Heritage Audit of the Northern River Nore

An action of the Kilkenny Heritage Plan

2007-2011

Volume 1
Introduction and Overview

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Kilkenny Heritage Forum

An Chomhairle Oidhreachta
The Heritage Council

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Foreword

During the formulation of the Kilkenny Heritage Plan the River Nore was identified, by the Kilkenny Heritage Forum, as one of our most important heritage resources. The river encompasses built, natural and cultural heritage; is strongly identified with, and has had a very significant influence on, the life and development of the county.

This project addresses action no. 8 of the Draft Kilkenny Heritage Plan to "*Undertake a community based project on all aspects of the River Nore's heritage*". It was decided to concentrate this project on the northern section of the River, which to date has not been widely studied. It is hoped that in future years additional sections of the river can be studied. The resulting report and database will be a very significant resource for community, heritage and tidy towns groups; it has the potential to inform planning and management of the area; and is a baseline against which change can be assessed.

I wish to thank the team of consultants Kilkenny Archaeology, Mieke Muyllaert & Associates and Jimmy Lenehan, for their commitment and enthusiasm in undertaking his project, the sub-committee of the Heritage Forum who guided the project, and the local communities for their enthusiastic support of the project.

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Dearbhala Ledwidge

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We also wish to thank the following for their contributions to the public information evenings: Nora Ní Eacha, Shane Foley, John Dalton, Monica White, Báithín Wong, Tom Hoyne, Melanie Zobl, Pat Raferty, Michael Holohan, Mary Butler, Brigid Murphy, Seamus Healy, Tom Butler and Dan Lenehan.

The team reported to the River Nore Heritage Audit steering group and we wish to thank them for their assistance throughout the project.: Dearbhala Ledwidge (Heritage Officer of Kilkenny County and City Councils), Jimi Conroy (National Parks and Wildlife officer), Colm Murray (Architecture Officer the Heritage Council), Tony Patterson (Kilkenny Heritage Forum). Brendan Cunningham (GIS Project Leader of Kilkenny County Council) and Aoife Dowling (GIS Technician Kilkenny County Council) are also thanked for their assistance with mapping and for providing us with GIS datasets.

List of Figures

Mother Nore

On thy banks 'twere sweet to linger,

Sweet to stem thy summer stream;

Sweet to woo, and wed, and die beside thee,

Thou, of waters, fairest queen

Canon William Carrigan

The Nore River God at the Custom's House, Dublin by Edward Smith

Introduction

In 2007 the draft Kilkenny Heritage Plan was prepared by the Kilkenny Heritage Forum. This is a five-year strategy for heritage in Kilkenny and one of its a key purposes is to collect and disseminate information on the county's heritage. One of the tasks envisaged in the plan was 'a community based project on all aspects of the River Nore's Heritage' (action no.8) and this formed the basis for the commissioning by the Heritage Forum of the River Nore Heritage Audit. A study-group comprising Kilkenny Archaeology, Mieke Muyllaert and Associates and Mr. Jimmy Lenehan was commissioned by the Heritage Forum to undertake the heritage audit, with the following key aims:

1. To provide a comprehensive and accurate mapped dataset of the built, natural and cultural heritage of the study area.
2. To locate, describe and photograph any previously unrecorded built heritage relating to the study area.
3. To make field inspections of relevant built heritage and to describe, locate and photograph these sites.
4. To gather a corpus of the study area's cultural heritage, with particular reference to the River Nore.
5. To identify, map and gather data on key species and habitats in the study area.
6. To manage the dataset within a Geographical Information System (GIS) database.
7. To engage with local communities and other interested parties throughout the project.
8. To deliver the results of the audit in report, inventory, GIS database and poster formats.

The study area

The 140km long River Nore rises on the eastern slopes of the Devil's Bit mountain in Tipperary and flows south-east through county Kilkenny to meet the river Barrow outside of New Ross, from whence they merge with the river Suir at *Cumar na dTrí Uisce* (the confluence of the three waters) at Waterford harbour. The study area extended along the River Nore for 22km from the Laois/Kilkenny border at Ballynaslee to Ossory Bridge (Maudlinsland and Archersgrove townlands) in the south (Figure 1). The main focus of the project was on the River Nore and its immediate environs though it also included an area which was loosely defined as 500m either side of the centre of the river. In the Kilkenny city centre area, from Green's Bridge to John's Bridge, this zone was decreased to *c.*10m to avoid cluttering the dataset with sites which were of little or no relevance to the river. Thus the total area studied in the audit measured 29km².

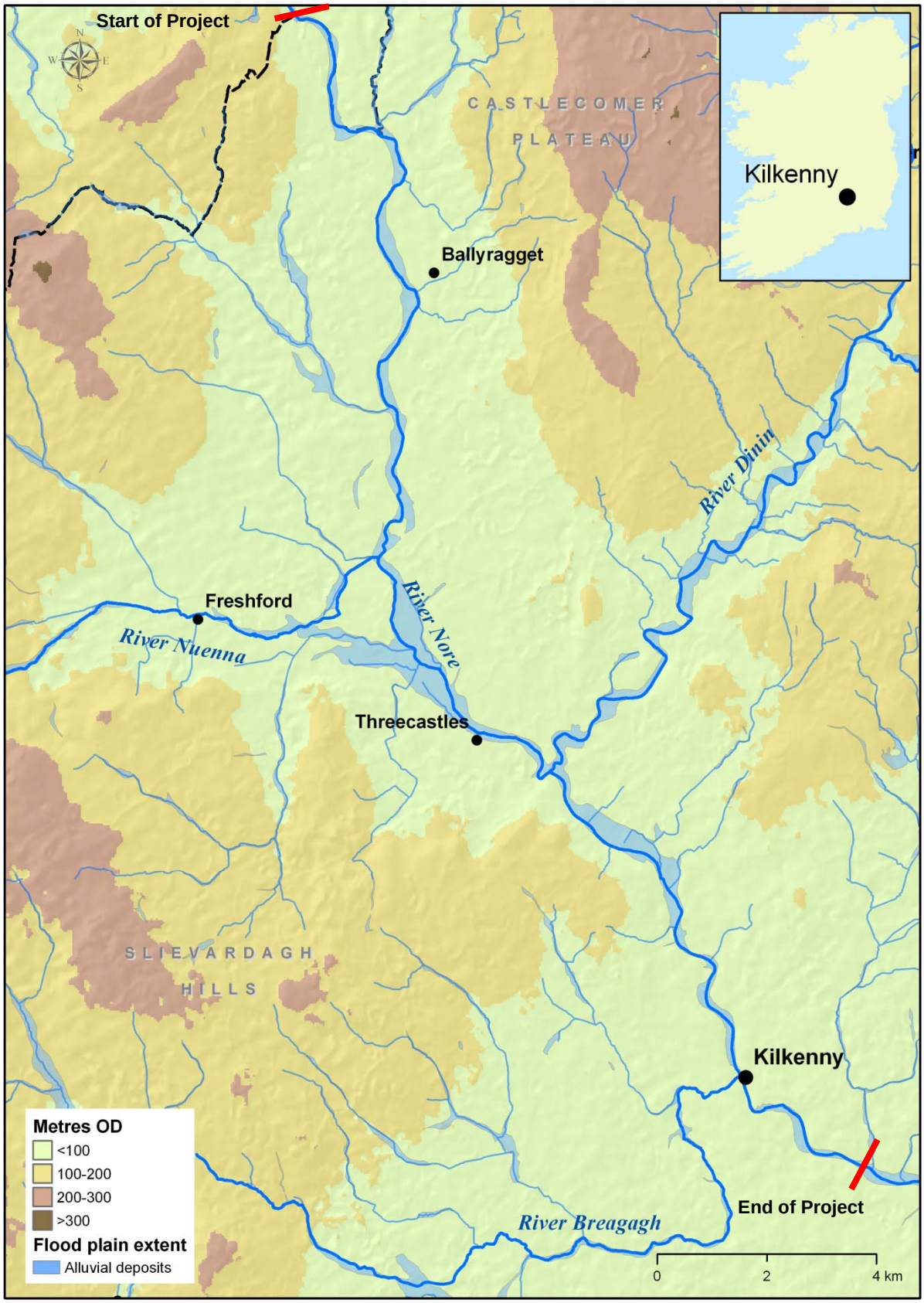
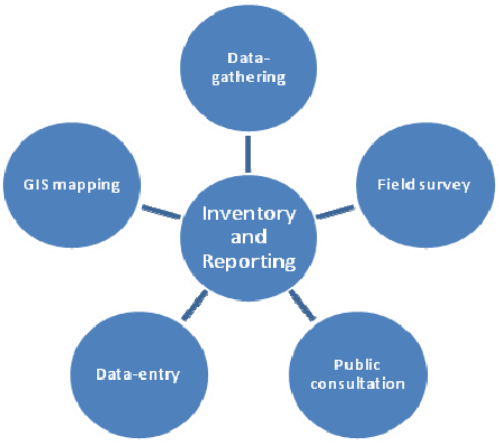


Figure 1: Map of the Northern River Nore and its tributaries with the study area marked (sources: EPA subsoils and rivers dataset, ASTER DEM) .

How the project was carried out

Work on the River Nore Heritage Audit began 8th September 2009 and was completed by 30th October 2009. The gathering together of information on the many disparate aspects of the study area's heritage was a major undertaking that involved a great deal of documentary research, the analysis of a variety of maps, aerial photographs and most importantly, meetings with the many people who live along the river and who have an extensive knowledge of its history and nomenclature.



Basic structure of the River Nore Heritage Audit

A period of fieldwork, including a canoe-survey down the river, followed and this process led to the compilation of a large corpus of information which was subsequently placed in a specially designed computer database. This allowed the information to be easily accessed and integrated with a GIS. GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. The final stage of the project involved the production of an inventory with maps and photographs of the study area's heritage.

Figure 2: Canoe-survey at Ballyragget weir October 2009

Figure 3: Dick Keoghan and Jack Phelan (left picture), Johnny Dalton and Sean Stapleton (right picture) discussing river names

Layout of the Report

This report is divided into four sections. This section, Volume 1, describes the evolution of the northern River Nore and provides a synopsis of its archaeology, its industry and its natural and cultural heritage. Volume 2 is an inventory of the built heritage of the Northern River Nore accompanied by mapping and a photographic record. Volume 3 contains the natural heritage inventory, mapping and photographic record and Volume 4 is a collection of oral history and river-names which was collated during the course of this project. The complete digital dataset in MS Access and Arc View GIS format accompanies the volumes.

Carved by Ice: the origins of the River Nore

Geology

Kilkenny may be known today as part of the sunny south-east but 350 million years when most of the county's rocks began forming, it was under a tropical sea on the equator. The geology of north Kilkenny ranges from the coal bearing Castlecomer plateau in the north-east to the limestone hills of Clomantagh through to the shale and sandstone hills of the Slievardagh range in the north-west. In the lowland river valleys it is primarily limestone that is found buried deep beneath glacial deposits; this was formed by the immense quantities of a calcite ooze that derived from invertebrate animals like corals that accumulated on the sea-floor and gradually over millions of years turned to stone (Figures 4-5).

Figure 4: A 300 million year old fossil fern from the Castlecomer coal-seams. The coal was formed over limestone and derives from trees, animals and other organic matter which inhabited shallow tropical swamps.

The formation of the River Nore

Like good footballers rivers exploit areas of weakness and dribble around obstacles. The Nore eroded its wide valley into a layer of softer shales and sandstones that formed over the harder limestone. Areas that resisted erosion now stand out as hills and ridges in the valley: a good example is to be seen at Naglesland where the main river channel and the Dinin tributary met a ridge of hard cherty limestone. This caused the river to veer steeply around the harder rock to form a deeply-incised meander.

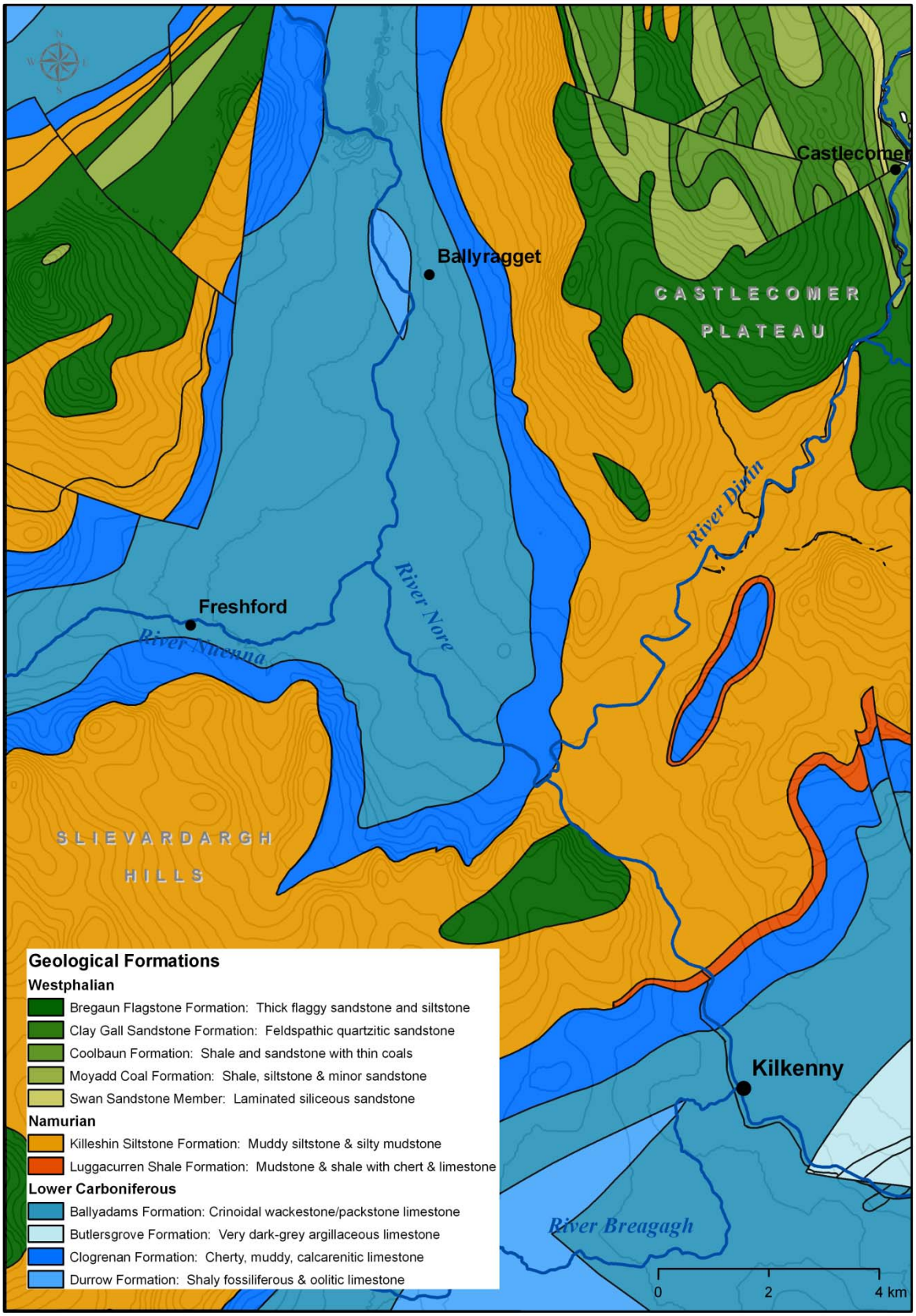


Figure 5: Map of the bedrock-geology of the Nore river valley (source: Geological Survey of Ireland).

Figure 6: At Naglesland the Nore takes a sharp left turn to avoid a ridge of hard cherty limestone (the high tree-covered area in the background of the photo).The spectacular views from this ridge were an important factor in the siting of a ringfort on its crown during the Early Medieval period.

The River Nore in the Ice Age

Kilkenny was completely covered by a vast, thick ice-sheet on at least two occasions over the past 200,000 years. Very little is known about the way the county was shaped by the penultimate glaciation – 'the Munsterian'. However, in 1984 a borehole at Ballyline near Castlecomer led to the chance discovery of an ancient lake-edge 40m below a glacial till (Coxon and Flegg 1985). Analysis of the pollen in the lake-sediment revealed that between the ice ages this part of Kilkenny was warm enough for pine, birch, fir and oak to grow.

The last great Ice Age – 'the Midlandian' - peaked 20,000 years ago and in Kilkenny two separate ice-sheets converged on the Nore valley. One of these glaciers had travelled from the west of Ireland and the other from the north; when they melted vast quantities of gravel were left behind in the valley. These have been recorded to a depth of 20m in places and there are numerous quarries exploiting the material throughout the Nore valley.

The last ice age profoundly affected the physical geography of the county and Kilkenny possesses quite a 'young' landscape, relatively speaking.

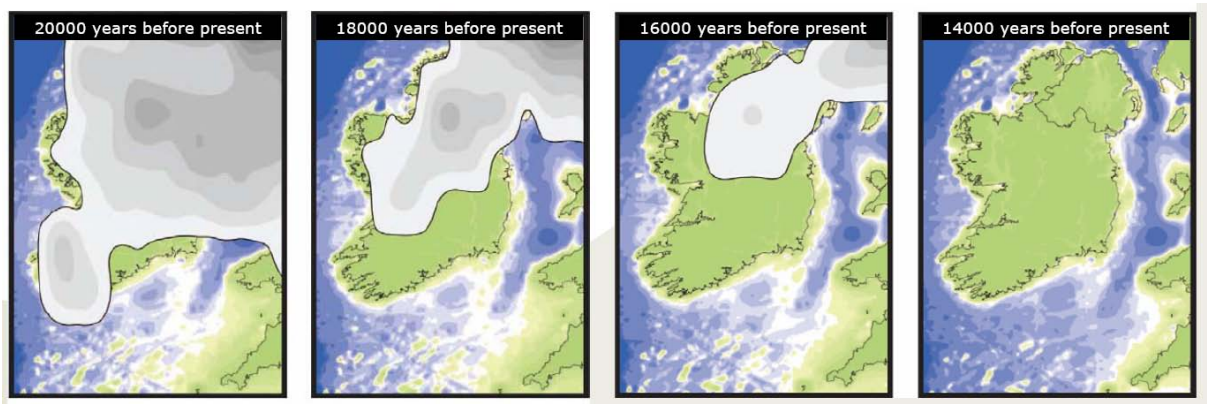


Figure 7: Reconstruction of ice retreat at the end of the last ice age (source: Submerged Landscapes Archaeological Network)

Once the ice had begun to melt these shores became populated by a suite of flora and fauna such as the Giant Irish deer, one of which was found in 1900 at Swift's Heath, near Ballyragget. Reindeer bones which were unearthed at Dunmore cave in 1894 may also relate to this period. Both these animals become extinct in this country during a sudden return of ice age conditions between 10,500-10,000 years ago.

Figure 8: A Giant Deer (Megaloceros giganteus) discovered 1900 at Swift's Heath and now in Rothe House, Kilkenny. This specimen is about 12,000 years old. The drawing on the right is of a male Giant Deer 'in the flesh'

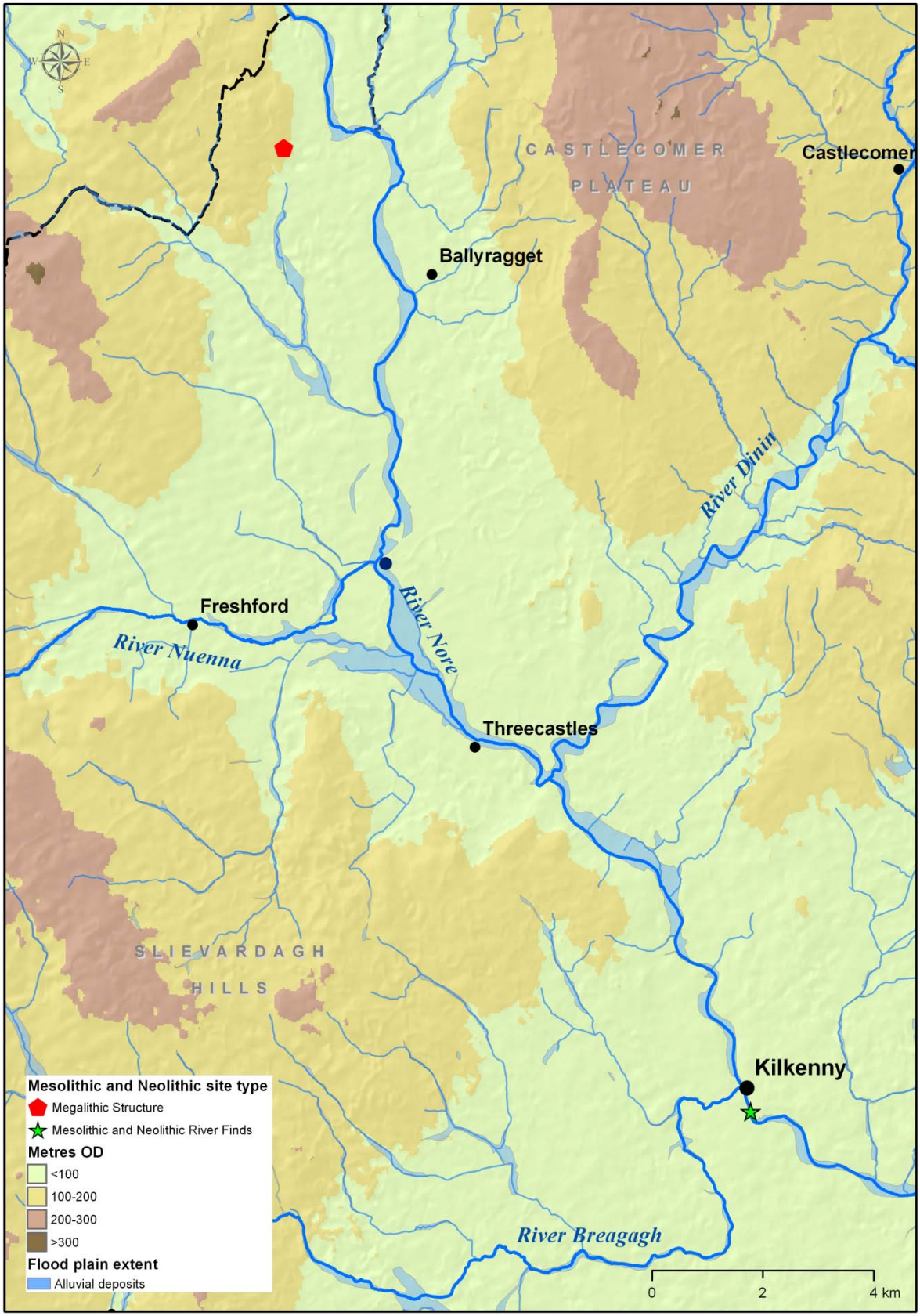


Figure 9: Map of the settlement landscape of the northern River Nore valley in the Mesolithic (7000-4000 BC) and Neolithic(4000-2500 BC) (sources: EPA subsoils and rivers dataset, ASTER DEM, RMP dataset) .

