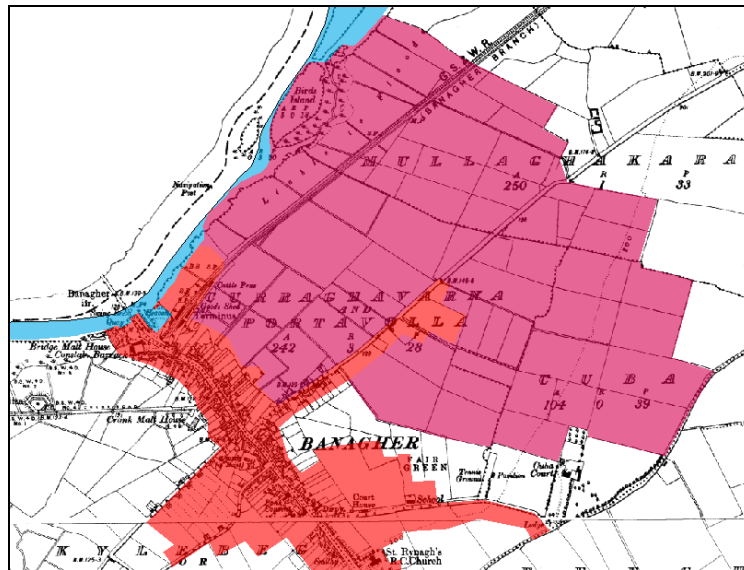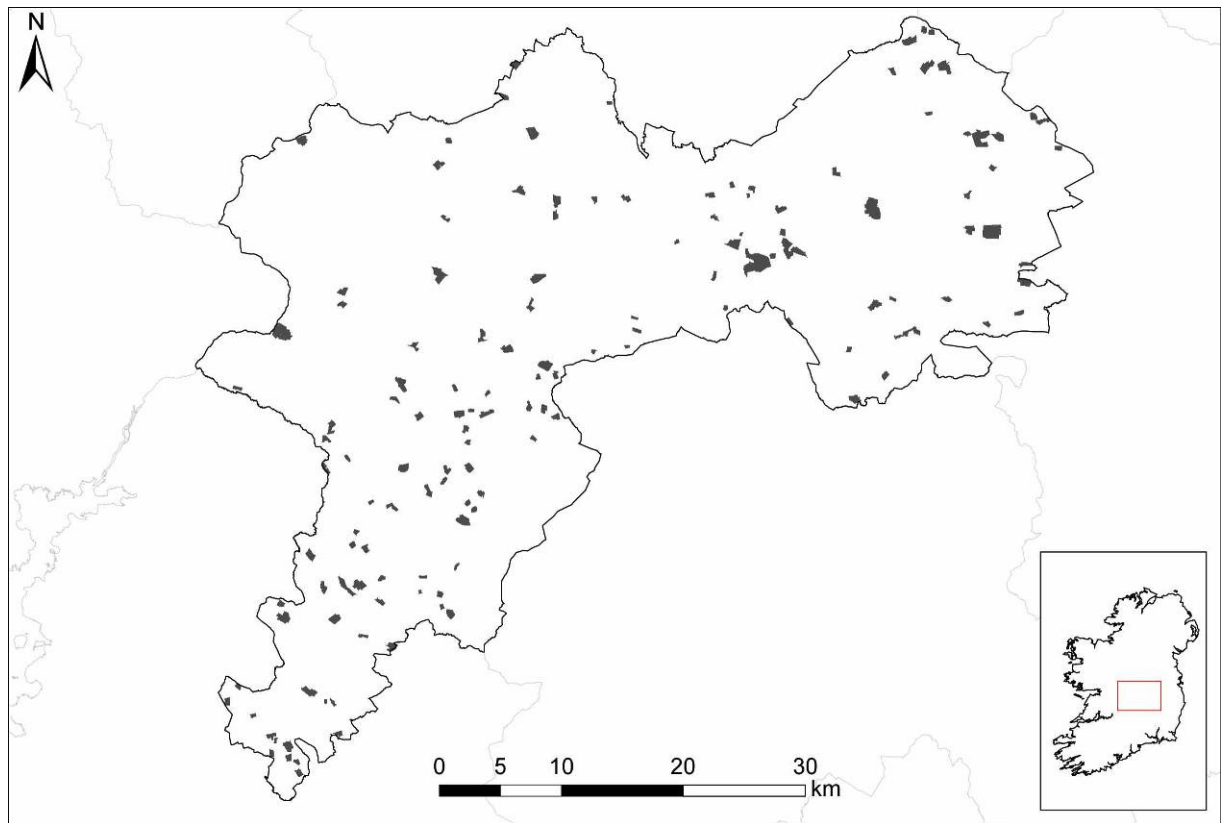
Enclosure Type F to the north of Banagher

The enclosure type is characterised by regular patterns of medium to large sized fields with straight boundaries.
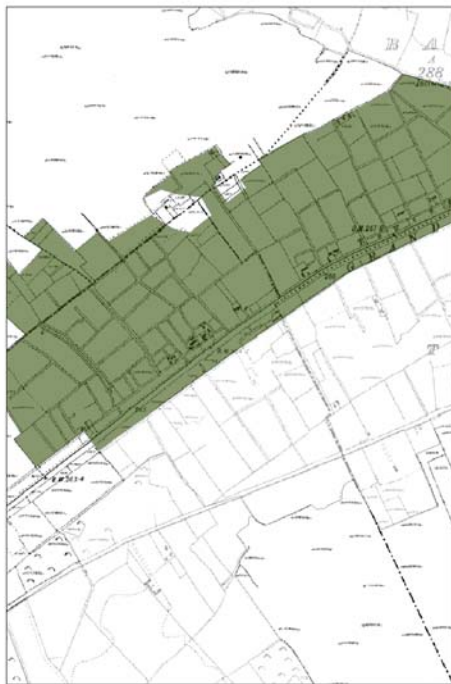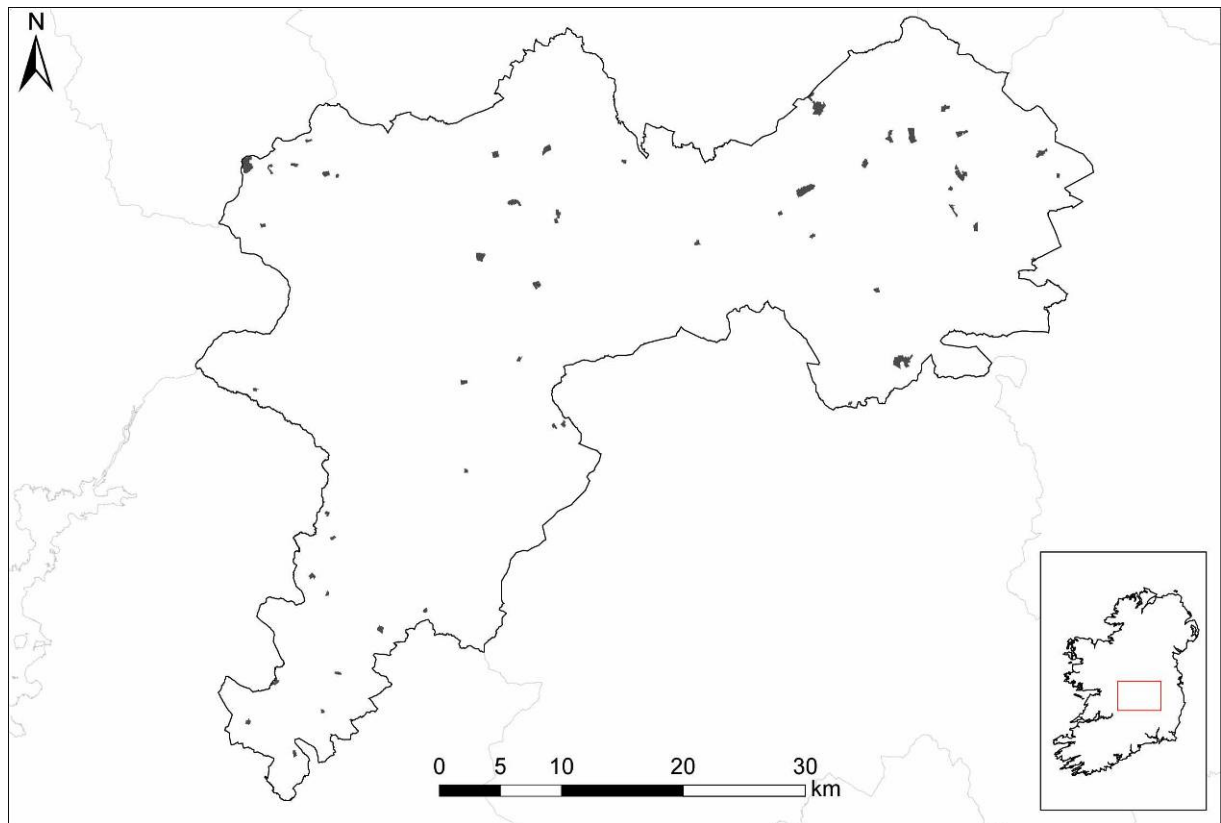
Enclosure Type G