Routeway to the Primeval Interior: the Nore in the Mesolithic

There is no evidence yet from Ireland that humans occupied the country before 10,000 years ago, though this is probably due to the absence of evidence rather than an evidence of absence. Kilkenny appears to have remained uninhabited for perhaps another 4,000 years, by which time the county was engulfed in a thick hazel and oak forest. Naturally therefore it was the rivers that provided the access route for moving through the landscape and virtually all of the Mesolithic (7000-4000 BC) finds from Kilkenny have been found in or near the Nore and Barrow rivers.

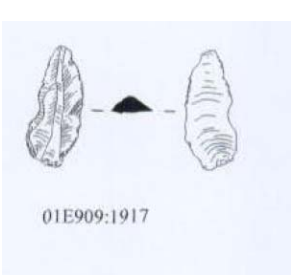


Figure 10: This rather innocuous flint microlith (left) is the oldest human artefact found in county Kilkenny (source: M. Gowen and Co. Ltd.). Excavations at Mount Sandel, County Derry have revealed that people at the time the flint was struck lived in skin-covered huts such as that shown above right.

The most remarkable discovery was made in 2001 by keen-eyed archaeologists searching for artefacts in the excavated river-gravels from the Nore flood-relief scheme in Kilkenny city (Lohan 2005). Near Bateman quay they found a tiny (32mm long) flint tool called a microlith; these are typical of the first half of the Mesolithic in Ireland and this is Kilkenny's oldest human artefact. Whether or not it represents an actual human presence in the county in the early Mesolithic is debatable however, as it could have washed in from further upstream. The River Nore in the city also produced flints that can be dated to the second half of the Mesolithic and there have been occasional similar finds from elsewhere in the north of Kilkenny. However the bulk of the activity at this time seems to have been in the south – indeed the only archaeological excavation of a Mesolithic site in Kilkenny has recently occurred at Newrath near Waterford, where a series of flints were found on an old submerged land-surface.[1] This concentration in the south is probably a reflection of the wide variety of exploitable environments (coastal, forest, riverine, intertidal) that were in easy reach, as opposed to further inland where there was less variety.

Neolithic pioneers on the River Nore

South Kilkenny was also the main focus for settlement during the subsequent Neolithic period (4000-2500 BC) when an agriculturally-based society possessing elaborate social and ritual structures developed. Megalithic tombs are the most visible markers for a Neolithic presence in an area and

[1] http://www.wac6.org/livesite/posters/poster_files/WAC_120_Timpany_Wilkinson.pdf (accessed 23.10..2009).

there are perhaps as many as five such tombs in the north of county Kilkenny, the finest of which is the passage-tomb on Clomantagh hill. Although it is likely they settled the area, none of the dwellings of these Neolithic pioneers have been found in the north of the county. Evidence for their presence along the northern Nore comes in the form of a series of polished-stone axes that have been recovered from the river itself, also during the flood-relief scheme in the city. These tools can be of earlier date though the vast majority are of Neolithic age and were used in wood-working and to fell trees.

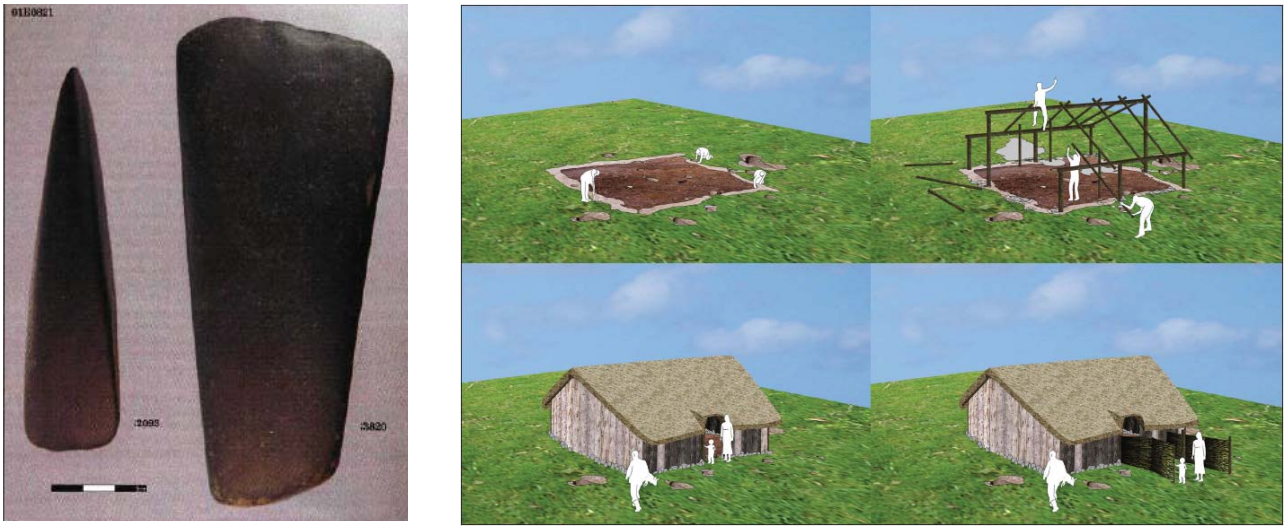


Figure 11: A number of polished-stone axes have been found in the River Nore at Kilkenny city, perhaps indicating that tools or objects were intentionally placed in the river as a ritual offering. The example shown above (left) was discovered during the course of the River Nore flood-relief scheme. Much of the woodworking for the construction of early Neolithic houses such as that excavated at Grannagh near Kilmaganny (right) would have been carried out with the aid of these axes (sources: M. Gowen and Co. Ltd., Headland Archaeology Ltd.).

The Valley of the Dead: the Nore in the Bronze Age

If the millennia that spanned the Neolithic and Mesolithic saw the northern Nore as being somewhat on the periphery of human activity, the succeeding Bronze Age (2500-800 BC) sees the river at the heart of settlement in the county. A population explosion appears to have occurred at this time throughout the Nore valley, its thick forests were cleared and field-systems such as those recorded by archaeologists at Ballyconra and Foulksrath were laid out to protect crops and livestock (Gibbons 1990). No dwellings of these Bronze Age farmers have been found in northern Kilkenny but recent excavations around Paulstown and Danesfort in the south have revealed the remains of substantial timber roundhouses that were set within small defended settlements. Large hillforts such as Toormore and Clomantagh which overlook the Nore valley were also built in the last centuries of the Bronze Age and were probably home to tribal kings and their entourage. *Fulachta fiadh* required large quantities of hot stones for cooking, bathing and perhaps ceremonies. Most date to the Bronze Age and are to be found today most frequently in upland areas of north Kilkenny. However excavations of *fulachta fiadh* at Parks Grove and Dukesmeadows have demonstrated that the Nore floodplain was also used, presumably as a source of water.

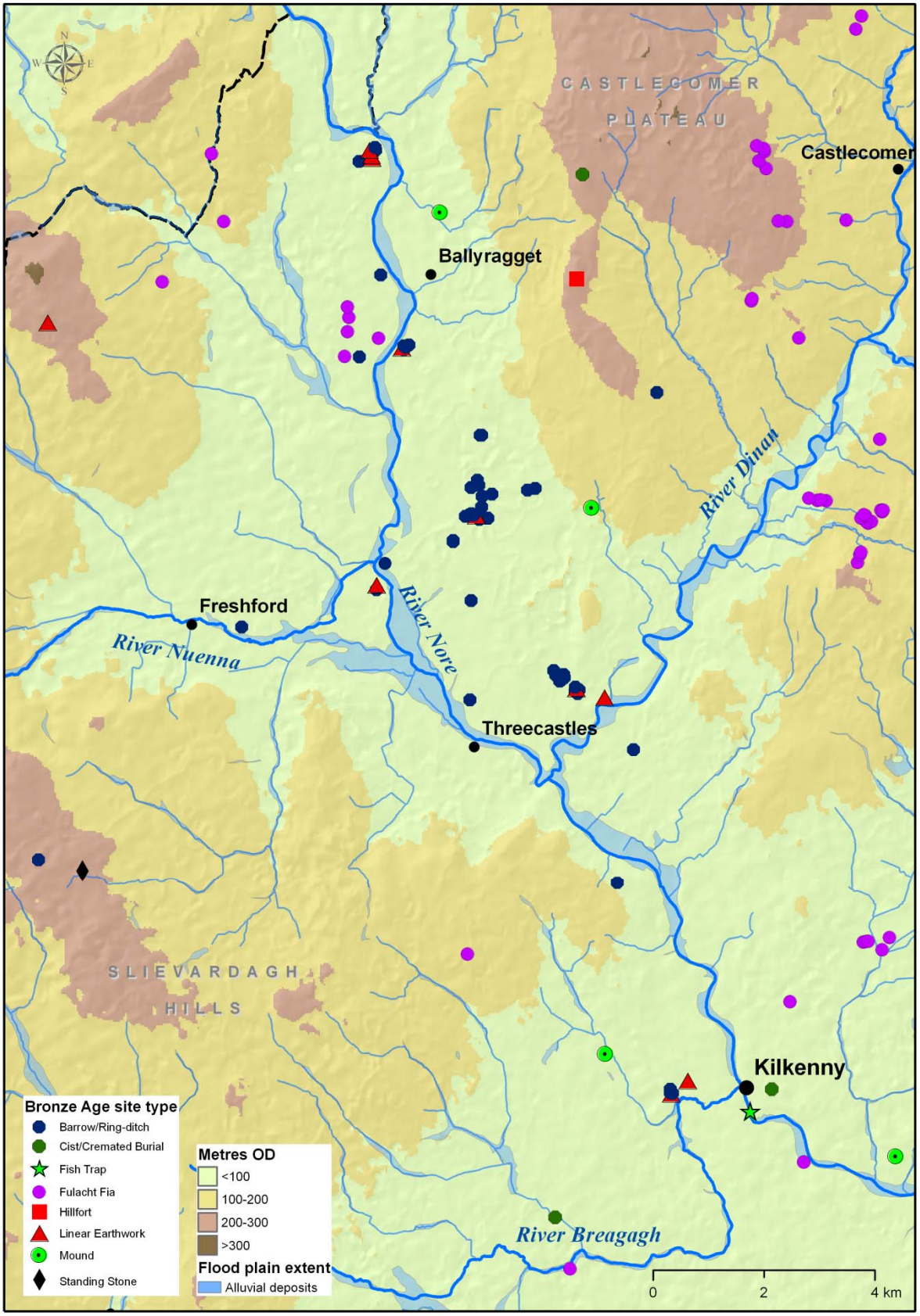


Figure 12: Map of the settlement landscape of the northern River Nore valley in the Bronze Age (2500-800 BC) (sources: EPA subsoils and rivers dataset, ASTER DEM, RMP dataset, River Nore Heritage Audit built heritage inventory GIS) .

Figure 13: Late Bronze Age looped-and-socketed spearhead from Conahy, Kilkenny (courtesy Rothe House Museum)

It is the archaeology of death however that marks the northern Nore out as a place of major significance during the Bronze Age. Over a hundred burial sites are spread along its valley, of which eighty are located between Kilkenny city and Ballyragget. On the opposite bank of the river cemeteries are to be found at Ballyconra, Parks Grove, Grange and Lismaine.

Figure 14: Barrow cemetery at Winterbourne Stoke East, England. This shows how these sites appear before they are ploughed, as has happened the majority of ring-barrows in the northern Nore valley.

The dominant funerary rite which was used in the cemeteries was the placing of the body (usually cremated and accompanied by a pottery vessel) in a mound and/or cist which was then surrounded by a circular ditch and then a bank. Most of the examples that are found in the study area have been damaged by ploughing and only their deepest parts – usually the surrounding ditch - remain intact. These are termed 'ring-ditches' and can only be seen from the air when they appear intermittently as cropmarks.

It is clear from the position of many of these sites overlooking the Nore that the river was an important reason why the burials were thus placed. Perhaps the Nore was seen as somehow sacred? When ring-ditches are ever excavated it is common to find pits containing cremated bone associated with them. It is plausible that cremated remains were also scattered into the river.

An Abandoned Landscape?: the Nore in the Iron Age

In the early first millennium BC Ireland experienced a population collapse and the almost complete absence of Iron Age sites from Kilkenny makes it clear that this scenario also occurred here on a considerable scale. The reasons behind this are not very well understood but may relate to an abrupt climatic deterioration, for which analysis of ancient tree-rings and pollen provides ample evidence..

There are however some slight indications of settlement in the northern reaches of the Nore valley in the Iron Age. In 1999, an important excavation took place at Parks Grove which brought to light one of the earliest iron-working sites in Ireland, from the 5th- 4th century BC (Stevens 2005). It is also possible that at least some of the ring-ditches noted above could be of Iron Age date as the burial tradition continued into this era. Indeed a burial mound at Chatsworth, near Clogh, has been suggested as an example (Gibbons 1990).

Magh-Airgid-Ros: heartland of the *Uí Duach*

By the third century AD the pollen record shows a dramatic increase in agricultural activity, which was caused by a massive increase in population. In north Kilkenny, as elsewhere, this is reflected in the widespread and dense distribution of defended farmsteads, 'ringforts'. Many of the forts are in a classic topographical situation, on the slope of a defensible ridge on relatively good land overlooking the River Nore or its tributaries. One of the most spectacular ringforts to have been built was at Threecastles where a 105m diameter triple-ditched cropmark enclosure was built to guard the nearby fording point. Indeed this may well be the 'Great Rath' of Odagh which the *Leabhar Branach* records the destruction of in the last quarter of the sixteenth century.

Figure 15: This cropmark at Threecastles represents the ploughed-out remains of a massive ringfort which was built to overlook an adjacent fording point on the River Nore to the north. Following the Anglo-Norman conquest four more castles were built in the same area to guard the crossing.

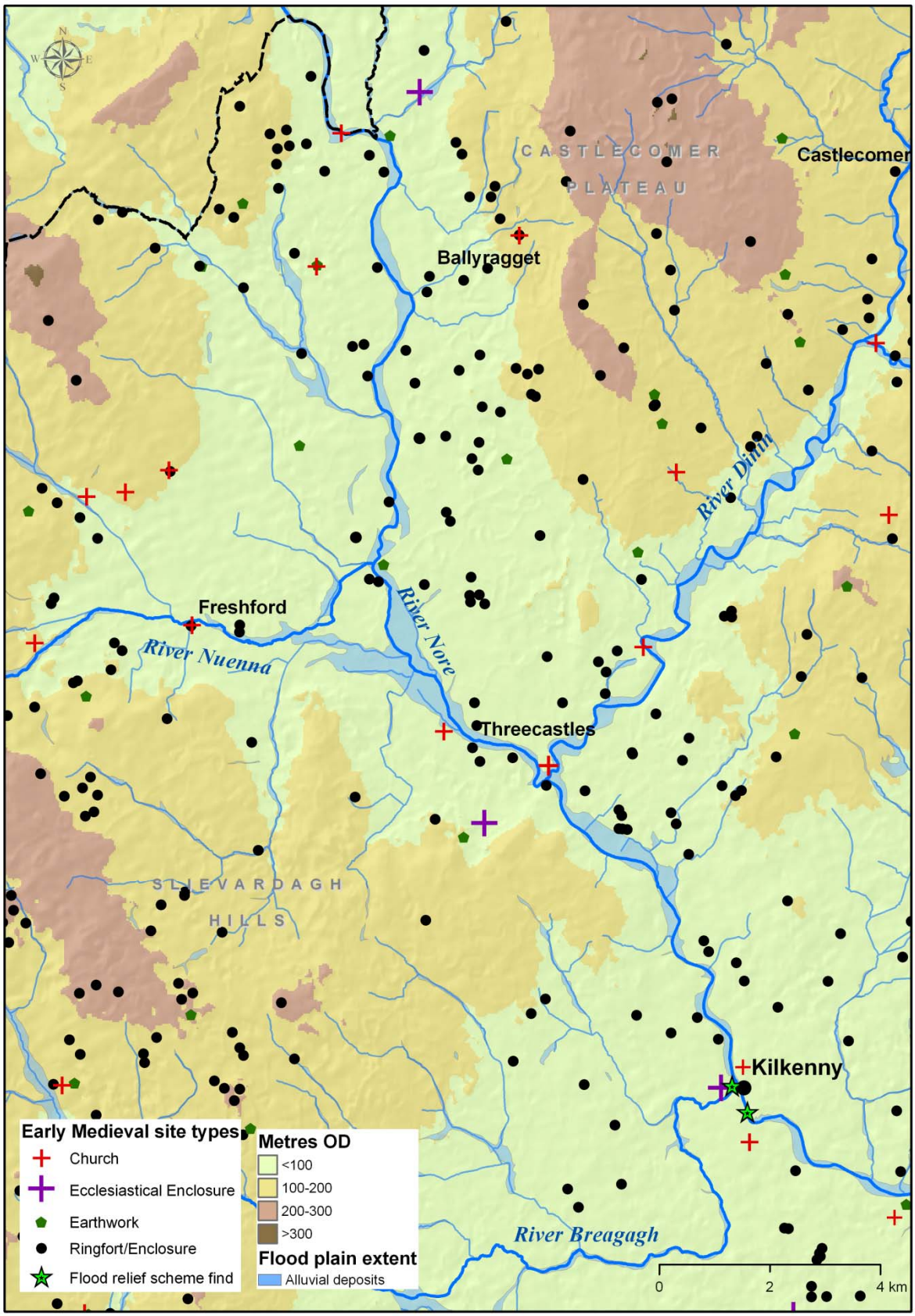


Figure 16: Map of the settlement landscape of the northern River Nore valley in the Early Medieval period (sources: EPA subsoils and rivers dataset, ASTER DEM, RMP dataset, Monasticon Hibernicum, River Nore Heritage Audit built heritage inventory GIS) .

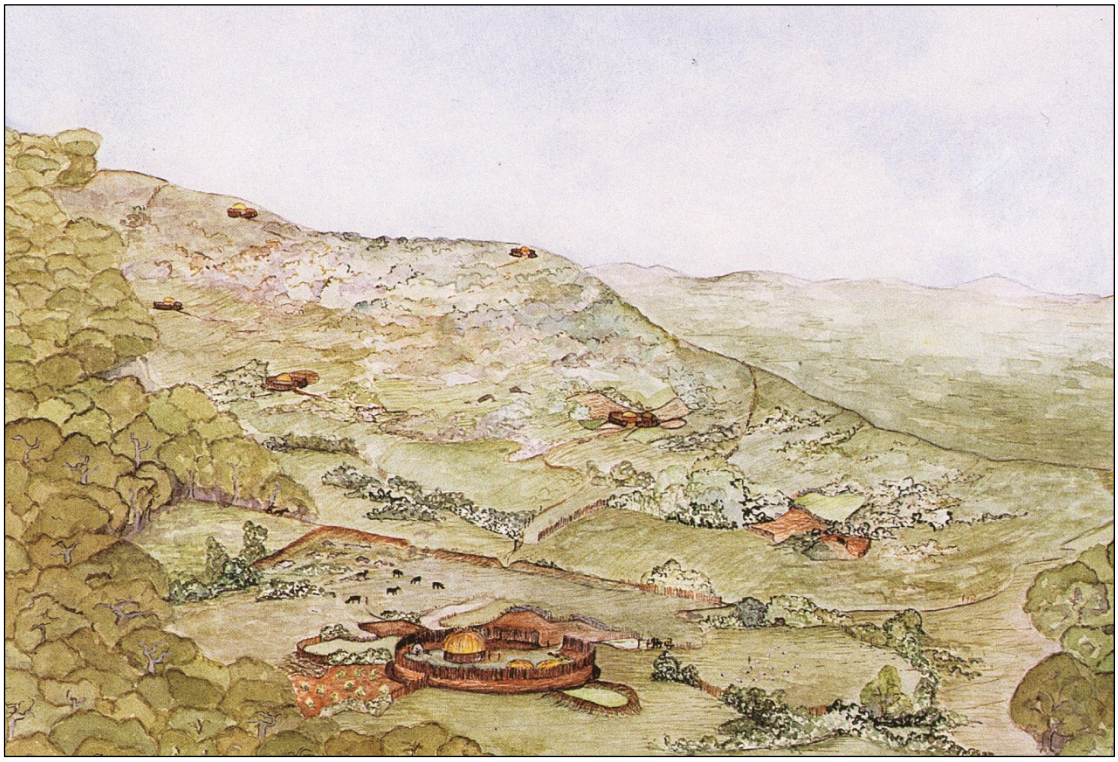


Figure 17: Artists reconstruction of an Early Christian landscape with ringforts scattered throughout (source: Atlas of the Irish Rural Landscape).

Until the Anglo-Norman conquest in 1169 the northern River Nore and its environs was largely the territory of the *Uí Duach* of the kingdom of Ossory, whose best known clan was the O'Brennans. The *Uí Duach* lands along the northern Nore were known as *Magh Airgid Ros* (the plain of the Silver Wood) and the map above clearly shows the dense distribution of ringforts along the northern Nore valley. It is interesting also to note the flood-plain of the Nore was assiduously avoided by the ringfort builders (Figure 16).

Christianity had reached Kilkenny by the fourth century and what appear to be christian burials (east-west orientated with the head to the west) of sixth century date have been excavated at Cooleeshalmore, near Threecastles. Early Medieval churches tend to follow the rivers and this is no less the case in the study area, with churches sited at Grange Mochu, Anker's Island and Ardaloo.

What is now the city of Kilkenny was an important ecclesiastical centre with perhaps as many as five early church-sites within a couple of miles of the centre. *Cill Chainnigh* (now St. Canice's cathedral, Irishtown) had become the most important church in Leinster, outside Dublin, by the twelfth century a substantial 'monastic town' had grown up around it.

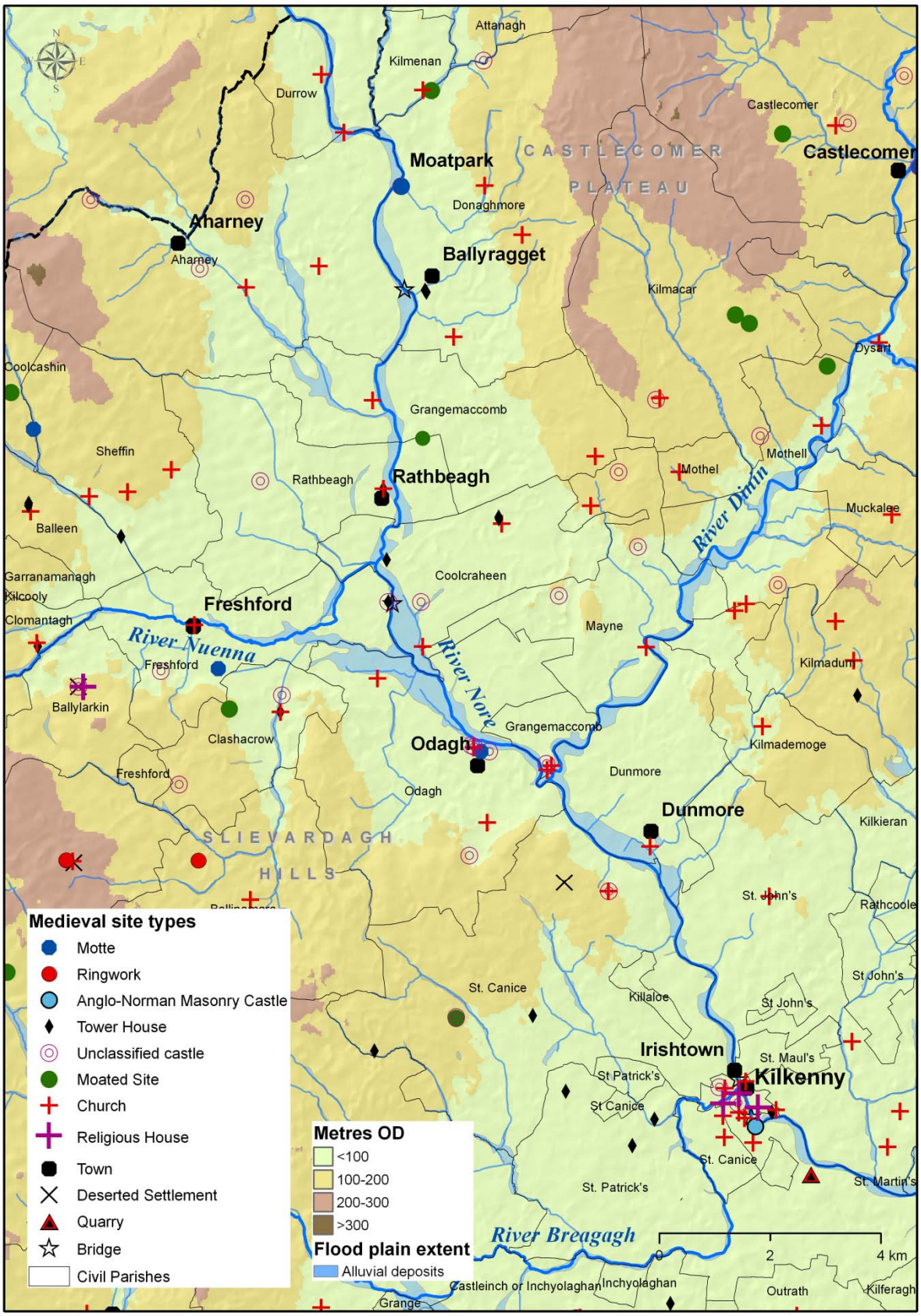


Figure 18: Map of the settlement landscape of the northern River Nore valley in the Late Medieval period (1169-1550) (sources: EPA subsoils and rivers dataset, ASTER DEM, RMP dataset, River Nore Heritage Audit built heritage inventory GIS) .

A tale in two halves, part 1: the troubled 'taming' of *Uí Duach*

When the Anglo-Normans invaded Ireland from Wales in 1169 Kilkenny was one of the first places to be taken. The conquest led to the expulsion of most of the Gaelic Irish from *Magh Airgid Ros* into the Castlecomer Plateau and the Slieve Bloom mountains and the newly taken territory – called the cantred of Odagh - was defended with a suite of timber castles that were erected to consolidate the gains. Many of these were deliberately sited to control traffic along the river, such as at Threecastles, Moatpark and probably Rathbeagh.

Figure 19: Threecastles (Odagh) motte. The Odagh crossing was chosen by Strongbow as the site of one of his motte castles and a borough probably grew up around its flanks. This has now disappeared but the remains of the motte still survive. It was planted with specimen trees in the 18th century.

The English also divided the former tribal lands into manors, each of which had its own castle, church and sometimes a borough or town. The manors used pre-existing territorial structures and their boundaries generally reflect those of today's civil parishes. It is noticeable on Figure 18 that the manors increase dramatically in area the further north one goes in county Kilkenny, a manifestation no doubt of the need to grant large swathes of march land as an incentive for prospective barons. The banishment of the Gaelic tribes was short-lived however and most of north Kilkenny, bar some heavily fortified Old English outposts like Odagh and Ballyragget, were won back to Gaelic Ireland in the 14th century. The construction of towerhouses and fortified churches at this time reflected the changed situation for the colonists and their ruins are to be found at Ballyragget, Threecastles, Inchmore and Lismaine.

Figure 20: Ballyragget castle built in 1495 by Maighread Ni Ghearoid

Figure 21: Even churches such as Threecastles parish church had to be fortified with towers following the near-collapse of the Anglo-Norman colony in north Kilkenny in the 14th-15th centuries.

Perhaps the Anglo-Norman's greatest legacy was the urban settlement and there were about fifty such foundations in Kilkenny. The River Nore was an important factor in the choice in the siting of a borough and those at Aharney, Moatpark (Donaghmore), Ballyragget, Odagh (Threecastles) and Dunmore all overlooked the river. Many of these were speculative ventures that never took off, such as Rathbeagh and Moatpark, others like Odagh and Dunmore were more successful but went into decline following the Black Death which devastated Kilkenny in 1348. There is also a striking difference in scale between the towns and boroughs of north Kilkenny and those to the south of the county – there are no walled towns north of the city and the settlements are in the main considerably smaller. The reasons for this are complex but probably ultimately relate to the Anglo-Norman's lack of control over the north of the county.

A tale in two halves, part 2: the Norman city on the Nore

The most important town founded by the Anglo-Normans was at Kilkenny where a new urban settlement – 'the Hightown - was effectively grafted onto the old ecclesiastical precinct in the Irishtown. By 1300 this had become the largest inland town in Ireland. The River Nore and its tributary the Breagagh profoundly influenced the topography of the medieval town: the main street runs parallel with the Nore, forming an axis between the centre of secular power at Kilkenny castle and the bishop of Ossory's domain at St. Canice's cathedral. Whilst today the city has turned its back

on the river to a certain extent, in the middle ages it was quite the opposite. The river was a vital trade artery that linked the city with its port at New Ross and to enable the boats from down-river to off-load goods a functioning quayside had to be constructed. This was located somewhere under what is now the Dunne's stores carpark.

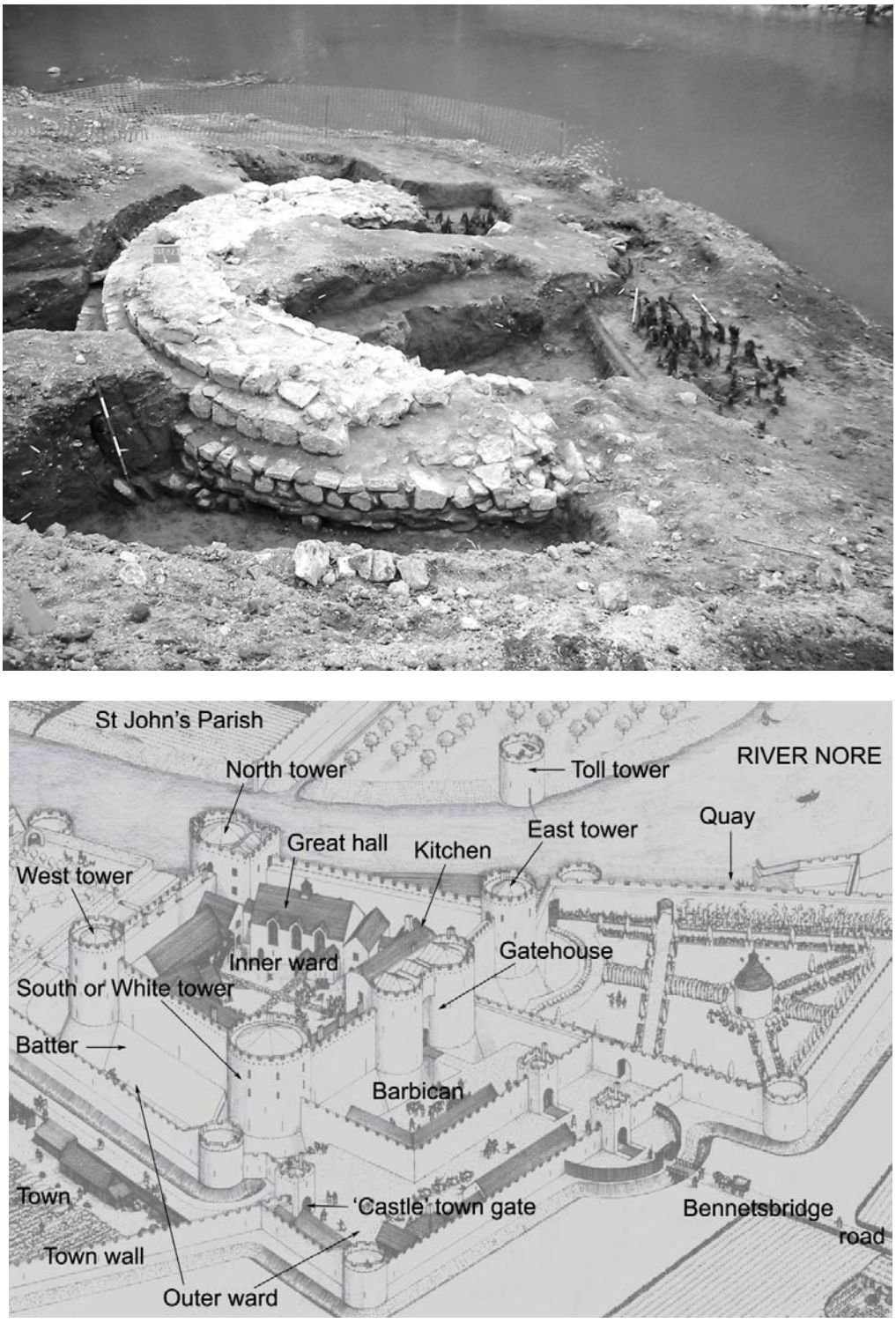


Figure 22: The excavated remains of the River Nore toll-tower opposite Kilkenny castle (above) and below it a reconstruction of Kilkenny Castle in 1350 by Daniel Tietzsch-Tyler. Note the quay and toll tower on the River Nore (sources: M. Gowen and Co. Ltd. and Daniel Tietzsch-Tyler).

Figure 23: Aerial photograph of Kilkenny 1967 with St. Canice's Cathedral in the foreground, St. Francis' friary on the left (source: Cambridge University Committee for Aerial Photography). In the classic continental manner, the cathedral and the castle were linked by the great long High (and later Parliament) Street that ran parallel with the River Nore. The river Bregagh formed the boundary between the cathedral precinct and the new town.

One of the most interesting discoveries made during the Kilkenny flood-relief scheme was of a toll tower on the east bank of the Nore opposite Kilkenny castle. A thick chain would have stretched from this tower across to the castle, thus controlling the entry of boats into the city. There were also excavations undertaken at John's Bridge and Green's bridge, where much was learnt about their earlier histories.

The success of Kilkenny in the early-mid 13th century meant that its population increased greatly and this led to the expansion of the city into the ancient flood-plain of the river. In fact over half of the area inside the town walls was built on land that had to be painstakingly reclaimed from the river.

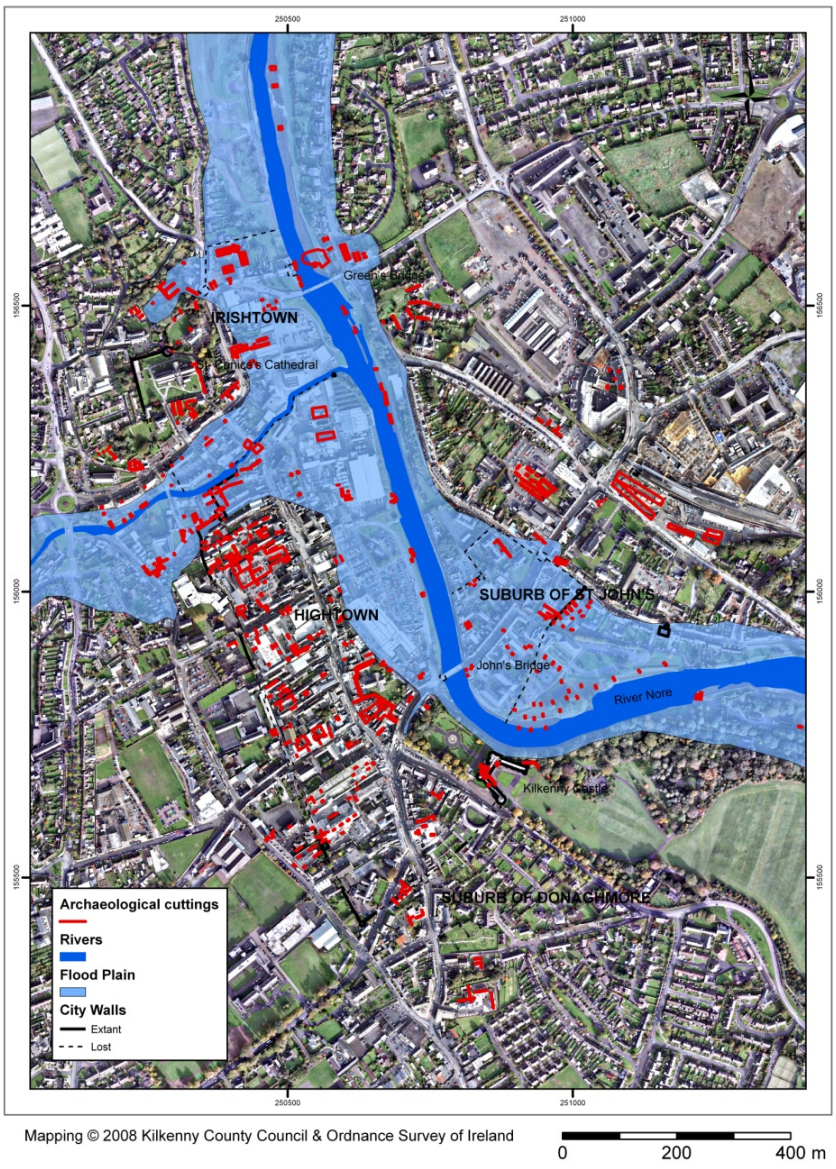


Figure 24: Over half of the medieval town of Kilkenny was constructed on ground that was reclaimed in the thirteenth century from the floodplains of the rivers Nore and Breagagh. This map was produced by plotting the occurrences of alluvial material in archaeological and geotechnical investigations throughout the city and relating them to its contours (source: Kilkenny Archaeological Project).

Mills were an important part of the city economy and many were built during the period of Edward II's (1284-1327) wars to feed his armies. There are also records of mills in the city prior to this, such as the Chancellor's mill, Castle mill (Ormonde mill) and Maudlin mill. The ownership of fishing weirs and rights was jealously guarded and there were many such weirs in the southern part of the Nore.

Figure 25: A fulling mill from Georg Andreas Böckler's Theatrum Machinarum Novum, 1661. From the medieval period, the fulling of cloth was often undertaken in a water mill, known as a fulling mill (also as walk mills or tuck mills). In these, the cloth was beaten with wooden hammers, known as fulling stocks.

Prior to 1641 Kilkenny formed one of the richest and most forward-looking parts of Ireland; the city had been one of the few to embrace the Renaissance wholeheartedly, as exemplified in the architecture of places like Rothe House on Parliament street. The oligarchy who controlled the town until the Cromwellian occupation in 1650 were mainly wealthy wool-merchants whose fulling mills dotted the Nore and its tributaries. One of John Rothe FitzPiers' tuck mills, the builder of Rothe House, was situated near the Greenvale woollen mill a kilometre to the north of Kilkenny.

The landlord and the landscape

By the end of the 17th century the middle-ranking Old English lords who had controlled much of north Kilkenny had been largely supplanted. Landowners like John Purcell of Lismaine were transplanted to Connaught and a suite of New English Protestant landlords, many of whom were Cromwellian officers and soldiers whose arrears of pay had been satisfied by grants of land, were now *in situ*. This is the origin of most of the landed estates that were created along the northern River Nore, such as the Grange (Warren), Lismaine (White), Threecastles (Reading) and Richview (Bradley). The Duke of Ormonde, the Butler Mountgarrets and the Grace family were restored to their lands after the death of Cromwell so Dunmore, Ballyconra and Ballyragget remained in their hands. The far north of the county was avoided by the new colonists because of the dangers posed by its militant resident population as well as its wetter and poorer land.

Rural settlement patterns were now completely reorganised around the centres of these estates, the demesnes. An 'Age of Improvement' ensued which was to profoundly impact on the landscape of north Kilkenny. Whereas during the medieval period land-enclosure had been largely confined to townland boundaries, a series of Enclosure Acts in the 18th century led to the wholescale parcelling of the countryside into small fields delineated by substantial banks and ditches. Most of the field-boundaries in the study area can trace their origins to this time. Large-scale reclamation of marginal land also occurred and for the first time much of the flood-plain of the northern Nore was drained and farmed.

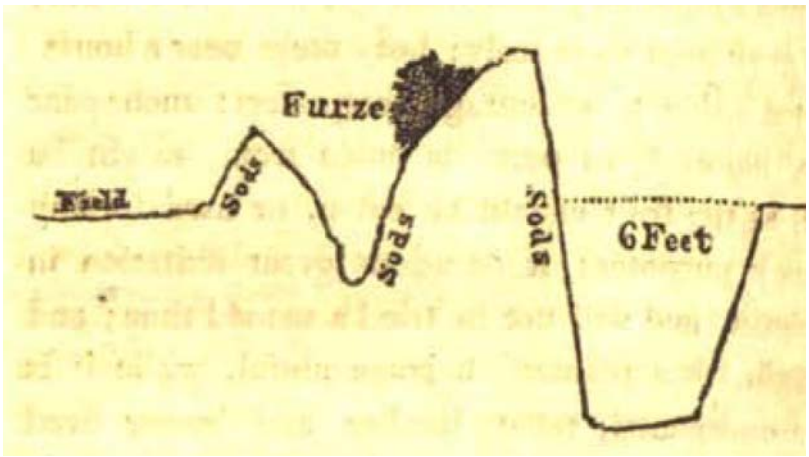


Figure 26: The effect of the 'Age of Improvement' on county Kilkenny has been meticulously documented in William Tighe's* Statistical Observations Relative to the County of Kilkenny 1800-1801. *This figure shows an section through an ideal field-boundary.

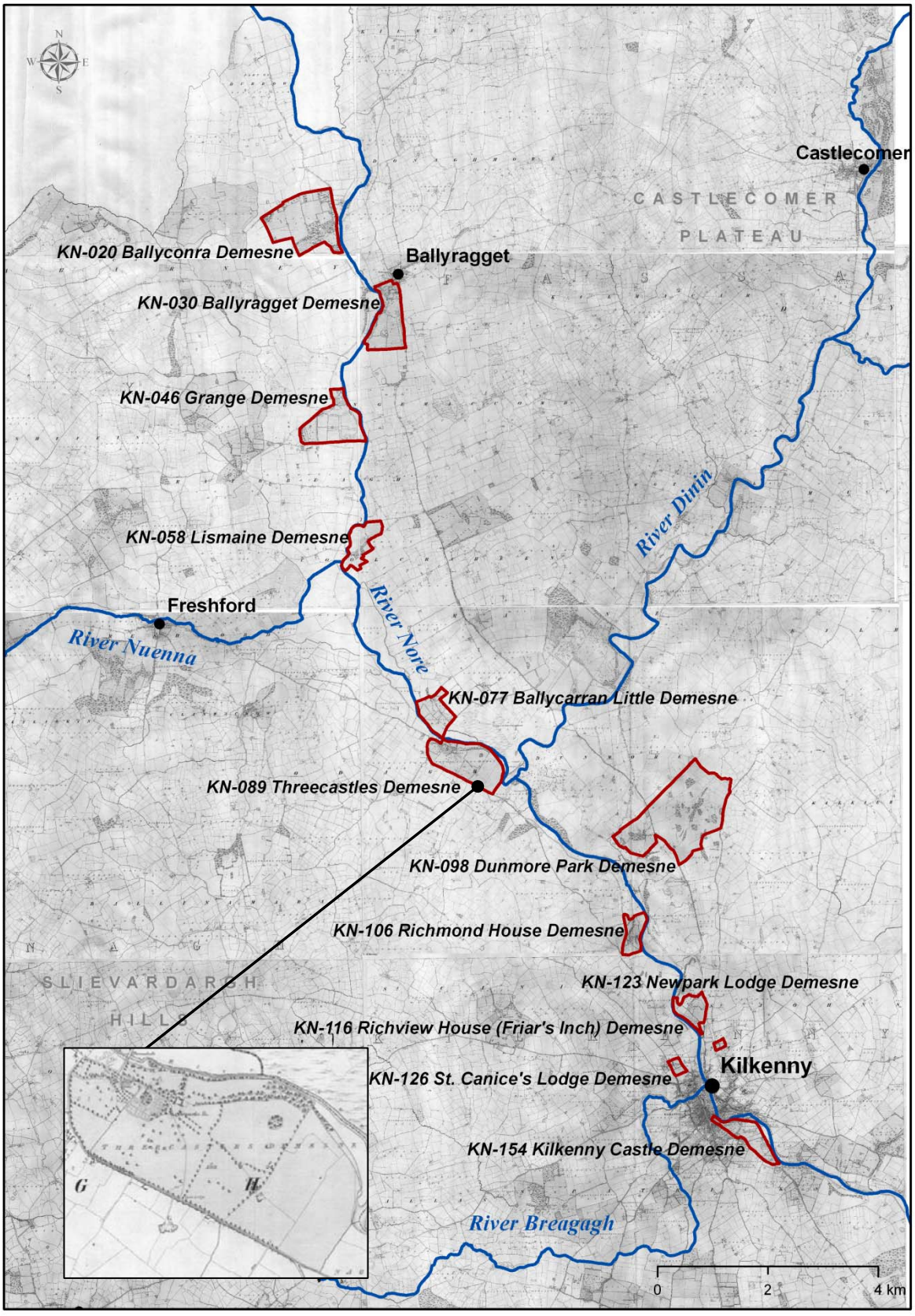


Figure 27: Map of the demesnes (highlighted in red) along the northern River Nore on the first edition Ordnance Survey map 1840, Threecastles demesne (inset) (sources: River Nore Heritage Audit built heritage dataset, First edition Ordnance Survey maps Kilkenny). The cartographers shaded the demesnes to distinguish their extents.

Figure 28: Grange demesne as depicted on the first edition Ordnance Survey map (above) exhibits many of the components of the typical Georgian designed landscape – the tree-lined avenues, wilderness, ornamental pond, park trees set as standards, dovecotes and statuary. The eastern range of the house overlooks the Nore. The 2005 aerial photograph (below) shows the majority of the designed landscape is now ploughland though the avenues can be seen as cropmarks.

The agricultural revolution led to a large increase in the population which in turn brought about a ten-fold increase in tenant-rents between 1660 and 1800. The bulk of the resultant wealth went to a small cohort of super-rich landlords who invested heavily in building new Palladian grand houses (e.g. Ballyconra, Threecastles, Grange) which were set within magnificent demesne landscapes. Twelve demesnes were constructed along the northern River Nore and the great houses were often sited to overlook the river, the waterway became in effect an integral component of the 'designed landscape'. The demesnes exhibit common themes that were heavily influenced by the landscape movement and in particular the renowned garden architect Capability Brown (1716-1783): a shelter-belt, ornamental pond, park trees set as standards, tree-lined avenues, a formal garden surrounding the house, a 'wilderness' and a deerpark/open parkland.