This is similar to Enclosure F being found in regular patterns and having straight boundaries. The size of the enclosures is however much smaller. It is rare in the west and the south. The example shown here was found to the east of Tullamore. It is located along the line of the canal and may perhaps represent land which was reclaimed from the bog for cultivation. The marketing opportunities offered by the canal may have given the impetus for such reclamation.
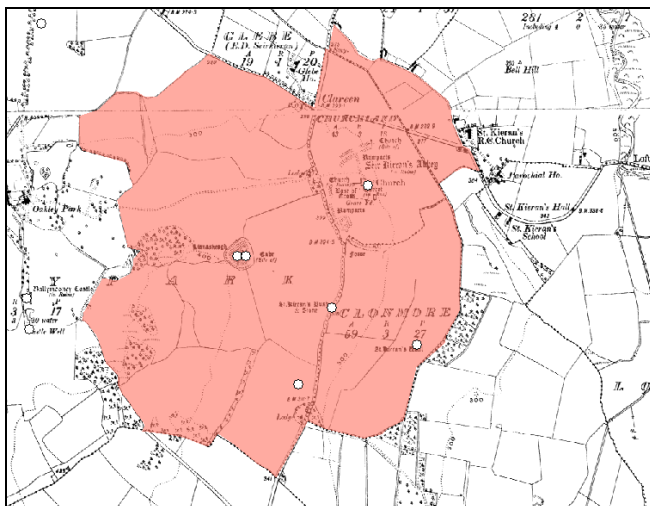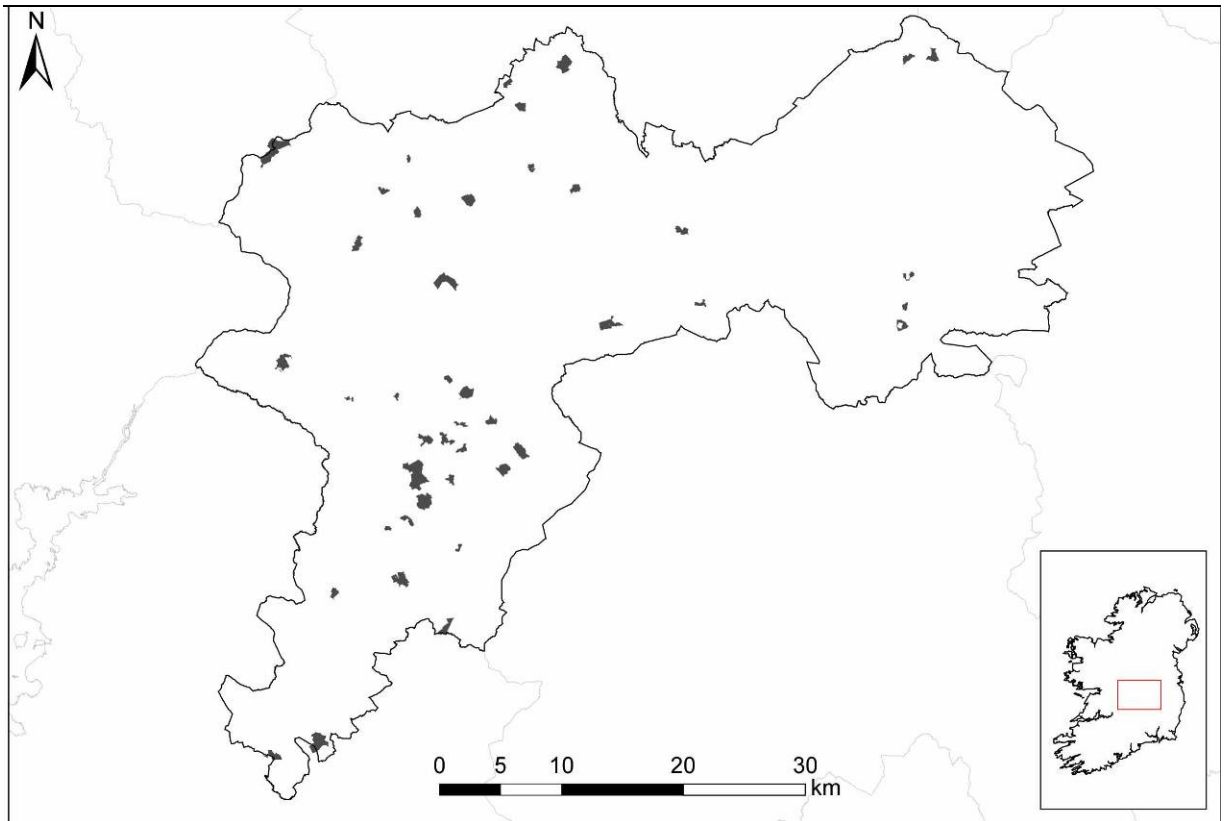
Enclosure Type H at Seir Kieran

Land given this classification is characterised by incomplete enclosures with broken and sinuous field boundaries. Such land is absent from large parts of the east of the county. There is a particularly large cluster in the environs of Clonmacnoise where the density of monuments would indicate its classification as an archaeological landscape.

This enclosure type is also found in conjunction with sites of early medieval ecclesiastical foundations at Seir Kieran, Killeigh and Lemanaghan.

8.24% (147) of the monuments listed in the SMR for Offaly are located on this landscape type – a difference of nearly +7% from that expected. In terms of monument coverage Enclosure Type H ranks as no.4 out of 21 landscape types. The 147 monuments located on this landscape type break down into the following broad categories:

Ecclesiastical	Prehistoric	Early Christian secular	Medieval & late medieval secular	Undated enclosures and earthworks	Non-antiquities	Misc.
61	14	17	12	23	8	12