Figure 29: The famine had a devastating impact on north Kilkenny

Cheap food, fuel and housing had resulted in an enormous expansion in Kilkenny's population in the period 1760-1815. At the end of this period an economic crash occurred, which when allied with a dependence on the potato crop left the marginalised poor of north Kilkenny on a knife-edge. The unprecedented potato blight was utterly devastating and north Kilkenny with its poor land was the worst hit area of the county: in the Castlecomer Poor Law Union alone a third of the population either died or emigrated between 1841-51.[2] By the second half of the 19th century the Irish landed gentry were widely blamed for Irish problems, including the famine, and in the Free State a Land Commission set about transferring ownership from landlord to tenant.

[2] http://www.rootsweb.ancestry.com/~irlkik/famine.htm (accessed 23rd October 2009).

Figure 30: The parcelling of the former Butler demesne at Ballyconra by the Land Commission can clearly be seen by comparing the field-patterns on the 1840 map and the 2005 aerial photograph. Today the eastern part of the demesne is occupied by the Glanbia factory.

The Nore: Artery of Kilkenny's Industrial Revolution

Milling

The mid 18th-19th century saw the construction of large mill buildings, breweries, distilleries and woollen factories along the Nore in an attempt to drag Kilkenny into the industrial revolution. It was the harnessing of the county's rivers that powered virtually all these industries and Tighe records the presence in 1800 of 22 bolting mills (for sifting flour) producing 4000 barrels per annum on the Nore between Durrow and Inistioge. In the county as a whole there were 72 corn mills, 44 flour mills and 11 tuck mills (for cleansing and preparing cloth) in the first half of the 19th century.

Figure 31: William Meredith's mill at Parks Grove in 1938 (courtesy Moyra McCarthy)

As a result of the narrow river channel and the lack of water volume in comparison to the south, milling on the northern Nore was problematical and required major investments in infrastructure. Thus the mill-races tend to be extremely long, in some cases over 2km, to facilitate a large-enough head of water to power the mill-wheel effectively. Thirteen mills have been recorded on the Nore in the study area. Although most of the mill-buildings along the northern Nore outside the city have been lost (eg. Ballyconra, Ballyragget, Dunmore) many of their weirs and mill-races still survive relatively intact. A particularly fine example is to be seen in front of Ballyragget new bridge. The most striking aspect of the mills in the city is the continuity of milling over the centuries on the same sites (e.g. Chancellor's Mills, Greensbridge mills, Ormonde Mills). The history of each individual mill is described in Volume 2.

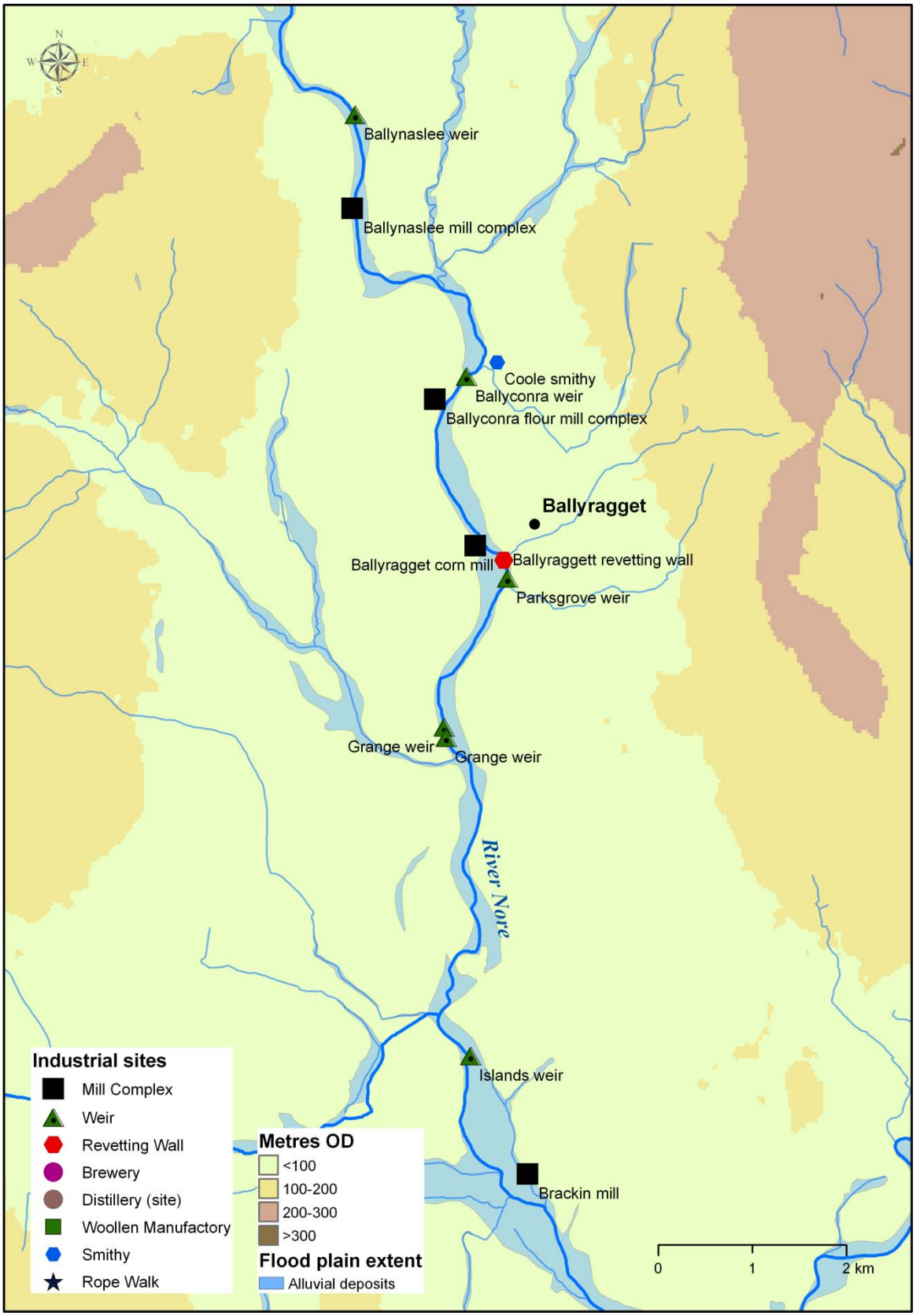


Figure 32: Map of the industrial archaeology sites on the northern River Nore, from Ballynaslee to Islands (sources: EPA subsoils and rivers dataset, ASTER DEM, River Nore Heritage Audit built heritage inventory GIS) .

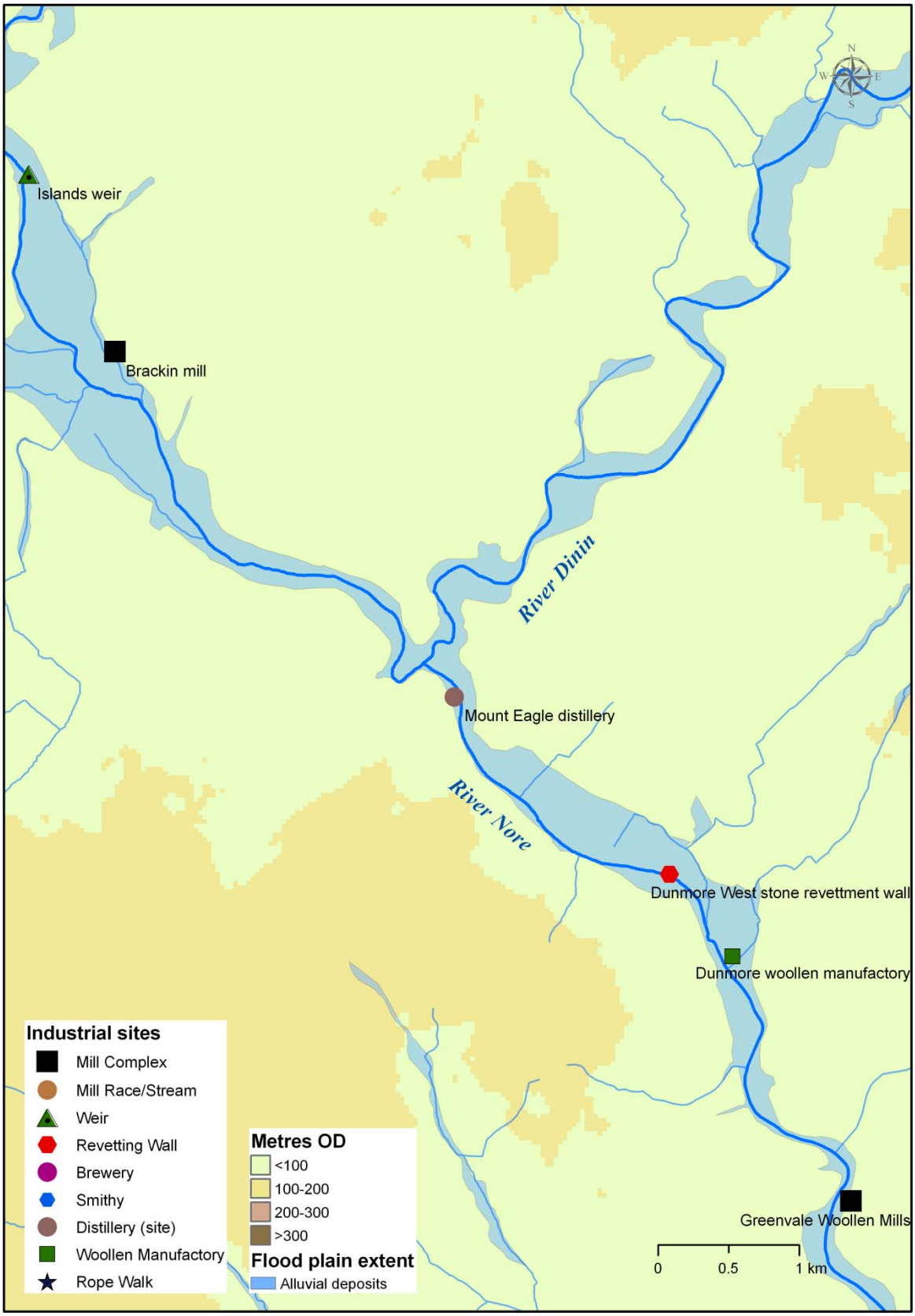


Figure 33: Map of the mills and the Mount Eagle Distillery on the northern River Nore, Islands to Friar's Inch (sources: EPA subsoils and rivers dataset, ASTER DEM, River Nore Heritage Audit built heritage inventory GIS) .

Figure 34: Map of the mills in Kilkenny city (sources: 2005 aerial orthophotography, River Nore Heritage Audit built heritage inventory GIS) .

The Nore Navigation

The navigation of the Nore had been a cause for concern since the middle ages and complaints about weirs impeding river-traffic were common. In 1537 the problem became so bad that Henry VIII issued a statute which required the 'removal of weirs on Nore … to make it navigable'. In 1581 Archer Fitzwalter was paid the enormous sum (for the time) of £108 6s 8d to make the river 'passable fit and servisable for boets of the full lading of one toun weight' between Kilkenny and Durrow.

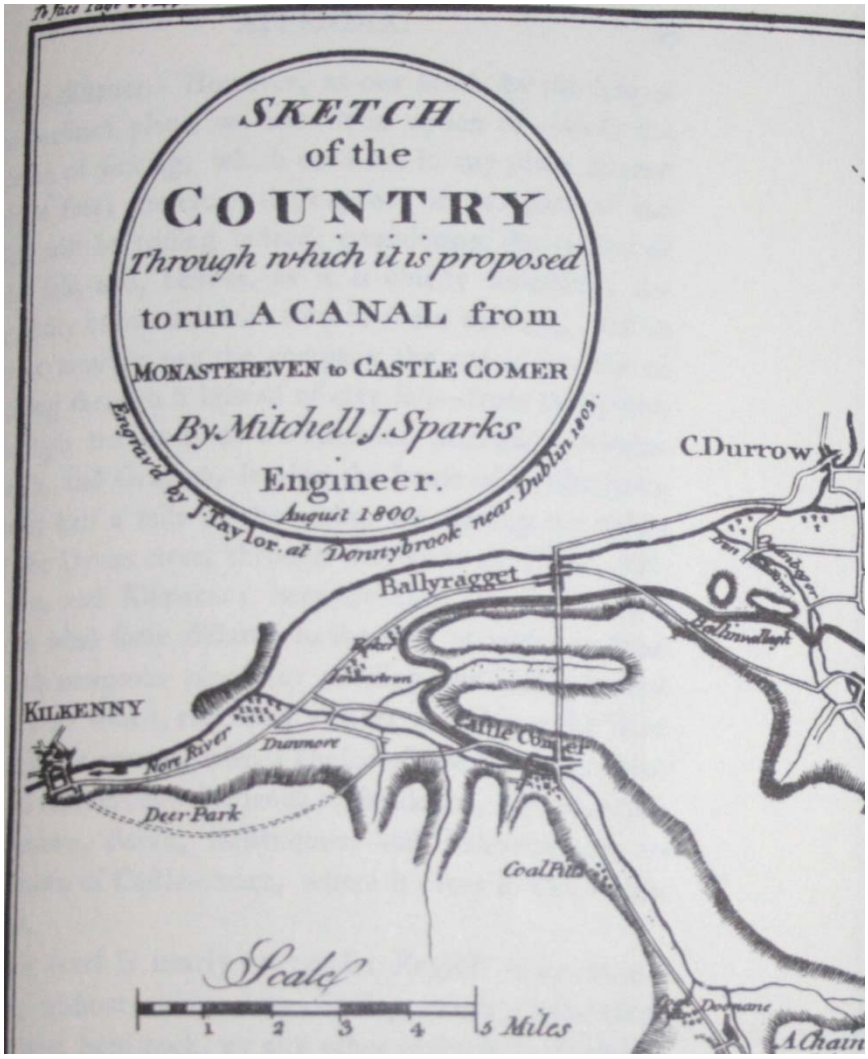


Figure 35: Extract from plan of proposed canal from Monasterevin to Castlecomer (1800) (source: Tighe's Statistical Survey).

However these attempts to make the river navigable ultimately failed. In the second half of the 18th century, proposals to construct a series of canals were made by the county's 'captains of industry'. It was argued that canals were required to allow large quantities of cloth, coal and wool to be transported with relative ease to the ports of New Ross and Waterford and from here onto Britain. Indeed it is clear that its proponents saw Kilkenny becoming effectively the 'bread-basket' of Britain. William Tighe described the impact of a canal on the county as follows:

'it would be a work of a superior kind, giving a constant and easy supply of grain to the increasing demands of the British market, converting heaths into fields of corn, changing decayed villages into rich and populous towns, and revolutionising the spirit, and habits of the subject, not by placing him in a descending, but an ascending scale of society'.

The 17th earl of Ormonde John Butler was the key figure who promoted a canal from Kilkenny to the Barrow, with branches to Freshford and Ballyragget and in 1801 plans for a colliery canal linking Inistioge, Castlecomer and the Barrow navigation were drawn up. Neither of these schemes ever commenced.

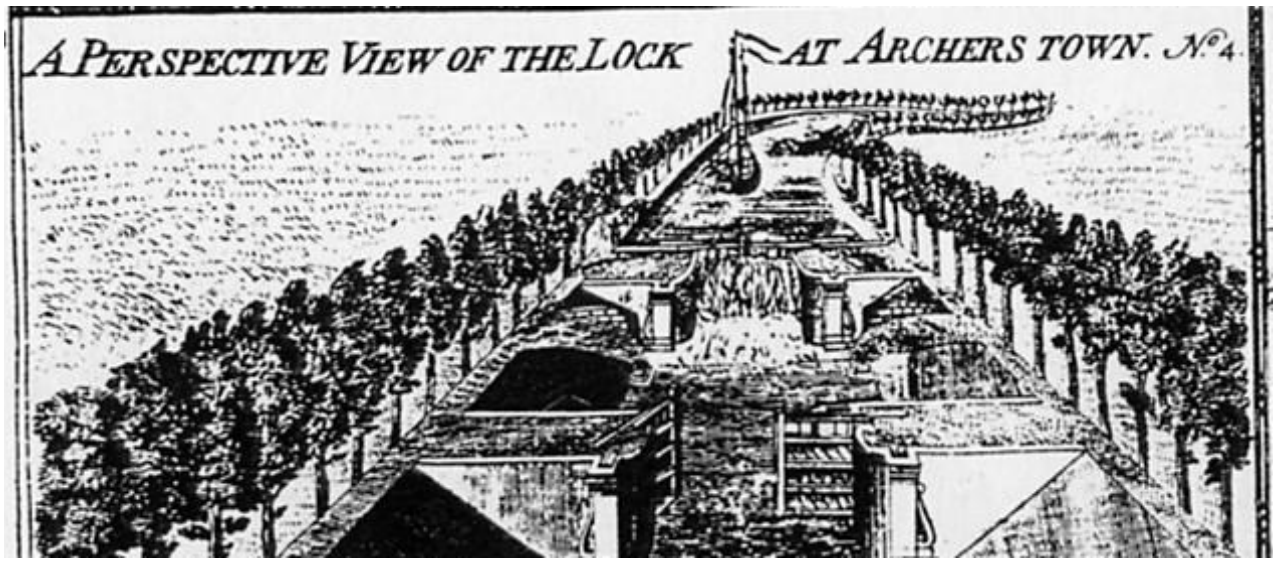
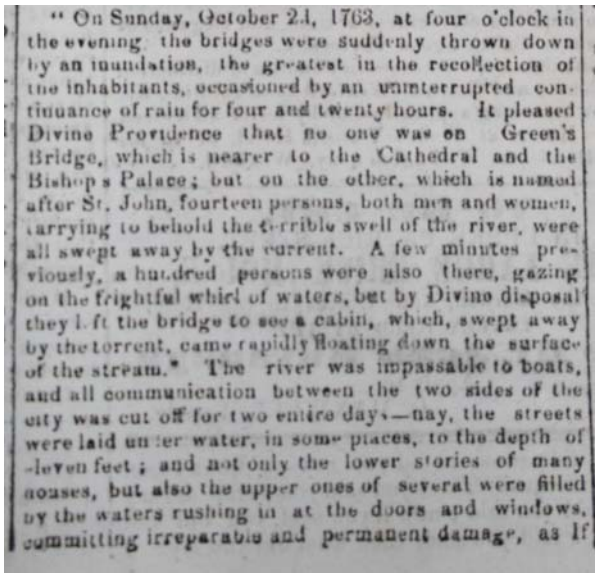


Figure 36: Extract from the Parliamentary Commission plan of the Nore navigation. This section of the canal was built by 1761 and is still largely intact, as are many of the lime-trees planted on either side.

Figure 37: The infilled canal-cut on Canal walk may still be traced today on the ground as a slight depression between the lines of lime trees.

Of all the navigation projects that were promulgated the Nore navigation from Kilkenny to Inistioge was the only one that actually commenced construction. Between 1757-1761 8km of canal, a new quay from John's bridge to Scot's lock, seven locks and an aqueduct were constructed in an attempt to establish a navigation. Technical, managerial, financial and logistical difficulties meant it was never completed. The failure to complete the Kilkenny canal from 1757-1761 combined with the by-passing of the city by the railway until 1845 had a negative impact on the city's economy, from which it never recovered. Today much of the line of the canal, including its locks, may be traced to Dunbell though much of it is infilled and silted.

The River as Tormentor: the Great Floods of 1763 and 1947



"On Sunday, October 24, 1763, at four o'clock in the evening the bridges were suddenly thrown down by an inundation, the greatest in the recollection of the inhabitants, occasioned by an uninterrupted continuance of rain for four and twenty hours. It pleased Divine Providence that no one was on Green's Bridge, which is nearer to the Cathedral and the Bishop's Palace; but on the other, which is named after St. John, fourteen persons, both men and women, carrying to behold the terrible swell of the river, were all swept away by the current. A few minutes previously, a hundred persons were also there, gazing on the frightful whirl of waters, but by Divine disposal they left the bridge to see a cabin, which, swept away by the torrent, came rapidly floating down the surface of the stream." The river was impassable to boats, and all communication between the two sides of the city was cut off for two entire days—nay, the streets were laid under water, in some places, to the depth of eleven feet; and not only the lower stories of many houses, but also the upper ones of several were filled by the waters rushing in at the doors and windows, committing irreparable and permanent damage, as if

Figure 38: Extract from a newspaper account describing the 1763 flood in the city (source: Kilkenny Journal 6.11.1844)

Kilkenny has long struggled with flooding and the effects on the city, half of which was built on the old floodplain, were particularly harsh. A severe occurrence took place on October 24th 1763 when torrential rains throughout Ireland led to catastrophic flooding. At least twenty lives were lost and both bridges over the River Nore in the city, John's Bridge and Green's Bridge, were swept away, as were those at Thomastown and Bennetsbridge. Mills and other industries that were sited along the river were also extensively damaged as was the newly constructed sections of canal and a new quayside which had been constructed to the south of the city. Egan's *Kilkenny Guide* describes events in the city graphically:

> *'so vast was the inundation that the water rose fifteen feet in some places. On Sunday, as about one hundred people stood on John's Bridge, surveying the temper of the rolling torrent a cabin was seen floating down the*

stream, which all ran to see. Immediately after they decamping the bridge fell, burying fourteen persons who remained, under the yellow wave'.

The flood of Sunday March 16th 1947 was preceded by unprecedented snowstorms and blizzards which brought Ireland to a standstill. A thaw that Sunday was accompanied by torrential rain, the combined effect of which was a massive flood of the Nore and its tributaries. Eye-witness accounts reported that between 6 and 7 o'clock, the river, already in flood, rose even higher and Irishtown, John Street and the quay were devastated. The River Breagagh overflowed into the houses of Irishtown, Dean St, Abbey St and Blackmill St. Inside the Black Abbey the water rose 4.5 metres and the seats and wooden confession boxes floated around in the floodwater. Mrs O'Rourke, *nee* Purcell who lives on Green Street remembers events:

'my mother told me to put my hand out from the first floor window of the house to touch the water so I'd always remember it, it was never that high in my memory before or since. We were stuck upstairs as was the rest of the street, Lenehan's came by with a boat and gave bread to us with a pitchfork. We were flooded every year but never as badly as in 1947. We had a place for everything upstairs; the cutlery crockery etc. as it happened so often, once we saw the river at a certain height we would know we'd be flooded and so everything was moved upstairs until the water receded. I miss the annual floods now since the flood relief works were completed, there was great camaraderie here on the street'.

Figure 39: Lady Desart's footbridge which crossed the River Nore at Talbot's Inch was swept away by the raging river in March 1947 and never replaced (courtesy Mr. John Dalton).

Kilkenny's Most Disastrous Flood

191 FAMILIES HOMELESS

Many Tragedies Averted

Kilkenny City suffered the most disastrous flood, if not in its history, at least within living memory, on Sunday night last, when flood waters from the rivers Nore and Breagach reached unprecedented heights. Whole areas of the city were inundated to depths varying from about 14 feet downwards, and fears were entertained for the safety of many people marooned in the upper storeys of their homes.

THE KILKENNY PEOPLE

TRAIL OF DESOLATION IN WAKE OF DISASTROUS FLOOD

KILKENNY CITIZENS GRAVE PLIGHT---NEARLY 200 FAMILIES HOMELESS

BLACK ABBEY CHURCH SUFFERS IMMENSE DAMAGE

LOSS OF LIVES NARROWLY AVERTED

WONDERFUL RESCUE WORK BY YOUNG MEN

(BY OUR OWN REPRESENTATIVE)

The greatest flood in living memory swooped down on Kilkenny City on Sunday evening last and it came with such startling suddenness that many houses were submerged to a depth of from six to ten feet of water within the space of an hour or so.

Consternation, amounting almost to panic, prevailed amongst residents on St. John's Quay, Green Street, Blackmill Street, Abbey Street, Irishtown and Vicar Street, as the flood continued to rise, reaching in some cases up to 14 and 15 feet. In several houses in Green Street there were over two feet of water in the upstairs bedrooms and at least one family had to be rescued through the roof of their dwelling.

THE BLACK ABBEY

Flooding in Thomastown and District

Figure 40:Newspaper headlines following the devastating flood of March 16th 1947 (sources: Kilkenny Journal and Kilkenny People 22nd March 1947)

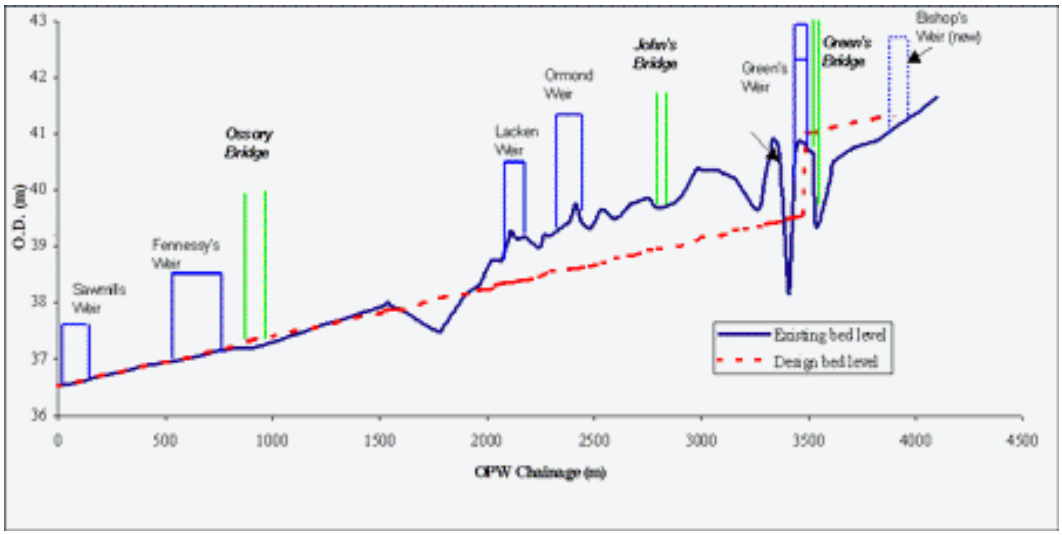


Figure 41: Longitudinal profile of the river-channel in the River Nore, Kilkenny. The blue line indicates the historic river- bed level and its level following the flood-relief is marked in red.

Since 1947 there have been frequent flood-events in Kilkenny city and a flood scheme design was developed to counter this by the Office of Public Works. The principal engineering aspects of the scheme included a major regrading of the river-bed through the city including sheet-piling along both sides of the channel, the substantial widening of the channel and the construction of a new weir at the upper extent of the scheme to act as a brake on water velocity during floods. The scheme was completed in 2004.

The Living Riverscape: marking place on the Nore

The rich heritage of river names along the northern Nore has been recorded and mapped by the study-group during the course of this project. In total 94 names were noted and these are listed in sequence from north-south in the table below with accompanying mapping. Detailed mapping may be found in volume 4. Many of the names refer to fishing stands and would appear to be of relatively recent origin. This is a reminder that place-names and river names are constantly evolving. There must have been a suite of river names that were in use prior to these, but which have now largely disappeared from the oral tradition. There is also a notable absence of Irish in the make-up of the river names which is in marked contrast to those that have been collected around Inistioge and Thomastown. This is probably a reflection of the older origin of the southern names.

River-Name	Descriptions from public consultations
Hestons Stand	A slow moving stretch of water that extends over three or four fields.
Tin Weir	This is the first weir on the journey south.
The Church Pool	An area of slack water, 120-150m long. A favourite spot for Paddy Coogan and his primus stove, he would cook up a *stone* of food on the primus and feed whoever was fishing with him. He was from a family of coopers from Ballyragget.
Ankers and Ankers Island	A stretch of fast water fished above the island.
The Head of Pat Dooleys	Fast water at the end of Anker's Island. The Laois side is known as New York.
Mouth of the O'Bheg	Where a small stream called the O'bheg or O'beg (as a suggestion it may be a form of *amhain beag*). Fast water, excellent fished with a bait of worms. Salmon stood here having passed a series of rapids.

Bernies	A wooded area on the Ballyragget side – difficult to fish.
The Flat	A slow moving stretch of three to four fields of excellent fishing (mainly on the Ballyragget side). Normally fished with a bait of worms or a devon.
Sunny Brophys	Two fields of rapids and scrub bushes.
Jack The Cooks	Jack Murphy a county councillor with Kilkenny County Council was fondly known as *The Cook*. This seems to be at Ballyconnra weir. At the end of the rapids only 100m is fishable due to the scrub cover.
Dan Delany's Hole	A stretch of slow water.
The Kennels	A long stretch of water on the Avonmore plant side. Called after the Hunt which used to meet at the cross-road to Lisdowney.
The well field	Not marked on map but the start of the Kennel is called the well field (this would be in line with the big house belong to Avonmore – now offices).
The Gut	This stretches from the weir of Ballyragget down to the old bridge or Archers Island. Archer's island is not now a true island but once was cut off by a mill stream servicing a mill beside the bridge. The Archers being a local family/landowners. Good fishing.
The Burren (Byrne?) Sally	Also know as Tom Thorntons tree. Where the Back river or Castle stream meets the Nore. This stand was made famous when Tom Thornton was arrested at gunpoint by the RIC for poaching as he lay asleep by the river. The newspaper headline read "Expensive sleep at river bank". The Thorntons provided a number of characters over the years all known for their exploits on the river……. Rommel Thornton aka Mick Gunner Thornton or Shemshee (Rommels father).
Paddy Fitz's Island	This island was created by a mill stream that ran from Ballyragget bridge, down approx 1-2 Km on the Freshford side of the river. Mainly trout fishing.
The Head of Johnny McGraths	None
Eel Weir	There was an eel weir here at the convent which Sean Stapleton remembers well, but it was bulldozed out in the 1970's as part of a locally organised flood alleviation

	scheme.
Tom Delanys Garden	Opposite where the mill stream enters the river at the end of Fitz's island. Good fishing with devons or worms.
Dick Macks Island	None
The Head of the Dairy	Fast water slowing down, a spot where fish would stand.
Tail of the Dairy	None
Suttons Hole	Bellow the rapids, dirty water difficult to fish.
The Garden Stream	None
Dairy Pond	Near junction of road and river at Grange
The Mound	Also called the mound "above" grange
Suttons Hole	None
Lennons of the Well	None
The Orchard	Belongs to Grange house
The Wire	Belongs to Gorman's farm , also the "head" of Gorman's pond
The Blackthorns	None
Gormans	A long flat section of water
Kennedy's	This runs into the long meadow
The Long Meadow	None
Lennons Hole	None
The Church Yard hole	None
The Rath Hole	None
Tail of Rathbegh	None
The Sandy Beach	None
The Swallow Hole	None
Lismaine Bridge	None
McGraths	Enter style at cement works and upstream for 100m
The Run In	This is the head of Lismaine pond
Lismaine Pond	A long stretch of water

Tail of Lismaine	Same as Cody's but Cody's is on east bank. This is where Johnny Dalton caught a 30lb 5oz salmon, a specimen fish.
Cody's Hole	Just above the separation of the Bracken/Nore divide
The Hole above the Bridge	None
The Herds Bridge	None
Above the Stone Wall	100m below the bridge
The Run in to…	None
The Sand Hole	Cattle drinking spot and cattle fording point to Islands
The Short Strip	A deep hole 100m bellow the sand hole
The Long Strip	A long stretch of water 100m below the Short Strip. This runs as far as the joining of the Freshford Stream
The Mouth of the Brook	The joining of the Nuenna/Freshford stream where the Nuenna crosses the near by lane the bridge is called the Black Bridge
The Stone Wall	A fast stretch of water some 100m below the *mouth*
The Rape Hole	Medium to fast running water - adjoining field names are little and big Capprix
The Tail of the Bracken	Jack recalls the only place on the nore to find *Gudgeon* is on the sandy bottom of the Bracken here
Windy Pond	A stretch of water some 200-300m long good fishing when water is running high or in flood
The Cement Wall	At a junction of a small stream
Tail of Windy/Walls Corner	Local swimming spot
Bourke's Island	Some 100m below tail of windy angry swirling water
Campion's	120m past Bourke's and now very overgrown not fishable, narrow fast and deepish water some 50-60m long
The Bridge Pond	Ardaloo Bridge Jack hooked a River Nore pearl mussel here
Pieries	Some 100m below the bridge
The Bog	Long stretch of water (1 mile or so) made up of the following names: The Ossiery, The Metal Man, The Blackthorn, The Big Tree
The Sod	Also called the shot

The Tail of the Bog	Also called The Back of the Sod
The Shot	Water beginning to speed up after long slow run
The Old Dinan	None
Shintins Weir	Possibly taken out in 1947 by farmers. Good fly fishing if water is right. Johnny Dalton believes there was a concrete wall in place to prevent riverbank erosion but this was dug out by farmers to try and not impede the flow of the Nore as it was approaching the Dinan- thereby reducing the risk of flood damage by the Dinan.
The Rock Stream	Fast water some 60m long- good fly fishing
The Tail of the Stream	A large stone here referred to as the armchair rock
Armchair Rock	None
The Pot	This is a swirling eddy some 30m long
The Sheep Hole	Where sheep were once washed, really is the tail of the pot. Fishermen have a hut here.
The Run In	A short stretch of fast water
The Big Hole The Tail of the big hole	The joinings of the Nore and Dinan
The Hole with the Stick	Start of the mill race. Jack says there is/was a weir here between these two stands (the big hole and the high banks)
The High Banks	Fast water leading down to the apple tree
The Apple Tree	None
The Malt House Hole	The distillery pond
The Tail Race	None
Cuggy's Ditch	None
Matter's Ditch	None
Flemming's Ditch	None
Riskeens	This is the only Irish name in the sequence
Yankees Bridge	This is where a Man called Yankee Kelly of Dean Street, was fishing on the Dunmore bank and wanted to get a drink at The Rock Bar, so as not to be outdone by the river, he stripped naked and forded the river, keeping his

	clothes dry above his head. Mr. Kelly got the name yankee as he had once lived in the USA
The Neck of Ryans	None
The Flags	None
The Boils	None
Lynch's Hill	None
The Black Island	Called after the black sallies (willows) that grow there
The Horse Hole	Johnny Dalton thinks this is where British Soldiers watered horses, but given the location it may have been the Ormonde's horses.
Bolgers Flat	None
Bournan's Pond	Pond was really the head of Troyswood weir and once the weir was removed (c. 1947) the water speeded up and the pond disappeared. Johnny Dalton called Troyswood weir 'Kealy's Weir'. Johnny also tells a story of a local priest , Fr Joyce of St Mary's who swam here for privacy and one day happened upon two poachers who were engrossed in the process of landing a salmon here.
The Broken Banks	Marked as the location of water treatment intake
The Richmond	Ladies swimming location- men only at Greenvale
Caney Island	None
The Island	None
Triangle Pond	None
The Weir / Greenvale	Also called the weir or the 10th field. Location of Greenvale swimming club - Was normally men only
The Woollen Mills Stream	None
The Suspension Bridge	None
The Cherry Hole	Just below suspension bridge
Marx's Rocks	None
Marx's Hole	None
The Silly-bub Ditch	None

Bumberry's Pond	Just above the sunken weir or above Devils Island
The Sunken Weir	Also known as the 3rd field or Devils Island
The Second Field	None
The Big Tree	None
The Meadows	An older swimming spot and also location of the 7 springs. The meadows also the 1st field, at the start of the meadows was the much used “7-springs” proving excellent drinking water. But the local Smithwicks brewery chose not to use the water after tapping into it saying the water was too hard.
O'Rourkes	None
The V	None
Sandy Banks	From Greensbridge to the River Breagagh
The Town Pond	From Greensbridge to the weir at Kilkenny College
The Tail of the Castle	Also the start of the canal
The Little Pond	Known more recently as the Tank on Maudlin Street

Figure 42: River names around Ballyragget

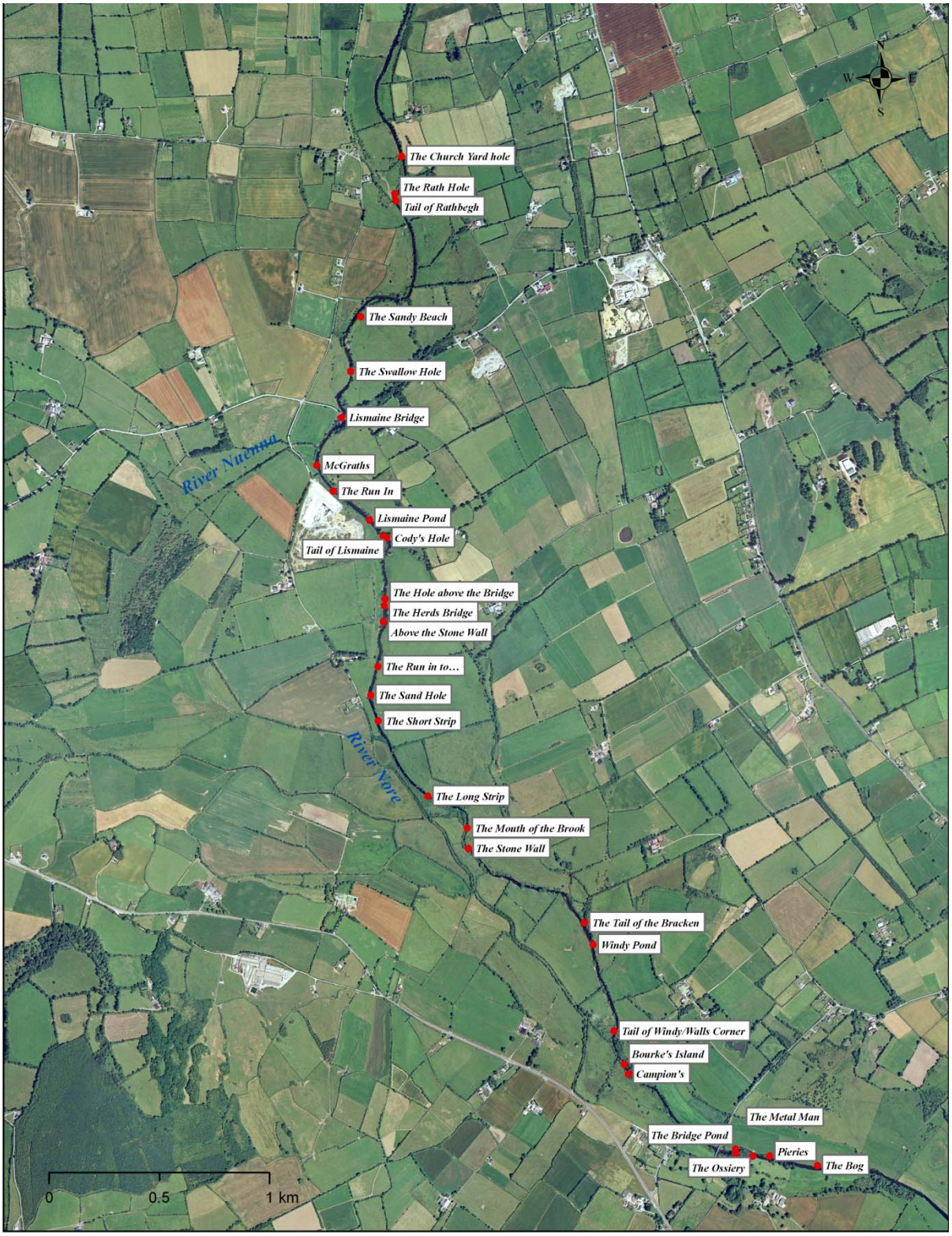


Figure 43: River names south of Ballyragget to Threecastles

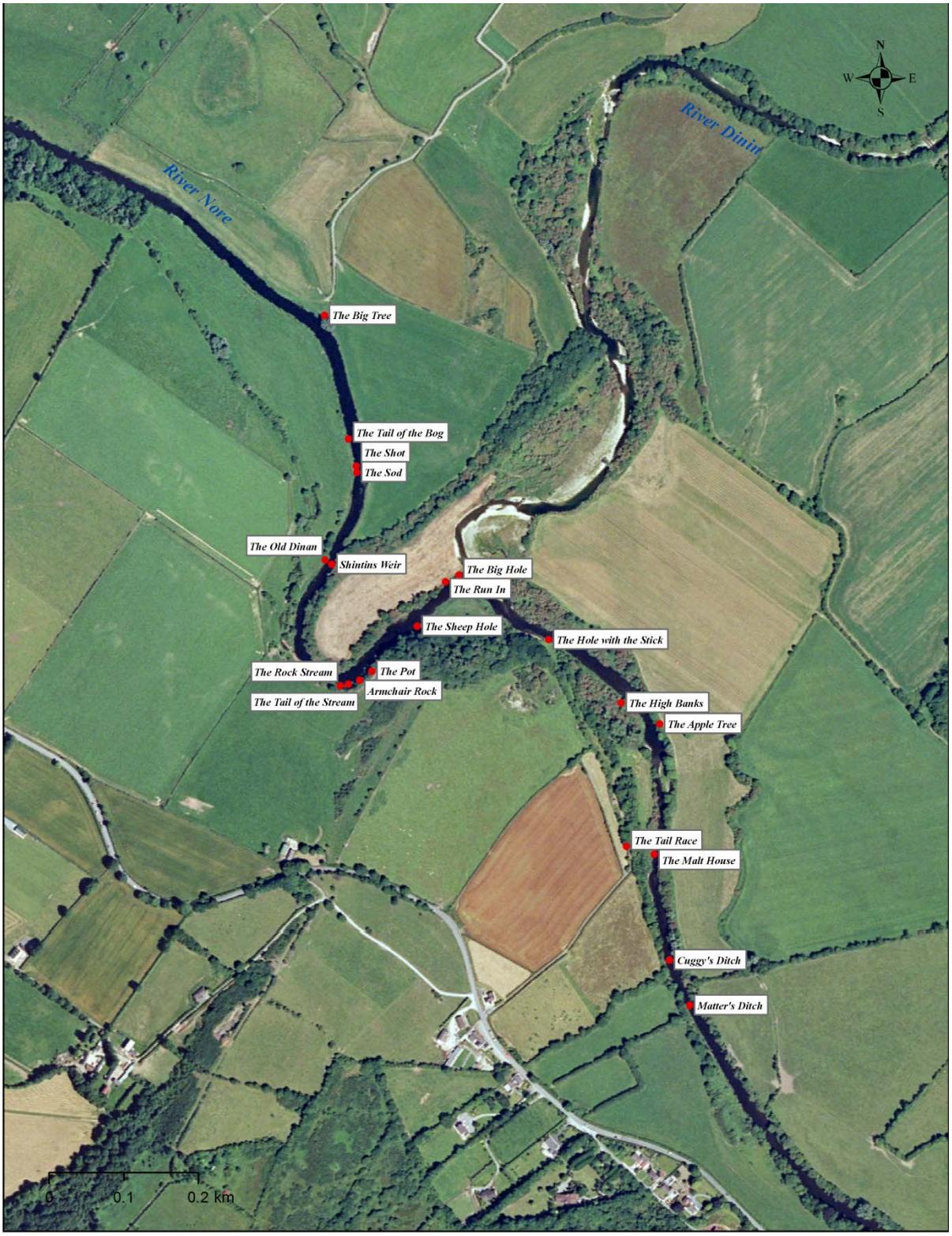


Figure 44: River names at the Shot, Naglesland

Figure 45: River-names north of Kilkenny

The Living Riverscape: Fishing on the Nore

The River Nore has been an important salmon and trout fishing river for thousands of years. The earliest evidence for fishing on the Nore was found beneath John's bridge in the city, where archaeological excavations in 2001 revealed the well-preserved remains of a wattle fish-trap. This was radiocarbon dated to the Late Bronze Age (1200-800 BC). Commercial fisheries have existed in the city since the middle ages and the rights over these were frequently the subject of quarrels and court cases. There are only two instances of commercial fishing known to the north of the Kilkenny; these are at Ballyragget where an eel weir existed and at the Shot, where the Dinin meets the Nore, where the Lawlor family held a snap-net licence until 1948.

Figure 46: Rod fishing at Greensbridge mill 1819, view of Kilkenny by Joanna Bann(?) (Kilkenny Archaeological Society Collection)

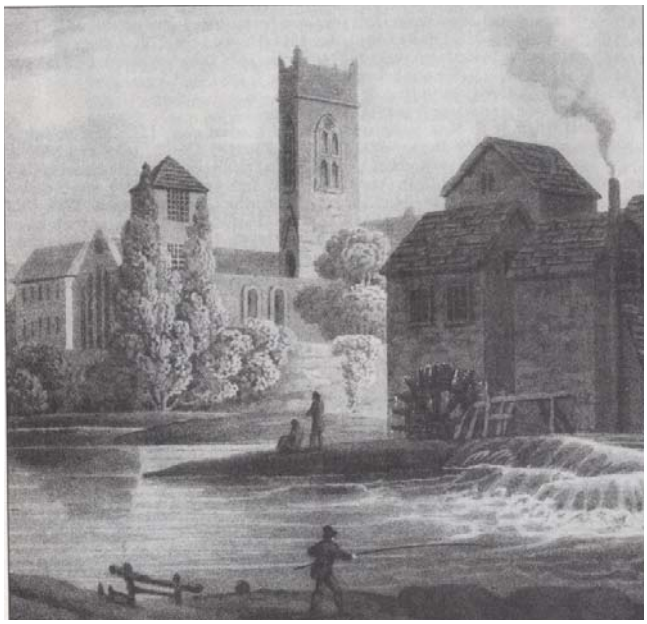


Figure 47: Fishing at Chancellor's Mills c.1800 (Robertson)

Specimen Fish

Certificate

It is hereby certified that the Irish Specimen Fish Committee has investigated and ratified a claim by John Dalton of Bishops Hill, Kilkenny- in respect of the capture by fair angling with rod and line at/in River Nore on 22 nd April, 1961 of a Salmon weighing 30 lbs. 5ozs.