Ecclesiastical monuments account for 61 (41%) of all the monuments located on this historic landscape classification. This is partly explained by the predominance of enclosure type H in the vicinity of Clonmacnoise. Clusters of monuments also occur in the vicinity of Killeigh and Lemanaghan (see figs. below – monuments indicated by white circles).
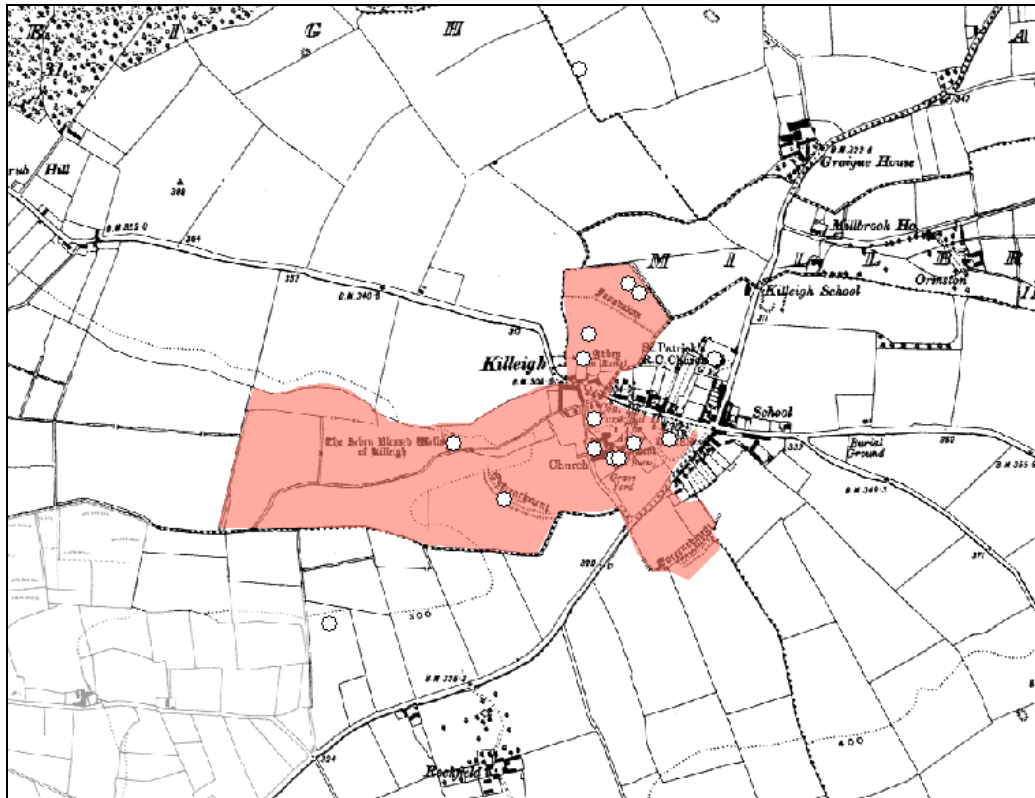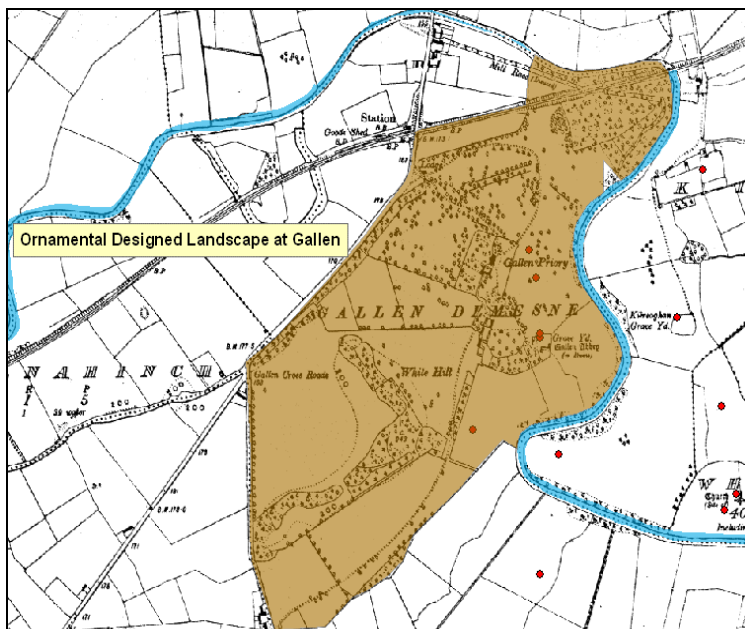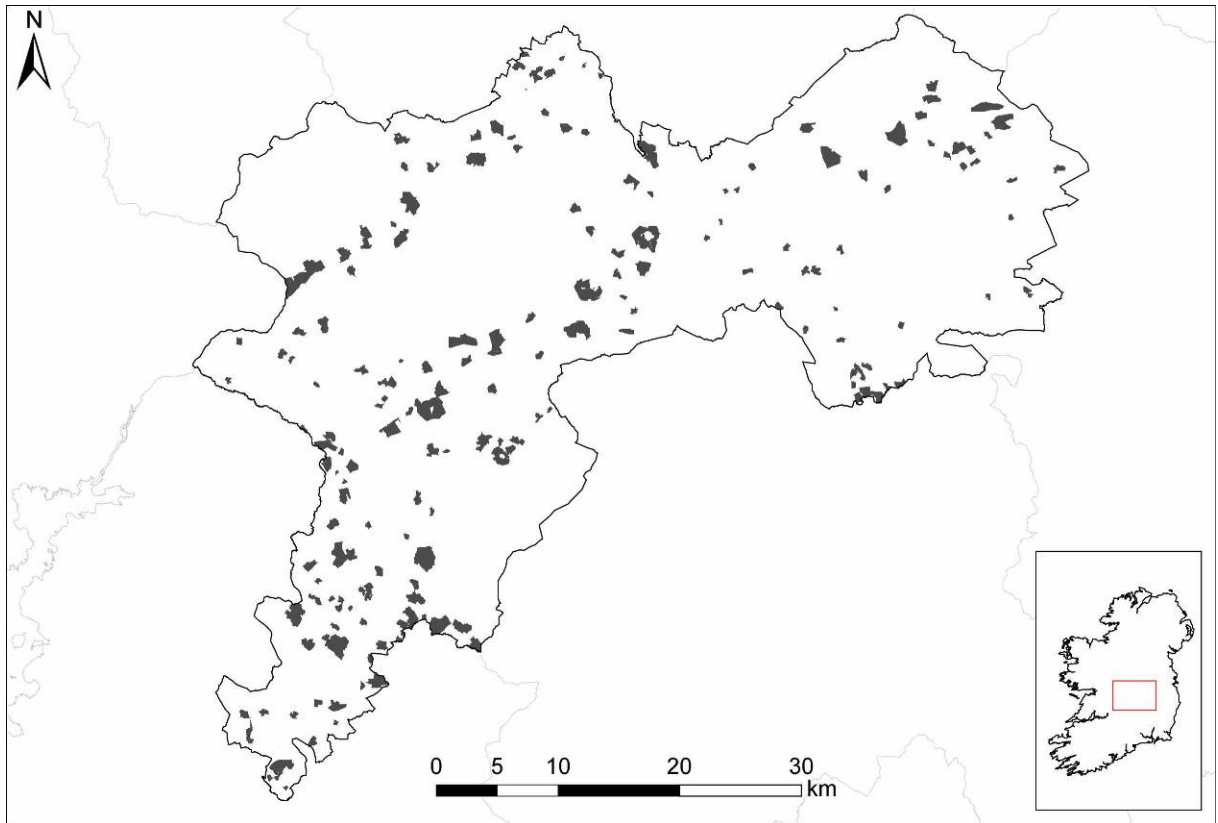
The area around Killeigh showing presence of <u>Enclosure Type H</u> classification and monument distribution.
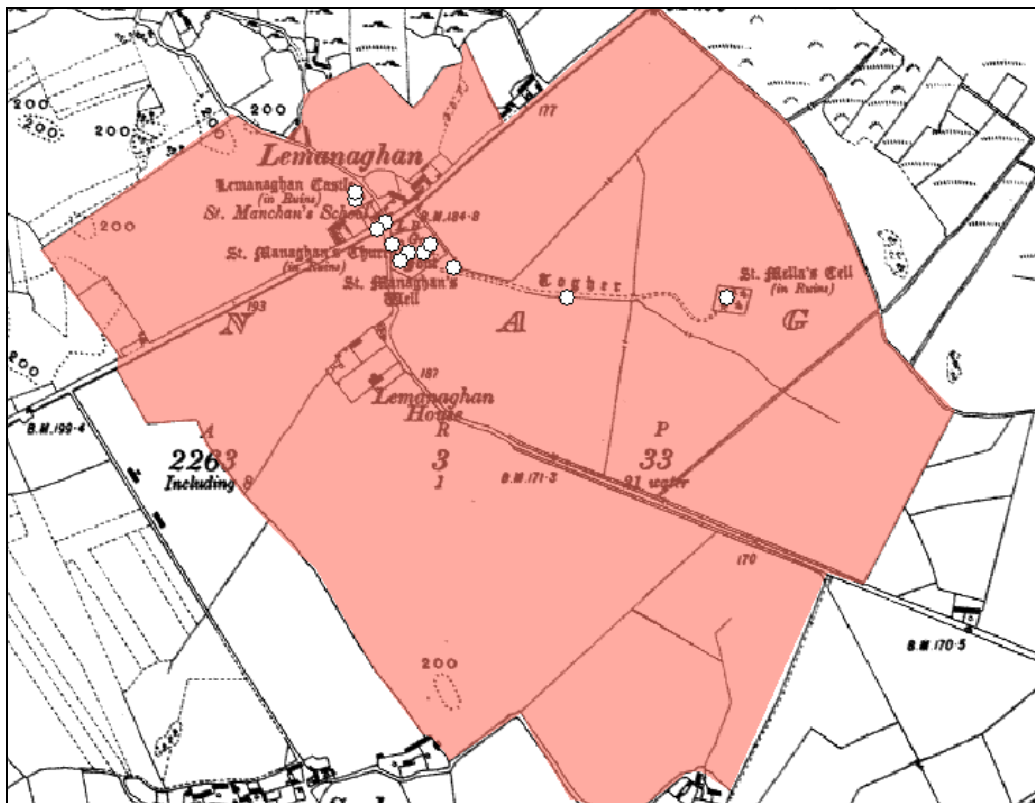
**The monument complex at Lemanaghan showing extent of Enclosure Type H**

Ornamental Designed Landscape at Gallen

Over 4% of the landscape in Co Offaly in 1913 was classified as ornamental designed landscape This type includes mainly later eighteenth and nineteenth-century landscapes which have been changed or manipulated in order to enhance natural features. It frequently includes lakes, parks, stands of trees and particular vistas. This landscape type is found throughout the county but particular clusters appear in the south and in the north east.

Described as 'ornate zones of wealth absorption surrounding the residence of the landlord' their remains in the landscape point clearly to the milieus of the large landowning classes.[i] In Co Offaly it is clear that the estates were located on the best land. The concentrations in the south are focussed particularly on the fertile floodplain of the River Brosna while in the barony of Warrenstown many estates clustered around the Grand Canal. Estates avoided the axis of the Slieve Blooms, the peaty areas of Coolestown and Philipstown and particularly the barony of Garrycastle.

These designed areas epitomised the symbolic landscape of the aristocracy, they also contained and in many cases preserved the monuments of previous occupiers. 11% of the Offaly monuments listed in the digital RMP were located on this HLC type. They included early enclosures, ecclesiastical sites of all periods, multi-period fortifications and residences and non-antiquities – a blanket category which covers post-1700 structures. Much of the broadleaved woodland present in the county was also associated with this HLC type. The figures below show areas of designed landscape at Gallen, Leap and Pallaspark along with monuments (shown by red circles).

Ornamental Designed Landscape and monuments at Leap

Ornamental Designed Landscape and monuments in Pallaspark area
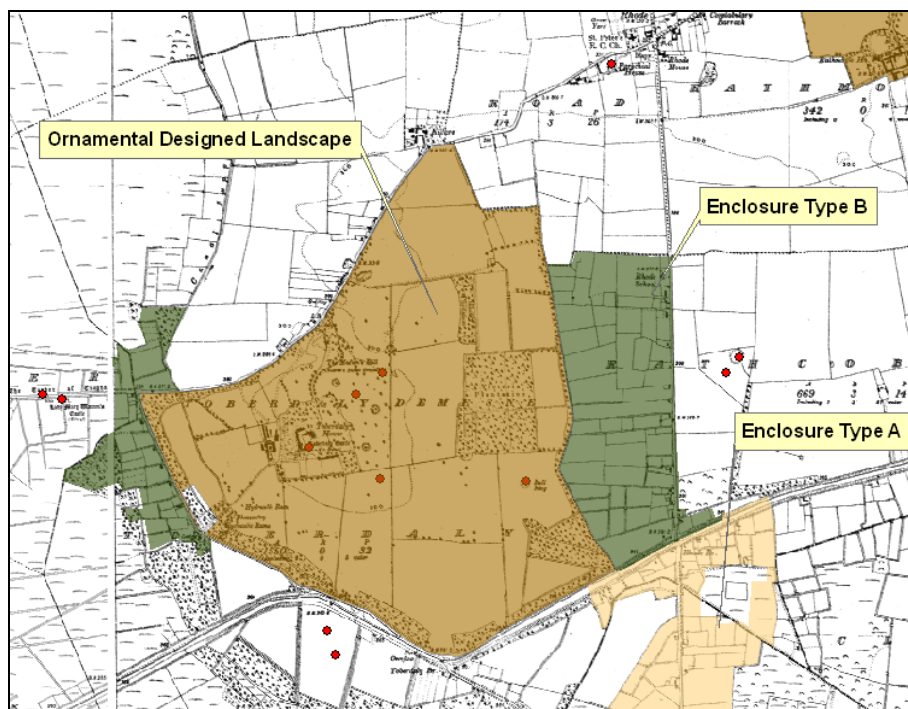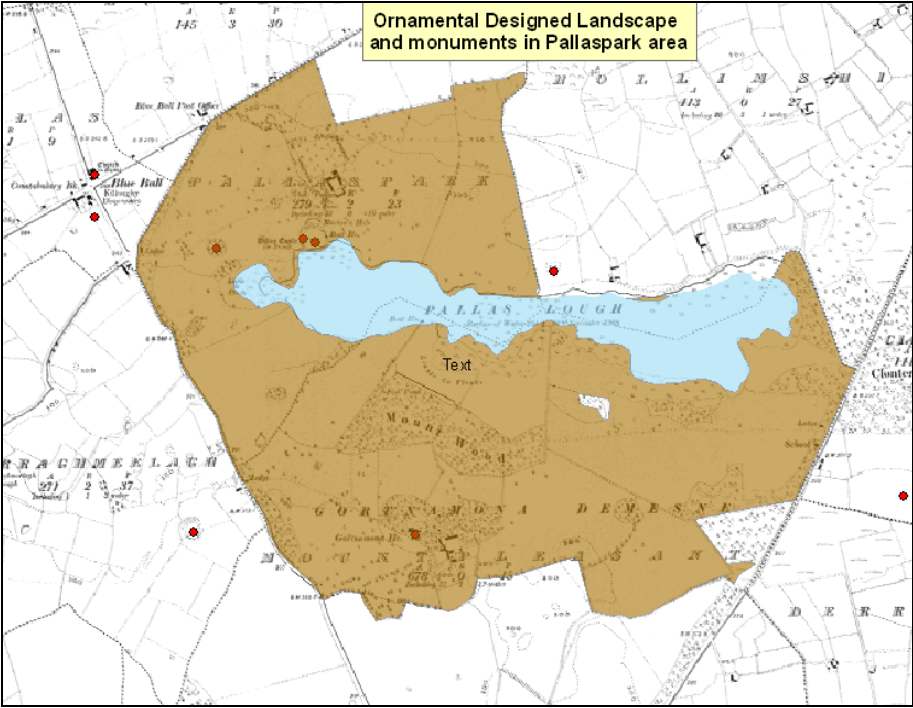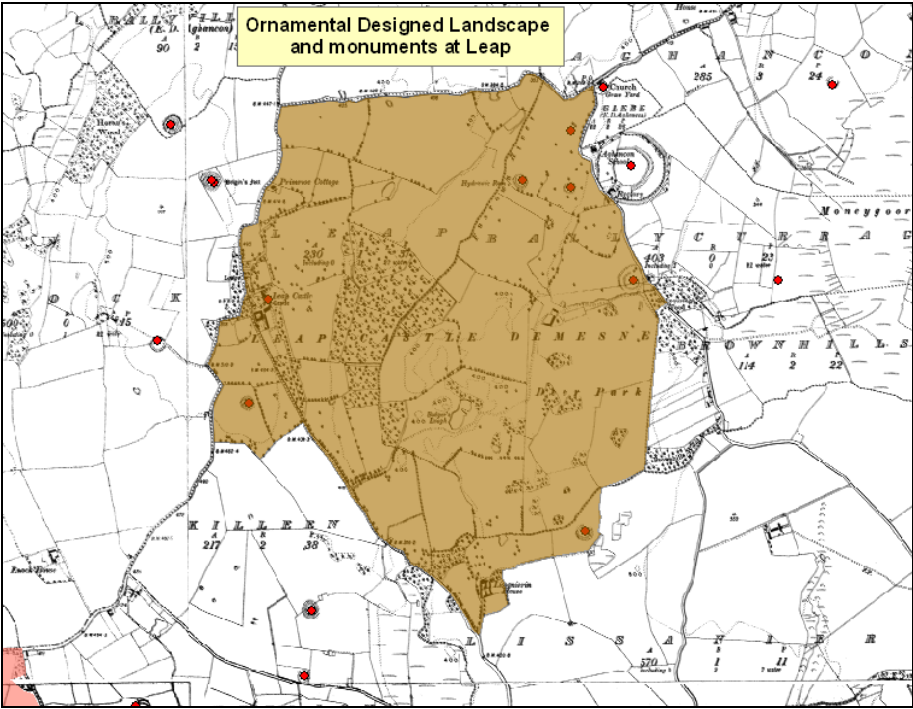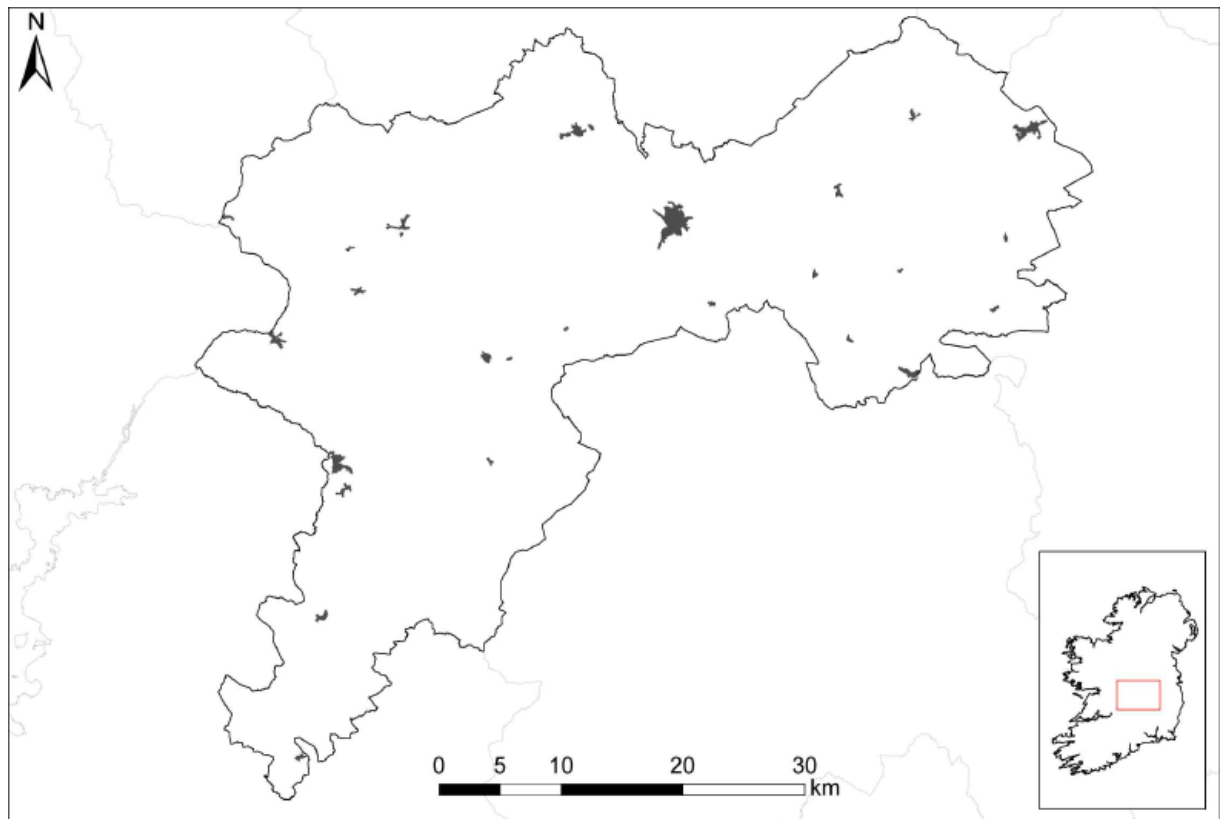
Urban areas accounted for under 1% of the total land area of Co Offaly in the early twentienth century. Twenty four distinct areas in the county were classified as displaying urban characteristics on the 3rd edition OS maps. These ranged from Tullamore and Birr, the principal towns with populations of about 5,000 and 4,000 respectively to places like Moneygall (population c. 250) and Geashill (population c. 100). After the principal towns came a group which could be termed the second rank of the urban hierarchy and which contained towns such as Banagher, Clara, Edenderry and Portarlington with populations of between 1-2,000. The 'urban' character of some of the smallest places in this grouping must have been at best marginal.
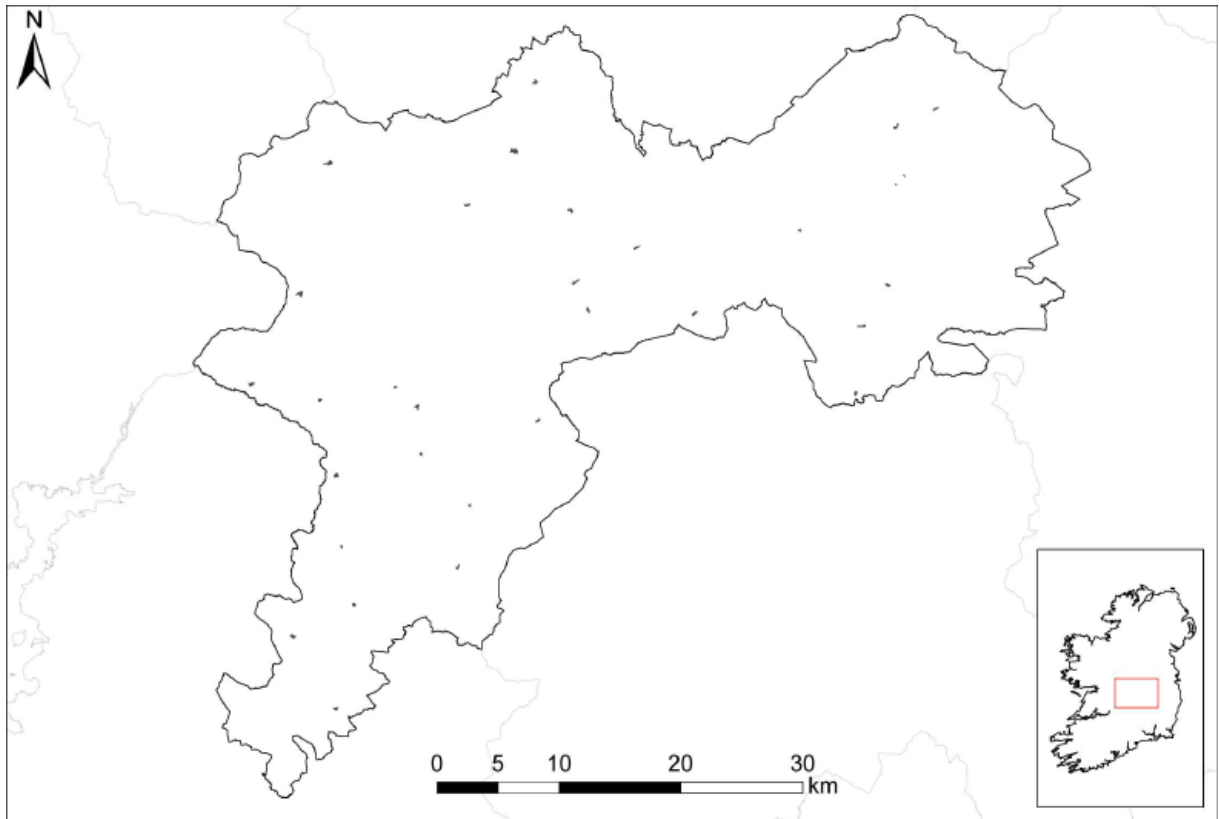
The presence of several clustered buildings in the countryside, either arranged at road junctions or strung out in ribbon-like development gave rise to the classification of 'rural nucleation'.
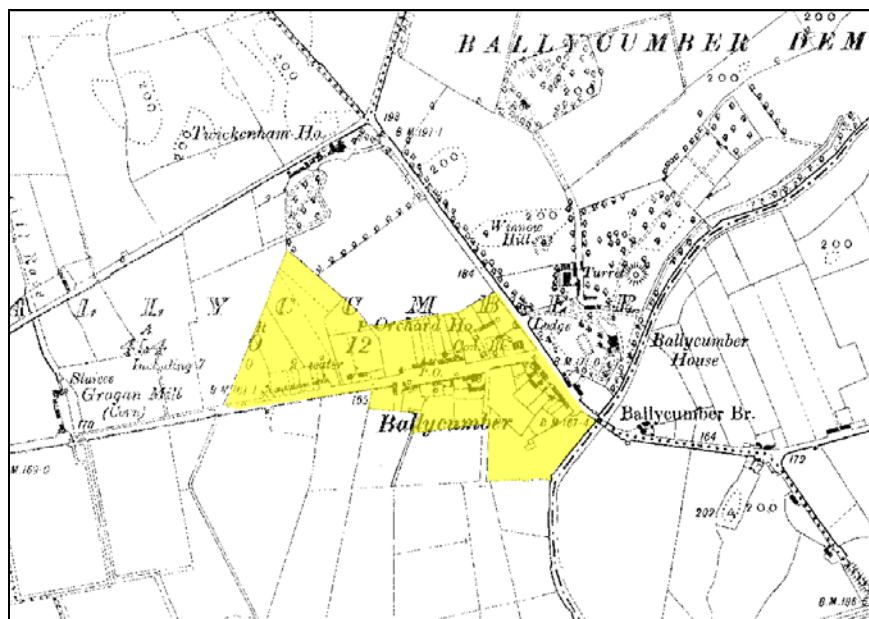
Rural Nucleation identified at Ballycumber