H. Brennan

for the Irish Specimen Fish Committee

Date: 1 st January, 1962.

Figure 48: Specimen fish certificate recording the 30 lbs, 5 ozs. Salmon caught by Johnny Dalton at the tail of Lismaine in 1961 (courtesy: Mr. Johnny Dalton).

Figure 49: A picture is worth a thousand words…fishing in Kilkenny has become an important tourism product (source: History of the Kilkenny Canal, Kilkenny City and County Anglers)

The vibrant Kilkenny Anglers' Association celebrates a hundred years in existence this year and fishing rights are held by the club in the Rock, Threecastles and Troyswood areas. Many of the river names noted above refer to fishing stands that are used by the club-members.

The Living Riverscape: Natural Heritage

Our natural heritage can also be called, among other terms: biodiversity flora, fauna and habitats; nature; and ecosystems. Flora means plants; fauna means animals; and habitats are the places where plants and animals live, such as rivers, woodlands or grasslands. It includes the entire landscape that we live in, be it the treacherous swampy woodlands of the rivers edge, the pasture and hedgerows along its banks, or the old stone walls and bridges in our towns and villages.

In Ireland, our natural heritage has often not been researched in as much depth as our built heritage, and so a study such as this relies to a greater extent on the information that is gathered by investigating primary sources such as maps and aerial photographs, and of course by surveying the land.

Landscape and ecology

The most striking element of much of the study area is the relatively narrow 'corridor' of semi-natural vegetation associated with the river, with some exceptions such as the low-lying ground between Lismaine and Threecastles bridges. The primary reason for this is the underlying geology and soil in the area, which is dominated by deep deposits of glacial till laid down during the last ice age. In the 14,000 years or so since the ice melted, the Nore has been cutting a channel down into the gravels. This has resulted in a fairly steep-sided valley, above which is a gently rolling landscape of well-drained soils. These well-drained soils were found to be very suited to pasture and arable farming, and have become increasingly intensively farmed, right up to the present day. It is on the steep valley slopes, and floodplain areas, that semi-natural habitats associated with the river have mostly survived. Most of the semi-natural habitats recorded during the survey are found to coincide with the area mapped by the EPA as alluvial soil.

Protected habitats and species

In Ireland, we call almost all our habitats 'semi-natural' because they have been changed by humans over the millennia since the first settlers arrived here. We have practically no true wilderness or fully natural habitat. Even our rivers, like the Nore, have been changed through clearing of vegetation, building weirs, carrying out arterial drainage, building towns and bridges, or changing the water chemistry through inputs from surrounding human land use – be that waste water discharge from our towns and industry, oils and rubber washed off our roads, or nitrogen and phosphate leached from farmland.

Despite these pressures, our river habitats remain one of the most significant areas of semi-natural habitat in Ireland, forming an intricate network of 'ecological corridors' through the landscape. The Nore is home to several habitats and species now threatened in Europe and protected under the EU

Habitats Directive, including alluvial woodland, floating river vegetation, otter, crayfish, freshwater pearl mussel and three species of lamprey. For this reason, the river and some of its adjacent habitats are designated as a Special Area of Conservation (SAC), under this Directive.

Parts of the river corridor are also listed as Natural Heritage Areas (NHA). This is an Irish designation for sites of national interest. Currently, all NHAs in the study area are *proposed*; that is, they have not yet been formally designated. The pNHAs found in the study area are:

- River Nore and Abbeyleix Woods complex (2076)
- Inchbeg (0836)
- Ardaloo Fen (0821)
- Dunmore complex (1859)
- Newpark Marsh (0845)

Most of these lie within the River Nore SAC and are therefore afforded the highest nature conservation protection.

Nore freshwater pearl mussel

(The following text is based on information contained within the Freshwater Pearl Mussel Draft Nore Sub-basin Management Plan (2009), available at http://www.wfdireland.net/docs/5_FreshwaterPearlMusselPlans/)

The Nore freshwater pearl mussel *Margaritifera durrovensis* is not known to occur anywhere else in the world. The freshwater pearl mussel *Margaritifera margaritifera* is found in soft waters; the Nore mussel is uniquely found in the hard waters of the Nore main channel. Both are listed on Annexes II and IV of the EU Habitats Directive. The Nore pearl mussel population stretches from Poorman's Bridge near Abbeyleix to Lismaine Bridge in Kilkenny, with most of the population found between Poorman's Bridge and the Avonmore Creamery above Ballyragget. The most recent estimate of the total number of live adults in Ireland, based on surveys from 1991 to 2005, is 500 individuals. This represents a decline of 75% from the total of 2,000 individuals found in 1991. The Nore pearl mussel has not reproduced successfully in the River Nore since 1970. Survival of juvenile mussels is being prevented by the poor quality of the river substrate resulting from excessive siltation and nutrient enrichment.

The conclusion from these studies is that the single population in the River Nore is not viable and on the verge of extinction. As a result, adult mussels have been taken into captivity in an attempt to breed mussel larvae (glochidia). In 2006, female mussels in captivity successfully released live glochidia, a number of which attached to the gills of host fish. These larvae should eventually fall off and bury themselves in the gravel bed of the river or captive breeding tank. They will be held in captivity until they naturally emerge above the gravel, which can take 5-10 years. At this stage, it is hoped the juvenile mussels will be translocated to suitable habitat within the Nore catchment.

The objective is to create at least two viable, self-sustaining populations of the Nore pearl mussel from mussels bred in captivity, each population totalling a minimum of 5,000 mussels. However this

cannot be successful unless the river that they are to be returned to has favourable habitat condition and water quality.

Habitats

A general description of each of the habitat types found during the survey is given below. These have been divided between wetland habitats, and those of dry areas, and are listed under the relevant *Guide to Habitats in Ireland* code, e.g. the code for wet grassland is GS4. These codes are also used on the accompanying habitat maps. Plant species are listed by common name in the text, for ease of reading. A list of species with common and scientific names is given with the habitat inventory.

The main habitats found in the study area include flowing water – not just the Nore itself, but the rivers, streams, springs and drainage ditches that flow into it. Most of the land in the study area is agricultural pasture land, which varies from improved grassland, to wet rushy fields, and more swampy areas that are used as seasonal grazing. Small pockets of semi-improved dry grassland are found on the gravel ridges and in hay meadows. Small to medium-sized areas of woodland are found throughout the study area, varying from wet willow woodland in the floodplain, to pockets of ash and hazel on drier slopes. Some of the larger woodlands are made up of mainly non-native species, such as beech and sycamore. Of course these are all joined to the wider landscape by the network of hedgerows. Old stone walls and buildings are also notable habitats, though the more modern concrete and tarmac areas are of less value for nature.

Wetland habitats

Rivers (FW) and drainage ditches (FW4)

Rivers are classified in the *Guide to Habitats* as either eroding (FW1) or depositing (FW2). This has proved to be a difficult classification to use as many rivers can present both types of conditions. In this study, rivers are classified FW.

The Nore channel through the study area presents a range of instream habitats, from gravel bars and shallow riffles, to deep pools and glides. Several weirs cross the channel. Where conditions are suitably clear and fast-flowing, aquatic plants grow on the river bed. These are mostly water-crowfoots, a member of the buttercup family and identifiable in summer by their white buttercup-shaped flowers. This ‘floating river vegetation’, as it is called, is a protected habitat type under the EU Habitats Directive, and one of the habitats for which the River Nore is designated as an SAC. These plants are an important micro-habitat for some invertebrates (insects, snails and other small creatures) which form part of the diet of salmonid fish (salmon and trout). They also help oxygenate the water. Other plants such as reed canary-grass and club-rush are found in slower-flowing areas, along the edge of the channel, or where sediment has built up.

The assessment of the Nore as part of the South Eastern River Basin District has found the river from just below Durrow as far as Inistiogue to be of bad status. This means that based on measurement of different aspects of the ecological status of the river, it has failed to reach an assessment of at least ‘moderate’ status. This is based on an assessment of biological and chemical features of the river, such as plants, invertebrates, fish, and pollutants. The objective for the river is to try to restore it to

at least good status by 2015, however it has been assessed as being at risk of not achieving that target (www.wfdireland.net accessed November 2009).

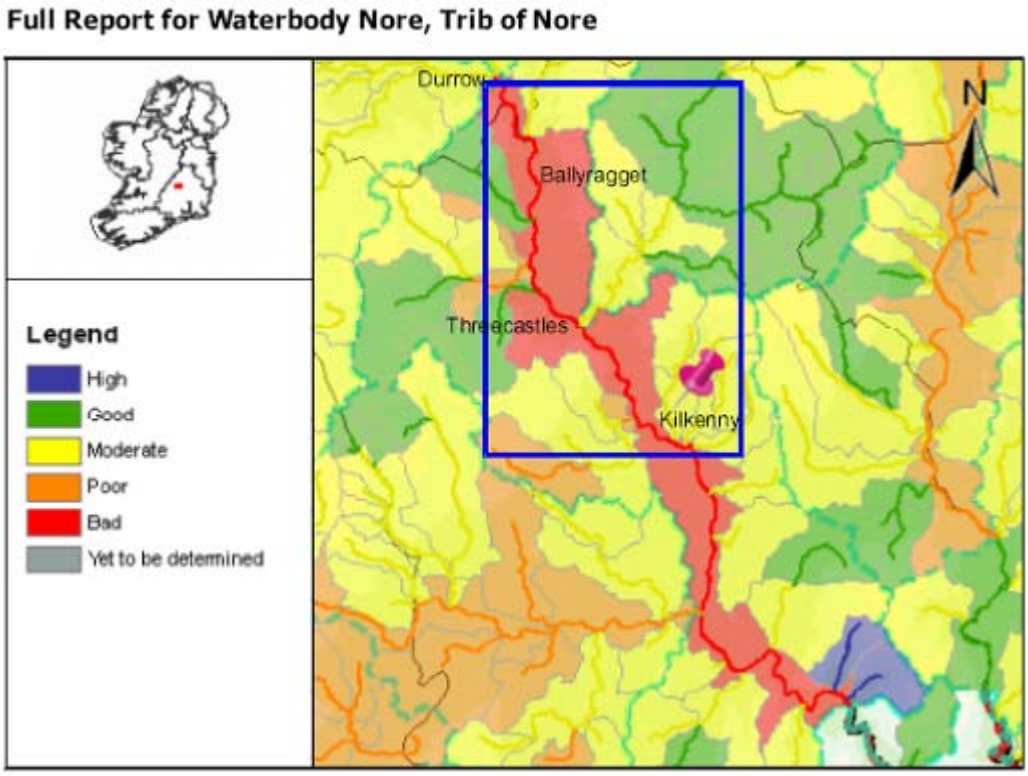


Figure 50: Report for the River Nore channel taken from the Water Framework Directive online map system, Water Maps, showing bad status in the study area. www.wfdireland.net

The Dinan is the largest of the tributaries flowing into the Nore in the study area. A network of smaller streams and rivers, with wet drains, also connect the water of the Nore main channel to the wider landscape. The larger of these include the Nuenna, Owenbeg, and Breagagh. These were only surveyed where they lie within the study corridor.

The smaller ditches and streams usually have a hedgerow along at least one side, and grassy banks. In some places they contain aquatic plants such as water-cress and fool's water-cress.

Figure 51:The Nore above Ossory Bridge, showing a wealth of nature in the city.

Wet grassland (GS4)

Grassland is the main habitat in the study area, and of this, most can be classified as wet grassland. This was found to broadly belong to three main types. The first is a semi-improved type with soft and hard rush, creeping bent-grass, Yorkshire fog grass, and creeping buttercup. Perennial rye-grass is often found in this type. The second type is found in wetter areas, dominated by lush growth of flote-grass, often with sharp-flowered rush. Thirdly, a small number of areas were found to contain a more diverse type with additional species such as ragged robin, meadowsweet, and sedges. In the field adjacent to Anker's Island, plants of devil's-bit scabious were found. This is the food plant of the EU-protected marsh fritillary butterfly. Both the plant and the butterfly have declined throughout Europe due to loss of habitat like wet grassland. The field with this plant contains one of the more species-rich wet grasslands found during the survey, and is similar to the EU-listed habitat of purple moor-grass meadows.

Substantial areas of floodplain grassland are classified as improved grassland, as they appear to have more intensive management and fewer wet grassland indicator species.

Figure 52: Wet grassland at Ballynaslee, stretching from the Durrow road to Anker's Island.

Reed and large sedge swamp (FS1)

Reed swamp is associated with the wet grassland, but in wetter areas or those with less grazing. It covers a small part of the overall study area. Two main types were found. The first is dominated by reed canary-grass with Yorkshire fog and creeping bent-grass underneath. Nettles are frequent. This type was found in low-lying fields beside the river. Though categorised as reed swamp, it was not extremely wet and a detailed vegetation survey could re-classify these areas as wet grassland.

Other swamps were found in very wet areas in some of the riverside fields. These tend to be dominated by branched bur-reed, and could not be surveyed in detail due to their inaccessibility. An area of swamp is found on Islands, dominated by reed canary-grass with a large sedge, possibly greater pond-sedge.

Reed swamp vegetation is found along the edge of most of the river channel, in a strip often no more than 1-2m wide, and is dominated by reed canary-grass.

Figure 53: Reed swamp on Islands, beside the Brackin river, a back channel of the Nore.

Figure 54: This riparian (river) woodland at Ballynaslee shows us what much of the Nore would have looked like before the arrival of the first settlers.

Riparian woodland (WN5)

Riparian (river) woodland of willow and alder would once have covered large parts of the Nore floodplain. The expansion of agriculture and the fertile nature of the alluvial soil led to the gradual clearance of woodland and claiming of the ground for agriculture. As a result, wet woodland along the study area tends to be confined to islands in the river or particularly wet places. These woodlands are dominated by willows, mainly white and crack willow with frequent osier. All three of these species are not native to Ireland, but have become widely naturalised along river corridors since they were introduced. Grey willow (sally) is also common. Other species such as alder, ash, hawthorn and viburnum are found, depending on how continuously the woodland is under water during the year. Alluvial woodland is has become rare in Europe due to drainage and habitat loss, and is now a priority habitat protected under the EU Habitats Directive. It is one of the reasons that the Nore is protected as an SAC.

Treelines (WL2)

Treelines are found along the riverbank throughout the study area. These cannot be classified as woodland as they are not wide enough – woodland generally has to be greater than 4m wide – but they contain many of the same species as the wet woodland areas. In addition, some parts of the riverbank edge are higher and can support species that are less tolerant of flooding, such as oak and sycamore, because they are only under water during high floods.

Wet willow-alder-ash woodland (WN6)

The largest piece of wet woodland within the study area away from the river itself is found south of Grange demesne. Shown on 1st edition maps as 'decoy', this was kept as cover for game. It is different to the riparian woodland in that it is not directly connected to the river, though it is close to the floodplain. This woodland was not accessed during the survey.

Figure 55: Wet woodland at the Decoy, Grange.

Springs FP1

Springs are found at a few locations in the study area. The most easily seen of these is along the old canal near Dukes Meadows. Other locations are at Ballynaslee and St. Catherine's well at Rathbeagh. These springs tend to be surrounded by marshy vegetation with fool's water-cress, water-cress, and flote-grass or reed canary-grass. Usually the water flowing from them is very clear – though it may not be safe to drink.

Figure 56: Spring along the old canal near Dukes Meadows

Grassland

Three types of semi-natural dry grassland were found in the study area, often where conditions are less suited to agricultural improvement, for example on steep slopes or where the underlying bedrock and gravels are very close to the surface. They are also found in a small number of fields that continue to be traditionally managed as hay meadow or less intensive pasture.

Dry calcareous and neutral grassland (GS1)

The main grasses were found to be red fescue, common bent-grass, and crested dog's-tail. Typical herb species included red clover, autumn hawkbit, common cat's ear, sorrel (sour-grass), common knapweed, rib-wort plantain and yarrow. This habitat is found in a small number of fields along the river which had been cut for hay at the time of the survey. The most interesting example of this habitat is found at the Black Quarry (Archersgrove Quarry) in Kilkenny city, where limestone-loving species such as field scabious, wild marjoram, ox-eye daisy, burnet saxifrage and quaking-grass are found.

Figure 57: Field scabious, left; and wild marjoram, right; both at Black Quarry

Dry meadows and grassy verges (GS2)

The second dry grassland type is classified as dry meadows and grassy verges. This habitat was once common in Ireland where fields were cut for hay once every year or couple of years, and were only grazed very little. It is characterised by tussocky grasses such as cock's-foot and false oat-grass. It tends to have a low diversity of species. In the study area (and elsewhere in Ireland) this habitat is most easily seen along road verges and the headlands of fields, where the grass is rarely cut or grazed. It is also found in a few small fields in the study area. Additional species that can be found in this habitat are bush vetch, tufted vetch and meadow vetchling.

Dry-humid acid grassland (GS3)

Dry acid grassland was found in one tiny part of the study area, at the Rock (Naglesland), Threecastles. It is worth mentioning because this is the only area of acid soils in the study area, associated with the acid rocks of the Slieveardagh. This is in contrast to the more calcareous soils of the majority of the study area. The high ground leading out to the rock is an outlier of the Slieveardagh; most of it has been reseeded as improved pasture, with a small area of semi-improved

grassland found at the tip. The only acid grassland indicator species found during the survey was sheep's sorrel.

Figure 58: Small patches of species-poor acid grassland mixed with scrub, overlooking The Shot.

Woodland, scrub and hedgerows

Dry woodland in the study area ranges from native-type semi-natural areas, to the modified mixed woodlands planted as part of the demesnes along the river.

Oak-ash-hazel woodland (WN2)

Native woodland is usually found on the gravelly ridges above the river, and is dominated by ash and/or hazel, sometimes with oak. Non-native trees such as beech and sycamore are sometimes also found. Shrub species include hawthorn, blackthorn and spindle. Most of the woodlands accessed during the survey were found to be grazed by livestock, which has lead to the woodland ground flora plants being suppressed and somewhat sparse. Species such as primrose, soft shield-fern, violets and wood avens are the most frequent species found. One plant of the rare Red Data Book species, nettle-leaved bellflower, was found at Ballynaslee.

Figure 59: Ash-hazel woodland with spindle on the motte at Moatpark.

Mixed broadleaved woodland (WD1)

Mixed woodland has a higher proportion of non-native species, mainly sycamore and beech, with spruce and horse chestnut. Native species such as ash and oak are also found in these woods. potentially invasive non-native shrubs are found in this habitat, such as cherry laurel and bamboo. Where there is a high proportion of conifers, the habitat is classified as *Mixed broadleaved/conifer woodland (WD2)*.

Scattered trees and parkland (WD5)

This habitat is particularly associated with old demesnes and 'planned' landscapes. It is characterised by mature trees in an open grassy setting. Sometimes the trees can be clustered together, but the habitat is differentiated from woodland by virtue of the fact that it lacks a woodland structure (i.e. no proper shrub layer) and the field layer is often maintained by mowing or grazing. Parkland trees are often non-native species.

Figure 60: Broadleaved woodland dominated by beech at Dunmore.

Figure 61: Parkland in Grange Demesne.

Scrub (WS1)

Scrub is similar to woodland but has few, if any, large trees, and tends to be more species-poor. In the study area, most areas of scrub are dominated by gorse (furze) with hawthorn, blackthorn and bramble. A few small areas of hazel and willow scrub were also found. Scrub is an important habitat

for birds, both for food in the form of berries, and for nesting. It is also used as cover by animals such as fox, badger, and rabbits.

Hedgerow (WL1)

Hedgerows are the most common type of field boundary in the study area. Different types of hedgerows can be seen. The more heavily-managed hedges are most often seen above the floodplain, at the edge of the intensive farmland. These are kept cut low (1-2m) with straight sides, and tend to be dominated by hawthorn and blackthorn, with a low plant species diversity. Within the river corridor itself, the hedges are generally less intensively managed, probably because ground conditions are difficult, being more steep or wet. These hedges can range from 2-4m high and taller. At the base, they can range from gappy and open, if they are grazed, to densely scrubby and 2-4m wide. Most of these hedges have as core species ash, hawthorn and blackthorn, with occasional elder. Spindle is frequent throughout the study area. Guelder rose (viburnum) is found in many places, usually on damper soils. In wetter areas the hedges are dominated by willows.

Figure 62: The hedgerows either side of the old Lismaine-Threecastles mediaeval road, now a farm lane, are an important local habitat.

Treeline (WL2)

This habitat has been mentioned earlier in the wetland section. Treelines also occur in drier areas and are usually the result of planting when the demesnes were set out. As a result, they are usually dominated by non-native species, lime and beech being the most common in the study area. They are distinguished from hedgerows by the lack of any shrub layer, though they can have a field layer of woodland plant species, such as wood false-brome grass and wood avens. Though they are dominated by non-native tree species, they are often important roosting or nesting areas for bats and birds because they may have good ivy coverage or large holes where branches have died.

Figure 63: The old canal bed in Kilkenny, flanked on either side by lines of lime trees.

Built land

Stone walls and other stonework (BL1)

Old stone walls, bridges and buildings, particularly those built with lime mortar or drystone, are important habitats for certain plants, particularly some of our smaller ferns. The plants and crevices on old stone structures provide nesting and roosting areas for small birds such as wrens, while bigger structures can be used as bat roosts. Wall plants found in the study area include ivy, pellitory-of-the-wall, navelwort, wall-rue fern, maidenhair fern, hart's-tongue fern, rustyback fern and polypody fern. The introduced species ivy-leaved toadflax and fairy foxglove are commonly found on walls in the study area, especially close to settlements.

Buildings and artificial surfaces (BL3)

The most modified of habitats along the river is that of modern built land, with concrete and tarmacadam. This is most obvious in Kilkenny city. Built land is generally of low value for ecology as it is constantly maintained and managed so that nature is largely excluded. Exceptions to this are, for example, plants such as buddleja growing on walls, swallows nesting in the eaves of houses, or bats roosting in buildings. The main issue with built land is that it fragments the river corridor, making it harder for wildlife to move up and down.

Figure 64: The river below John's bridge, where only small amounts of natural habitat are available to wildlife.

Notable flora

The Nore valley is noted for some rare plant species, particularly autumn crocus (logo of Kilkenny Heritage Forum), nettle-leaved bellflower, basil thyme, and ivy broomrape, all listed in the Red Data Book (RDB) of Vascular Plants.

Autumn crocus (*Colchicum autumnale*) is listed on the Flora Protection Order. In the 1988 RDB it is listed as Endangered. The current draft revision of this list (2005) suggests that this be revised to Critically Endangered. This plant grows in damp meadows and clearings in damp woods. It was recorded from the study area north of the city in the past, but no plants were found during this survey despite the survey being carried out during the flowering period.