Occupying only 0.05% of land area it was the rarest of all the HLC types identified for the county. The paucity of rural nucleations clearly demonstrates that the prevailing type of settlement in early twentieth-century rural Offaly was in dispersed farmhouses. In certain parts of the county this represented a considerable change from the situation in the early nineteenth century. At that time Clachans – nucleated groups of farmhouses where landholding was organised communally – were a very characteristic settlement type of the north west of the county.They were also found in smaller numbers in the east of the county but were absent from the central belt and the south. The reorganisation of land and settlement which followed the famine did away with these clachans in the belief that only individual farms would encourage initiative and self reliance. Interestingly, rural nucleations are particularly scarce in these areas in 1913.

WOODLAND
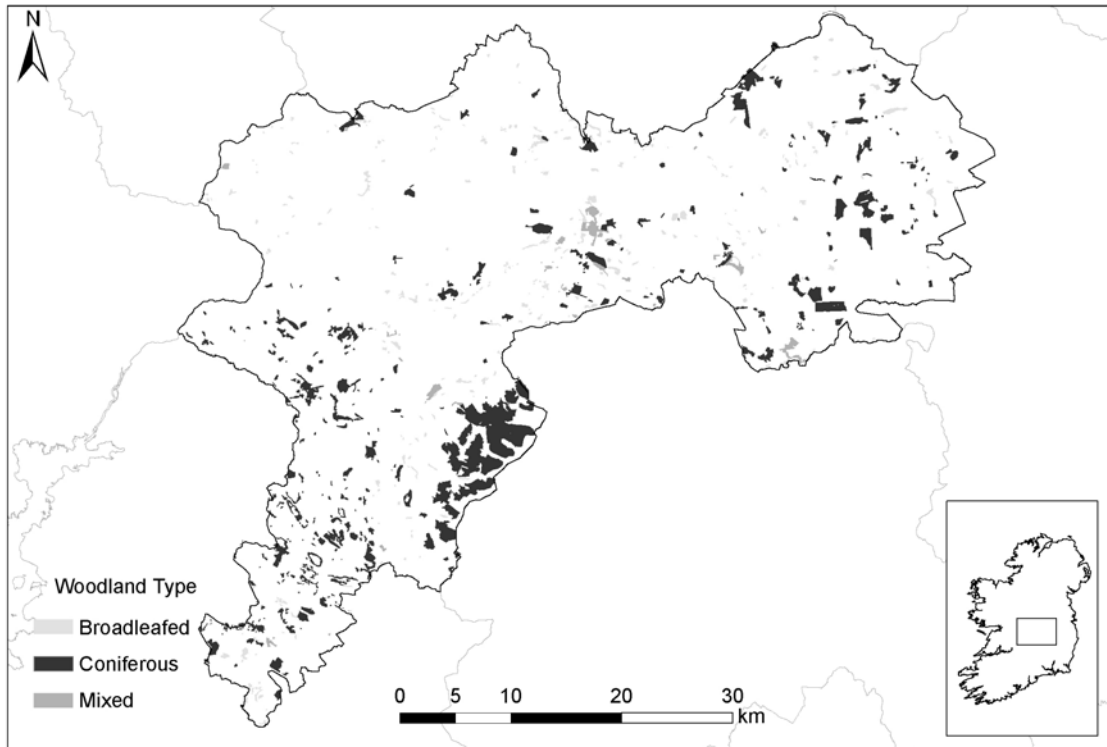
Different varieties of woodland

HLC Type	Percentage of land area
Coniferous Woodland	4.89%
Broadleaved Woodland	0.71%
Mixed Woodland	0.37%
Total	5.97%

Covering just under 6% of the county, woodland was a significant element in the Offaly landscape. Coniferous woodland which made up 5% of this total was the fourth most commonly occurring HLC type. Particularly extensive coniferous plantations were found in the Sliabh Bloom area and in other 'marginal locations not wanted for agriculture.