Nettle-leaved bellflower (*Campanula trachelium*) is listed in the 1988 RDB as Vulnerable, and the current draft list suggests that this should be changed to Endangered. It is a plant of usually dry calcareous soils in woodland and open scrub, often of hazel. Its headquarters in Ireland is the Nore valley. One plant of this species was found at Ballynaslee in a small area of hazel scrub. It is known to occur in the woodlands of Dunmore complex pNHA at Loughmerans and Dunmore, and also occurs at Archersgrove, just south of the study area.

Basil thyme (*Clinopodium acinos*) is listed in the 1988 RDB as Vulnerable, while the draft revision suggests this be upgraded to Endangered. It is a plant of sandy and gravelly soil and is known to occur within the Dunmore complex pNHA. No additional sites for it were found during the study.

Ivy broomrape (*Orobanche hederae*) is a parasitic plant on the roots of ivy. It is listed in the 1988 RDB as Not Threatened, and recommended for reclassifying as Least Concern in the revision. This plant was found growing in scrub at Rathbeagh.

Figure 65: Left: Nettle-leaved bellflower photographed on an esker in Laois; Right: Ivy broomrape plant in scrub at Rathbeagh.

Fauna

The Nore is an important wildlife corridor through the intensive farmland of this part of North Kilkenny. The river itself contains aquatic species such as Atlantic salmon, lampreys, trout, eel and crayfish, while otter, badger, hare, bats, frog, fox and rabbit use the river corridor habitats.

Aquatic species

It is well known that salmon have declined in recent years; however it is less well known that eels have also declined. This has resulted in a ban on eel fishing until 2012, when the status of this species will be reviewed. Public consultation with local people during this study revealed that anglers and others who use the river consider that there has also been a decline in crayfish. Local anglers report that pike are found around Rathbeagh, Lismaine and Ardaloo, while other coarse fish such as roach, dace and rudd are known from the vicinity of the city, but not so much in the upper part of the study area. As described earlier, the Nore freshwater pearl mussel is an important feature of the River Nore in the study area.

Mammals

The Irish Squirrel Survey 2007 found that red squirrels are almost non-existent in Kilkenny, having be ousted by the greys. They also found that pine marten were very scarce in Kilkenny. During the Nore survey 2009, grey squirrels were reported from Lismaine and Threecastles. In a separate study,

feeding signs of red squirrel and pine marten signs were recorded from the south of Kilkenny city, during survey work for the Lacken walk in 2009 (Flynn 2009 – 2).

Bats are likely to occur throughout the study area. The All-Ireland Daubenton's Bat Waterway Monitoring Scheme 2006-2008 recorded this bat species from Threecastles Bridge, and downstream of the bridge. This bat species feeds over water and is likely to occur at other points along the river. In addition, a review of wildlife and natural amenities of Ballyragget for Ballyragget Development Association in early 2009, found that the old bridge beside the town is likely to be used by bats (Flynn, 2009 – 1). The castle in Ballyragget also is also potentially a bat roost (Ballyragget Local Area Plan 2004). These selected examples show the potential importance of old stone buildings, bridges and other stonework as habitat for Irish bat species.

Otters occur along the river, and one was observed fishing beside the Castle Park during fieldwork for this study. The 2004/2004 Otter Survey of Ireland recorded otter signs at Threecastles Bridge and at Kilkenny city, as well as on the Dinan.

Figure 66: Otter feeding after catching an eel just above Ossory Bridge.

One possible badger sett was found in woodland at Lismaine. Badgers are likely to occur throughout the study area and are protected by law. Irish hare is known to occur in the study area, though none were seen during the survey.

Rabbits and one fox were also seen during the survey, and rabbit burrows were seen in hedgerow banks at various locations throughout the study area.

All mammal species described above, except fox and rabbit, are protected under law.

Birds

Of note along the study area, as seen during the canoe survey and reported by locals, are kingfishers. This bird is on the Amber list of Birds of Conservation Concern in Ireland, and Annex I of the EU Birds Directive. There seems to be a good population of this species in the study area, probably helped by the number of areas where the steep banks provide suitable habitat for their nest holes.

Common wetland birds are found along the river channel, the most frequently noted during the survey being the moorhen (also known as waterhen), which was heard and seen in many of the wetland areas beside the river. Snipe was flushed from many of the wetlands; this species is also on the Amber list and has suffered from loss of wetland habitat. Mallard duck and mute swans are seen in some areas. Little egret has been reported from the study area and one was seen at the Shot (confluence of the Dinan) during the survey. It is also reported to occur at Inchmore. This once-migratory species has become resident in Ireland since the 1990s. It is a small white crane, similar to our own heron which is grey, white and black. Cormorants are reportedly found along the river. Dipper can be seen in the shallows and riffle areas, as can grey wagtail.

The most notable bird area is the large, low-lying wet land area from Lismaine to Threecastles, and including Ardaloo fen, where a curlew was heard following floods in late October. The area around Islands was proposed as an NHA before it ever became part of the Nore SAC, because of the numbers of birds that used the area in winter. At the time (1990s), birds reported from the NHA included golden plover, lapwing, whooper swan, Bewick's wan, curlew, snipe, mallard, wigeon and teal. Public consultation described wetland birds from the area around Threecastles, which included some of the above species as well as pochard. Hurley's pond at Threecastles has also been reported to supported black-headed gulls and greater black-backed gulls. A figure of 44 swans occuring at Inchmore in recent years was given during consultation; it remains to be confirmed whether these were whooper or Bewick's.

Local bird records in the Threecastles area, particularly around the demesne, also include buzzard, sparrowhawk, treecreeper, redwing, chiffchaff, rook and jackdaw, as well as our more common birds such as wren, blackbird, robin, blue tit, coal tit and great tit. Local records for Talbots Inch include reed bunting, stonechat, grey wagtail, mallard with ducklings, kingfisher, waterhen and dipper. Willow warbler and chiffchaff are reported to occur, as are redwing, fieldfare, goldfinch, linnet, redpoll and goldcrest.

Figure 67: Ducks and swans on the Castle Park pond.

Other fauna

Dragonflies were noted during one particulary warm day of field survey. Frogs were also seen at a small number of locations. These species particularly require marshy areas that hold water over summer and provide insects for their food.

Invasive species

A small number of sites of invasive non-native species were found during the survey. The species recorded were Himalayan balsam (*Impatiens glandulifera*), Japanese knotweed (*Fallopia japonica*), and New Zealand pigmyweed (*Crassula helmsii*). The first two of these plants were introduced to Ireland in the 1800s-early 1900s as garden ornamentals, while the pigmyweed was first recorded in the wild in 1994. Invasive species such as these cause problems in semi-natural habitats in various ways. The most obvious one is their vigorous growth, which allows them to suppress the native plants that would normally grow in that situation, thereby reducing native diversity. Secondly, they usually die back in winter, leaving exposed soil which is then more easily eroded and washed away. In the case of Japanese knotweed, it can cause structural damage as its rhizomes can spread for many metres underground and grow up through hard surfaces.

Luckily, only a small amount of these plants were found in the study area. However they are difficult to control and co-ordinated action is required for this to be successful.

Dace is an invasive coarse fish which has been introduced to Irish waters. It is known to occur in the city stretch of the river.

Data on invasive species gathered during the survey will be forwarded to the National Biodiversity Data Centre in Waterford, where a database of invasive species in Ireland is being compiled.

Figure 68: Left: Himalayan balsam – pretty but bad for native habitats; Right – Japanese knotweed in autumn, showing heart-shaped leaves and long canes.

Conclusions

A natural heritage asset

The Nore from the Laois border to Ossory Bridge is a great natural asset for the people of Kilkenny. The interesting range of habitats and species can be seen at a number of points. The bridges at Ballyragget, Lismaine and Threecastles provide a view of grassland, woodland and wetlands, while a wealth of natural heritage is within touching distance along the linear walk, Castle Park walk, and Lacken walk. This is a fantastic resource for people to experience nature and increase their knowledge of our native wildlife.

Importance of riparian habitats

Although the corridor of semi-natural habitats along the river is generally quite narrow, it is extremely important as a buffer between the more modified habitats and the river channel. Whether it is through improved pasture and arable land, or the built-up ground of the city, the band of vegetation along it helps the river ecosystem to function properly. It does this by absorbing storm-water run-off, along with nutrients, chemicals and silt, while at the same time holding together the river bank.

The health of this riparian ecosystem is becoming increasingly important as Ireland tries to meet its objectives under the Water Framework Directive, to restore all waters to good status by 2015. As the Nore within our study area is currently classified as being of bad status, it is even more important that these habitats are kept, restored and looked after in a sensitive way.

Climate change and the Northern River Nore

The likely implications of climate change for the natural heritage of Ireland's inland waterways has been reviewed by the Heritage Council and Failte Ireland (2009). Briefly, predictions for changes in Ireland's climate over the coming century have three main features: increased annual average temperatures; increased chance of floods, and of those floods being bigger; and increased chance of seasonal drought. In relation to rivers and wetlands, this is anticipated to lead to an increase in the temperature of the water.

These predicted changes will affect the River Nore ecosystem. Based on the current predictions, the effects could include the following scenaria. Species that are sensitive to the effects of warmer average water temperatures will decline, as will those that are sensitive to increases in amounts of silt and nutrients. This includes salmonid fish (salmon and trout) and the Nore pearl mussel. One the other hand, these conditions are likely to favour more tolerant species, such as coarse fish. Increases in nutrients and temperatures would also lead to greater risk of eutrophication (too many nutrients) and greater growth of algae and tolerant plant species. This could lead to a reduction in sensitive species, such as floating river vegetation, and an increased oxygen demand at certain times.

Increased frequency and severity of flooding could lead to greater amounts of siltation, and to more turbid conditions (when the river is cloudy or muddy), as well as greater inflow of nutrients to the river. This will affect sensitive species such as salmonids, freshwater pearl mussel, and some plants. In wetlands along the river, including ponds, lakes, swamps and fens, the effects of seasonal drought are expected to be most strongly felt and could cause these habitats to shrink. Insects that have larvae that live in wetlands as part of their life-cycle could also be adversely affected.

Nature will always adapt and come to a new balance, with or without our help. Species and habitats that can tolerate the changes will survive, while those at their ecological limits may not be able to adapt in time, particularly at the fast rate at which these changes are predicted to occur. Some of these species are significant in their own right, e.g. the Nore pearl mussel, unique in the world and capable of living to over a hundred years old; others have an economic and amenity importance, e.g. salmon fishing. Wetland habitats associated with the river act like a giant sponge, mitigating the effects of extreme flood events, and holding water in the ground during droughts. If we don't try to help the river ecosystem to adapt, we will probably find that as well as losing some of our unique heritage, we will suffer directly through the effects of flooding and drought.

So how can we try to alleviate and adapt for these changes? The overall goal should be to help the river ecosystem to become more resilient, by improving its ecological status. There is need for further study to look at the options for achieving this. Such studies are in their infancy, the most recent general review having been compiled by the Heritage Council in 2009 (Kelly & Stack 2009).

A Trip down the Nore from Ballynaslee to Ossory bridge

Introduction

In this section we describe a trip down the river Nore in a canoe which was taken by the team in October 2009. The key heritage sites that are encountered during the course of the voyage are described as are river names and oral folklore.

Ballynaslee to Ballyragget Bridge

A slow moving stretch of water that extends over three to four fields, Hestons Stand, leads into the weir and mill-race for the Russellstown Tuck mill. The weir is known as the Tin Weir. The Church Pool, an area of slack water, passes by the medieval parish church of Ballynaslee and its adjoining moated site, the probable location of a 13th century manor house. The 'Ass mill', whose wheel-house gable remains intact is on the east bank of the river below a series of small islands that divide the river into channels, a treacherous spot as the team found out to his cost!

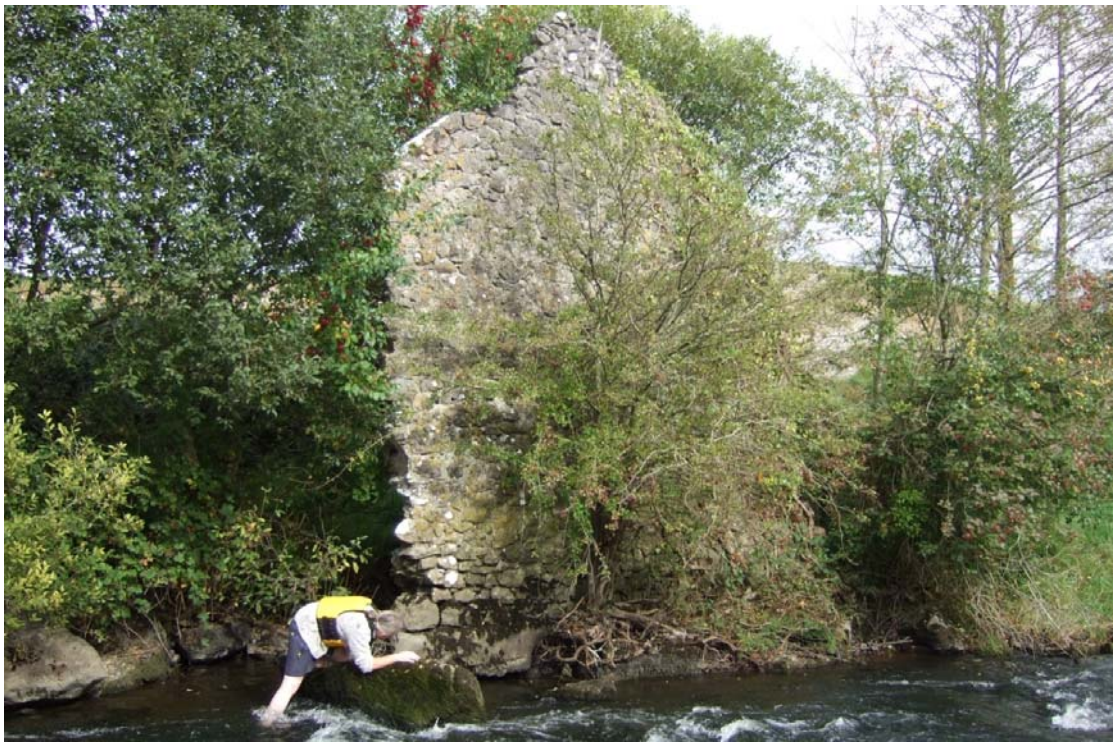


Figure 69: Surviving gable of 'Ass Mill' wheel-house, Ballynaslee mill complex

The low-lying ground along the Kilkenny bank of the river is host to a rich variety of habitats, including wet grassland, swamp, wet woodland, hazel scrub and dry limestone grassland, which are home to species such as snipe, waterhen, dragonflies and red admiral butterflies. The nettle-leaved bellflower occurs in this area. 300m to the south the river takes a sharp turn to the east and leads to fast water at Anker's Island, named after an 'anchorite' or hermit who inhabited a small stone church. There is also a tradition locally that the name derives from the hermit 'anchoring' himself in the river with a magical stick. The scant ruins of the church are present as a tree-covered hillock

overlooking the river. This is where a sleeping fox cub was spotted during the survey. At the end of Anker's Island is 'The Head of Pat Dooleys'; the Laois side here is known as New York! As the river enters Ballyconra townland it straightens and passes 'Bernies', a wooded area on the east side that is notoriously difficult to fish. This habitat gives a flavour of what our forefathers would have had to deal with when trying to navigate the river in prehistoric times, when most of the landscape was wooded. From here 'The Flat' is a slow moving stretch which is overlooked to the west by the Ballyconra Bronze Age barrow cemetery. This shows up on aerial photographs taken in the 1960s as an array of ring-ditch circles and ancient field systems.

Figure 70: Ballyconra house, the lintel over the front doorway commemorates the removal of the 1647 'frontispiece' of Ballien castle to Ballyconra in 1724 (photo: Laura Walsh)

Figure 71: Ballyragget old bridge

On the east bank just before the rapids known as ‘Jack the Cooks’ the impressive earthwork remains of Moatpark motte rise above the river. Traditionally this was reknowned as the 'mound of the O Bairrche tribe'. It is now home to a patch of native woodland with hazel, ash and spindle. The weir at the start of the rapids served the Ballyconra flour mills along with a second weir back at Anker’s island which fed water into a 1.5km mill race. The Ballyconra mills were built on the site of a Butler castle and were run by the Mosse family until it was burned down in 1885. The castle formed part of the Ballyconra estate which and was sold in 1966 to Avonmore, now Glanbia. A long slow stretch of water known as ‘the Kennels’ passes by the demesne and into Parks Grove townland.

A well-preserved ring-fort overlooks the river and ‘the Gut’ which is the stretch of river that leads from the well-preserved stone weir at Ballyragget down to the ‘new’ Ballyragget bridge, built 1979. This effectively by-passed the fine five-arch stone bridge which dates from 1813 and replaced a series of earlier bridges and fording points at this important crossing. A variety of wall-plants and ferns are found on the old bridge, and its underside may be used by bats.

Ballyragget Bridge to Threecastles Bridge

The magnificent late-fifteenth century Butler Mountgarret towerhouse at Ballyragget would have dominated the river-crossing before the development of the planned town and demesne in the eighteenth century. The original medieval borough of Ballyragget probably developed around the bawn of the towerhouse and a series of ringforts in the environs emphasise the long-held importance of the area for settlement.

The ‘Burren Sally’ flows past Ballyragget demesne and the site of an eel weir, since removed, as far as ‘Paddy Fitz’s Island’. This was an island created by the mill stream that ran from near Ballyragget bridge for a kilometre on the west bank of the Nore. Between the bridge and the mouth of the mill-stream is another weir which acted to channel water into one of the longest mill-streams in north Kilkenny; this terminated 3km away in Donaghmore townland. Little is known about the mills that worked off these streams.

At the south-west corner of the former Ballyragget demesne overlooking the stretch of river known as ‘Tom Delanys Garden’ is the ploughed-out remains of an impressive prehistoric ring-barrow cemetery. Shortly thereafter the ‘Head of the Dairy’ leads to the ‘Tail of the Dairy’, at which point the river kinks to the west. Above the kink are series Bronze Age sites: *fulachta fiadh* and barrows. Both sides of the river here were evidently heavily settled in late prehistory and the preponderance of funerary sites suggests it was a place of some ritual importance.

Entering Grange townland the river straightens and is fronted onto by a ringfort site. The river here is known as the ‘Garden Stream’. The west bank follows the Grange estate for a kilometre, one of the finest landscaped demesnes in the north of the county. At the north of the demesne overlooking the river is the Early Medieval Grange Mochu church and at its south end is the remains of a ‘decoy’, an artificial lake used in duck-shooting which has recolonised with a natural wet woodland.

Figure 72: Rathbeagh fort

Figure 73: Lismaine bridge

The medieval parish church of Rathbeagh sits on a height overlooking the river. At the point where the river takes a sudden kink the famous Rathbeagh fort was built. The fort sits immediately adjacent to the river and a sheltered inlet beside it must have been used for berthing boats in antiquity. Rathbeagh is traditionally associated with Eireamhoin, son of Mil, the leader of the Gaelic people in their settlement of Ireland. The story goes that after the Tuatha De Danann delayed them by tricks and magic, Eireamhoin led his people into Ireland through the Boyne estuary. After defeating the Tuatha De Danann at Tailtiu (Teltown Co. Meath), he and his brother Eibhear divided the kingdom of Ireland between them, he reigning in the northern half and Eibhear in the south. Within a year the brothers had a dispute concerning border territories and in a battle between them at Bri Damh (near Gashill Co. Offaly) Eibhear was defeated and killed. Eiremhoin was then unchallenged king of Ireland and he dug two royal forts -Rath Oind in Cuala (Rathdown in Greystones Co. Wicklow) and the other at Rath Bheathaigh (Rathbeagh). The actual archaeological evidence points to the site being either a platform ringfort or perhaps an Anglo-Norman ringwork castle. The earthwork provides a little patch of semi-natural grassland with a variety of interesting species. Just upstream of the ringfort, are the wetlands at the site of St. Catherines well. These callows fields are important for local wildlife.

At the start of Lismaine demesne the river takes a severe turn to the west and leads into an area of river known as the 'Swallow Hole'. Lismaine bridge is one of the most picturesque on the river and is a five-arch construction built twelve years after the great flood of 1763. The crossing point has been important since at least the middle ages when a tower house was built nearby to the south by the Purcells. The demesne itself contains a range of interesting habitats, such as wet grassland and swamp, and native woodland overlooking the river, containing at least one old oak tree.

From Lismaine demesne to Inchmore castle the river curves back to its usual north-south configuration. This area of river is known as the 'Run In' and the 'Tail of Cody's Hole'. Inchmore quarry now occupies the site of another Bronze Age cemetery and at the opposite side of the river is 'the Islands', a large wetland surrounded by the Nore on the west and the Bracken stream on the east. The southern part of Islands is traditionally farmed by grazing during dry periods, and is home to wet grassland with a diversity of native species. The Nuenna river enters the Nore just south of Lismaine bridge; this is known as 'McGrath's'.

Figure 74: The bawn wall of Inchmore castle and the Herder's Bridge

Inchmore bridge is known locally as the 'Herder's Bridge' and is the only bridge in north Kilkenny to have survived the 1763 flood. It is probably of Late Medieval date and leads into the bawn of Inchmore castle, a Grace towerhouse that was converted to a grand Elizabethan mansion. The house was pulled down in the mid-nineteenth century and the bawn is now plated with maize. Thankfully stone mullions and transoms from this edifice, as well as other architectural fragments, have been carefully gathered by Dan Lenehan who resides nearby. Some of the more curious stones he has collected are a series of numbered stone posts whose function remains something of a mystery. Four of the stones are set into the ground on the far side of Inchmore bridge.

Figure 75: One of a series of numbered stone posts from Inchmore. Their purpose is something of a mystery.

Figure 76: **A sixth century AD burial which was excavated in 1999 at Cooleeshalmore (source: Neary 2003).**

Past the ‘Sand Hole’, a cattle fording point to the Islands, the river enters the ‘long strip’ which extends as far as the ‘Mouth of the Brook’ where a tributary enters the main river at Ballycarran townland. To Threecastles bridge the river passes through Cooleeshalmore where archaeological excavations in 1999 unearthed some of the earliest Christian burials in the county, dating from the sixth century. This whole area is noted for its use by wintering wetland birds, which stop over in the wetlands to rest and feed. The old Threecastles to Lismaine road, now a farm lane, is flanked on either side by mature hedgerows with a very good variety of native trees and shrubs.

Figure 77: Threecastles bridge

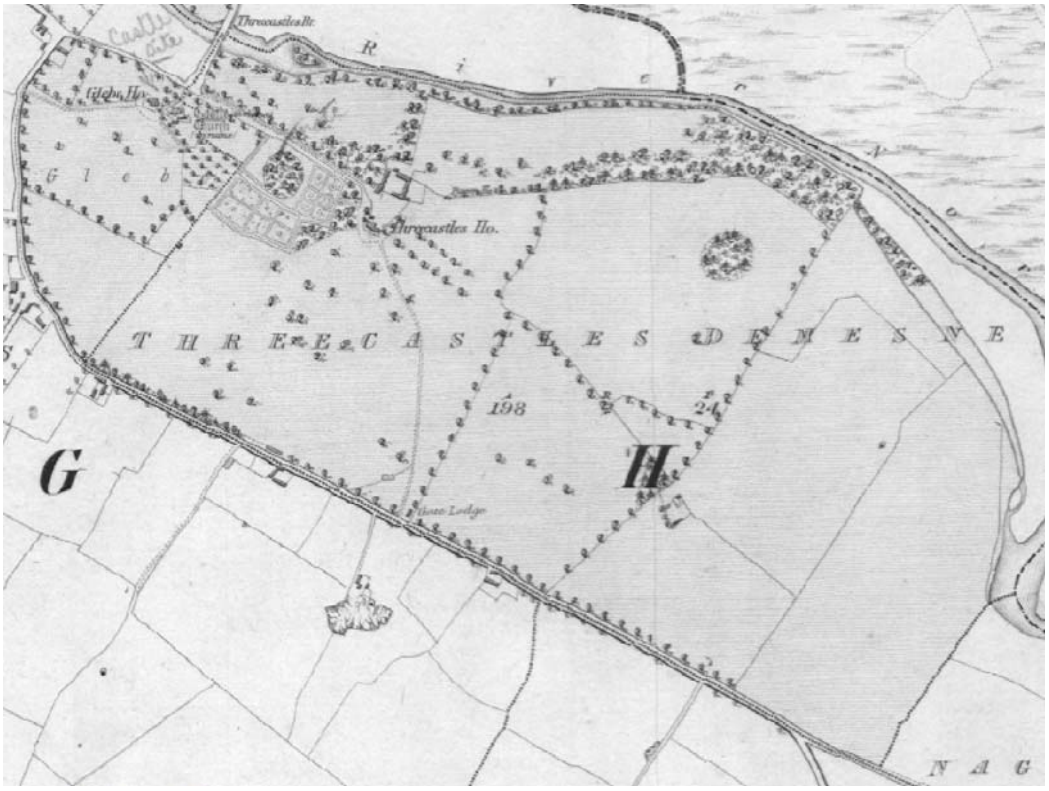


Figure 78: First edition Ordnance Survey map of Threecastles demesne

Figure 79: Residential tower at Threecastles church.

On the east bank Ballycarran demesne flanks the river as far as Threecastles bridge, which was built in 1790. Since the Early Medieval period this has been a critical crossing over the Nore and its environs are studded with archaeological monuments. Otters have been recorded at the bridge. A 105m diameter ringfort, perhaps a royal residence of the O'Brennans, is the earliest recorded monument. One of the more interesting burial monuments from Threecastles graveyard was a 'cadaver stone', a late medieval effigy that showed the corpse as it decayed. Its whereabouts are presently unknown. Following the Cromwellian campaign the manor of Odagh was taken out of Old English hands and the Ball family's Threecastles demesne incorporated many of the monuments into its designed landscape. The mature woodland, wetlands and parkland provides habitat for birds and, along the river, Daubenton's bats.

Threecastles Bridge to Green's Bridge

Through Threecastles bridge the river enters a stretch of fast water that divides into a mill stream. The river names here are the 'Ossiery', 'the metal man', 'Pieres' and 'the Bog'. Threecastles estate flanks the river for over a kilometre as far as Naglesland, passing the large wetland area of Ardaloo fen on the east bank. This treacherous wetland contains a variety of woodland, swamp and grassland habitats. At Naglesland the river takes a dramatic turn to avoid an area of hard limestone. Perched on top of a ridge overlooking the river at Naglesland is a large ringfort that is now heavily overgrown with trees – mostly planted, though a tiny remnant of native hazel woodland still exists. This outcrop, unusually for our journey, is covered with acid soils, and is the only location in the study area where a tiny pocket of acidic grassland was found. On the opposite bank in the peninsula formed by the bend in the Nore and the entry of the Dinin is the site of Ardaloo grange, towerhouse

and Early Medievalchurch. The grange was a private ecclesiastical estate which was granted by earl William Marshal in the early 13th century to the Augustinians at Kells Priory. Not a trace of it remains.

There are a host of river names at this location, reflecting its popularity with anglers: 'the Big Tree', 'the Shot', 'the Sod', 'the Big Hole', 'Shintins Weir', 'The Run in' and 'Armchair rock', to name a few. Where the Dinin currently enters the Nore is about 50m downstream from its original point of entry. This change occurred as a result of a combination of engineering works and flooding - the silted former river-channel is still to be seen, and has recolonised with alluvial woodland, though much of this is dominated by the non-native sycamore. The gravel banks and wet woodland here are among some of the more untamed habitats found on our trip. A commercial snap-net fishery worked the Shot until 1948.

In about 1830 the Mount Eagle distillery was opened by Thomas Little on the west bank of the Nore at Naglesland. However, Father Matthew's temperance movement put paid to its ambitions and today only a wall and its gate-pillars survive. After a series of riverine islands a long stretch of slow water – 'the Flemmings', 'the Riskeens', 'Yankee's Bridge', 'Bolger's Flat', 'Bournan's Pond' – leads to Dunmore and the site of a woollen manufactory. This was established in the early nineteenth century on the site of a medieval flour mill. It had closed by 1900 and no trace of its survives above ground apart from fragments of its weir and mill-stream. The roadside hedgerow from the Rock Bar towards the city is of local interest, with its many native species.

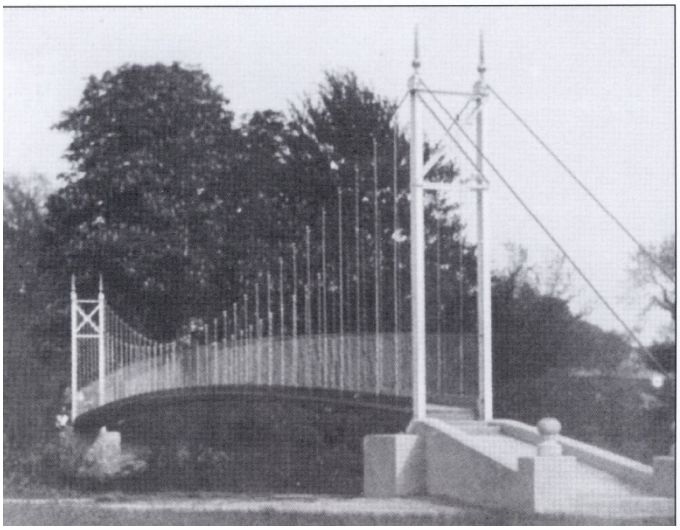


Figure 80: Suspension bridge at Talbot's Inch, which was destroyed in 1947

The demesne of Richmond House runs alongside the Nore at Troyswood and leads to 'the Island', 'Triangle Pond' and the Greenvale Woollen Manufactory. This was a water-powered woollen mill established by Ellen Countess of Desart in 1906 on the site of an earlier Bleach mill. Much of the factory still stands, as does a large weir and a series of mill-streams. Many of the mill's employees lived in the planned village of Talbot's Inch on the opposite bank of the river. To enable them ease of access across the Nore a suspension bridge was built in the early 1900s. The great flood of 1947 destroyed the bridge however, though many of its cables and concrete footings may still be seen along the west bank of the river in the linear park.

Figure 81: Lead marker for the* Anthrotaxus Selaginoides *tree, one of many which Lady Desart placed along a specially constructed river-walkway lined by exotic trees below Talbot's Inch. This species is an evergreen conifer which is native to Tasmania (marker in possession of Mr. John Dalton).

Lady Desart also constructed a pleasure-walk along the west bank and planted it with various exotic species. Most of these are now lost, apart from bamboo cane which has given its name to 'Caney Island'. Though much of the woodland is dominated by non-natives such as beech and sycamore, there are many more natural areas, particularly in the northern section, which are home to native ash, willows, alder and native plants including ferns and woodland flowers.

Figure 82: Greenvale woollen manufactory c.1920

Figure 83: Green's Bridge, constructed after the great flood of 1763

Past the site of the suspension bridge the river flows into the environs of Kilkenny city and the townland of Friarsinch. Here 'Marx's Rocks' and the 'Silly-bub ditch' are river names. Overlooking these on the west bank is what may be a promontory fort, perched on the edge of a steep river-cliff. A series of mill-races run parallel with the river here; these leats are remarkable pieces of medieval engineering and served mills at Green's Bridge and the Maudlin mill on the far side of the city. Along the linear walk, a variety of native habitats can be seen – willow woodland along the river channel, ash-hazel woodland along the ridge, and pockets of limestone grassland just inside the wall along the Bleach Road.

Green's Bridge has been a fording point probably since prehistory and was an important factor influencing the site of the Early Medieval monastery of *Cill Chainnigh*. A bridge spanned the Nore here from the late 12th century and has been replaced on at least five separate occasions. The abutments of the sixteenth century bridge may be seen slightly upstream of the existing bridge when the water is low. This was destroyed in the 1763 flood and replaced by in 1766 by the present structure which was described by the eminent architectural historian Maurice Craig as 'one of the four or five finest bridges in Ireland'.

Green's Bridge to Ossory Bridge

Green's Bridge effectively marks the beginning of the old city of Kilkenny and between it and John's Bridge there are a large array of historical sites and monuments that line the river frontage. The

main milling area in the city was around Green's bridge where there were two major mill-complexes that were powered by water channelled through leats and a large V-shaped weir.

Figure 84: Aerial photograph of Kilkenny city 2005 (courtesy Kilkenny Borough Council)

Figure 85: Greensbridge mill (left) and Chancellor's Mill (right) are shown on this view of Kilkenny by Joanna Bann(?) 1819 (Kilkenny Archaeological Society Collection)

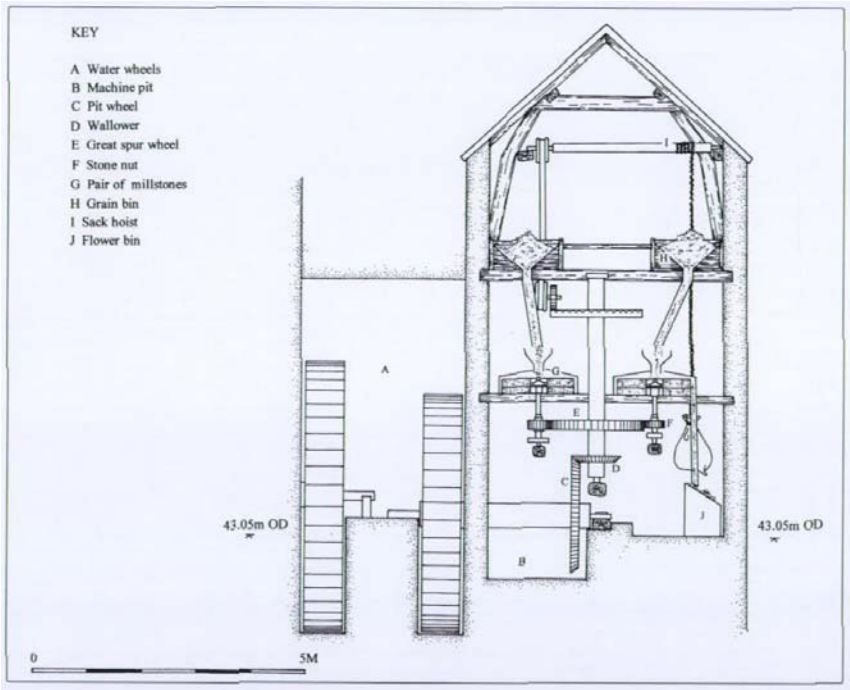


Figure 86: A reconstruction drawing of the mill machinery at Greensbridge mill (Walshe's Mill) (M. Gowen and Co. Ltd.).

Prior to the removal of the 'Mill Island' for Greensbridge mill (Walshe's Mill) an excavation took place in 2001-2, during which documented the history of the site from the 17th-20th centuries. The excavation represents one of the most comprehensive industrial archaeology projects ever undertaken in Ireland

Just below the mills on the right bank is the Diageo brewery which occupies the former precinct of the Franciscan friary which was founded by Richard Marshal *c.*1234. Its surviving remains comprise the thirteenth century choir and a belfry. A recently rediscovered photograph of the site in 1862 from the opposite bank of the River Nore shows part of the south transept intact. The north-east corner of the precinct was marked by a turret, Evans' tower, which overlooks the river and is still largely intact. In 2002 a medieval sword was found in the river at the base of the tower.

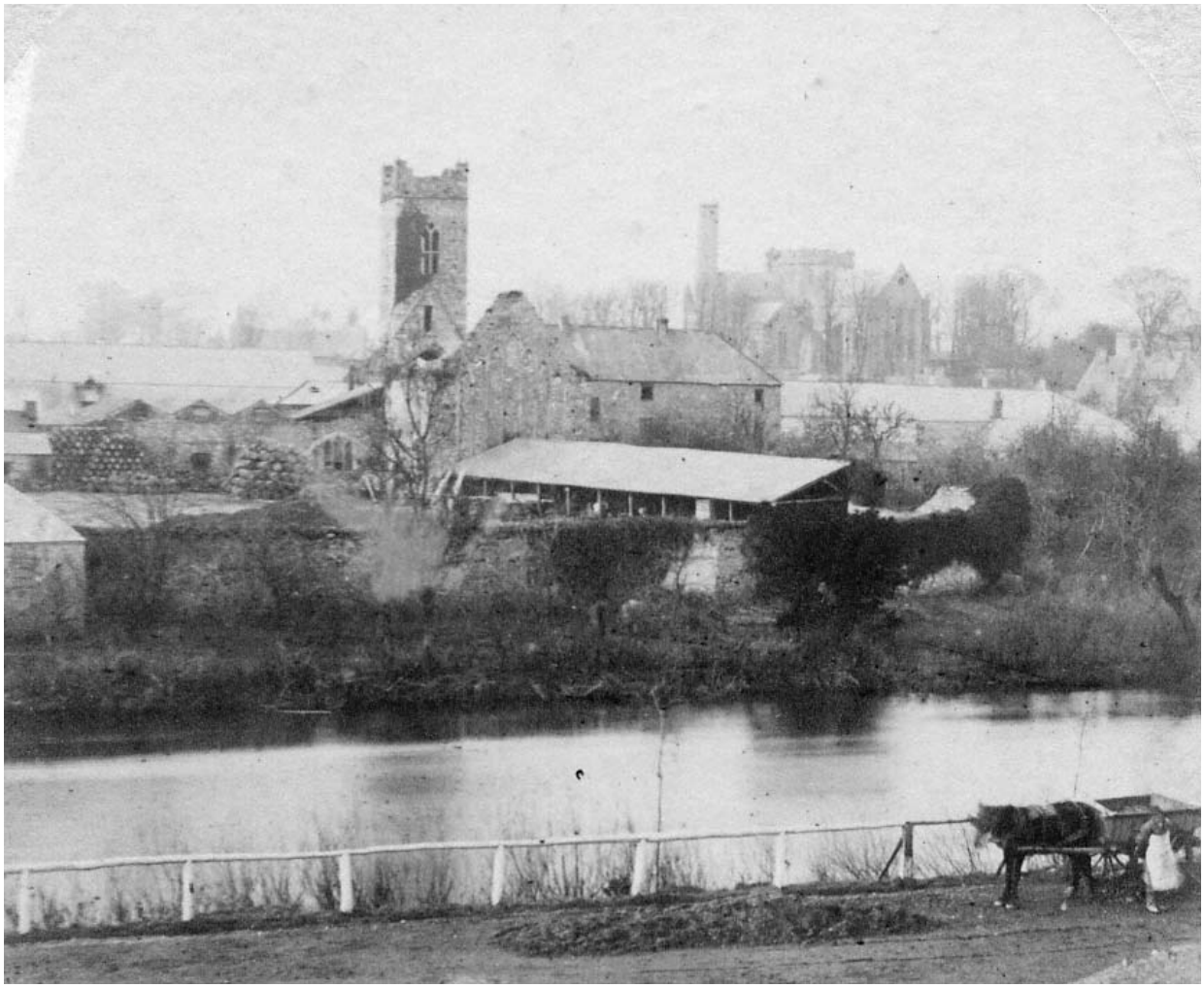


Figure 87: Recently rediscovered photograph by Hartford of St. Francis' Friary 1862 (RSAI collection)

Figure 88: Late Georgian toll house and pleasure-house on Bateman quay

It is not known if the riverside was defended with a town wall though there were certainly gates controlling access over Green's bridge and John's bridge. In the middle ages a quayside would also have been constructed, probably on both side of the Nore though no trace of it has ever been found. In the later 18th century a 'new quay' was built on what is now Bateman quay. A toll house for this quay still stands and this is adjacent to a small two-storey 'pleasure house'. The late 17th- 18th century saw much of the city transformed and for the first time the River Nore was seen as place of pleasure, as well as industry. Thus gentlemen's 'Pleasure Houses' were built fronting onto the river along what is now Bateman quay. These had berths for boats outside them and a kitchen at ground floor level where sweetmeats, tea and drinks were prepared for the men who sat in the ornate top storey. Walks along the river, such as the canal walk, were also laid out at this time.

The Kilkenny city flood-relief scheme 2001-2004 led to the recovery of a large and varied collection of artefacts, some of which are illustrated in figure 84. A particularly important excavation took place during the scheme at John's Bridge where a Late Bronze Age fish-trap. The abutments and construction history of the bridge constructed after the flood of 1763 were also revealed. An underwater excavation at the same point revealed much about the 16th century John's bridge, as well as a major corpus of medieval graveslabs which had been built into the bridge.

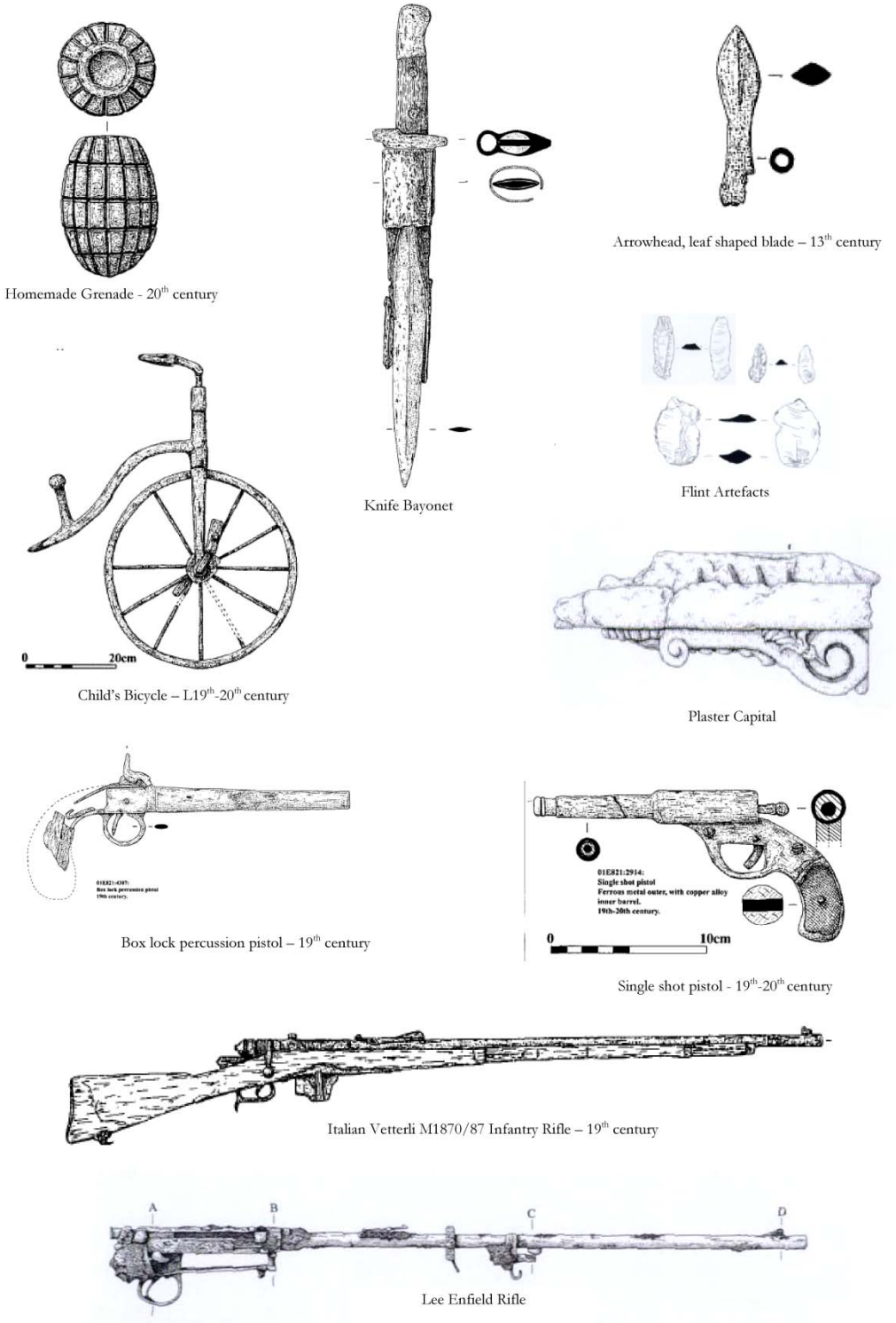


Figure 89: A selection of the finds recovered from the River Nore during the Kilkenny flood-relief scheme

From the river at John's bridge there is a fine view to Kilkenny castle which commands the crossing and dominates the 'High Town' of Kilkenny. A laneway ran along the river below the castle to give access to the Castle Mills, later Ormonde Woollen factory and this was converted to the 'Canal walk' in the 1860s.

Figure 90: Autumnal view over the River Nore with the ruins of the Ormonde Mill on left and the castle weir in the centre (photo: Kilkenny Archaeology)

Figure 91: The mill-wheel for the Castle Mills (later Ormonde Woollen mill) in 1760 is shown on Thomas Mitchell's view of Kilkenny (National Gallery of Ireland)

The Ormonde Woollen Mills are on the site of the medieval Castle Mills. The complex included three water-powered mills built 1798. It was famous throughout western Europe for its high quality blankets. Five waterwheels survive, which were largely destroyed by fire in 1969. The Magdalen mills and Lacken Mills are situated on the opposite bank of the river, both of which have their origins in the medieval period. Between the three mills a large weir stretches across the river; this was modified in the flood relief scheme. Much of the uncompleted Nore navigation remains intact running parallel with the river from the Ormond Woollen Mills as far south as Dunbell. The construction of the Ossory bridge in 1984 marked a new phase in the economic development of the city and also marks the end of the study area

The section along the canal walk is a haven for nature within the city, with mature trees, wetland along the river's edge, and marsh in parts of the old canal. Along with the woodland of the Castle park and the Lacken walk, and the semi-natural grassland of Dukes Meadows and the Black Quarry, this area is a natural heritage hotspot within the city. This was amply demonstrated during the field survey when an otter was observed leisurely hunting in the river here, within metres of people walking along its banks.

Figure 92: The sculpture on Ossory bridge by Joan Smith (1984) provides a fitting end to the River Nore Heritage Audit study area. Depicted are the megalithic period, Oengus King of Ossory, Ogham stone, Pre-Christian culture, Bardic Heritage, Christian scribes, round tower (photo: Ann Tierney)

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