Broadleaved woods were rare and most often the result of ornamental plantings on the county's demesnes. It is possible that some of the broadleaved woods may represent the remnants of ancient woodlands. In 1983 Oliver Rackham visited a wood on an island in a lake near Tullamore which was full of 'great ancient oaks hung with ancient ivies'.[ii]

This may represent the last vestiges of the extensive woodlands which were shown on the late sixteenth century map of Laois and Offaly (see above). Woodland on this map was found extensively in the foothills of the Slieve Blooms, in the river valleys and ringing the bogs. Most if not all of the surviving broadleaved woodland however, was planted on demesnes by private landowners.
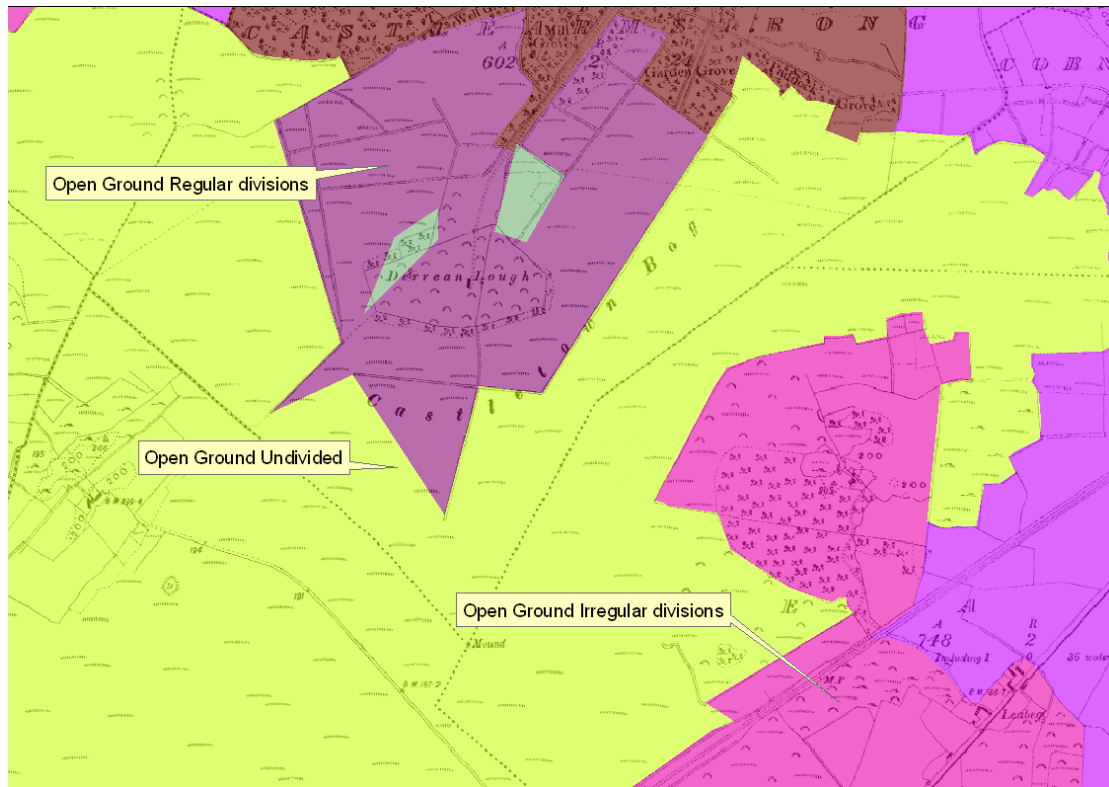
OPEN GROUND
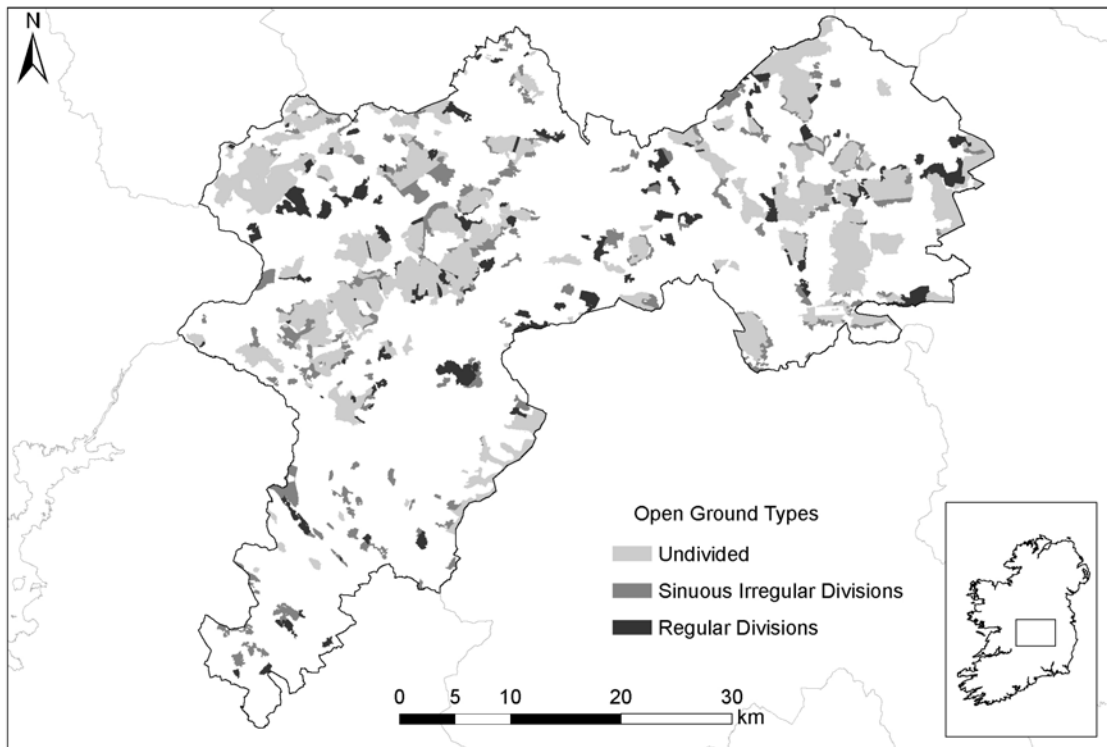
Most of the open ground found in Offaly was peatland. The classification was applied to unenclosed ground of greater than 1km sq. A small proportion of the peatland did contain boundaries and these resulted in sub-divisions of the class depending on the morphology of these boundaries.

Type	Percentage Cover	Description
Open ground undivided	16.80	Undivided open ground (greater than 1km sq).
Open ground sinuous irregular divisions	4.19	Open ground divided by sinuous,irregular boundaries.
Open ground regular divisions	3.35	Open ground divided by straight, regular boundaries
Total	**24.34%**	

As can be seen from the table two-thirds of the open ground in the county was completely undivided at the time of the 3rd ed. OS suggesting that it was not being

interacted with by humans. A small amount of open ground displayed evidence of interaction of a piecemeal, non-systematic kind and only a very small area of open ground was subject to regular, defined interaction. This would suggest that most peat extraction was undertaken by small scale individual or community enterprises while industrialised peat extraction was just starting to get underway.

Three different types of open ground (peatland), Castletown Bog, Co Offaly

[i] Grainne Breen 'Landlordism in King's County' in Nolan & O'Neill, Offaly *History and Society*, p 640.
[ii] Oliver Rackham, *History of the countryside* p 117.

Section 5: Assessment of Future Historic Landscape Characterisation Projects in Co Offaly

INTRODUCTION

This section outlines the processes and stages that could be carried out to build upon and develop the HLC data previously created within the PCL project. As outlined in section two the limitations of time and source map data availability in 2003 only allowed for HLC data to be collected from a 3rd edition OSI base map. Now with new vector based data sets available to the user, the process of HLC map creation can be improved. Four key stages have been identified to produce a HLC map with increased spatial and attribute accuracy. These include:

1. Creation of 1:5,000 OSI land parcels
2. Creation of contemporary HLC map
3. Conversion of previously created 3rd ed (1913) HLC to modern geographic framework
4. Creation of 1st ed (1838) HLC Map

Each of these stages acts as one of the map data sources for the following stage and therefore the processes below have to be carried out in sequential order. Within the time constraints of the project it was only possible to carry out these stages on an area equivalent to one of the third edition map sheets (map sheet 29) within the County Offaly area.

STAGE ONE: CREATION OF POLYGONAL LAND PARCELS FROM MODERN OSI 1:5,000 DATA

For the creation of a modern historic landscape characterisation map of County Offaly, it would be advantageous to base its map scale and geometric position around the current 1:5,000 vector data set, in combination with the modern orthophotos that exist for the county. This will bring a two fold advantage to the created data set:

- HLC parcels/units will sit coherently within a national framework which planners and other map users are familiar with and can use.
- The accuracy of field boundaries will be to a recognised level subscribed to by the national mapping agency.

There are also problems associated with using these datasets, including:

- Current 1:5,000 OSI vector mapping exists as discrete field boundaries, represented by single unconnected lines. Land parcels must therefore be constructed by manually joining together boundary lines and converting the shape

into polygons. Within the UK the national mapping base data, MasterMap has already addressed this problem by offering users land parcel data in a polygon format.
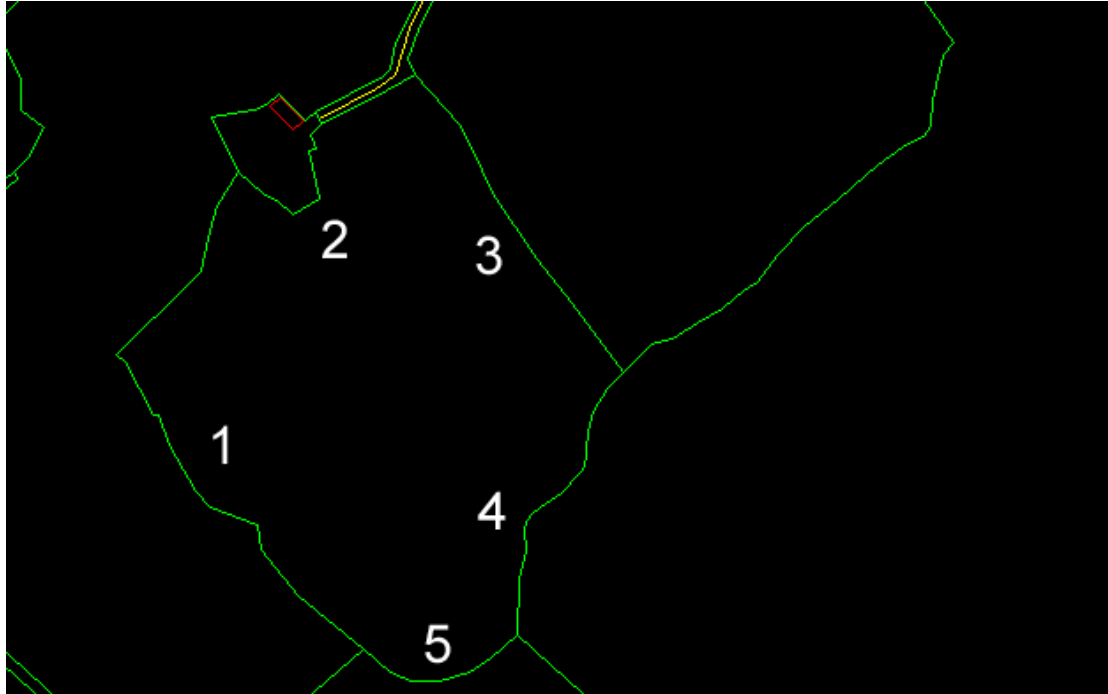

Fig 5.1: Sample of OSI 1:5,000 data highlighting the five separate lines that need to be manually joined together to produce a polygon representation of the field unit.

- The OSI provide the 1:5,000 data sets as a tiled series of AutoCAD dxf files. These tiles must be joined together and edited to produce a seamless county wide data set.
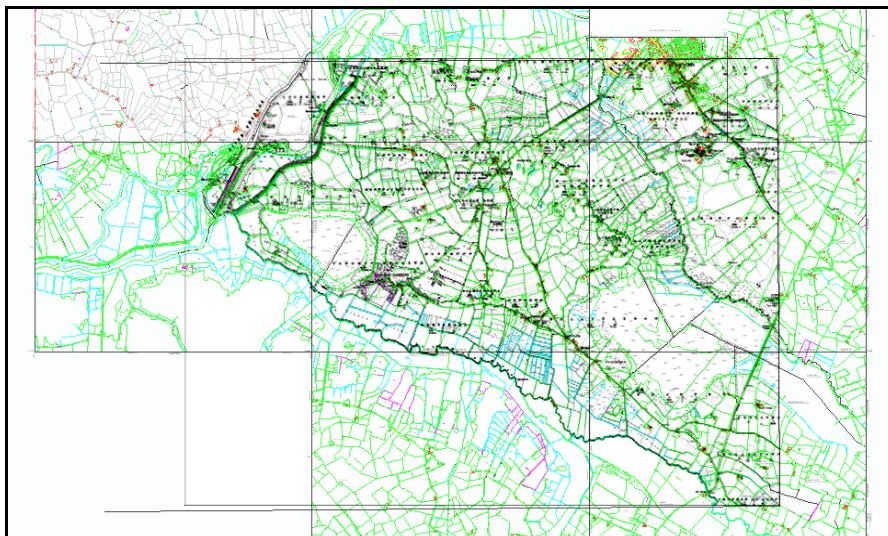

Fig 5.2: Illustration of the eight individual 1:5,000 and 1:2,500 vector data tiles the go up to make the equivalent area covered by sheet 29 of the 3rd edition mapping set.

- For certain areas within the county where population density is relatively greater, the OSI have mapped the area at a scale of 1:2,500 and 1:1,250. This provides an increased level of detail; however, the positioning discrepancy between the tiles and a neighbouring 1:5,000 data tile is all too evident and presents a problem on where objects truly sit within the area.
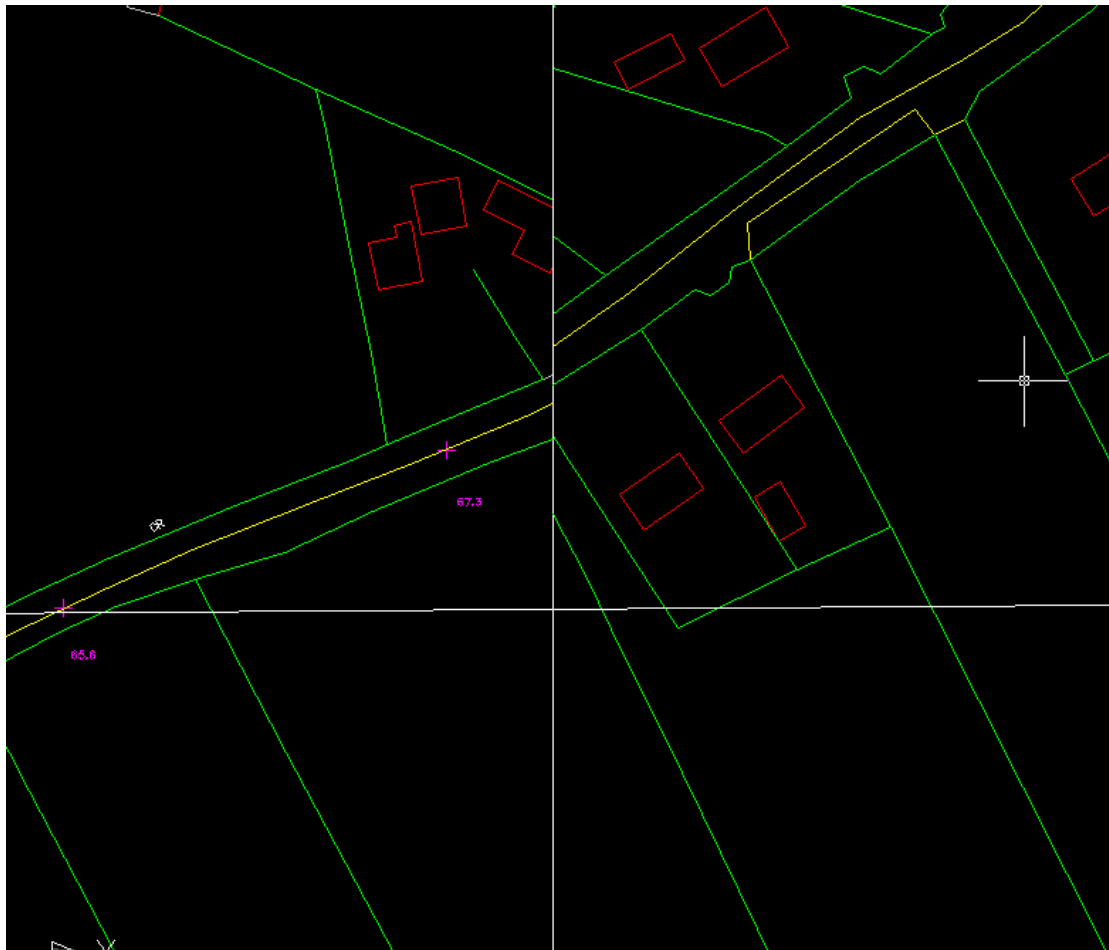

Fig 5.3: A screen shot of OSI vector data illustrating the location discrepancy between the 1:2,500 data (left) and 1:5,000 data (right).

The processes of polygonal field parcel creation was carried out for the equivalent areas covered by sheet 29 which is constructed by eight 1:5,000 vector data tiles. The process took five days to complete and check, and extrapolating this process to the whole of County Offaly would take somewhere in the region of 150 days for the editing of the complete 215 OSI tiles that cover County Offaly. The OSI have stated that in the coming two years that the 1:5,000 data will be formed into a seamless map layer that contains polygonal data with assigned attribute information. An assessment would need to be made whether this expenditure of time into the

cleaning up of OSI data is an efficient use of resources. If this process was to benefit the council in other mapping projects (i.e. digital map data for general planning) it may be worth carrying out this data clean up exercise, however, if the only proposed use of this data is for the creation of a HLC map, it would probably be beneficial to wait until the OSI have carried out this work.

STAGE TWO: CREATION OF CONTEMPORARY HLC MAP

This stage of the process utilises two data sources to create a contemporary HLC map similar to those created by comparable exercises in the UK. [1] Utilising the polygon data set created in stage one of this process, together with the 1:40,000 scale OSI orthophotos a HLC operator can classify land parcels depending on their morphology and historic function to produce a HLC map for the county. The final product being a HLC map based on current land use within County Offaly. This took approximately 2 days for the completion of an area covered by one 3rd edition map sheet. It is estimated to complete this process for all of County Offaly would take approximately 100 days.

Fig 5.4: A combination of cleaned 1:5,000 polygonal map data and modern orthophotos is used in the production of a contemporary HLC map for County Offaly.

STAGE THREE: CONVERSION OF THIRD EDITION MAPS TO NEW 1:5,000 REFERENCE DATA.

This stage facilitates the integration of the data that was created as part of the PCL Project to the modern map location data frame, created in stage one. Within the GIS

system both the modern 1:5,000 map data and the 3rd edition maps and HLC data is placed so each layer is visible. The HLC operator then selects the polygons from the modern 1:5,000 data that correspond to equivalent areas already classified (see Figure 5.5). For areas where land parcel morphology differs from the modern landscape compared to the 3rd edition maps field subdivision or field aggregation is carried out on the modern 1:5,000 data set so that it reflects the 3rd edition map.
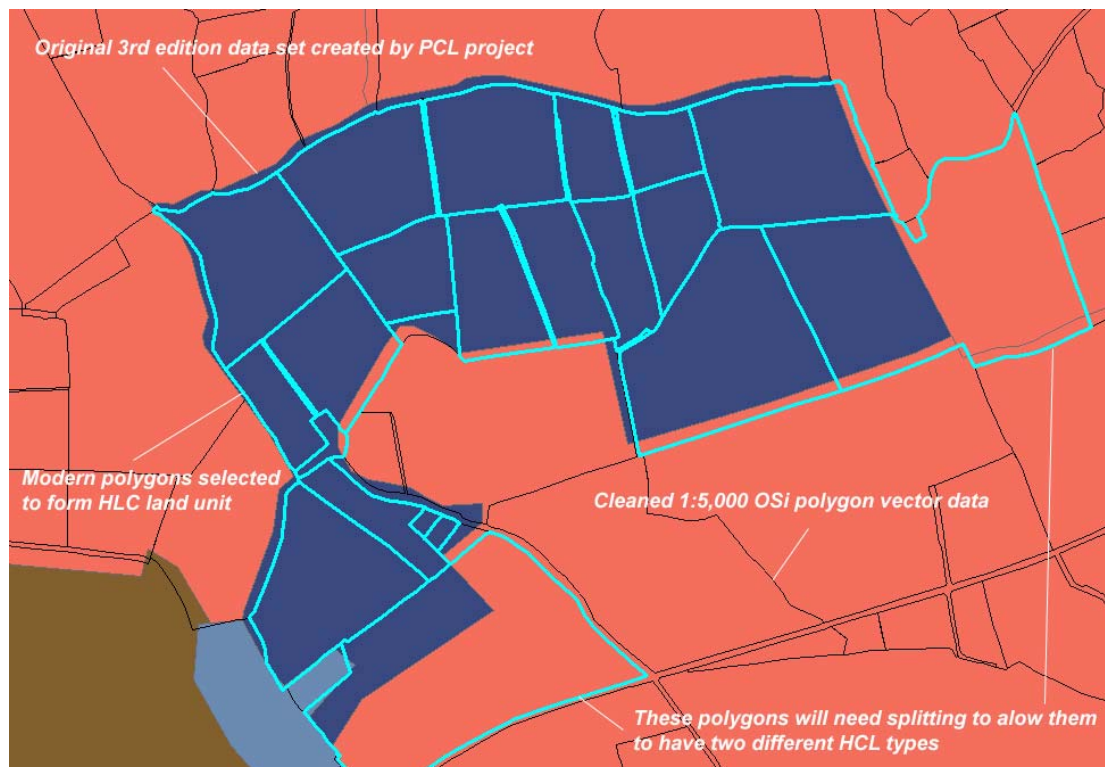

Fig 5.5: Converting previously created HLC data from the 3rd edition map to a modern 1:5,000 spatial framework.

Problems are evident between the spatial geo-referencing of the 3rd edition maps to the modern 1:5,000 data set. Due to no standardised national grid being in existence during the creation of the 3rd edition mapping each sheet has an individual map projection. The positional accuracy of the third edition data and any data digitised from this source is therefore not accurate to modern mapping standards, if the position of the third edition maps is unedited. Where new boundaries need to be digitised from the 3rd edition map, the position of the map needs to be transformed to coincide with the 1:5,000 data set (see Fig 5.6) using geo-referencing tools within the GIS. The time taken for this process was approximately 3 days per map sheet, resulting in a estimated timeframe of approximately 150 person days to complete.
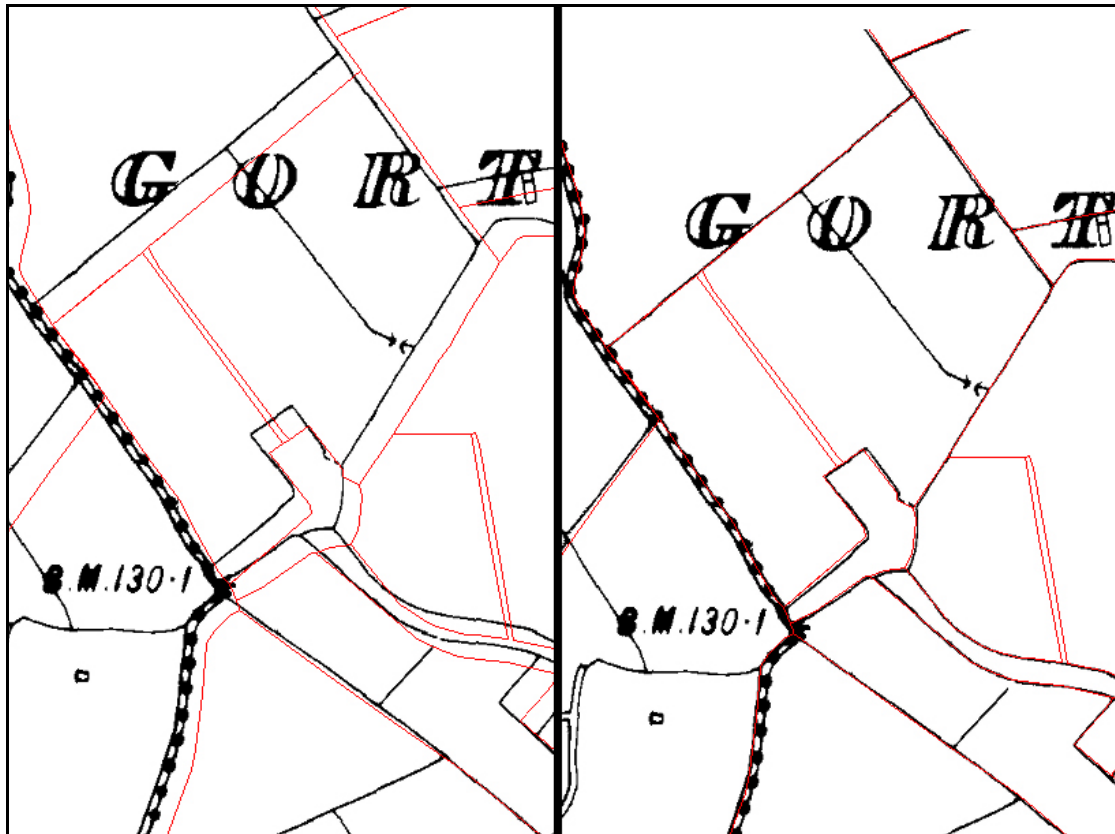
Fig 5.6: Spatial discrepancy between modern map data and 3ʳᵈ edition maps. Left image is uncorrected, and right image has been transformed to the coincide with OSI 1:5,000 base mapping.

STAGE FOUR: CREATION OF 1ˢᵀ EDITION HLC MAP

This process is similar to stage three; however, the HLC operator should use a combination of the HLC data set created in stage three as the base map and the geo-referenced first edition maps as their historical map source. The operator should then edit the vector data set, including the digitising of land parcel boundaries that have been removed since the first edition map was created, so that the final HLC polygon data set resembles and characterises the landscape displayed within the first edition map. Again problems exist between the spatial positioning of the first edition map and modern map data. The position of the first edition map should be transformed as digitisation is carried out to improve the positional location of any created data. The time taken for this process was approximately 2 days per map sheet, resulting in an estimated timeframe of approximately 100 person days to complete.

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Figure 5.7: Illustration of a geo-referenced 1st edition map and its relationship to field boundaries created in stages 2 and 3.

STAGE 1 – 4 COST ESTIMATES

The estimated breakdown of actual time cost to complete each exercise for the whole of County Offaly is as follows, with each stage being calculated with and without and additional 10% for error checking and corrections (value in brackets):

Stage	Approximate days required
1. Cleaning of 1:5,000 OSI data	150 (165)
2. Creation of contemporary HCL	100 (110)
3. Creation of 3rd ed. HLC	150 (165)
4. Creation of 1st ed. HLC	100 (110)
Total	*400 (550)*

APPLICATION OF HLC DATA SETS

As each of the stages is completed, an increasing level of understanding of the historic evolution of the landscape of County Offaly is achieved. These data sets would offer historical researchers, and county planners the ability to fully understand the change in land use within the county and development of landscape over time.

Comparisons between the different HLC data sets will allow for a more informed assessment of the impact of agricultural methods and development on the Offaly landscape over the past 200 years. With the three HLC data sets created quantitative analysis of the landscape can take place. Question of landscape evolution can be asked, including:

- Average field size evolution: mean/median field size and perimeters over time.
- Rate of removal of field boundaries between the time periods 1838 – 1913 - 2004.
- Rate of loss of historic landscape types over time period 1838 – 2004.
- Area of pre 1838 field units still in existence today.
- Is there a trend of landscape use to change from one HLC type to another?

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[1] Clarke Jo, Darlington John & Fairclough Graham, *Using Historic Landscape Characterisation.* (English Heritage, 2004)

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